

Policy Brief

Raw Materials in Ukraine

Enhancing Transparency and Countering Corruption



Country Background and Current Situation in the Raw Materials Sector

Mineral raw materials are the basis of modern human existence because they are used in the production of indispensable household items and technical equipment (steel, non-ferrous metals, etc.). In addition, certain raw materials (lithium, nickel, cobalt, manganese and graphite) are essential components of green technologies and are crucial for climate change mitigation and adaptation. Depending on the country, governments and policies might address these raw materials as “critical minerals”, “strategic raw minerals” (SRMs) or “critical raw materials” (CRMs).

Indeed, there is a lack of consistency in use of the terms “critical” and “strategic” in scientific and technical publications, which leads to misunderstandings, miscommunications, and potentially misrepresentations. Which materials are considered critical depends to a large extent on the priorities and objectives of the country that conducts the assessment. Therefore, if the terms “critical” and “strategic” are used, they should be clearly defined and should not be applied out of context. “Critical materials” is a broad term that refers to raw materials for which there are no viable substitutes with current technologies, which most consumer countries are dependent on importing, and whose supply is dominated by one or a few producers, whereas “strategic materials” are those essential to a country’s defence[1]. Once critical raw materials are identified, countries tend to introduce strategies aimed at diversifying their supply, developing substitutes, and improving reuse and recycling of critical raw materials. When it comes to strategic materials, a country’s internal policies usually focus on decreasing and precluding dependence upon foreign sources.

Sustainable mineral development should be of utmost importance for Ukraine. Firstly, it is a vital prerequisite in achieving energy independence and in developing green energy in Ukraine, which is one of the key priorities of Ukraine’s Recovery Plan[2]. Secondly, given the apparent abundance of minerals in Ukraine, the sector will be expected to play a crucial role in the reconstruction of the country following the end of war. Specifically, the sector should contribute construction materials for material reconstruction. Thirdly, developing production of certain raw materials (lithium, aluminum, vanadium, copper, etc.) is essential for increased security capabilities in the national defence industry. Finally, development of raw materials will boost our country’s autonomy and economic growth. As global demand for critical raw materials rises, Ukraine can capitalize on this opportunity. Due to our country’s natural resource wealth, Ukraine could become one of the key Europe’s major suppliers for critical minerals.

Forbes Ukraine recently estimated the value of Ukraine’s minerals at \$14.8 trillion, where of the total value of minerals, 62% is provided by coal, 14% by iron ore, each of the other assets is less than 5% [3]. The total amount of minerals is 111 billion tons.¹

¹ Ibid

In 2020, a group of experts under the auspices of the European Commission conducted a study on the EU's List of Critical Raw Materials and published their Final Report, whereby raw materials which are considered as critical in Europe were grouped according to their characteristics². Below is the chart of raw materials comprising individual and grouped materials based on the Final Report on the EU's List of Critical Raw Materials (2020) [4].

Industrial and construction minerals	aggregates, baryte, bentonite, borates, diatomite, feldspar, fluorspar, gypsum, kaolin clay, limestone, magnesite, natural graphite, perlite, phosphate rock, phosphorus, potash, silica sand, sulphur, talc
Iron and ferro-alloy metals	chromium, cobalt, manganese, molybdenum, nickel, niobium, tantalum, titanium, tungsten, vanadium
Precious metals	gold, silver, and Platinum Group Metals (iridium, palladium, platinum, rhodium, ruthenium)
Rare earths	Heavy rare earths (dysprosium, erbium, europium, gadolinium, holmium, lutetium, terbium, thulium, ytterbium, yttrium); Light rare earths (cerium, lanthanum, neodymium, praseodymium and samarium); and scandium
Other non-ferrous metals	aluminium, antimony, arsenic, beryllium, bismuth, cadmium, copper, gallium, germanium, gold, hafnium, indium, lead, lithium, magnesium, rhenium, selenium, silicon metal, silver, strontium, tellurium, tin, zinc, zirconium
Bio and other materials	natural cork, natural rubber, natural teak wood, sapele wood, coking coal, hydrogen and helium

Analysis of geological and economic data provided by Ukrainian state authorities and mass media sources showed that Ukraine has abundant reserves of industrial and construction materials, ferroalloy metals, non-ferrous metals, certain rare earth elements, and some other materials (in particular, coking coal) which are on the European Union's Critical Raw Materials List 2020.

