



REPUBLIC OF SLOVENIA
MINISTRY OF INFRASTRUCTURE

Langusova ulica 4, 1535 Ljubljana

BULLETIN

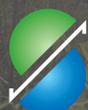
YEAR 2020

MINERAL RESOURCES

in Slovenia

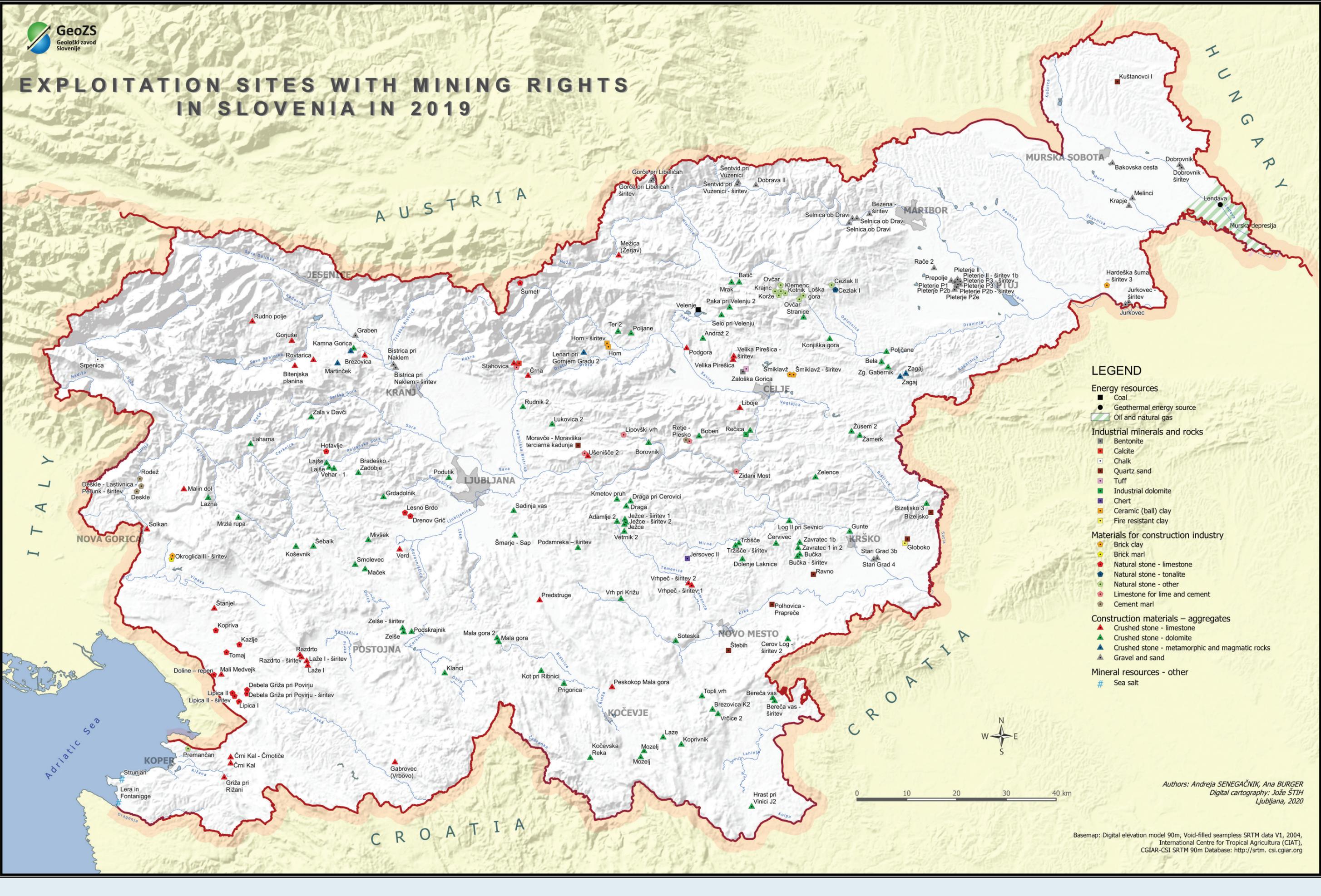
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GeoZS
Geološki zavod
Slovenije

EXPLOITATION SITES WITH MINING RIGHTS IN SLOVENIA IN 2019



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



Authors: Andreja SENEGAČNIK, Ana BURGER
Digital cartography: Jože ŠTIH
Ljubljana, 2020

Basemap: Digital elevation model 90m, Void-filled seamless SRTM data V1, 2004,
International Centre for Tropical Agriculture (CIAT),
CGIAR-CSI SRTM 90m Database: <http://srtm.csi.cgiar.org>

FOREWORD

Dear Reader,

It is my pleasure and honour to introduce this year's edition of the Mineral Resources Bulletin, an increasingly influential publication produced by the Ministry of Infrastructure of the Republic of Slovenia and the Geological Survey of Slovenia. In accordance with the editorial policy of recent years, the Bulletin serves as much more than just an annual overview of mineral and energy resource-related issues and developments in Slovenia. Instead, it provides professional articles on topics that are central to Europe's effort to become a leading force in the sustainable management of natural resources, and toward seeing the implementation of the European Green Deal.

In the context of the objectives set out in the European Green Deal and in accordance with the goals of its smart specialization program, Slovenia is working to become a European leader in the harnessing of circularity with a view to transforming and decarbonising its economy. The country aims to effect through a coordinated national approach based on local needs and international best practice. Based on both the content of this bulletin and the remarkable growth of work and activities in the field, we can confidently maintain that our knowledge and expertise in primary and secondary mineral resources will well serve to facilitate this ambition. The vision and strategy of the Geological Survey of Slovenia, whose work is built on three interconnected and inseparable pillars – research and development, public service, and market consultancy – also serves to support the country's efforts in the field.

This Bulletin presents news and developments related to the transfer of state-of-the-art research on mineral resources into practice. It also introduces new developments related to the inventory and accessibility of relevant data on primary and secondary resources in the region, and explores the ways industry can benefit from such.

Moreover, if we connect the country's formidable ambitions in the field of mineral resources with the primary objectives of EIT RawMaterials – the leading European community for raw materials in which Slovenian public research institutions are particularly active – we feel Slovenia will be well positioned to take a leading role, in the region and beyond.

Ljubljana, September 2020

Miloš Bavec
Director

Geological Survey of Slovenia (*GeoZS*)



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Mineral data Up-dated to 2019

WORK OF THE UNIT FOR MINING (WITHIN THE MINISTRY OF INFRASTRUCTURE)

The Unit for Mining (relevant for mining and mineral resources), organized within the Energy Directorate at the Ministry of Infrastructure, carries out various administrative, expert, coordinative, supervisory and other tasks in the field of mineral management related to exploration and exploitation, including the remediation of degraded areas and in procedures involved in closing mines.

The main activities are:

- development of mining legislation and administrative procedures in line with the Mining Act and National Mining / Mineral Strategy,
- the issuing of mineral exploration licenses and granting of mining rights (concessions),
- preparing expert material for spatial documents and issuing approvals for local spatial plans,
- maintaining a register of persons authorized in mining,
- monitoring of coal mine operations and supervising closing works,
- monitoring the work of the Inspectorate for energy and mining,
- performing tasks for “Commission for professional certification in mining”,
- coordination of administrative procedures and projects.

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About the Ministry of Infrastructure

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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.

Leadership



Jernej Vrtovec
Minister
Ministry of Infrastructure
+386 1 478 82 82
gp.mzi@gov.si



Blaž Košorok
State Secretary
Ministry of Infrastructure
+386 1 478 80 00
gp.mzi@gov.si



Aleš Mihelič
State Secretary
Ministry of Infrastructure
+01 478 84 40
gp.mzi@gov.si

Ministry of Infrastructure
Langusova ulica 4
1535 Ljubljana
Show on map

+386 1 478 80 00
gp.mzi@gov.si

ministrstvozainfrastrukturo
mzi_rs
mzi_rs

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WORK PLAN OF THE GEOLOGICAL SURVEY OF SLOVENIA FOR THE MINISTRY OF INFRASTRUCTURE

The basic starting points for the annual GeoZS work program are defined in line with Slovenian legislation, EU directives and the needs of the ministry responsible for mining (Ministry of Infrastructure - Energy Directorate - Unit for Mining).

The work program performed by GeoZS is divided into main sets of tasks according to the needs of the Unit for Mining:

- EXPERTISE
 - expertise for National Mining / Mineral Strategy and other regulations on implementation,
 - expertise in spatial planning supporting licensing procedures,
 - expertise engaging in EU activities related to minerals.
- MINERAL INFORMATION INFRASTRUCTURE
 - development and maintenance of the web application “Mining registry book”,
 - Bulletin Mineral resources,
 - “Balance of mineral reserves and resources”,
 - thematic maps,
 - archive of documentation on closed mines.
- RESEARCH WORK
 - 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 feasibility of exploitation,
 - impacts of closing mines.
- OTHER
 - Participation in the Commission charged with determining mineral reserves and resources. The Commission determines the relevance of Reports of the annual classification of reserves and resources.
 - Organization of thematic workshops and congresses, the results of which 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*), the Geological Survey of Slovenia, in its role of Public Mining Service, supports the ministry responsible for mining (Ministry of Infrastructure) in terms of sustainable mineral management and mineral policy.

The Public Mining Service is authorized to monitor all mineral exploration works (e.g. drillings).

Tasks performed by the Public Mining Service:

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



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

MINERAL DATA COLLECTION IN SLOVENIA

All Slovenian concessionaires are required to report annually on production, degraded surface, reserves and resources in their mining areas (Reporting forms on mineral resources). Mineral data is collected by the responsible ministry. Data collected is further processed and evaluated for purposes of mineral statistics on the 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 (limestone, tonalite, other natural stones), raw materials for the lime and the 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 195 exploitation sites with mining rights in Slovenia involved with 25 different minerals and rocks in 2019, and which have been run by 126 mining right holders.

MINERAL AND ENERGY RESOURCES IN SLOVENIA IN 2019

Overview of Slovenia's mineral resources

In Slovenia, situated between the Alps, the Pannonian Basin, the Dinarides and the Dinaric Foreland, energy, metallic and non-metallic resources occur in different geological formations. 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 greatest resources and proven reserves are the Velenje Basin (N Slovenia; Pliocene lignite), Sava Basin(s) (E Central Slovenia; Oligocene subbituminous ("hard brown") coal, and the Pannonian Basin (E and NE Slovenia; Miocene lignite and "brown" coal). Uranium ore occurs mainly in the area of Žirovski Vrh, W of Ljubljana, in the Permian Val Gardena / Gröden Formation. The most promising area for oil and gas generation and accumulation is the Pannonian Basin. In other areas, hydrocarbons may have been generated in different known source rocks (from the Palaeozoic to Early Tertiary) but were lost (not trapped) during subsequent geological processes. Offshore in the Adriatic Sea (as in the case of Italy, Croatia and southwards) might represent a potential area, but Slovenia's claim to the sea is very limited, and no exploration has yet been carried there. Slovenia has one oil-and-gas field in operation -the Dolina-Petišovci one since 1942. Oil production is only symbolic (less than 500 tons/year) but gas production has been increasing in recent years after two new wells – Pg-10 and Pg-11A – from 2011 were activated.



