



Workshop on guidelines and best practices for MSMEs in sustainable resource management and critical raw material supply, Bosnia and Herzegovina and Serbia

BOSNIA AND HERZEGOVINA

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Opportunities for MSMEs in the production of CRMs in Bosnia & Herzegovina



B&H Economy



Bosnia and Herzegovina (B&H) is an upper middle-income economy, with a population of 3.5 million and nominal gross domestic product (GDP) per capita of USD 11714 at prices in 2017 (World Bank, 2018). B&H's economy is consumption-driven and one of the most volatile in the Western Balkans (WB) region, with an economic structure that remains highly exposed to external economic fluctuations.

The service sector contributes the most value added to the economy, generating 55.8% of GDP in 2017; followed by industry (including construction) at 23.4%; and agriculture, forestry and fishing at 5.8% (World Bank, 2018). Most of the active labour force was employed in the service (48.7%) and industry (32.2%) sectors, while the agriculture sector accounted for 19.1% of total employment in 2017 (ILO, 2018).

The key metal processing sectors are aluminium and iron, both based on domestic mining production.

Steps for establishing a business in Bosnia and Herzegovina

Significantly improved in the last 10 years with legal procedures "cutting" in both Bosnian entities

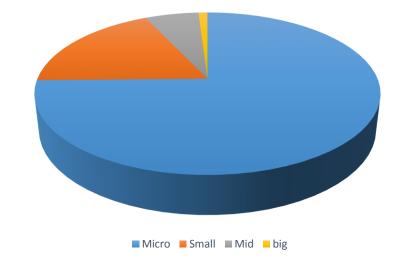
(takes 10-15 days)



MSMEs definition criteria

Enterprise	EU standards	FB&H
Micro	<10 employees <2M EUR revenue or balance sheet	<10 employees <500000 BAM euro revenue <250000 BAM business property
Small	<50 employees <10M EUR revenue or balance sheet	<50 employees <2M BAM euro revenue <1M BAM business property
Mid	<250 employees <50M euro revenue <43M EUR revenue balance sheet	<250 employees <8M BAM euro revenue <4M BAM business property

Enterprise	EU standards	RS
Micro	<10 employees <2M EUR revenue or balance sheet	<10 employees
Small	<50 employees <10M EUR revenue or balance sheet	<50 employees <2M BAM euro revenue <1M BAM business property
Mid	<250 employees <50M euro revenue <43M EUR balance sheet	<250 employees <8M BAM euro revenue <4M BAM business property



Region or Country	Employees	Share
EU	up to 250	99.8
USA	up to 250	99.0
Germany	up to 250	99.5
France	up to 250	99.5
Austria	up to 250	99.7
Slovenia	up to 250	99.8
Croatia	up to 250	99.7

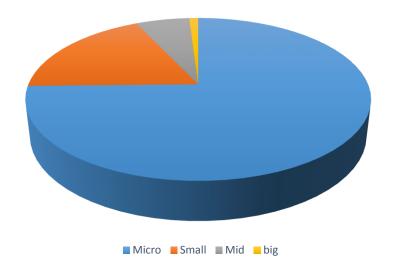
MSMEs in B&H

- □74.7%, microenterprises (0-9 employees)
- □18.3%, small enterprises (10-49 employees)
- □6.0%, mid enterprises (50-249 employees)
- □1.0% big enterprises (250 and more employees)

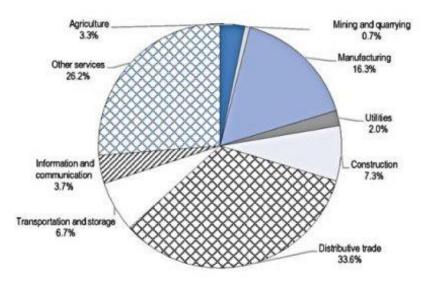
Distributive trade was the largest sector for MSMEs, accounting for one-third of active MSMEs in 2017.

It was followed by the manufacturing sector, which accounted for 16.3% of MSMEs (down from 19% in 2016). Transportation and storage accounted for 6.7%, similar to construction (7.3%).

It total share of MSMEs mining and quarrying sector take minor 0.7%, the least between all sectors.



B&H companies size share



Sectoral distribution of MSMEs in B&H (Source: doi.org, OECD publishing 2017.)