Below is the 2020 EU Critical Raw Materials List (valid as of today)[5].

² The first assessment was conducted in 2011. Based on the assessment, the first list of CRMs was published the same year.

Antimony	Hafnium	Phosphorus
Baryte	Heavy Rare Earth Elements	Scandium
Beryllium	Light Rare Earth Elements	Silicon metal
Bismuth	Indium	Tantalum
Borate	Magnesium	Tungsten
Cobalt	Natural Graphite	Vanadium
Coking Coal	Natural Rubber	Bauxite
Fluorspar	Niobium	Lithium
Gallium	Platinum Group Metals	Titanium
Germanium	Phosphate rock	Strontium

Description of the Table No. 1: *Materials which are available in Ukraine are highlighted in green [6]. Elements in yellow are classified as «secret» under Decree of the State Security Service of Ukraine 23 December 2020 No. 383. Consequently, official and confirmed data about them is not available. Reserves of natural rubber were not found in Ukraine. This element is therefore highlighted in red.*

In view of the above, it appears that Ukraine obtains reserves of 24 out of 30 raw materials which according to the assessment 2020 are considered critical in Europe³. Consequently, we could have already capitalized on producing and supplying 24 elements which are deemed under the risk of supply in Europe. However, until now, little attention has been given to making explicit the manner in which the development of the raw materials can be expected to lead to economic growth in Ukraine. Furthermore, Ukraine is still yet to identify which materials should be considered critical and which are strategic for our country, as well as what “criticality” or “strategic importance” assessment should be applied. Decree of the President of Ukraine of 23 July 2021 No. 306/2021 approved a list of minerals of Strategic Importance for Sustainable Economic Development and Defence of Ukraine [7]. However, by now, the people of Ukraine are not aware what assessment was applied to determine the strategic importance of the approved minerals and the reason why mineral deposits that are of strategic importance should be distributed for use under the terms of Product Sharing Agreements.

In 2023, a new study of the critical raw materials for the EU was provided [8]. The study presented the results of the fifth technical assessment 2023 of critical raw materials for the EU. This technical assessment is feeding into the legislative package of the Proposal for a Regulation of the European Parliament and of the Council establishing

³ Fourth technical assessment of critical raw materials for the EU, based on the methodology developed by the European Commission in cooperation with the Ad hoc Working Group on Defining Critical Raw Materials (AHWG) 5 in 2017

a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020 of 16 March 2023 (hereinafter - the proposal of the CRM Act Regulation). The latter sets out new methodologies for identifying EU's strategic and critical raw materials [9].

Based on the same groups of raw materials which were allocated in Final Report on the EU's List of Critical Raw Materials (2020), the assessment revealed that copper (Other non-ferrous metals' group) and nickel (Iron and ferro-alloy metals' group) do not meet the CRM thresholds but are included on the CRM list as strategic raw materials in line with the Critical Raw Materials Act. Four new materials, namely neon, krypton, xenon and roundwood which belong to Bio and other materials group were assessed. Titanium metal was assessed in addition to titanium (both represent Iron and ferro-alloy metals' group). Aluminium and bauxite (Other non-ferrous metals' group) have been merged for consistency reasons. Below is comparison chart of the EU's CRMs list 2020 and the proposal of the CRM Act Regulation:

No.	EU's List of Critical Raw Materials (2020)	EU's Proposed List of Critical Raw Materials (2023)
1.	Antimony	Antimony
2.	Baryte	Arsenic
3.	Beryllium	Bauxite
4.	Bismuth	Baryte
5.	Borate	Beryllium
6.	Cobalt	Bismuth
7.	Coking Coal	Boron/ Borate
8.	Fluorspar	Cobalt
9.	Gallium	Coking Coal
10.	Germanium	Copper
11.	Hafnium	Feldspar
12.	Heavy Rare Earth Elements	Fluorspar
13.	Light Rare Earth Elements	Gallium
14.	Indium	Germanium