Pg-10 and Pg-11A were drilled as the most recent wells (3545 and 3500 m deep) in the Dolina-Petišovci oil-and-gas field.

On the metallogenic map of Slovenia, more than 220 locations of metal mineral deposits and occurrences are marked, a few dozen of which were once mining sites (ore deposits), while the rest represent ore occurrences only. No metal mines are currently active. Potential economic significance can be attributed primarily to sites bearing mercury (Idrija), lead and zinc (Mežica, Litija), uranium (Žirovski vrh) and to a lesser extent copper (Sovodeni), molybdenum (Mežica), antimony (Trojane), manganese (Karavanke), iron and bauxite.

Non-metallic mineral resources of higher market value (industrial minerals and rocks) that could be exported occur only moderately. Non-metallic mineral resources of lesser value prevail (mineral resources for building materials and construction), which are primarily used domestically or 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, and for glass manufacturing, farming, foodstuffs and similar.



Underground lignite mining in Velenje

Mining enjoys a long tradition in Slovenia. In the past this consisted in the exploitation of a significant quantity of mercury in Idrija, whereas today it involves technologically advanced underground extraction of lignite in Velenje. After 1990, several underground coal mines, and mines of uranium, mercury, and 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 concluded in 2012.

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 subsequently thoroughly explored and increasingly exploited in the 20th century, especially for the railway and later for the production of electricity at coal-fired power plants. Among the more than 100 coal-mining sites many had only local significance, as can be gleaned from different historical documentation and maps; but a number operated as full-blown collieries, which produced tens to hundreds of thousands of tonnes of coal annually. Between 1950 and 1990, annual coal production (mostly underground) increased from 2 to almost 7 million tonnes (Mt). In the period 1962–1976, the run-of-mine calorific value of all excavated coals (lignites and subbituminous coals) in Slovenia from 11 mines varied at 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. In the 1980s, calorific value of total Slovenian coal production was slightly less than 10 MJ/kg, and coal was used almost exclusively in power plants that produced ca. 37% of the country's electrical energy (about the same as the country's hydro power plants). During this period, maximum 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 concluded in four coal mines (Laško, Zagorje, Senovo, and Kanižarica), and in 2012 production also wrapped up in Trbovlje-Hrastnik. Over the past two decades, some 4 Mt of lignite with a calorific value of 10.5 MJ/kg was produced annually in Velenje, which has the potential to remain the only active (underground) coal mine until the 2050s.

The uranium mine at Žirovski Vrh, which is the only underground mine in Slovenia that opened after the Second World War, has been in the process of closing since 1991. Production of mercury ore in Idrija ended in 1991, and in Mežica the last tonnes of lead and zinc ore were extracted in 1994. Otherwise, the mines in Idrija and Mežica have been in the process of closing since 1987 and 1988, respectively. The Litija Mine closed and concluded its production of lead and zinc in the 1960s.

As can be seen from the brief description above, the situation in Slovenia has seen a pronounced change in dynamics over the past 30 years in terms of potential mineral resources and the overall related economic situation. These changes include the closure of centuries-old metal mines, almost all coal mines except for the Velenje Lignite Mine, and the uranium mine; on the other hand the country has continued to put a significant emphasis on non-metallic mineral resources for the building and construction industries. In view of current trends and economic development programmes, primarily as they relate to infrastructure construction (roads, railways, apartment buildings), we can predict future needs for individual non-metallic mineral resources, firstly in construction, with other applications also coming into play in the longer term since 2018. Mineral resources for construction, which will be extracted using surface mining, will continue to represent an important factor in the country's economy and future development.

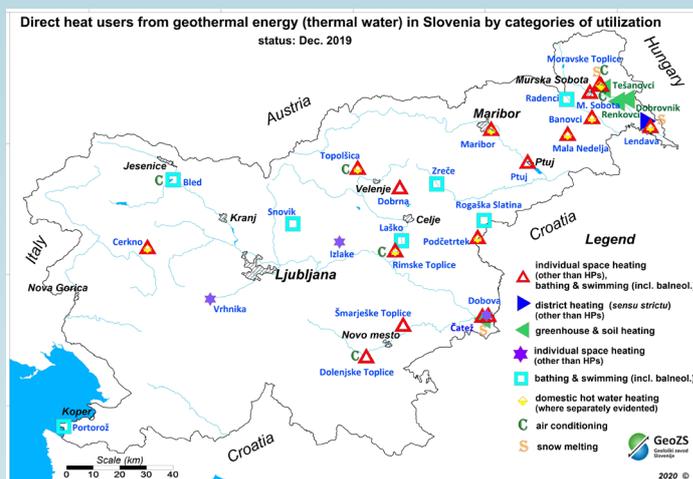
In conclusion, there was 1 exploration site and 195 exploitation sites with mining rights in Slovenia mining 25 different mineral resources in 2019. These sites were run by 126 mining rights holders.

Use of geothermal energy in Slovenia in 2019

Roughly 18% of the country has better deep geothermal potential than other parts of the country. This northeastern region belonging to the Pannonian basin, with its high potential, has been intensively investigated in recent years within various European projects. Efforts have also been put into the promotion of more sustainable exploitation by applying new reinjection wells forward into the future based on materials prepared during project operations. Better insights have been gained regarding the characteristics of the geothermal field, the hydrogeological conditions of northeastern and eastern Slovenia, and the potential for direct heat utilization. The northeastern part is characterized by a thin crust and thick Cenozoic sedimentary layers (up to 5.5 km) with elevated surface heat-flow density (HFD) above 100 mW/m² and expected temperatures above 80 °C at a depth of 2 km east of the Maribor - Ptuj line. All production wells situated in that area exploit thermal water from Neogene aquifers with the exception of those in Maribor. About 20 inactive and some 11 new potential wells exhibit wellhead temperatures of between 20 and 72 °C and have a total maximum yield of 281 kg/s, resulting in an ideal thermal power output of 23.9 MW_t. This most geothermally utilized area is filled with Neogene marine and freshwater sediments, and at depths of more than 2500 m thermal fluids

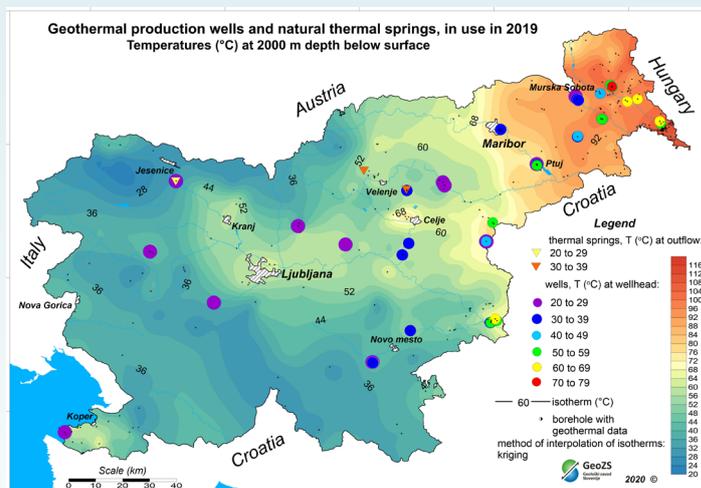
reach temperatures of 100 to 200 °C. Here clays and marls predominate, with intercalations of porous sands and sandstones of the Upper Pannonian-Pontian Mura Fm, where mineral, thermal and thermo-mineral waters are found. These hydraulically connected sandy lenses are widely utilized in Hungary and Slovenia and are composed of sand-prone units 50 to 300 m thick found at depth intervals of roughly 0.7 to 1.45 km in the interior parts of the Pannonian basin, with temperatures from 50 to 70 °C.

In recent years particular attention has been paid to efforts to estimate shallow geothermal potential, particularly in the urban and some suburban areas.



The main categories of direct heat use of geothermal energy from thermal water in Slovenia in 2019 at 31 locations.

Everywhere geothermal energy is successfully used in numerous spas and recreation centres, in agriculture, and for individual space and district heating. Total utilization of geothermal energy, as of 2019, was 1608.44 TJ, with a corresponding installed capacity of 262.68 MW. Geothermal energy from thermal water is used directly at 31 locations, where installed capacity and geothermal energy consumed amounted to 62.06 MW_t and 600.03 TJ, respectively. The shallow geothermal energy (heat in the shallow subsurface), which is exploited by approximately 12,726 units of ground-source heat pumps, contributed 1008.40 TJ of used geothermal energy from the installed capacity of 200.63 MW_t. Of these, the bigger GSHP units (with >20 kW of rated power), of which there are roughly 652, contributed some 271.18 TJ of shallow geothermal energy.



Geothermal production wells and natural thermal springs in use in 2019 in Slovenia (status: Jun. 2020); expected temperatures at a depth of 2000 m beneath the surface.

Andreja Senegačnik, Miloš Markič, Dušan Rajver
(GeoZS)

Most South-East Europe countries (SEE) have joined forces in a project funded by EIT RawMaterials to realise the idea of a common “Mineral Register” for the West Balkan. The Register deals with data on primary and secondary raw materials. This data will be integrated into the Mineral intelligence for Europe to bring the SEE region into the common European minerals market. The work is coordinated by the Geological Survey of Slovenia, a core member of EIT RawMaterials. Primary and secondary mineral resources data from the six South-East European countries (Albania, Bosnia and Herzegovina, Croatia, North Macedonia, Montenegro and Serbia) has been mapped. Most of these countries are not yet included in the existing mineral data platforms.

formation evaluated. The processed data was put into a common scheme with all relevant attributes in order to ensure a balance among the national data provided.

In addition to PRM data, information on mine and metallurgical waste in selected SEE countries was collected. Expert knowledge of Secondary Raw Materials (SRM) and related PRM data will be brought together. Special attention has been paid to scarce and critical minerals in mining and metallurgical waste sites that have not yet been analysed and recycled. This plays an important role in the transformation of mine and metallurgical waste into potential sources of raw materials in the future.

During the creation of a common “Mineral Register”, PRM and SRM data is being transformed into an INSPIRE-aligned form. By the end of the project, in mid-2021, this data will be harvested into the Mineral intelligence for Europe and become publicly available.