COAL RS

Year	2012	2013	2014	2015	2016	Unit
Coal	2 201 062	2 194 257	2 000 524	2 296 360	2.256.897	tons
Lignite	3 140 026	3 333 663	3 483 915	3 791 578	4 729 279	tons

COAL FB&H

Year	2012	2013	2014	2015	2016	Unit
Coal	4 158 094	3 859 780	3 968 931	3 911 791	4 034 584	tons
Lignite	2 812 441	2 377 127	2 219 950	2 112 101	2 467 387	tons

METALS RS

Year	2012	2013	2014	2015	2016	Unit
Lead and zinc	20 541	24 736	21 955	24 310	26 678	tons
Bauxite	614 950	482 557	410 482	573 301	527 274	tons
Iron	2 075 732	2 121 908	2 127 564	2 122 802	1 751 800	tons

NON-METALS FB&H

Year	2012	2013	2014	2015	2016	Unit
Salt	118 210	127 603	129 690	120 269	125 020	tons
Cement	845 657	881 580	840 211	807 587	840 945	tons
Gypsum	18 906	16 253	13 646	13 607	13 820	tons

List of key MR – selection criteria

The proposal of the list of key MR (entity and national) is based on few criteria, were as most important are identified those:

- provide reliable electricity and energy supply for national economy included health care sector as well as significant export;
- with increased demand in application of MR in production of the medicine equipment and PPIs,
- with increased demand in application of MR in transition to green economy.

In addition, the other factors are analysed as:

- current status of the exploitation,
- active exploration licences,
- forecast for possible production in foreseeable future (10 years) as well as
- expert prognosis of the importance of the MR for national economy.

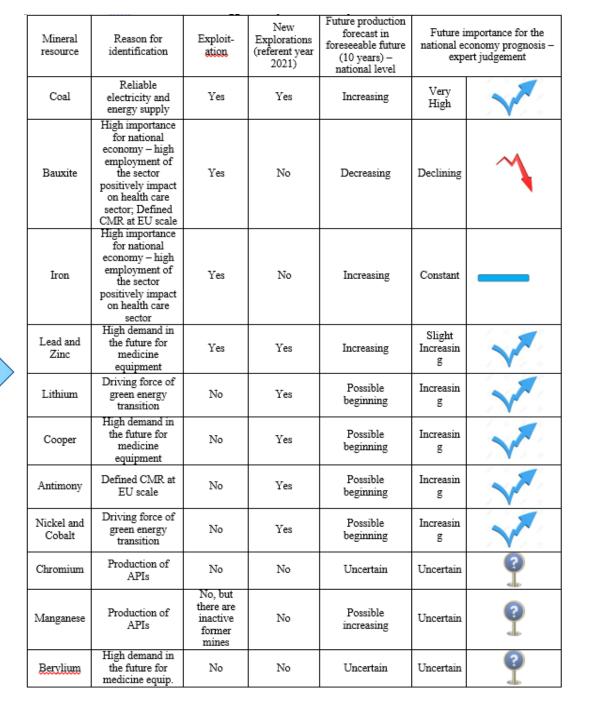
List of key MR – the List

Group 1

- •provide reliable electricity and energy supply for national economy included health care sector as well as significant export;
- •with increased demand in application of MR in production of the medicine equipment and PPIs,
- •with increased demand in application of MR in transition to green economy.

Group 2

- •current status of the exploitation,
- •active exploration licences,
- •forecast for possible production in foreseeable future (10 years) as well as
- •expert prognosis of the importance of the MR for national economy.



Application of UNFC and UNRMS in sustainable management and achieving circularity in CRM use

UNFC for Resources



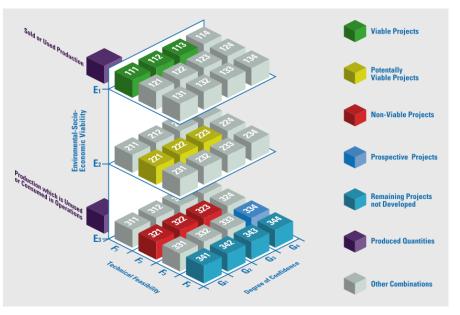
Domains of application of the

The United Nations Framework Classification for Resources (UNFC, here considered in the latest version, update from 2019) is a resource project-based and principles based classification system for defining the environmental-socio-economic viability and technical feasibility of projects to develop resources. The UNFC provides a consistent framework to describe the level of confidence of the future quantities produced by the project.

UNFC has been designed to meet, to the extent possible, the needs of applications pertaining to:

- policy formulation based on resource studies;
- resources management functions;
- corporate business processes
- financial capital allocation.