15.	Magnesium	Hafnium
16.	Natural Graphite	Helium
17.	Natural Rubber	Heavy Rare Earth Elements
18.	Niobium	Light Rare Earth Elements
19.	Platinum Group Metals	Lithium
20.	Phosphate Rock	Magnesium
21.	Phosphorus	Manganese
22.	Scandium	Natural Graphite
23.	Silicon metal	Nickel – battery grade
24.	Tantalum	Niobium
25.	Tungsten	Phosphate rock
26.	Vanadium	Phosphorus
27.	Bauxite	Platinum Group Metals
28.	Lithium	Scandium
29.	Titanium	Silicon metal
30.	Strontium	Strontium
31.		Tantalum
32.		Titanium metal
33.		Tungsten
34.		Vanadium

Description of the Table No. 2: Elements in gray color on the right are suggested to be removed from the EU's CRMs list 2023. Materials which are available in Ukraine are highlighted in green [10]. Elements in yellow are classified as «secret» under Decree of the State Security Service of Ukraine 23 December 2020 No. 383. Consequently, official and confirmed data about them is not available.

Even though additional research regarding the availability in Ukraine of six newly proposed minerals is required, the comparison chart shows that based on the research conducted regarding the EU's CRMs list 2020, Ukraine obtains the lion's share (at least 23) of the proposed materials for the EU's CRMs list 2023.

Natural rubber which belongs to Bio and other materials group wasn't present in Ukraine before and now is suggested to be removed from the Fifth list of EU's CRMs list. Information on Indium (Other non-ferrous metals) which is now suggested to be removed from the Fifth list of EU's CRMs list, was not available in Ukraine because it is classified.

Ukraine's potential to increase its extraction, processing or recycling capacities remains underexploited. Investments and new technologies are needed to unlock Ukraine's full capacity. Hence, transparency, and clarity of rules applicable to all stages of the minerals processing chain (e.g., exploration, development and production, resource processing and refining, etc.) is required to attract necessary investments in the sector.

In 2021, Ukraine signed the Memorandum of Understanding with the European Union on a Strategic Partnership on Raw Materials and committed to foster development of raw materials and batteries supply chains with the EU as well as to ensure approximation of environmental, social and governance criteria, by the present time this mission is yet to be accomplished. According to the research conducted by the project funded by the European Union in 2022, investors operating in Ukraine believe that Ukraine's subsoil sector still has significant room for improvement [11].

However, removing existing obstacles to investments should not weaken national interests. Sustainable natural resource management should be viewed within its intersections with environmentalism and include more active local communities' engagement. The transition to a raw materials economy calls for a systems-thinking approach and the involvement of businesses, government, and society at large. The lack of a clearly defined approach to this issue in Ukraine should motivate all stakeholders to become more active participants in the establishment of balanced state policies and decision making on critical raw materials.

Legal Framework and Permitting System

In Ukraine regulatory and oversight powers in extractive industry are divided between several state authorities. There is no single state body responsible for development and implementation of state extractive industry policy or regulatory function. The Ministry of Ecology and Natural Resources of Ukraine regulates a number of issues, including registration and monitoring of geological studies, accounting for the depleted deposits, mining losses, and oil and gas wells. The State Service for Geology and Mineral Resources of Ukraine (Derzhheonadra) grants licenses for subsoil use.

The Subsoil Code [12] is the key piece of legislation governing the rational use and protection of subsoil. On 23 March 2023, the Law “On amendments to certain legislative acts of Ukraine on improving legislation in the field of subsoil use” No. 2805-IX which amended the Subsoil Code of Ukraine entered into force. Its provisions include deregulation of the sector and its digitalization; free market of licenses; new terms for special permit extension; exhaustive cases of revocation and suspension of subsoil use rights.