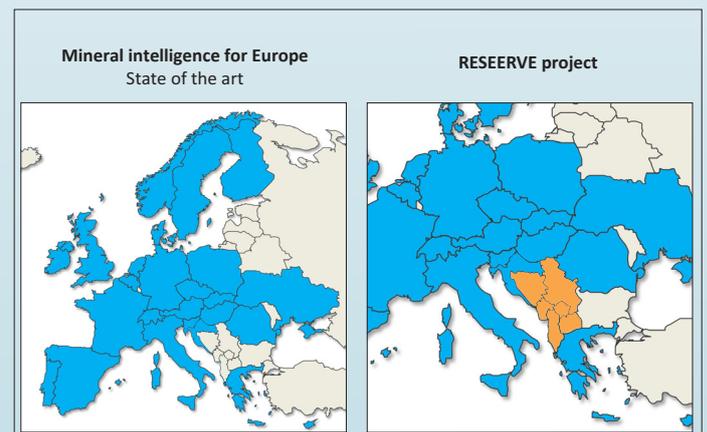


Project's Consortium

All engaged research partners, namely the national geological surveys, play an important role with the collection, evaluation, storage and provision of national geodata. National geological surveys are authorised to manage relevant mineral data sets. Educational and business partners contribute by sharing their knowledge and experience, and by outlining their various needs.

The data from the Mineral Register will serve as a roadmap for potential investments in mineral exploration and exploitation.

The quantity, quality, format and availability of existing data held by national geological surveys is being assessed. Several gaps in the mineral information relating to the SEE region have been identified. A comparison of datasets from participating SEE countries was carried out and the mineral in-



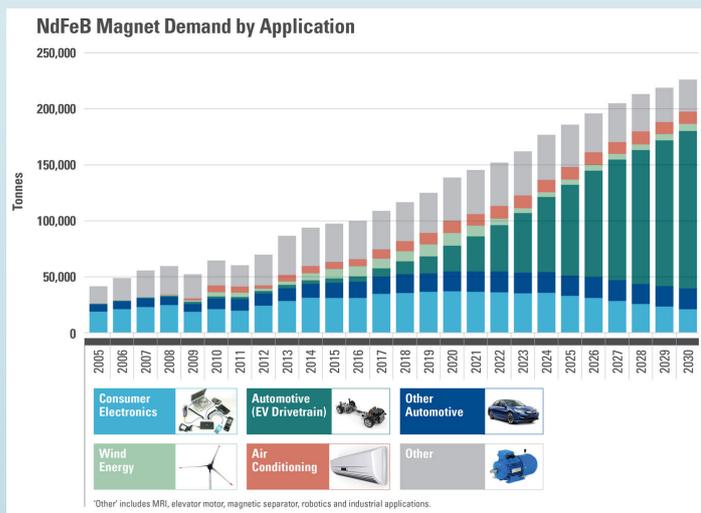
The “RESEERVE” project – filling the gap in the Mineral intelligence for Europe

The Mineral Register is an excellent example of providing a methodology for collecting and organising data from different sources and countries for harvesting into the Mineral intelligence for Europe. Here the data is organised in one place, is easily available, and as such is more attractive to potential investors in the extractive sector in the SEE region. This is one of the steps being taken towards increasing Europe’s self-sufficiency in raw materials.

Duška Rokavec, Matej Draksler, Tina Zajc Benda, Urša Šolc
(GeoZS)

RECYCLING END-OF-LIFE PERMANENT MAGNETS – URBAN MINING

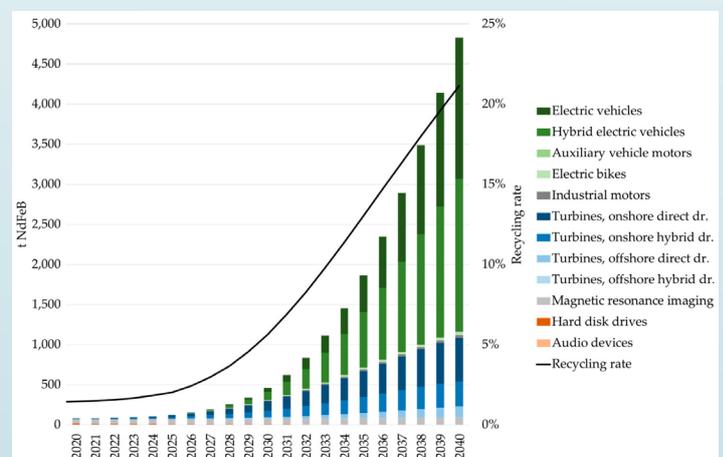
The European Commission's "European Green Deal" aims to accelerate "the shift to sustainable and smart mobility"¹. This is a vital move, as transport represents a quarter of Europe's greenhouse-gas emissions, which must be reduced to a net zero level by 2050. To achieve this goal, research and capital is being targeted at electrifying the continent's transport system. Electric vehicles (EVs) require powerful permanent magnets (PMs) based on rare-earth elements (REEs), like Nd-Fe-B and Sm-Co, without which the transfer to green mobility will simply not succeed. Today, industry consumes 140 kt of Nd-Fe-B, with this figure expected to rise to 225 kt by 2030 owing to the increased demand². Nd-Fe-B magnets contain up to 30 wt. % of REEs like Nd, and a few wt. % of Dy and Tb, of which 84% are currently sourced from China³. Mining of REEs is a dirty business, which leads to problems like atmospheric pollution, groundwater contamination, and associated health problems. China has a virtual monopoly over the global REEs sector, leading to accusations of price fixing and supply restrictions. As a result, REEs are considered by the European Commission to be the most critical raw materials in terms of their economic importance and supply risk⁴.



Current consumption of NdFeB magnets by application and future predictions¹⁰.

In order to achieve greater REEs sustainability, the EU needs to develop a circular economy that encompasses the recycling of REEs-containing end-of-life (EOL) products. PMs, due to their high REE content and their widespread use in many technologies, are a highly valuable secondary source of REEs. In recent years, PM-based EVs and wind turbines have greatly enhanced the potential of recycling Nd-Fe-B. With the expected lifespan of these machines at 5-15 years, the total theoretical recycling

potential from 2016 to 2040 for Nd-Fe-B is about 233 kt, corresponding to 66.6 kt of neodymium and 7.9 kt of dysprosium⁵. As currently less than 1% of the world's REEs are being recycled, research and innovation aimed at improving their exploitation as a secondary resource are very much needed. At present, the only way to recover EOL magnets from the waste streams of electric and electronic equipment is by shredding and recycling using physical, chemical or pyrometallurgical routes, which is expensive, energy intensive and in some cases produces a lot of waste. This is why several national (ARRS L2-9213⁶ and ARRS L2-18297⁷) and EU projects (DEMETER⁸, MaXycle⁹ and SUSMAG-PRO¹⁰) have been developing novel zero waste processing and recycling methods designed for use in pilot plants in Europe, as well as magnetic devices that are easy to dismantle and labelled for easy sorting, making PM recycling more expedient.



Estimation of the realistic return flows by application in tons of NdFeB and overall recycling rate⁵.

Slovenia is a good location for the collection of waste from central and eastern regions of the EU and is home to two of the EU's REE PM producers in the form of Magneti Ljubljana and Kolektor Group. Using local suppliers would significantly reduce carbon emissions, and it is expected that in side just a few years Slovenia could produce ~45 t/y of Nd-Fe-B magnets based on recycling¹¹. But in order to stimulate this activity, some legislative changes will be required to lever the domestic production of secondary mineral resources for PMs. Until then, European industry will remain exposed to the price fluctuations of the open market, making it vulnerable and potentially uncompetitive.

**Benjamin Podmiljšak, Kristina Žužek Rožman,
Spomenka Kobe, Sašo Šturm**
(Jožef Stefan Institute)

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

² <https://www.arultd.com/products/supply-and-demand.html>

³ Zhou, B.; Li, Z.; Chen, C. Global Potential of Rare Earth Resources and Rare Earth Demand from Clean Technologies. *Minerals* 2017, 7, 203

⁴ https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en

⁵ Reimer, M.V.; Schenk-Mathes, H.Y.; Hoffmann, M.F.; Elwert, T. Recycling Decisions in 2020, 2030, and 2040—When Can Substantial NdFeB Extraction be Expected in the EU? *Metals* 2018, 8, 867.

⁶ <https://www.ijs.si/ijsw/ARRSProjekti/2018/Učinkovita%20reciklaža%20brusnega%20blata%20pri%20proizvodnji%20Sm2Co17%20magnetov%20za%20gospodarstvo%20brez%20odpadkov>

⁷ <https://www.ijs.si/ijsw/ARRSProjekti/2019/Razvoj%20večkomponentnih%20trajnih%20magnetov%20kompleksnih%20oblik%20z%20uporabo%20napredne%20tehnologije%203D%20tiskanja>