UNFC Categories and Examples of Classes

UNFC for Resources in B&H

The UNFC classification is used in some legal document in B&H entities, but it is quite unknown to many experts deal with energy and mineral resources classification systems.

For the first time it is mentioned in some legal document in the above mentioned the Rule on classification and categorization adopted in 2014. Indeed, the section 5 in article 15 of the Rule consider UNFC 2004 version and contain the following parallels between national classification and UNFC 2009:

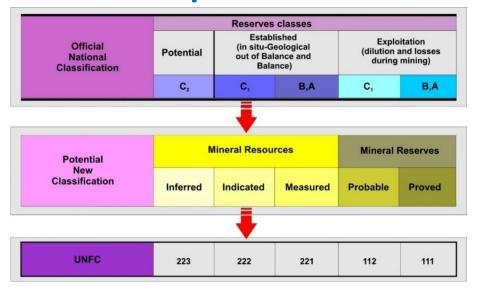
Article 5

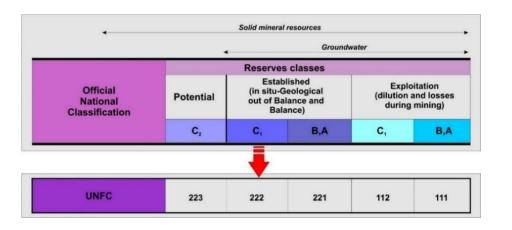
- (1) In accordance with level of exploration and knowledge of quality, solid mineral resources are split into categories A, B, C_1 and C_2 .
- (2) In accordance with United Nations Framework Classification (UNFC) reserves of A and B categories of national classification approximately match Proven Reserves in UNFC, and C₁ matches Probable Reserves in UNFC.
- (3) In analogy with the previous, reserves of C₂ category matches Inferred Reserves.
- (4) Categories and classes mentioned under (1) in this article area applied in UNFC and use appropriate three-axis based system.

From the above listed paragraph of the article 5 of the actual Rulebook and in comparison with figure 6 it is obviously that this transposition of UNFC (in that moment 2009 version) is not properly consider this classification. Used terms proven, probable and *inferred matches CRISCO standard, not UNFC*.

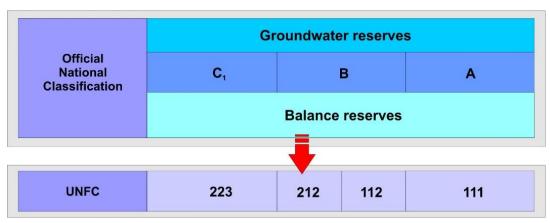
On the other side, positive fact is that the UNFC classification was for the first time mentioned in legislation of the Republic of Srpska, B&H and adopted in one entity sub-law document deal with mineral resources.

UNFC – Entities classification systems Proposal for Conversion Schemes - Solids and Groundwater





Proposed Mapping Scheme between official classification of the Republic of Srpska, B&H and UNFC with "transitional" classification based on CRISCO standard for solid mineral resources (Vukas&Jolović, 2020)



Proposed Mapping Scheme for groundwater between official classification of the Republic of Srpska, B&H and UNFC (Jolović, 2020)

UNFC APPLICATION B&H

GEROTEHRMAL ENERGY

Status	UNFC	Class	
Current project	E1.1; F1.1; G1	Viable Projects	
	E2; F1.3; G1	Potentially	85% of probability
Potential Project	E2; F1.3; G2	viable projects; Development	70% of probability
	E2; F1.3; G3	on hold;	50% of probability



Reserve category	Output temperature (°C)	Probabilit Y	Project	Estimate	Energy/annual (PJ)
A*	48	99%	Current	Low	0.053
Α	20	85%	Potential	Low	0.36
В	20	70%	Potential	Best	0.78
C ₁	20	50%	Potential	High	1.25

GROUNDWATER (BOTTLING)