In addition, following laws regulate the subsoil use sector:

- ✘ The Oil and Gas Law; [13]
- ✘ Mining Law of Ukraine; [14]
- ✘ On Production Sharing Agreements; [15]
- ✘ Tax Code of Ukraine; [16]
- ✘ On Environmental Impact Assessment; [17]
- ✘ On State Geological Service of Ukraine; [18]
- ✘ On Approval of the National Program for the Development of the Mineral Resources of Ukraine until 2030; [19]

Other pieces of legislation related to the subsoil use sector in general and to minerals of strategic importance in particular:

- ✘ Decree of the Cabinet of Ministers of Ukraine of 23 September 2020 No. 993 “On Approval of the Procedure for Conducting Auctions for the Sale of Special Permits for Subsoil Use”; [20]
- ✘ Decree of the President of Ukraine of 23 July 2021 No. 306/2021 “On the Decision

of the National Security and Defence Council of Ukraine of 16 July 2021 “On Stimulating the Search, Extraction and Enrichment of Minerals of Strategic Importance for Sustainable Economic Development and Defence”;^[21]

- ⌘ Decree of the Cabinet of Ministers of Ukraine of 14 February 2023 No.132 “On the approval of the list of subsoil areas (mineral deposits) that are of strategic importance for the sustainable development of the economy and state defence, which will be made available for use through tenders for the conclusion of production sharing agreements”. ^[22]

Although the Ukrainian government commenced developing SRMs and CRMs-related legislation and Ukrainian society might have empirical findings on that, this concept is not either explained fully or translated into Ukrainian legislation. Up to date it remains foreign and unenforceable in full to the citizens of Ukraine and international investors. The required legislation on SRMs and CRMs is absent in Ukraine. Development of the raw materials that are important for the Ukrainian economy and could enhance the strong position of our country as a supplier of CRMs have not been made explicit or made a part of national economic strategy.

Due to the intersectionality of the subject, different state authorities, including the Cabinet of Ministers of Ukraine, Ministry of Energy, Derzhheonadra, Ministry of Economic Development and Trade, National Security and Defence Council of Ukraine, Ministry of Strategic Industries of Ukraine, Ministry of Ecology and Natural Resources of Ukraine are somehow engaged into decision making regarding CRMs and SRMs. However, there is no single state body responsible for leading and developing the critical minerals sector. Furthermore, there is a lack of effective institutional capacity within the exciting participating state authorities to integrate critical raw material actions within sectoral planning.

Subsoil Use Licenses

Mineral resources exploration and production could be granted via licensing⁴. A license holder acquires the right to dispose of a mineral resource only upon its extraction from the subsurface⁵. License serves as a prerequisite for obtaining other permitting documents required for subsoil use, including necessary land-use rights and Environmental Impact Assessment (EIA). License constitutes a part of a subsoil use agreement⁶. The latter provides for specific terms and conditions for subsoil use, description of the subsoil area, mandatory work program and timeline. Derzhheonadra is the only state authority in Ukraine that provides access to geological information, conducts auctions for the sale of licenses for subsoil use and carries out inspections over the licensed activities. These activities include the following:

Activity	Duration
Combined Exploration and Production	Up to 5 years for amber, from 3 to 20 years for onshore operations and up to 30 years for offshore operations for hydrocarbons

⁴ Article 16 of the Subsoil Code of Ukraine

⁵ Article 24 of the Subsoil Code of Ukraine

⁶ Article 16-3 of the Subsoil Code of Ukraine

Production	Up to 20 years for onshore operations for all types of raw materials, and up to 30 years for offshore operation for hydrocarbons
Underground storages, geological territories and objects	from 3 to 20 years for underground storages, geothermal energy, underground mines dewatering, from 3 to 20 years for geological territories and objects (scientific training grounds, geological reserves, nature reserves, medical and health facilities) (except for oil and gas-bearing subsoil)
Production Sharing Agreement	Up to 50 years

Possible types of investment in exploration and production of raw materials in Ukraine

- **Obtaining a License via E-Auction**

Obtaining licenses via electronic auction is the most common and transparent way of acquiring the right for subsoil use. There are 9 exceptions which allow to obtain a license out of auction such as obtaining production license on the base of exploration license, obtaining license by medical institutions, public utility companies of water supply or with the purpose of irrigation,⁷ for the most common minerals such as sand or clay if the applicant owns the land up to 25 ha.