⁸ <https://etn-demeter.eu/>

⁹ <http://www.maxycle.eu/>

¹⁰ <https://www.susmagpro.eu/>

¹¹ <https://www.arultd.com/products/supply-and-demand.html>

OVERVIEW OF EXPLOITATION SITES AND MINERAL PRODUCTION

LIST OF EXPLOITATION SITES WITH MINING RIGHTS IN SLOVENIA IN 2019

	Mineral commodity	Exploitation sites	Concessionaire		Mineral commodity	Exploitation sites	Concessionaire
1	Coal	Velenje	PREMOGOVNIK VELENJE, d.o.o.	67	Crushed stone - limestone	Liboje	VOC Ekologija, urejanje okolja d.o.o.
2	Oil and natural gas	Murska depresija	GEOENERGO, raziskave in pridobivanje surove nafte in zemeljskega plina d.o.o.	68	Crushed stone - limestone	Mali Medvejk	KRAŠKI ZIDAR d.d., podjetje za gradbeništvo, inženiring in proizvodnjo - v stečaju
3	Geothermal energy source	Lendava	PETROL, Slovenska energetska družba, d.d., Ljubljana	69	Crushed stone - limestone	Malin dol	KRAJEVNA SKUPNOST LOKOVEC
4	Bentonite	Zaloška Gorica	MONTANA, pridobivanje in predelava nekovinskih rudnin, d.o.o.	70	Crushed stone - limestone	Mežica (Žerjav)	GRADBENI MATERIALI, podjetje za proizvodnjo gradbenih materialov d.o.o.
5	Calcite	Stahovica	CALCIT, proizvodnja kalcitnih polnil d.o.o.	71	Crushed stone - limestone	Peskopok Mala gora	O-PROJEKT, Gradbeno projektiranje in inženiring d.o.o., Kočevje
6	Chalk	Srpenica	TKK Proizvodnja kemičnih izdelkov d.o.o.	72	Crushed stone - limestone	Podgora	KAMTEH GmbH, Predstavništvo Šmartno ob Paki
7	Quartz sand	Bizeljsko	IGM ZAGORJE Industrija gradbenega materiala, d.o.o.	73	Crushed stone - limestone	Predstruge	KPL, družba za gradnjo in vzdrževanje cest, zelenih površin ter inženiring d.o.o.
8	Quartz sand	Globoko	IGM ZAGORJE Industrija gradbenega materiala, d.o.o.	74	Crushed stone - limestone	Razdrto	CPK, d.d., družba za vzdrževanje cest, gradbeništvo in druge poslovne storitve
9	Quartz sand	Kušanovci I	Murexin, gradbeni materiali, d.o.o.	75	Crushed stone - limestone	Razdrto – širitev	
10	Quartz sand	Moravče - Moravška terciarna kadunja	TERMIT, rudarsko podjetje za pridobivanje kremenovih peskov d.d.	76	Crushed stone - limestone	Rovtarica	GOZDNO GOSPODARSTVO BLEĐ d.o.o.
11	Quartz sand	Polhovica - Prapreče	KREMEN d.d., Industrija in rudniki nekovin, Novo mesto	77	Crushed stone - limestone	Rudno polje	GOZDNO GOSPODARSTVO BLEĐ d.o.o.
12	Quartz sand	Ravno	KREMEN d.d., Industrija in rudniki nekovin, Novo mesto	78	Crushed stone - limestone	Solkana	SALONIT ANHOVO, Kamnolomi, d.o.o.
13	Quartz sand	Štebih	KREMEN d.d., Industrija in rudniki nekovin, Novo mesto	79	Crushed stone - limestone	Stahovica	CALCIT, proizvodnja kalcitnih polnil d.o.o.
14	Tuff	Zaloška Gorica	MONTANA, pridobivanje in predelava nekovinskih rudnin, d.o.o.	80	Crushed stone - limestone	Štanjel	KAMNOLOM ŠTANJEL DUŠAN ŽERJAL s.p.
15	Industrial dolomite	Rečica	GRATEX, Pridobivanje in predelava dolomit-skega agregata in kurivoprodaja d.o.o., Laško	81	Crushed stone - limestone	Ušenišče 2	IAK, INDUSTRIJA APNA KRESNICE, d.o.o.
16	Chert	Jersovec II	P-D KREMEN, Pridobivanje drugih rudnin in kamnin, d.o.o.	82	Crushed stone - limestone	Velika Pirešica	CM CELJE, d.d. - Ceste mostovi Celje, družba za nizke in visoke gradnje - v stečaju
17	Ceramic (ball) clay	Hom	Gorenje Keramika, d.o.o.	83	Crushed stone - limestone	Velika Pirešica - širitev	
18	Ceramic (ball) clay	Hom - širitev		84	Crushed stone - limestone	Verd	KAMNOLOM VERD Podjetje za proizvodnjo kamnitih agregatov, d.o.o.
19	Fire resistant clay	Globoko	IGM ZAGORJE Industrija gradbenega materiala, d.o.o.	85	Crushed stone - limestone	Vrhpeč - širitev I	CGP, družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.
20	Brick clay	Hardeška šuma - širitev 3	WIENERBERGER OPEKARNA ORMOŽ d.o.o.	86	Crushed stone - limestone	Vrhpeč - širitev 2	
21	Brick clay	Okroglica II – širitev	GORIŠKE OPEKARNE d.d.	87	Crushed stone - dolomite	Adamlje 2	KAMNOLOM JEŽICE, JOŽE ADAMLJE, S.P.
22	Brick clay	Šmiklavž	Gorenje Keramika, d.o.o.	88	Crushed stone - dolomite	Andraž 2	EKOMINERAL, svetovanje, storitve, proizvodnja, d.o.o.
23	Brick clay	Šmiklavž - širitev		89	Crushed stone - dolomite	Batič	GRADBENIŠTVO PERŠE UROŠ PERŠE s.p.
24	Brick marl	Okroglica II – širitev	GORIŠKE OPEKARNE d.d.	90	Crushed stone - dolomite	Bela	KLAS PRODAJALNA NOVE IN RABLJENE KMETIJSKE TER GRADBENE MEHANIZACIJE, STARO ZA NOVO STANISLAV HACE S.P.
25	Natural stone – limestone	Debela Griža pri Povirju	KAMNOŠESTVO TAVČAR pridobivanje in obdelava kamna d.o.o.	91	Crushed stone - dolomite	Bereča vas	AVTOPREVOZNIŠTVO IN PRIDOBIVANJE PESKA IN GRAMOZA - JANEZ AMBROŽIČ S.P.
26	Natural stone – limestone	Debela Griža pri Povirju - širitev		92	Crushed stone - dolomite	Bereča vas – širitev	
27	Natural stone - limestone	Doline – repen	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	93	Crushed stone - dolomite	Bizeljsko 3	AGRAD podjetje za trgovino, gradbeništvo in gostinstvo d.o.o.
28	Natural stone - limestone	Drenov Grič	MINERAL, obdelava naravnega kamna, d.o.o.	94	Crushed stone - dolomite	Boben	AGM NEMEC, podjetje za proizvodnjo, trgovino in storitve d.o.o.
29	Natural stone - limestone	Hotavlje	MARMOR HOTAVLJE, družba za obdelavo kamna, d.o.o.	95	Crushed stone - dolomite	Borovnik	AGM NEMEC, podjetje za proizvodnjo, trgovino in storitve d.o.o.
30	Natural stone - limestone	Kazlje	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	96	Crushed stone - dolomite	Bradeško – Zadobje	IZKOPI IN PREVOZI JANEZ BRADEŠKO S.P.
31	Natural stone - limestone	Kopriva	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	97	Crushed stone - dolomite	Brezovica K2	KOGRAD gradbeništvo d.o.o.
32	Natural stone - limestone	Lesno Brdo	MINERAL, obdelava naravnega kamna, d.o.o.	98	Crushed stone - dolomite	Bučka	AVTOPREVOZNIŠTVO - TGM - MKI JOŽEF TOMAŽIN S.P.
33	Natural stone - limestone	Lipica I	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	99	Crushed stone - dolomite	Bučka - širitev	
34	Natural stone - limestone	Lipica II	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	100	Crushed stone - dolomite	Cerov Log - širitev 2	CGP, družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.
35	Natural stone - limestone	Lipica II - širitev		101	Crushed stone - dolomite	Červivec	GMP LUZAR Škocjan, nizke gradnje d.o.o.
36	Natural stone - limestone	Šumet	MEDARD ŠUMET	102	Crushed stone - dolomite	Dolenje Laknice	CGP, družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.
37	Natural stone - limestone	Tomaj	MARMOR, Podjetje za pridobivanje in obdelavo naravnega kamna Sežana, d.d.	103	Crushed stone - dolomite	Draga	TRGOGRAD trgovina in gradbeništvo, d.o.o., Litija
38	Natural stone - tonalite	Cezlak I	MINERAL, obdelava naravnega kamna, d.o.o.	104	Crushed stone - dolomite	Draga pri Cerovici	DRAGA Separacija peska, d.o.o., Litija
39	Natural stone - other	Cezlak II	MINERAL, obdelava naravnega kamna, d.o.o.	105	Crushed stone - dolomite	Grdadolnik	TGM IN PRIDOBIVANJE PESKA FRANC GRDADOLNIK S.P.
40	Natural stone - other	Klemenc	SILVESTER KLEMENC	106	Crushed stone - dolomite	Gunte	CGP, družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.
41	Natural stone - other	Korže	KORŽE SONJA	107	Crushed stone - dolomite	Hrast pri Vinici J2	PRIDOBIVANJE IN PRODAJA PESKA ZDRAVKO JURŠINIČ S.P.
42	Natural stone - other	Kotnik	KOTNIK VESNA	108		Ježce	
43	Natural stone - other	Krajnc	PREDELAVA OKRASNEGA KAMNA SIMON KRAJNC S.P.	109	Crushed stone - dolomite	Ježce - širitev 1	PESKOPOK KEPA SUZANA KEPA s.p.
44	Natural stone - other	Loška gora	ČREŠNAR ANTON	110	Crushed stone - dolomite	Ježce - širitev 2	
45	Natural stone - other	Ovčar	OVČAR ALOJZ - DOPOLNILNA DEJAVNOST NA KMETIJI	111	Crushed stone - dolomite	Kamna Gorica	GORENJSKA GRADBENA DRUŽBA, projektiranje, inženiring, gradnja in vzdrževanje objektov visoke in nizke gradnje d.d.
46	Natural stone - other	Ovčar	PK OVČAR, PRIDOBIVANJE OKRASNEGA KAMNA JOVAN DAMIJAN S.P.	112	Crushed stone - dolomite	Klanci	GREĐIN gradbeno in transportno podjetje Markovec d.o.o.
47	Natural stone - other	Premančan	INGEN - Gradbeni inženiring, d.o.o.	113	Crushed stone - dolomite	Kmetov pruh	TRGOGRAD trgovina in gradbeništvo, d.o.o., Litija
48	Limestone for lime and cement	Lipovski vrh	IGM ZAGORJE Industrija gradbenega materiala, d.o.o.	114	Crushed stone - dolomite	Kočevska Reka	SNEŽNIK podjetje za proizvodnjo in storitve, d.o.o.
49	Limestone for lime and cement	Retje - Plesko	Lafarge Cement, d.o.o., Trbovlje	115	Crushed stone - dolomite	Konjiška gora	KONGRAD gradbeno, obrtno, instalcijsko in proizvodno podjetje d.d.
50	Limestone for lime and cement	Stahovica	CALCIT, proizvodnja kalcitnih polnil d.o.o.	116	Crushed stone - dolomite	Koprivnik	LESDOG KOČEVJE, družba za proizvodnjo in storitve, d.o.o.
51	Limestone for lime and cement	Ušenišče 2	IAK, INDUSTRIJA APNA KRESNICE, d.o.o.	117	Crushed stone - dolomite	Koševnik	DOLOMIT GRADBENA MEHANIZACIJA-SEPARACIJA PESKA JANKO KOSMAČ S.P.
52	Limestone for lime and cement	Zidani Most	APNENEC d.o.o., Proizvodnja apnenčeve moke	118	Crushed stone - dolomite	Kot pri Ribnici	KLUN - PESKOPOK, TRANSPORT IN USLUGE TGM KLUN JOŽE S.P.
53	Cement marl	Deskle	SALONIT ANHOVO Gradbeni materiali, d.d.	119	Crushed stone - dolomite	Laharna	RASPET, Podjetje za proizvodnjo materialov in gradbene storitve d.o.o.
54	Cement marl	Deskle - Lastavnica - Perunk - širitev	SALONIT ANHOVO Gradbeni materiali, d.d.	120	Crushed stone - dolomite	Lajše	STORITVE S TEŽKO GRADBENO MEHANIZACIJO MARJAN VEHAR S.P.
55	Cement marl	Retje - Plesko	Lafarge Cement, d.o.o., Trbovlje	121	Crushed stone - dolomite	Lajše	TOPOS HOTAVLJE, gradbeništvo, proizvodnja, trgovina in storitve, d.o.o.
56	Cement marl	Rodež	SALONIT ANHOVO Gradbeni materiali, d.d.	122	Crushed stone - dolomite	Laze	RIGLER, peskopok, prevozištvno in storitve gradbene mehanizacije, d.o.o.
57	Crushed stone - limestone	Bitenjska planina	GOZDNO GOSPODARSTVO BLEĐ d.o.o.	123	Crushed stone - dolomite	Lazna	SOŠKO GOZDNO GOSPODARSTVO TOLMIN d.o.o.
58	Crushed stone - limestone	Brezovica	VODNOGOSPODARSKO PODJETJE d.d.	124	Crushed stone - dolomite	Log II pri Sevnici	CGP, družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.
59	Crushed stone - limestone	Črna	CALCIT, proizvodnja kalcitnih polnil d.o.o.	125	Crushed stone - dolomite	Lukovica 2	STRABAG gradbene storitve d.o.o.
60	Crushed stone - limestone	Črni Kal	CPK, d.d., družba za vzdrževanje cest, gradbeništvo in druge poslovne storitve	126	Crushed stone - dolomite	Maček	STORITVE Z GRADBENO MEHANIZACIJO MARJAN MAČEK S.P.
61	Crushed stone - limestone	Črni Kal - Črnotiče	SALONIT ANHOVO, Kamnolomi, d.o.o.	127	Crushed stone - dolomite	Mala gora	TANKO podjetje za nizke gradnje in hidrogradnje in trgovino na debelo, d.o.o.
62	Crushed stone - limestone	Gabrovec (Vrbovo)	SALONIT ANHOVO, Kamnolomi, d.o.o.	128	Crushed stone - dolomite	Mala gora 2	
63	Crushed stone - limestone	Govjuše	GOZDNO GOSPODARSTVO BLEĐ d.o.o.				
64	Crushed stone - limestone	Griža pri Rižani	PRIMORJE d.d. družba za gradbeništvo, inženiring in druge poslovne storitve - v stečaju				
65	Crushed stone - limestone	Laže I	KOLEKTOR CESTNO PODJETJE NOVA GORICA, Družba za vzdrževanje in gradnjo cest, d.o.o.				
66	Crushed stone - limestone	Laže I – širitev					