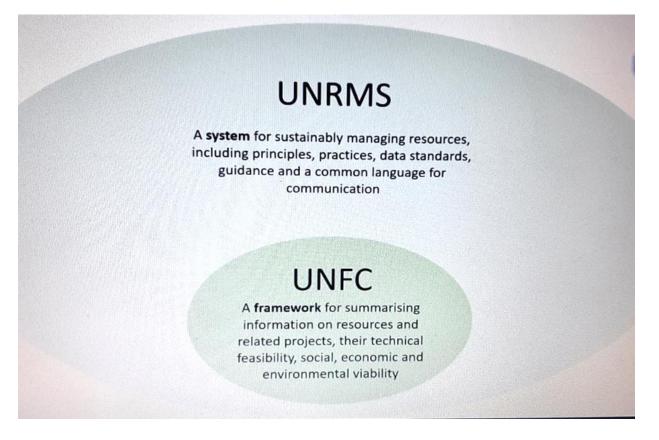
Status	UNFC-2019	Class
Present project	E1.1; F1.1; G1	Viable Projects

Reserve category in accordance with national legal policy	Probability (%)	Q (L/s)	Remark
A *	99	1	Based on 13 years abstraction period
А	85	15	Based on two years hydrograph
В	70	32	Based on two years hydrograph
C ₁	50	48	Based on two years hydrograph

UNRMS - United Nations Resource Management System

The United Nations Resource Management System (UNRMS), which will be based on the United Nations Framework Classification for Resources (UNFC). UNRMS is a comprehensive, sustainable resource management system that supports the realization of the 2030 Agenda for Sustainable Development. While resources are required to support sustainable development, resources need to be produced and consumed in a sustainable manner.

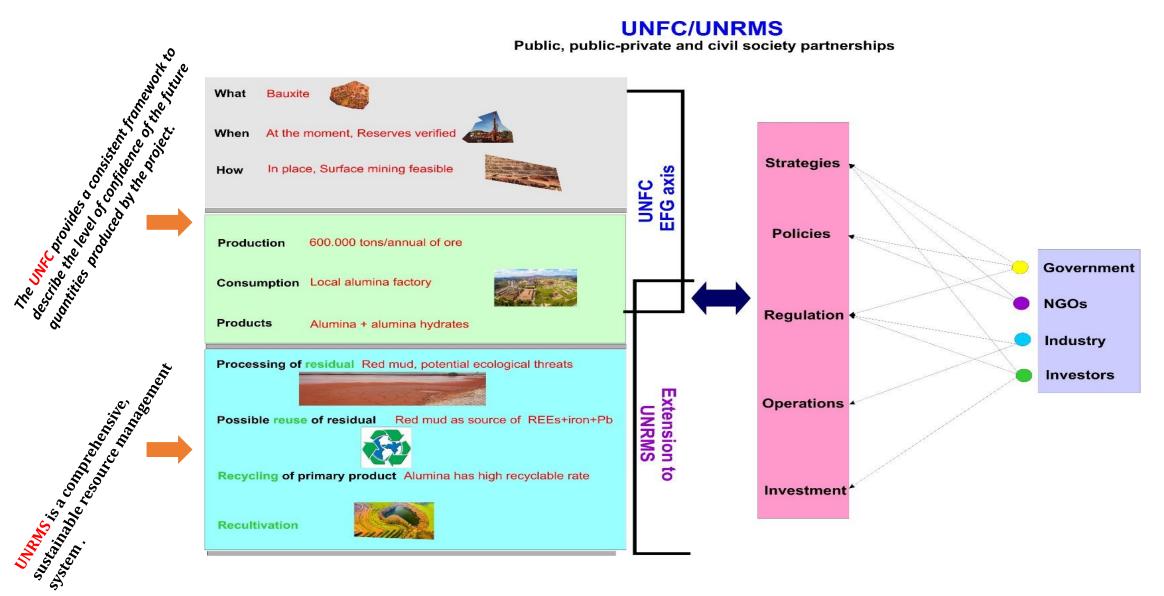
It is a voluntary global standard for integrated resource management within the framework of public, public-private and civil society partnerships that is uniformly applicable to all resources. Primary users of UNRMS will be governments/regional bodies, industry, capital investment entities and civil society, including academia, non-profits, indigenous communities and the public. Each stakeholder group will be using UNRMS for specific purposes.