Licenses may be purchased at online auctions arranged by Derzhheonadra. Starting from December 2019, licensing auctions are held online via the electronic platform Prozorro. The lots are placed online during the 20 days for all raw materials, and 90 days for oil and gas minerals⁸.

The Investment Atlas of Ukraine is an online shop with teasers of existing vacant subsoil areas where investors can look for business opportunities and offer subsoil areas, they are interested in to be sold at an auction [23].

- **Assignment/transfer of the subsoil use rights under the license**

Due to recent amendments to the Subsoil Code of Ukraine⁹, assignment of the right to use the subsoil - by buying/selling it became possible. It is also possible to transfer it as a contribution into joint activities. In addition to the possibility to assign the right granted by a license could be done either completely or partially. Assignment of the right to use the subsoil under the certain license should be conducted through purchase and sale agreement. If proposed activity under the existing license does not change, no new EIA is needed.

- **Purchasing a license holder**

Alternatively, a foreign investor can acquire a Ukrainian company that already holds a license via Mergers and Acquisitions. This type of investment might include an already issued EIA. Even though this type of investment is not widespread in Ukraine, it has more advantages than acquisition of subsoil rights through Production Sharing Agreements.

⁷ Article 16-2 of the Subsoil Code of Ukraine

⁸ Par. 13 of Decree of the Cabinet of Ministers of Ukraine of 23 September 2020 No.993

⁹ Article 16-1 of the Subsoil Code of Ukraine

The latter involves a decision of the Interagency Commission on Production Sharing Agreements which is not transparent and complicated.

- **Production Sharing Agreements**

Production sharing agreements (PSAs) are usually used for a large known field or a large exploration area. PSAs are executed between an investor and the Cabinet of Ministers of Ukraine representing the Government (State)¹⁰.

Under the PSA, an investor undertakes to carry out a certain work program at his own expense and risk. The Government provides the investor with the following: a contract area and all permits required to carry out operations under PSA; the right to compensate its expenses at the cost of a certain portion of minerals produced; an entitlement to a certain share of profit production.

Indeed, PSA has been used as a tool for regulating the field of subsoil use in many countries around the world. However, the existing mechanism of PSA in Ukraine has several drawbacks and limitations that make it a poor tool for regulating subsoil use.

One of the main problems with PSAs in Ukraine is that there is no model production sharing agreement that sets out the terms and conditions of the agreement in a standardized way. This means that the terms of each PSA are negotiated separately between the government and the company, which can lead to inconsistencies and a lack of transparency in the process. This lack of a standard model can also lead to an uneven distribution of benefits between the government and the company, which can be particularly problematic in countries with weak governance systems.

Another issue with PSAs in Ukraine is that they can be prone to corruption and rent-seeking. Since the terms of each PSA are negotiated on a case-by-case basis, there is a risk that officials may demand bribes or kickbacks in exchange for more favorable terms for the company. This can lead to a situation where the government is not able to capture a fair share of the profits generated from subsoil use, and the country as a whole is left worse off as a result.

PSAs also tend to be very complex and can be difficult to enforce. This is particularly true in the case of Ukraine, where the legal and regulatory environment is often unclear and subject to frequent changes. This can create a situation where companies are able to take advantage of loopholes and inconsistencies in the agreement to avoid paying their fair share of taxes or royalties.

Furthermore, PSAs could hide many risks. Freezing legislation at the time of signing the PSA excludes measures related to national security and defence, environmental protection, and public order. In addition, PSAs conclusion involves a decision of the Interagency Commission on PSAs. The objectivity of decision-making under the PSA procedure has been questioned on different occasions by NGOs and civil society. The lack of transparency in the permitting system holds back the collaboration with foreign investors. Furthermore, decision-making under the PSA procedure eliminates participation of the representatives of the local government which could lead to local opposition against developments in the local area.