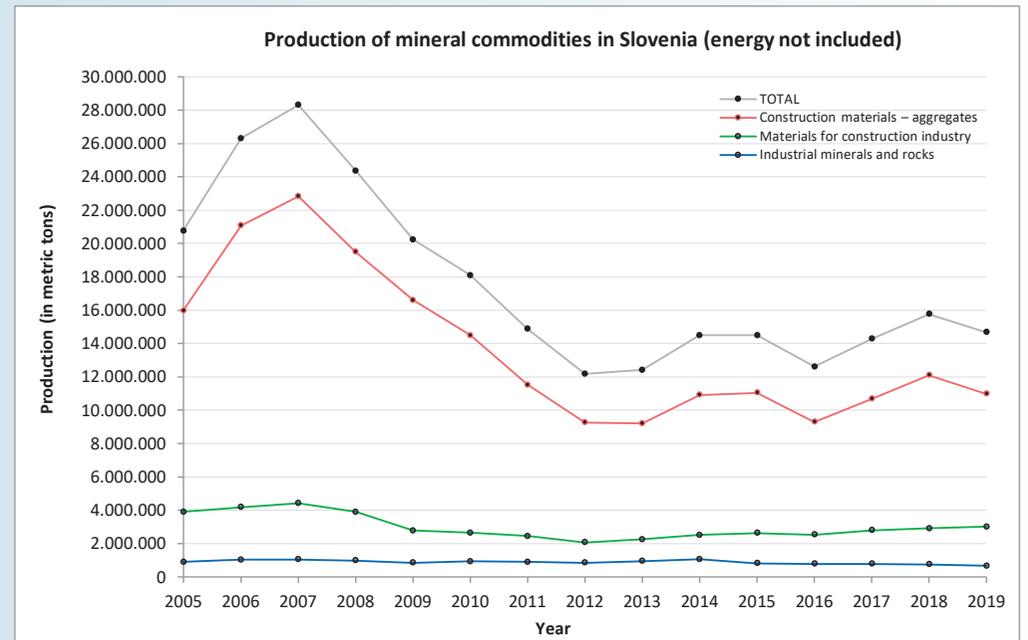
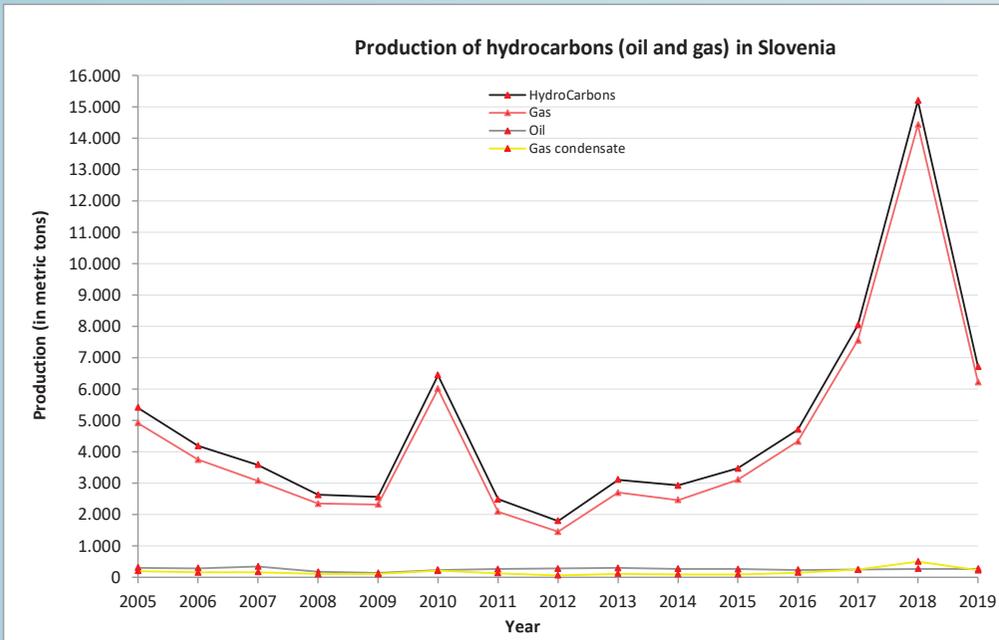
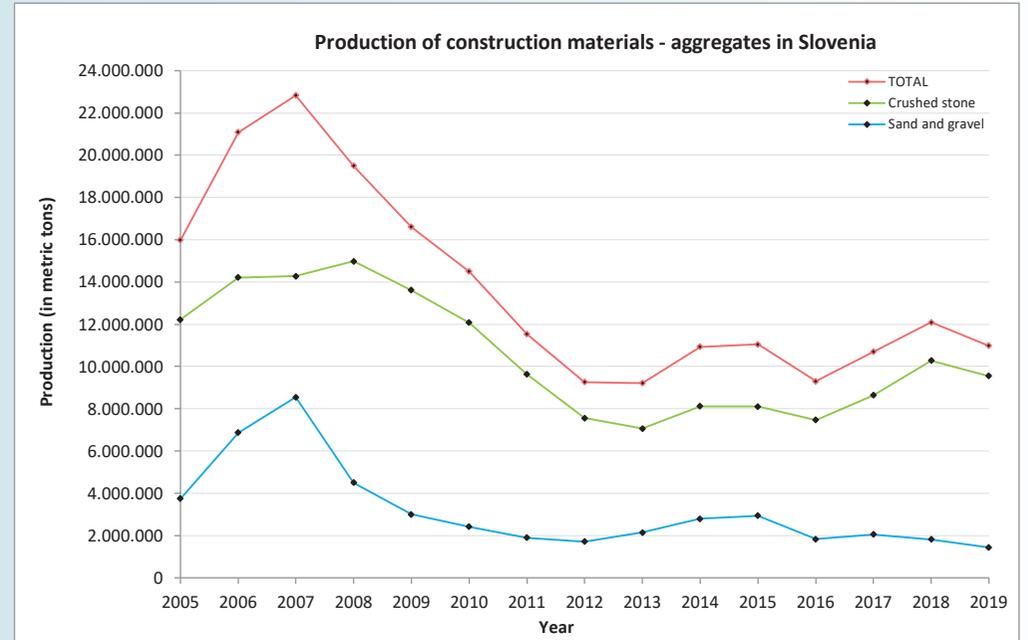
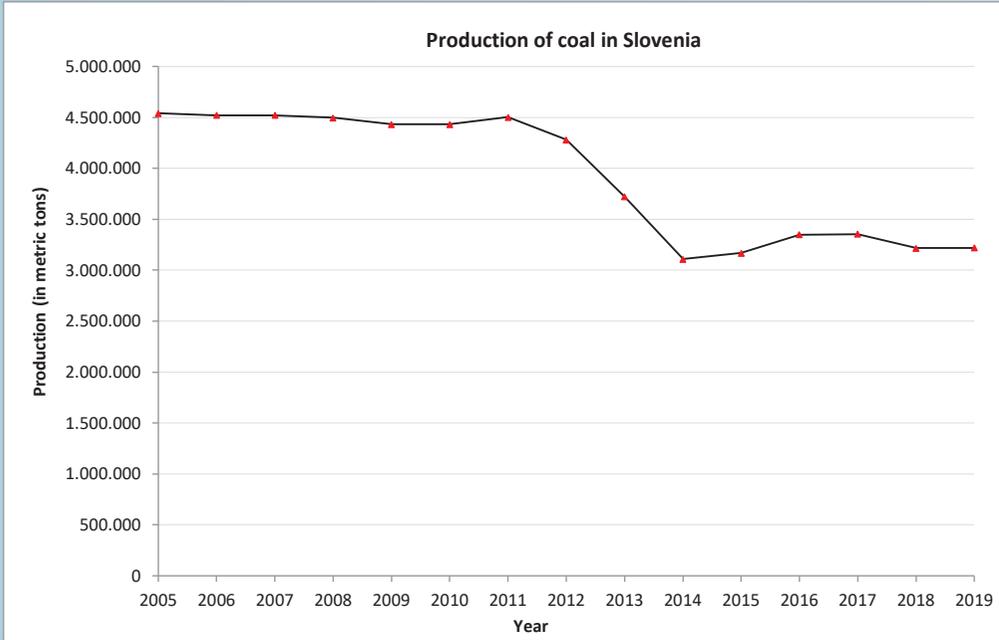
	Mineral commodity	Exploitation sites	Concessionaire		Mineral commodity	Exploitation sites	Concessionaire
129	Crushed stone - dolomite	Mivšek	MIVŠEK, OPRAVLJANJE STORITEV Z GRADBENO MEHANIZACIJO, AVTOPREVOZNIŠTVO, DRUGA GRADBENA DELA, RAČUNOVODSKE STORITVE RAJKO MIVŠEK S.P.	167	Crushed stone – meta-morphic and magmatic rocks	Kamna Gorica	GORENJSKA GRADBENA DRUŽBA, projek-tiranje, inženiring, gradnja in vzdrževanje objektov visoke in nizke gradnje d.d.
130	Crushed stone - dolomite	Mozelj	LESDOG KOČEVIJE, družba za proizvodnjo in storitve, d.o.o.	168	Crushed stone – meta-morphic and magmatic rocks	Lenart pri Gornjem Gradu 2	"TUFKA" PESKOKOP TUFKA KANOLŠČICA PETER BEZOVIŠEK S.P.
131	Crushed stone - dolomite	Mozelj	JAVNO KOMUNALNO PODJETJE KOMU-NALA KOČEVIJE d.o.o.	169	Crushed stone – meta-morphic and magmatic rocks	Martinček	GOZDNO GOSPODARSTVO BLEĐ d.o.o.
132	Crushed stone - dolomite	Mrak	MRAK LEOPOLD	170	Crushed stone – meta-morphic and magmatic rocks	Zagaj	TRIK kamenine d.o.o.
133	Crushed stone - dolomite	Mrzla rupa	"GRAMEH" GRADBENA MEHANIZACIJA BOJAN JEREŠ S.P.	171	Crushed stone – meta-morphic and magmatic rocks	Zagaj	POSREDNIŠTVO IVAN MIJOŠEK S.P.
134	Crushed stone - dolomite	Paka pri Velenju 2	RGP d.o.o., rudarski gradbeni programi	172	Gravel and sand	Bakovska cesta	POMGRAD, gradbeno podjetje d.d.
135	Crushed stone - dolomite	Podskrajnik	JAVNO PODJETJE KOMUNALA CERKNICA d.o.o., Cerknica	173	Gravel and sand	Bezena - širitev	PREVOZNIŠTVO, GRADBENA MEHANIZACIJA, POSREDNIŠTVO, GRAMOZNIČA BEZENA SILVA BRACKO S.P.
136	Crushed stone - dolomite	Podsmreka – širitev	PESKOKOP UNIVERSAL proizvodnja grad-benega materiala d.o.o. Ivančna Gorica	174	Gravel and sand	Bitrica pri Naklem	GORENJSKA GRADBENA DRUŽBA, projek-tiranje, inženiring, gradnja in vzdrževanje objektov visoke in nizke gradnje d.d.
137	Crushed stone - dolomite	Podutik	KPL, družba za gradnjo in vzdrževanje cest, zelenih površin ter inženiring d.o.o.	175	Gravel and sand	Bitrica pri Naklem - širitev	MARALD-MARSEL gradbena mehanizacija-gramoz d.o.o.
138	Crushed stone - dolomite	Poljane	PREVOZNIŠTVO - PESKOKOP KRIVEC JANEZ S.P.	176	Gravel and sand	Dobrava II	NOGRAD, gradbeno in trgovsko podjetje d.o.o.
139	Crushed stone - dolomite	Poljčane	TRIK kamenine d.o.o.	177	Gravel and sand	Dobrovnik	GRAMOZNIČA PAČNIK, separacija, prodaja in storitve, d.o.o.
140	Crushed stone - dolomite	Prigorica	RIGLER, peskokop, prevozišstvo in storitve gradbene mehanizacije, d.o.o.	178	Gravel and sand	Dobrovnik - širitev	GORENJSKA GRADBENA DRUŽBA, projek-tiranje, inženiring, gradnja in vzdrževanje objektov visoke in nizke gradnje d.d.
141	Crushed stone - dolomite	Rečica	GRATEX, pridobivanje in predelava dolomit-skega agregata in kurivoprodaja d.o.o., Laško	179	Gravel and sand	Goče pri Libelcih	MARALD-MARSEL gradbena mehanizacija-gramoz d.o.o.
142	Crushed stone - dolomite	Rudnik 2	Avtoprevozišstvo in gradbena mehanizacija Klemen Uršič s.p.	180	Gravel and sand	Goče pri Libelcih - širitev	GRAMOZNIČA PAČNIK, separacija, prodaja in storitve, d.o.o.
143	Crushed stone - dolomite	Sadinja vas	KPL, družba za gradnjo in vzdrževanje cest, zelenih površin ter inženiring d.o.o.	181	Gravel and sand	Graben	GORENJC, družba za inženirske dejavnosti, d.o.o.
144	Crushed stone - dolomite	Selo pri Velenju	VEGRAD d.d. Gradbeno industrijsko podjetje - v stečaju	182	Gravel and sand	Jurkovec	ECOENERGETIKA družba za varstvo okolja, rudarstvo in gradbeništvo d.o.o. - v stečaju
145	Crushed stone - dolomite	Smolevec	STORITVE S TEŽKO GRADBENO MEHANI-ZACIJO PRIDOBIVANJE PESKA IN GRAMO-ZA RAJKO CERIN S.P.	183	Gravel and sand	Jurkovec - širitev	SEGRAP rudarstvo, proizvodnja in gradbeništvo d.o.o.
146	Crushed stone - dolomite	Soteska	GOZDNO GOSPODARSTVO NOVO MESTO d.d.	184	Gravel and sand	Krapje	T G P OZMEC - trgovsko, gradbeno in prevozišsko podjetje d.o.o.
147	Crushed stone - dolomite	Stranice	VOC Ekologija, urejanje okolja d.o.o.	185	Gravel and sand	Melinci	CESTNO PODJETJE PTUJ D.D.
148	Crushed stone - dolomite	Šebalk	ŠOŠKO GOZDNO GOSPODARSTVO TOLMIN d.o.o.	186	Gravel and sand	Pleterje II	EPSON, trgovina, gostinstvo in storitve, d. o. o.
149	Crushed stone - dolomite	Šmarje – Sap	KG-EKO, Proizvodnja in predelava agregatov, d.o.o.	187	Gravel and sand	Pleterje II - širitev Ib	CESTNO PODJETJE PTUJ D.D.
150	Crushed stone - dolomite	Ter 2	PRIDOBIVANJE PESKA IN GRAMOZA TEREZIJA BURJA S.P.	188	Gravel and sand	Pleterje P I	CESTNO PODJETJE PTUJ D.D.
151	Crushed stone - dolomite	Topli vrh	GMP PESKOKOP ALEN MUJAKIČ S.P.	189	Gravel and sand	Pleterje P2b	CESTNO PODJETJE PTUJ D.D.
152	Crushed stone - dolomite	Tržišče	AGM PUNGERČAR, d.o.o., avtoprevozišstvo, gradbena mehanizacija, peskokop	190	Gravel and sand	Pleterje P2b - širitev	CESTNO PODJETJE PTUJ D.D.
153	Crushed stone - dolomite	Tržišče – širitev	STORITVE S TEŽKO GRADBENO MEHANI-ZACIJO MARJAN VEHAR S.P.	191	Gravel and sand	Pleterje P2e	CESTNO PODJETJE PTUJ D.D.
154	Crushed stone - dolomite	Vehar – I	REKON gradbeništvo, inženiring, trgovina, d.o.o.	192	Gravel and sand	Pleterje P3	TLAKOVEC podjetje za proizvodnjo in trgovino d.o.o.
155	Crushed stone - dolomite	Vetrnik 2	CGP družba za gradbeništvo, inženiring, proizvodnjo in vzdrževanje cest, d.d.	193	Gravel and sand	Pleterje P3 - širitev	BETON - BETONSKI IZDELKI DUŠAN KU-HAR S.P.
156	Crushed stone - dolomite	Vrčice 2	GOSTGRAD, Gostinstvo, gradnje in storitve d.o.o. Žužemberk	194	Gravel and sand	Prepolje	GOKOP gradbeno, gostinsko in trgovsko podjetje d.o.o.
157	Crushed stone - dolomite	Vrh pri Križu	GORENJSKA GRADBENA DRUŽBA, projek-tiranje, inženiring, gradnja in vzdrževanje objektov visoke in nizke gradnje d.d.	195	Gravel and sand	Rače 2	PANEL avtoprevozišstvo, storitve z gradbeno mehanizacijo, trgovina, gradbeništvo in svetovanje d.o.o.
158	Crushed stone - dolomite	Zala v Davči	GRADNJE gradbeništvo in prevozišstvo d.o.o. Boštanj	196	Gravel and sand	Selnica ob Dravi	KONSTRUKTOR VGR gradbeništvo, proiz-vodnja, trgovina in storitve,d.o.o. - v stečaju
159	Crushed stone - dolomite	Zavratec 1 in 2	STEDO proizvodnja, trgovina in storitve d.o.o.	197	Gravel and sand	Selnica ob Dravi	MAGDA GODEC družba za proizvodnjo, trgovino in storitve d.o.o.
160	Crushed stone - dolomite	Zavratec 1b	KAMNOLOM ZELŠE, d.o.o.	198	Gravel and sand	Stari Grad 3b	Kostak, komunalno in gradbeno podjetje, d.d.
161	Crushed stone - dolomite	Zelence	PREVOZNE STORITVE, ZEMELJSKA DELA, PRIDOBIVANJE KAMNA ANDREJ JAGODIČ S.P.	199	Gravel and sand	Stari Grad 4	Kostak, komunalno in gradbeno podjetje, d.d.
162	Crushed stone - dolomite	Zelše	KRAJEVNA SKUPNOST LOKA PRI ŽUSMU	200	Gravel and sand	Šentvid pri Vuženic	GRADBENIŠTVO KUSTER, nizke in visoke gradnje, d.o.o.
163	Crushed stone - dolomite	Zelše - širitev	KRAJEVNA SKUPNOST LOKA PRI ŽUSMU	201	Gravel and sand	Šentvid pri Vuženic - širitev	SOLINE Pridelava soli, d.o.o.
164	Crushed stone - dolomite	Zg. Gabernik	KRAJEVNA SKUPNOST LOKA PRI ŽUSMU	202	Gravel and sand	Lera in Fontanigge	SOLINE Pridelava soli, d.o.o.
165	Crushed stone - dolomite	Žamerk	KRAJEVNA SKUPNOST LOKA PRI ŽUSMU	203	Sea salt	Strunjan	SOLINE Pridelava soli, d.o.o.
166	Crushed stone - dolomite	Žusem 2	KRAJEVNA SKUPNOST LOKA PRI ŽUSMU	204	Sea salt	Strunjan	SOLINE Pridelava soli, d.o.o.