Primary users of UNRMS



UNRMS of one hypothetical case study related with bauxite and its processing aspects (authors understanding)





Requirements to increase investments in the CRM sector

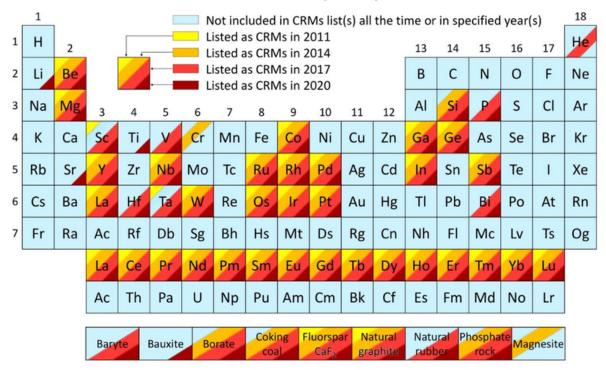
CRM List

The EU 2020 assessment covers a larger number of materials: 83 individual materials or 66 candidate raw materials comprising 63 individual and 3 grouped materials (ten individual heavy rare earth elements (REEs), five light REEs, and five platinum-group metals (PGMs). Five new materials (arsenic, cadmium, strontium, zirconium and hydrogen) have been assessed.

For comparison, 41 candidate materials have been screened in 2011, 54 in 2014 and 61 in 2017. Results of the 83 individual (66 candidate) raw materials assessed, the following 30 were identified as critical in this assessment.



Critical Raw Materials (CRMs) for the EU

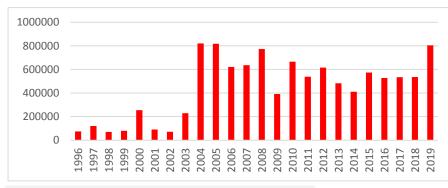


CMRs

Actual suport to CMRs support from B&H

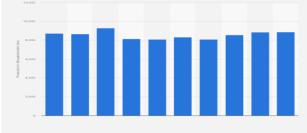
2020 Critical Raw Materials (30)					
Antimony	Fluorspar	Magnesium	Silicon Metal		
Baryte	Gallium	Natural Graphite	Tantalum		
Bauxite	Germanium	Natural Rubber	Titanium		
Beryllium	Hafnium	Niobium	Vanadium		
Bismuth	HREEs	PGMs	Tungsten		
Borates	Indium	Phosphate rock	Strontium		
Cobalt	Lithium	Phosphorus			
Coking Coal	LREEs	Scandium			





Bauxite production in tons, RS, B&H, 1996-2019.

6.5% contruibution

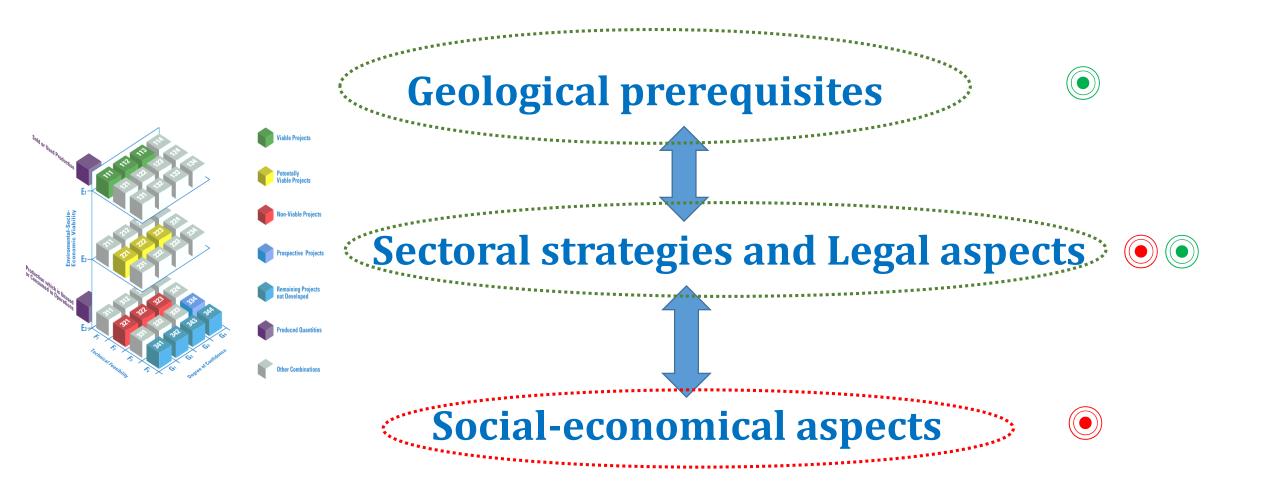


Europe: 8-9M tons, 2009-2018

PROSPECTS FOR THE FORESEEBLE FUTURE (next 10 years)