¹⁰ Article 5 of the Law of Ukraine "On Production Sharing Agreements"

According to the Decree of the Cabinet of Ministers of Ukraine of 14 February 2023 No.132, an exploration and production of 26 deposits of strategic minerals will be granted based on PSAs. At the same time, under the current legislative provisions, participation of the representatives of the local government in decision making processes related to the PSA conclusion is not mandatory and could be provided upon the consent. Consequently, participation of local communities in decision making processes regarding 26 deposits of strategic minerals could be eliminated and lead to potential obstacles in subsoil use in future.

In summary, while PSAs may work well in some countries, they are not an efficient tool for regulating subsoil use in Ukraine. Without a standardized model and robust enforcement mechanisms, they are likely to lead to corruption, rent-seeking, and an uneven distribution of benefits between the government and the company.

- **Access to the geological information**

Unfortunately, obsolete methods and techniques are currently employed to record and store geological information with much of the information available only in antiquated and non-digital form (often single copy paper and disk). Such a situation makes access to the data incredibly difficult, expensive and time consuming in normal times, and all but impossible in the current security environment.

Currently the National Geological Portal gathers 15 information databases, including registers, catalogs, and interactive maps [24]. The publicly accessible interactive maps contain information about more than 3,000 licenses and PSAs and almost 10,000 contours of deposits, 17,000 of seismic lines, 12,000 of oil and gas wells, 8,000 of artesian wells and groundwater intakes, 20,000 legacy geological reports. The National Geological Portal also includes the information about land plots and national parks across Ukraine, as well as about 1,000 of promising spots with raw materials which are deemed critical in Europe, and 4,000 of promising spots with raw materials for construction purposes.

However, the abovementioned databases are not considered as user-friendly and do not allow to conduct interactive research.

Information about Ukraine's reserves of gold, lithium, niobium, tantalum, titanium, zirconium, uranium, scandium, gallium, indium, tellurium, cesium, and their elements in the subsoil are classified as «secret» and prohibited for distribution. Information about reserves and resources of deposits of above-mentioned minerals is restricted.

- **Publicity and Transparency**

As a member-country of the Extractives Industries Transparency Initiative Ukraine discloses the information along the extractive industry value chain, including the data related to extraction rights and how revenues make their way through government and how they benefit the public [25].

In 2021 the National Security Council of Ukraine launched an online subsoil use monitoring system which provides and updates automatically information on licenses for subsoil use, ultimate beneficiaries and founders of companies that own special permits, conditions of issuance and history of status changes, subsoil area, volumes of production of raw materials [26].

- **Main obstacles to investing in the Ukrainian raw materials resources sector**

Mining is considered as an extremely capital-intensive business. First, mining has a large up-front layout of construction capital called capex – the costs associated with the development and construction of open-pit and underground mines. There is often other company-built infrastructure like power-generating stations, roads, railways, bridges to facilitate extraction and shipping of ore and concentrate. Second, there is a continuously rising opex, or operational expenditures. These are the day-to-day costs of operation: rubber tires, wages, fuel, camp costs for employees, etc.

All over the world the mining industry is facing complex challenges from all directions. Environmental footprint and climate change pressures, trade wars and geopolitics, changing and uncertain demand, technology changes, and a global maintenance skills shortage to name a few.

According to the recent report on Main Barriers and Perceived Risks for Investment in the Ukrainian Raw Materials Resources Sector, the following key barriers, and obstacles for the development of raw materials exist in Ukraine:

- ✘ complex procedures for accessing geological data and poor quality of the latter;
- ✘ agreeing on the terms of the Production Sharing Agreement;
- ✘ obtaining land plots;
- ✘ carrying out an EIA, and connecting to grids;
- ✘ absence of the required legislative procedure related to CRMs.