NUMBER OF EXPLOITATION SITES (NON-ENERGETIC) IN SLOVENIA

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bentonite	1	1	1	1	1	1	1	1	1	1	1	1
Calcite	1	1	1	1	1	1	1	2	1	1	1	1
Chalk	1	1	1	1	1	1	1	1	1	1	1	1
Quartz sand	7	7	7	7	7	7	7	7	7	7	7	7
Tuff	1	1	1	1	1	1	1	1	1	1	1	1
Industrial dolomite	2	2	2	2	2	2	1	1	1	1	1	1
Chert	1	1	1	1	1	1	1	1	1	1	1	1
Ceramic clay	6	5	4	4	4	4	5	4	5	5	5	3
Industrial minerals and rocks	20	19	18	16								
Brick clay	9	7	9	8	7	5	6	5	6	5	5	5
Natural stone												
limestone	12	11	13	12	12	11	13	14	15	14	14	13
tonalite	3	3	3	3	3	3	3	3	2	1	1	1
other	16	15	15	14	14	13	13	13	12	10	10	9
Natural stone	31	29	31	29	29	27	29	30	29	25	25	23
Raw materials for lime	6	6	6	6	6	6	6	5	5	5	5	5
Raw materials for cement	6	6	6	6	6	5	5	5	4	4	4	4
Materials for construction industry	52	48	52	49	48	43	46	45	44	39	39	37
Crushed stone												
limestone	24	25	26	26	26	27	29	36	33	32	32	30
dolomite	96	99	101	101	94	95	94	84	86	85	84	80
other	3	3	4	4	4	4	6	6	5	5	5	5
Crushed stone	123	127	131	131	124	126	129	126	124	122	121	115
Gravel and sand	46	47	47	45	41	47	44	38	34	31	32	31
Construction materials – aggregates	169	174	178	176	165	173	173	164	158	153	153	146
TOTAL	241	241	248	243	231	234	237	227	220	210	210	199