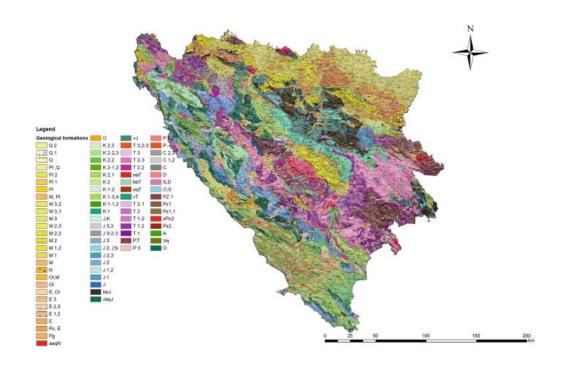
'n				-	Estado ano de etimo		
	Mineral resource	Reason for identification	Exploit- ation	New Explorations (referent year 2021)	Future production forecast in foreseeable future (10 years) – national level	Future importance for the national economy prognosis – expert judgement	
	Coal	Reliable electricity and energy supply	Yes	Yes	Increasing	Very High	VA
	Bauxite	High importance for national economy – high employment of the sector positively impact on health care sector; Defined CMR at EU scale	Yes	No	Decreasing	Declining	~
	Iron	High importance for national economy – high employment of the sector positively impact on health care sector	Yes	No	Increasing	Constant	_
	Lead and Zinc	High demand in the future for medicine equipment	Yes	Yes	Increasing	Slight Increasin g	No.
	Lithium	Driving force of green energy transition	No	Yes	Possible beginning	Increasin g	NA.
	Cooper	High demand in the future for medicine equipment	No	Yes	Possible beginning	Increasin g	VA.
	Antimony	Defined CMR at EU scale	No	Yes	Possible beginning	Increasin g	VA
	Nickel and Cobalt	Driving force of green energy transition	No	Yes	Possible beginning	Increasin g	NA.
	Chromium	Production of APIs	No	No	Uncertain	Uncertain	3
	Manganese	Production of APIs	No, but there are inactive former mines	No	Possible increasing	Uncertain	9
	Berylium	High demand in the future for medicine equip.	No	No	Uncertain	Uncertain	3

Increase the investments in the CRM sector in B&H

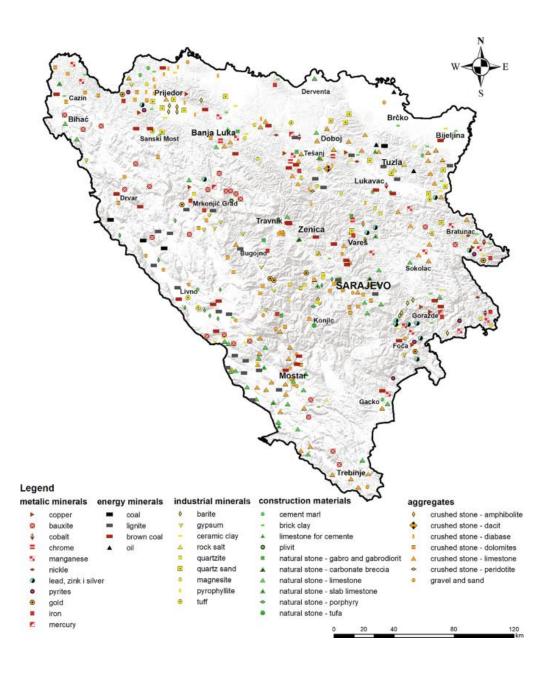


Geological prerequisites

- 40 different MRs
- the list not completed



One of the last European underexplored territories!!!



Sectoral strategies and Legal aspects





- Entity strategies on MRsM not prepared yet, urgently needed (in RS in preparation, unknown deadline for issuing);
- The legal policy regarding exploration and exploitations radically improved in the last decade;
- Favourable concession laws (especially in RS, investment more than 5M KM (2.5M euro) concession contract.

Social-economical aspects, including ecological



Ocassionaly "malicious" interpretation of the purpose of geological explorations by "ecological experts", intensify in the last two years!

At the same time, these "experts" promote the Green Transition! But avoid to discuss what we essencially need for Green Transition and decarbonisation?

Geological community reaction is very weak! Wee need stronger "geological community"!

Thus, Increased Investments prediction is unpredictable!