Furthermore, the Ukrainian raw materials resources sector and research and development in the mining industry has been underinvested for decades. Ukraine should introduce policies and initiatives to promote research and development in the field of critical minerals, including funding research projects, supporting innovation, and promoting technological advancements in the exploration, extraction, and processing of critical minerals.

Policy targets

According to the World Bank, three billion tons of minerals and metals will be needed by 2050 and by 2030 we will need to build 50 more lithium mines, 60 more nickel mines and 17 more cobalt mines to meet global net carbon emissions goals [27]. It means that structural transformation of the world's economies or of their important sectors is inevitable. In its turn, acceleration of economic structural transformation could be enabled by utilizing innovative technical opportunities and designing policies that foster investment into those opportunities. Resource diplomacy and strategic investments in resource-abundant countries will be one of the key tools to diversify imports and hence to strengthen the security of supply¹¹. Due to our country's natural resource wealth, Ukraine should be ready to become an active participant of this process. **Transparency is a key ingredient in preventing corruption, building a functional and sustainable Ukrainian raw materials resources sector and becoming a reliable partner on the international arena.**

The following tools need to be equipped to develop the Ukrainian raw materials resources sector as a transparent one:

1. Introduction of the methodology of assessment of CRMs and SRMs and identifying these materials according to the approved methodology. Lists of CRMs and SRMs and the way how these minerals are to be distributed should not be any longer the issue where one person or small group decides.
2. Development of the national Raw Materials Strategy. The government should make explicit the manner in which the development of the raw materials can be expected to lead to economic growth in Ukraine.
3. Identifying national strategic projects and projects which could be deemed as strategic for the EU under the Proposal of the CRM Act Regulation. These steps will help to boost our country's autonomy and economic growth.
4. Refusing to use existing PSA mechanism for distribution of subsoil areas for CRMs and SRMs exploration and production. Obtaining licenses via electronic auction is the most common and transparent way of acquiring the right for subsoil use.
5. Complete digitization of geological data and simplified access to it. Accessible geodata encourages mineral resource companies to invest through reducing exploration risk.

¹¹ FACTUAL SUMMARY REPORT OF THE PUBLIC CONSULTATION on EUROPEAN CRITICAL RAW MATERIALS ACT, Ref. Ares (2023)529454 - 24/01/2023: 71% (183 out of 259) of respondents agree, that the EU should strengthen the ongoing strategic partnerships on critical raw materials and conclude additional ones with resource rich third countries

6. Consolidation of a multi-faceted permitting regime into a single one and providing subsoil use permits as a ready to start mining project will reduce common vulnerabilities of market players.
7. Indocinating principles for sustainable raw materials which aim to align EU understanding of sustainable extraction, processing, and recycling. Mandatory ESG reporting for the raw materials industries will help to ensure regulatory compliance on international level.
8. Removal of artificial barriers from the state export and trade policy. Development of the Ukrainian raw materials resources sector cannot be provided due to the deregulation of the subsoil sector only. Other state policies should be aligned.
9. Enhancing involvement of territorial communities. Government should work closely with territorial communities to establish a strategic vision on the development of critical raw materials.
10. Further development of knowledge, skills and technical capacity in CRMs sector will allow to drive innovation, education, and entrepreneurship in the sector.

The above measures also should unlock Ukraine's potential in the raw materials resources and help to attract necessary investments in the sector. Their introduction will allow to enhance governance, increase transparency, counter corruption. Let us look at this in more detail.

1. Categorization of a mineral as critical and strategic and development of the official methodology of their assessment

Establishing methodology and providing lists of national CRMs and SRMs is vital for setting out our country's vision and strategy regarding the raw material sector. It would also signal to domestic and international investors where to focus their efforts, and to the government where we must sign cooperation agreements with allies to advance work together.