PRODUCTION OF MINERAL COMMODITIES IN SLOVENIA (in metric tons)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bentonite	140	130	130	160	104	135	168	98	143	199	232	182	147	113	99
Calcite	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	221.767
Kaolin															
Chalk															
Quartz sand	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	311.954
Tuff	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	9.133
Industrial dolomite	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	102.619
Chert	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	20.773
Ceramic clay	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	6.412
Industrial minerals and rocks	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	672.757
Brick clay	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	180.088
Natural stone															
limestone	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	69.155
tonalite	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	25.078
other	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	2.660
Natural stone	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	96.893
Raw materials for lime	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	1.186.037
Raw materials for cement	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	1.551.728
Materials for construction industry	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	3.014.746
Crushed stone															
limestone	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	4.557.967
dolomite	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	4.984.010
other	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	8.662
Crushed stone	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	9.550.639
Sand and gravel	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	1.437.101
Construction materials – aggregates	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	10.987.740
TOTAL	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	14.675.243
brown coal	594.456	587.912	483.417	488.828	510.769	419.466	435.800	314.262							
lignite	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	3.218.696
coal	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	3.218.696
oil	303	284	344	174	138	233	263	279	298	366	261	229	241	270	267
gas condensate	196	154	167	104	105	207	131	60	114	95	98	150	240	499	223
gas	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	6.225
oil and gas*	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	6.715
sea salt	803	1.624	3.029	535	2.924	59	4.291	5.684	3.360	0	2.191	2.417	2.335	2.018	1.437



PARTIAL LIST OF EU-FUNDED MINERAL RESOURCES PROJECTS

Programme	Project acronym	State	Project title	Start	End	Duration (months)	Lead partner	Project summary
KIC EIT RawMaterials	STINGS	ongoing	Supervision of Tailings by an Integrated Novel Approach to combine Ground-based- and Spaceborne Sensor data	Apr '17	Dec '20	45	DMT GmbH & Co. KG, Germany	STINGS is an innovation project working to establish a ground- and space-borne remote sensing and analysis system to effectively and cost-efficiently monitor critical ground infrastructure stability and content, focusing primarily on mining tailing dams. It is designed to increase the safety standards related to tailing operations and to deliver an extended monitoring and early warning system for the 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	RC ADRIA	ongoing	Regional center ADRIA, EIT RawMaterials Hub	Jan '18	Dec '20	36	Geological Survey of Slovenia (GeoZS), Slovenian National Building and Civil Engineering Institute (ZAG), Faculty of Mining, Geology and Petroleum Engineering at the University of Zagreb (UNIZG-RGNF), Croatia	RC Adria is a hub for mineral raw materials stakeholders focused primary on Slovenia and Croatia with the outreach to South-East European countries (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia). It acts as an interface between local environments (knowledge triangle) and EIT RawMaterials, enabling access to information on EIT RawMaterials projects and activities. Some of the main objectives of the RC Adria include encouraging networking, exchanging project ideas and offering support to potential new partners of the EIT RawMaterials community. It is an informational "one stop shop" for EIT RawMaterials knowledge transfer for all local stakeholders – businesses, educational institutions, research organisations and local authorities. At the same time, it connects local raw materials communities with their international EIT RawMaterials counterparts.
KIC EIT RawMaterials	InvestRM	ongoing	Multifactor model for investments in the raw material sector	Jan '18	Mar '21	39	Faculty of Mining, Geology and Petroleum Engineering at the University of Zagreb (UNIZG-RGNF), Croatia	The InvestRM project will create a decision-making tool for raw materials companies and investors, mining institutes, technical universities, geological surveys, non-governmental associations, the government of Bosnia and Herzegovina, and state institutions in order to facilitate investments in the raw materials sector. The project is focused on Bosnia and Herzegovina due to its considerable raw materials potential, but will also be fully transferable to other East and Southeast European (ESEE) countries.
KIC EIT RawMaterials	RM@Schools 3.0	ongoing	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 on 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 active learning processes. They will be involved in experiments with RM-related hands-on educational tool-kits, excursions to companies, and in science dissemination activities. 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 competitions for the best communication products, as well as an annual European Conference will be organized. Selected groups of students will receive training on digital competences, like video making and other related activities to be proposed during Public Events in order to work together with RM Ambassadors.
KIC EIT RawMaterials	RIS-RECOVER	ongoing	Regional innovation scheme for zero waste extraction of critical raw materials	Feb '18	Jan '21	36	Slovenian National Building and Civil Engineering Institute (ZAG)	The main objective of RIS-RECOVER is to build a roadmap for the zero-waste extraction of critical raw materials (CRM) and metals from mining tailings and metallurgical heaps in SEE. Alongside the development of an innovative zero-waste approach the project is building the 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	RESEERVE	ongoing	Mineral potential of the ESEE region	Apr '18	Jun '21	39	Geological Survey of Slovenia (GeoZS)	Mineral resources are of strategic importance for the EU. Most EU countries are already part of the Mineral intelligence for Europe, which provides well organised and consistent data and information on mineral resources on the European level. The West Balkan region represents a gap in this network. The RESEERVE project represents knowledge transfer of EIT RM to the West Balkan countries with the aim to facilitate development of new markets for modern technologies, to create opportunities for start-ups and SMEs, to contribute to the creation of new job opportunities and to generate economic added value in the mineral sector. The project's objectives are: (1) to determine available and missing information on primary and secondary mineral resources data in West Balkan countries, (2) to set up a West Balkan mineral register for primary and secondary mineral resources by mapping data from Croatia, Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Albania, (3) to increase mineral management capacity on national levels in the region and (4) to ensure a sufficient flow of information on mineral resources for Europe's industry with the intention to expand their business and investments in the West Balkan.
KIC EIT RawMaterials	RIS-CuRE	ongoing	Zero waste recovery of copper tailings in the ESEE region	Jan '19	Dec '21	36	Slovenian National Building and Civil Engineering Institute (ZAG)	The work of the RIS-CuRE project is 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 on a regional scale, drawing on 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 around the world.
KIC EIT RawMaterials	RIS-ALICE	ongoing	Al-rich industrial residues for low-CO2 Cement clinkers	Mar '19	Dec '21	34	Slovenian National Building and Civil Engineering Institute (ZAG)	Aluminium is one of the key components in the production of Al-rich mineral binders. In order to reduce the 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 rates in RIS countries represent high secondary mineral resource potential. RIS-ALICE plans to define possible ways of replacing 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 a circular economy and zero-waste management for Al-rich industrial waste in ESEE regions.
Horizon 2020	ROBOMINERS	ongoing	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 be especially relevant for mineral deposits that are small or difficult to access. This covers both abandoned, flooded mines that are no longer accessible using conventional mining techniques, or places that have formerly been explored but where exploitation was considered economically unviable due to the small size of the deposits or the difficulty accessing them.
KIC EIT RawMaterials	UNEXUP	ongoing	UNEXUP, UNEXMIN Upscaling	Jan '20	Dec '22	36	University of Miskolc, Hungary	UNEXUP stands for UNEXMIN Upscaling, a project funded under EIT Raw Materials and a direct continuation of the Horizon 2020 UNEXMIN project. Efforts have been made at UNEXMIN towards the design, preparation and testing of an innovative exploration technology for underground flooded mines. The main goal of UNEXUP is to launch the UNEXMIN technology into the market, while further improving the system's technology and capabilities. A real service-to-client approach will be demonstrated, supporting mineral exploration and mine surveying efforts in Europe using unique data from flooded underground environments that cannot be obtained without incurring high costs or risks to human lives. Improvements will be made to the UX-1 research prototype, raising technology readiness to TRL 7/8. Specific goals of the UNEXUP project include improving the system's hardware, software and capabilities, testing the robot's performance in four different pilot tests, commercialising this innovative technology, and launching the service on the market.
KIC EIT RawMaterials	INSite	ongoing	Insitu ore grading system using LIBS in harsh environments	Jan '20	Dec '22	36	INESC TEC Instituto de Engenharia de Sistemas e Computadores do Porto, Portugal	INSite brings together a multidisciplinary research team with a renowned spectroscopy company to take a new smart LIBS (Laser Induced Breakdown Spectroscopy) technology to the market. LIBS is a powerful spectroscopy technique used for element analysis with very promising features for real time assessment of composition. Recently, however, the INESC team has developed novel methods that allow LIBS technology to perform accurate analytical operations even with complex mineral samples, thus enabling real time ore grading. INSite thus aims to bring to market a unique and integrated LIBS technology that can perform accurately in harsh mining environments with true analytical capabilities. These kinds of analytical capabilities in situ is also an asset in many other applications and potential markets, e.g. geosciences research/services, oil and gas research, and various development fields.
GeoERA	Mintel4EU	ongoing	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 harmonisation, communication and interaction between the existing data platforms, such as the Raw Materials Information System of the EU; to disseminate data through the European Geological Data Infrastructure in a uniform way; and to test the applicability of the UNFC classification system for obtaining more accurate Pan-European mineral inventories.
GeoERA	FRAME	ongoing	Forecasting and Assessing Europe's Strategic Raw Materials Needs	Jul '18	Jun '21	36	Laboratório Nacional de Energia e Geologia, I. P. (LNEG), Portugal	Europe is experiencing an increase in consumption of mineral commodities, where supply does not meet 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 into exploitable resources, and reducing huge amounts of mining waste and large tailings by converting them into exploitable resources. The FRAME project is designed to research 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 contributions towards increasing knowledge of potential primary deposits, identifying new target areas/deposits, and recognising the potential in secondary deposits. FRAME will collect, extract and disseminate data on strategic and critical minerals in Europe.
GeoERA	EuroLithos	ongoing	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 decreasing both locally and regionally in many parts of Europe, along with related knowledge, traditions and skills. EuroLithos was founded with the intention to increase knowledge related to the quality and history of natural stone and its use in Europe, which has the potential to stimulate more sustainable use of stone resources in Europe for the benefit of SME's, to enrich our cultural heritage, and to establish a sound land use management policy for the safeguarding of ornamental stone deposits. The project addresses several aspects, including the identification and mapping of different types and qualities of construction materials and to provide tools and protocols for the assessment and comparison of deposits. It also addresses cultural heritage and building preservation, since the maintenance of European heritage and the stone industry are mutually dependent. EuroLithos will set up an ornamental stone knowledge base under the umbrella of EGDI, covering harmonised spatial data on European stone resources, an atlas of resources and use, a directory of ornamental stone properties, and guidelines on the valorisation of ornamental stone heritage. The project work runs in close collaboration with the GeoEra Information Platform.