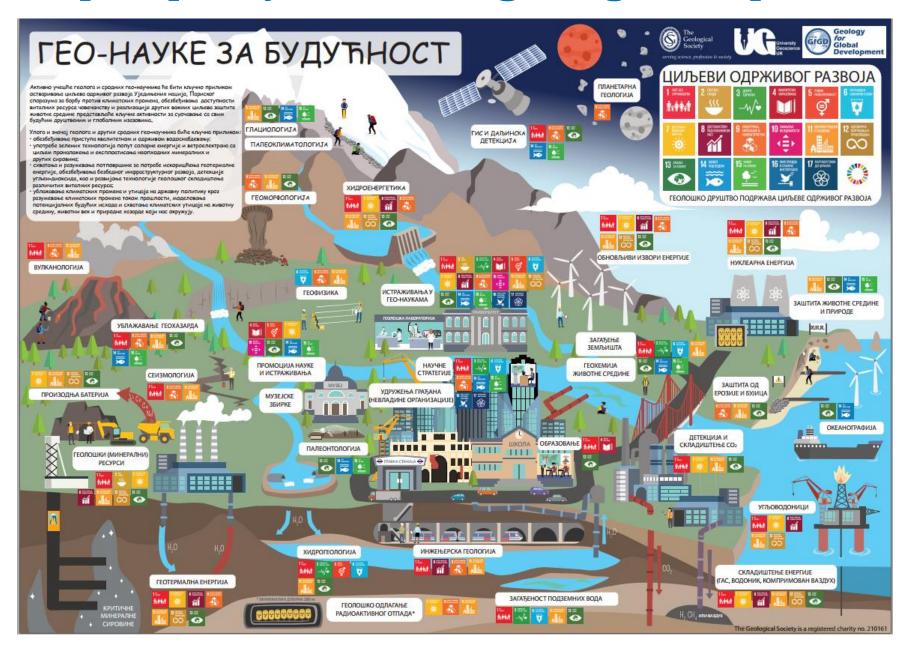
Instead Sustainable Development approach (defined also by UNRMS) "battle" against all kind of the Explorations and Exploitations is promoted in the region!

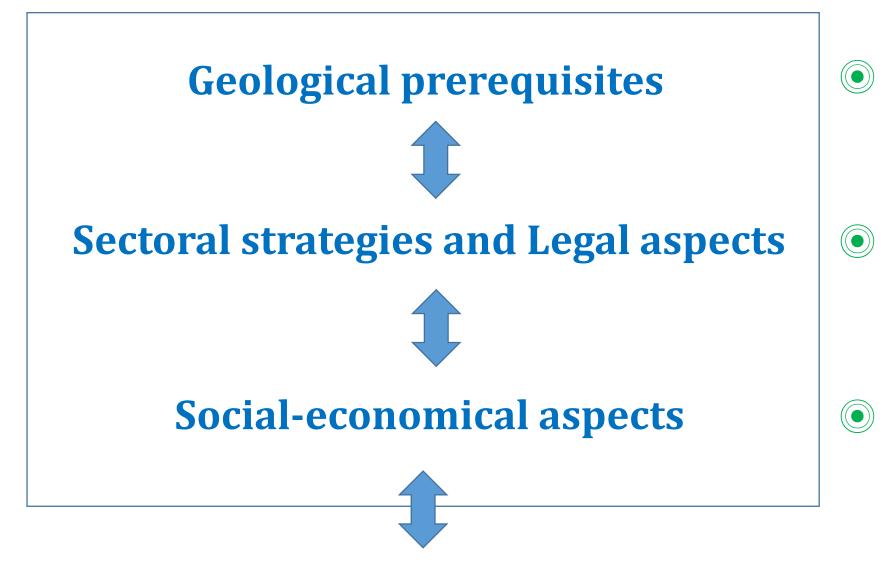
Chance for Green transition support stopped before it started.

Emergency reaction of Geological and Mining community.

Sustainable development before "pure" ecological approach!

Any human prosperity start with geological explorations!





Increasing of the investment in MR (possible a few M USD/annual) Signifiaently impacted MSMEs

IV

Policy recommendations to support MSMEs engagement in the critical raw material supply chains

Oportunisties for MSMEs in the critical raw material supply chains

One realistic possibility

Oporavlja se tržište auto-dijelova u BiH



Anja Matarugić Prije 1h

BANJALUKA, SARAJEVO - Nakon što je u posljednje dvije godine industrija, a posebno auto-industrija, bila u problemu zbog nestašice mikročipova i poluprovodnika, tržište se polako oporavlja te je situacija i u BiH nešto bolja, jer rastu narudžbe za auto-dijelove.