RE-ACTIVATION OF FORMER MINING SITES

Today, abandoned mining sites and areas across Europe are the focus of the European raw materials community. It is assumed that significant amounts of valuable minerals remain in the former underground and open pit mines, but also in waste rock dumps, tailings and slag heaps. The EU project RE-ACTIVATE has established a Network of Infrastructure (NoI), which brought together relevant expertise and capabilities comprising the whole process of reactivating former mine sites using best industry practices and technologies. Commercial services for the reactivation and optimization of abandoned and/or underperforming mine sites and infrastructure have been developed and validated (peer-reviewed). In addition, potential pilot sites for the economic application of these services have been identified.



Mining waste site from historic mining operations of Mežica lead and zinc mine, Slovenia

The Geological Survey of Slovenia contributed data on various mining waste sites of interest from the historical Mežica lead and zinc mine to the list of potential pilot sites. The data was compiled from the Inventory of closed waste facilities from mining and other extractive activities in Slovenia. The total amount of mining waste at Mežica is estimated at approximately 7,000,000 m³. There are 33 waste sites in the Mežica area covering about 47 hectares of surface. A total of 19 deposits are classified as waste rock, 7 as low-grade ore, 4 as separation tailings and 3 as mixed tailings composed of waste rock, separation tailings and slag. While important information on the environmental impact of the waste is already available, there is a near complete lack of such on the waste recovery potential of all but one site.

At present, most of the historical waste from the Mežica mine area is far too small to be economically interesting. Only five sites are considered large (composed of > 100,000 m³ of mine waste material). The largest is already being exploited by a local construction company as a secondary resource of crushed limestone and dolomite. The other four sites probably also have greater potential to become secondary raw material resources in the future. However, detailed waste characterization studies are needed to fully understand the value of the waste in terms of recovery potential. Of primary interest is a comprehensive geological assessment of the sites in order to obtain reliable data on the exact quantity and chemical composition of the waste material. Furthermore, knowledge on waste recovery processing techniques, national legislative tools and social acceptance must be developed and elaborated in order to push forward the idea of exploiting historical mining waste sites.

The next operational stage of the RE-ACTIVATE NoI initiative is to take its services to the market for commercial projects. After careful analysis, waste sites in Romania, Portugal, Spain and Kosovo have been identified as the most viable pilot sites for potential tailings reprocessing and cost optimization operations. A successful application of the services in the pilot case is crucial in the effort to reach the next development step and will serve as a reference for further activities. In order to achieve this goal, a search for investors and interested stakeholders is currently under way.

„The benefit of RE-ACTIVATING former mine sites goes beyond direct economic value. For instance, environmental risks and damages are diminished, the land use is upgraded, the local economy strengthened.“

Further information on:

www.re-activate.eu

Špela Bavec
(GeoZS)

EUROPEAN MINERALS INVENTORY AS PART OF MINERAL INTELLIGENCE FOR EUROPE

Primary and secondary mineral raw materials are of strategic importance for the EU. Improving the existing European Minerals Inventory (current M4EU database) has become necessary in order to include most European countries, since some of them are not yet covered.

The harmonisation of existing data is also necessary, since datasets of different European countries vary from one to the other considerably.

The geographical coverage of the Minerals Inventory is being extended with data from the Western Balkan countries. Specifically, the mineral data from this region represents a gap in the existing mineral inventory. Therefore, mineral data from seven Southeast European countries (Serbia, Albania, Bosnia and Herzegovina, Croatia, North Macedonia and Montenegro) was evaluated and transformed into the INSPIRE-compliant common European mineral system with the support of GeoZS experts in the frame of the EIT RM “RESEERVE” project.

The process of refining the European Minerals Inventory includes: (a) expansion of geographical coverage (b) setting up a quality control application to identify data gaps, low-quality or missing data and data errors (c) identification of technical errors in the harvesting process (d) establishment of links with other related projects.

The Mintell4EU Quality Control Application (QCA) was also developed to examine the latest data reported by data providers (Figure 1). Accordingly, a harvesting system for the collection and validation of mineral resources data has been

established by the Geological Survey of Slovenia. Harvesting is a process that collects and validates data from different sources and automatically extracts data from numerous web services into a central database (Figure 2). We are currently performing the harvesting process on a monthly basis for 31 data providers across Europe. The process adopts INSPIRE solutions as a common standard for describing phenomena and exchanging information. Technical routines developed as part of the harvesting process allow strict control of data quality and verify that the harvesting process has been carried out properly.

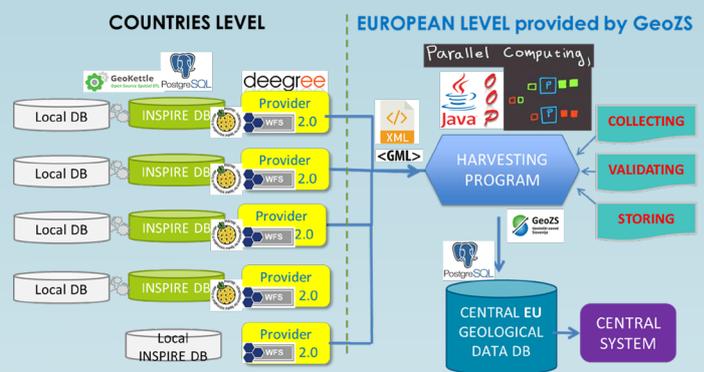


Figure 2: Harvesting System Architecture

The activities described above are implemented within the GeoERA ERA-NET Co-Fund Action in Mintell4EU and GIP-P projects.

Špela Kumelj, Jasna Šinigoj, Duška Rokavec
(GeoZS)

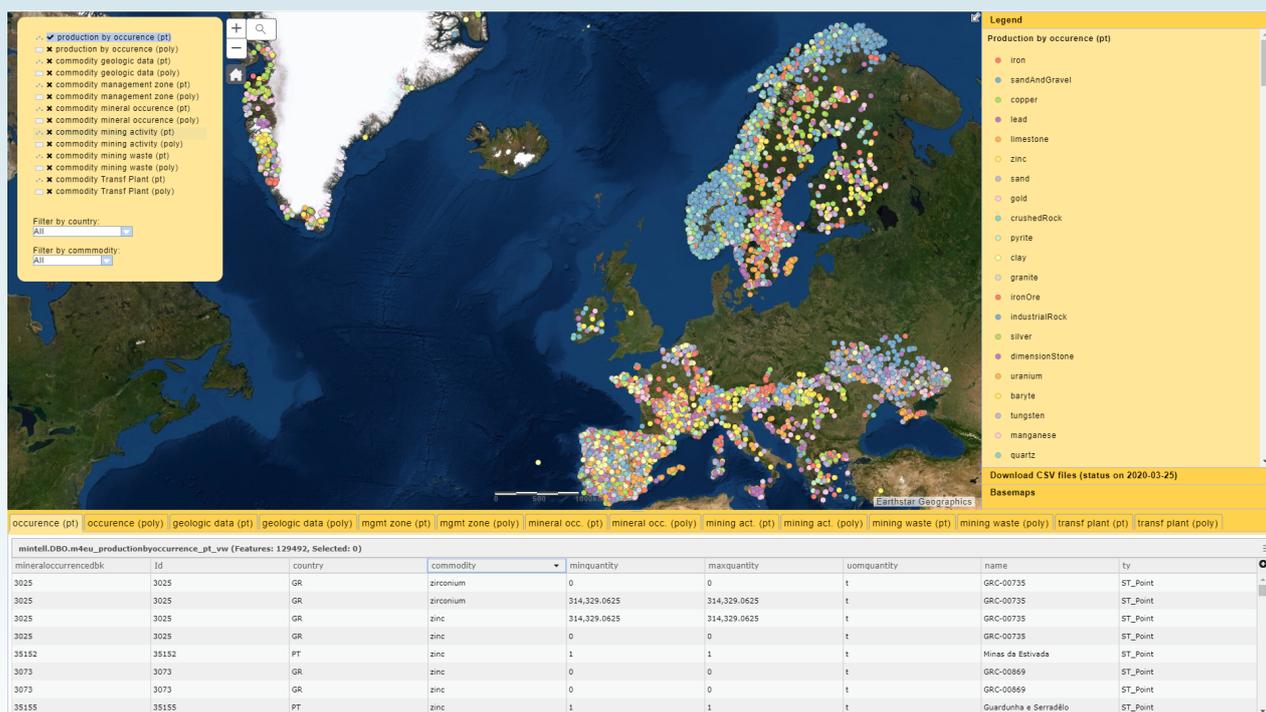


Figure 1: Mintell4EU Quality Control Application (QCA)

FACULTY OF NATURAL SCIENCES AND ENGINEERING



University of Ljubljana
Faculty of *Natural Sciences and Engineering*

	Department of Geology	Department of Geotechnology, Mining and Environment	Department of Materials and Metallurgy
E-mail	og@ntf.uni-lj.si	ogro@ntf.uni-lj.si	omm@ntf.uni-lj.si
Website	www.ntf.uni-lj.si/og/en/	www.ntf.uni-lj.si/ogro/en/	www.ntf.uni-lj.si/omm/en/
Head of the department	Assoc. Prof. Boštjan Rožič	Assoc. Prof. Željko Vukelić	Prof. Goran Kugler



Društvo tehničnih vodij
površinsko odkopavanje

SURFACE MINING ASSOCIATION (“DTV PO”)

The Surface Mining Association has been operating continuously for 25 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 the private sector.

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

President of DTV-PO: Željko Pogačnik, Ph.D.

Address: DTV-PO, Kotnikova 30, SI-1000 Ljubljana, Slovenia.

Website : <http://drustvo-dtvpo.si>

E-mail: info@drustvo-dtvpo.si; predsednikdtvpo@gmail.com

Phone: + 386 51 396293



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

The Slovenian Mining Society of Engineers and Technicians (SRDIT) is a non-governmental non-profit organization of miners and geotechnologists. The SRDIT's mission is to implement the mining and geotechnical profession in Slovenia and beyond. SRDIT assumes the role of arbitrator in assessing the professionalism of its membership, organizes international networking, raises the level of expert knowledge of its membership and organizes social events. At the time of its founding in 1991, the Slovenian Mining Association of Engineers and Technicians counted 53 members; at the end of 2019 it had 158 members. The SRDIT is the organizer and co-organizer of educational seminars, expert meetings and consultations (the “Jump over the leather skin” meeting and the “St. Barbara” meeting), technical meetings, workshops for miners and expert international consultants, and conferences (Waste Management - GzO and Urban Mining).

President of SRDIT: Drago POTOČNIK, MSc. Mining

Address: SRDIT, Aškerčeva cesta 12, SI-1000 Ljubljana, Slovenia.

Website: <http://www.srdit.si>

E-mail: joze.kortnik@guest.arnes.si

Phone: + 386 1 4704626

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