Naime, situacija na svjetskom tržištu trenutno je takva da se većina automobilskih kompanija vratila u normalu, a razlog oporavka je, naime, inflacija, koja je pomogla da se normalizuje situacija sa mikročipovima.

Ove poluprovodnike, odnosno mikročipove koji su neophodni za proizvodnju automobila, koriste i





Digital gold

Silicon is the material of choice in the chip industry.
Unlike the metals normally used to conduct electrical currents, silicon is a 'semiconductor', meaning that its conductive properties can be increased by mixing it with other materials such as phosphorus or boron.
This makes it possible to turn an electrical current on or off.

The good news is that it's everywhere! Silicon is made from sand, and it is the second most abundant element on earth after oxygen. Silicon wafers are made using a type of sand called silica sand, which is made of silicon dioxide. The sand is melted and cast in the form of a large cylinder called an 'ingot'. This ingot is then sliced into thin wafers.

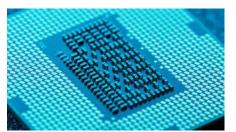






MSMEs
-exploration
-exploitation







Chip factory – to suport domestic auto indutry and help in Supply Chain Reselience

Opportunities for CRM supply MSMEs in economic recovery in Bosnia and Herzegovina

Covid-19 caused significant pressure on MSMEs in B&H, but at the same time open different possibilities in supply chain, which can be driving force in future "closing" of the supply chain in many sectors: resource management, transport and distribution, quality control, repackaging etc.

Inclusion of MSMEs should to help in building of the resilience in CRMs supply and progress in circular economy, and general economy recovery in post Covid-19 period.

The COVID-19 outbreak highlighted the structural deficiencies of the country's business environment. The current situation is therefore an opportunity for Bosnia and Herzegovina to address some of its vulnerabilities to external shocks and overcome the changes needed to transform its economic model and role of MSMEs.

The COVID-19 pandemic has showcased the need to ensure firms are able to adjust to working in the "new normal" being created by the pandemic, and adopt new technologies that can increase their growth potential and competitiveness during the recovery phase. The different studies results indicate that UNECE region countries seek for flexible and adaptable models of the CMRs supply. The existing structure of the metal sector in B&H, characterized by small companies, provides an opportunity for larger companies to integrate existing primary producers and further develop their business operations.

The price of labour in the metal extraction and processing industry in B&H is competitive when compared with global market labour costs. Besides materials for industrial processing, during the last decade small private companies also buy modern computerized equipment and strive to stay updated with current technologies. Many factories are engaged in semi-processing of components for foreign companies based in the EU and neighbouring countries.

The MSMEs in metal processing and construction industry are also experienced a significant increase of production in the last decade and the companies within this value chain were able to respond to many demanding projects in EU. It is still important development potentiality for both entities.

Oportunisties for MSMEs and Policy reccomendations for B&H

Regarding CMRs it is assumption that beside bauxite, B&H will be focused on explorations and possible production of antimony and batteries minerals (eg. Li and Co) in next 10 years. It is good opportunity for many MSMEs in exploration, mining, transportation, logistic and other services. To support MSMEs in their activities additional policy improvements are necessary:

- Businness facilitation and facilitation of business registration procedures, partly improved in last 5 years;
- Government incentives to encourage entrepreneurship, where numerous already exist, as:
 - Small loans and grants available to start-up companies in a range of different industries, with specific eligibility criteria, especially agricultural and craft-related enterprises;
 - Specialised "free zones" where companies can import goods without paying VAT; and
 - Low (10%) corporate tax rate
- **Digitalisation improve the access to data, information and knowledge** (tax subsidies for training, retraining and the recruitment of employees with high school or college diplomas already available); **Businness innovations**;
- **Encouraging MSMEs in market access** (most companies in metal industry are quite passive they wait for potential customers, to come with their technical drawings and design, asking for the cheapest offer for production, to offer their services, while the customers are always trying to find the one amongst them to offer them the lowest price
- Easy access to finances (A large number of financial institutions operate in B&H relative to its small size. Most of these, however, are foreign-owned, which is likely to account for the stability of the financial infrastructure. *Positive example*: New banking laws have been passed, aligning the regulations more closely with the Basel framework. It aim to make banks safer and more sound, meaning MSMEs in Bosnia and Herzegovina will be less exposed to bank funding constraints in the long term)
- Facilitate logistic and supply chains especially in three key value chains in the B&H: metal processing sector, the aluminium value chain, and the construction elements value chain





THANK YOU FOR THE ATTENTION!!!