Decision of the National Security and Defense Council of Ukraine dated 16 July 2021 "On stimulating the search, extraction, and enrichment of minerals of strategic importance for sustainable economic development and defense capabilities of the state", which was put into effect by the Decree of the President of Ukraine dated 23 July 2021 No. 306 introduced a list of 37 ores and non-metallic minerals that are of strategic importance for the country. However, it remains unknown what methodology and criteria was implied to identify minerals that are of strategic importance for the country. In addition, the competence of the National Security and Defense Council of Ukraine to identify respective minerals is questionable. Draft Subsoil Code that was developed by the EU Project on Development of Ukraine's new Subsoil Code attempted to introduce definitions of critical and strategic minerals. However, Law No.2805-IX, which replaced Draft Subsoil Code, took a different approach. The new legislation does not provide any special regulatory support to the critical mineral's sector. Another attempt to give definition to strategic and critical raw materials in Ukraine was made by the draft Law "On the Amending the National Mineral Strategy of Ukraine until 2030" [28] which due to the war and budget cuts is not likely to be adopted in the foreseen future.

At the same time, introduction of the methodology of assessment of CRMs and SRMs

and respective lists will provide greater certainty and predictability on national priorities to investors, subsoil users, communities, and foreign partners.

2. Developing long-term vision for raw materials/ Raw Materials Strategy

When reviewing recent policy choices related to securing critical minerals, states fall into two groups. In the first case, countries with sufficient resources of critical minerals (Canada, Australia, China) introduced laws and regulations to build on the economic and political advantages of their current market position [29]. In the second case, countries with limited production capabilities focus on increasing domestic supply and reducing import dependencies. For instance, to secure a sustainable supply, the EU Commission has had in place a dedicated strategy since 2008 and put forward an action plan in the 2020 Communication on Critical Raw Materials. The EU Parliament adopted the EU Strategy Critical Raw Materials Strategy on 24 November 2021 [30]. Further on 16 March 2023, the European Commission published a proposal of the CRM Act Regulation, a legislative proposal intended to strengthen the EU's autonomy in the supply of key raw materials.

Ukraine, as one of resource rich European countries, should introduce an official strategy focused on increasing domestic resource extraction, processing and recycling capabilities, providing security of national production capabilities, and supporting innovations that increase the recyclability of the minerals as well as innovations aimed at developing new mining technologies that allow the exploitation of new mineral reserves/ reduce production costs.

3. Identifying national strategic projects and projects which could be considered as strategic for the EU

Proposal of the CRM Act Regulation introduces Strategic Projects, a new concept which would benefit from additional permitting and financial support through dedicated resources from Member States and a dedicated European CRM Fund [31]. According to Annex III of Proposal of the CRM Act Regulation strategic projects are those which contribute to maintaining or strengthening Union capacities as a share of the Union's annual consumption of strategic raw material. At the same time Annex I and Annex II of the Proposal of the CRM Act Regulation set out that Titanium metal is considered both as SRM and CRM. Currently seven countries, namely China, Japan, India, Russia, Kazakhstan, USA and Ukraine produce Titanium [32]. Consequently, with some economic stimulus Ukraine can capitalize on this opportunity. Assessment of national industrial capacities which should include upstream, midstream and downstream operations as well as assessment of international demand in CRMs should be conducted. Investment and financing opportunities for the national and EU strategic projects should be identified. Value chains across the largest reserves, such as titanium should be developed.

4. Refusing to use existing PSA mechanism for distribution of subsoil areas for CRMs and SRMs exploration and production.

Existing PSA mechanism in Ukraine where there is no model production sharing agreement that sets out the terms and conditions of the agreement in a standardized way and PSA are negotiated on a case-by-case basis creates a number of corruption risks which account for increased vulnerability to corruption across the extractive value chain.

Furthermore, under the current legislative provisions for PSA, participation of the

representatives of the local government in decision making processes related to the PSA conclusion is not mandatory and could be provided upon the consent. Under Decree of the Cabinet of Ministers of Ukraine of 14 February 2023 No.132, an exploration and production of 26 deposits of strategic minerals will be granted based on PSAs. Consequently, participation of local communities in decision making processes on strategic minerals could be eliminated and lead to potential obstacles in subsoil use in future.

While PSAs may work well in some countries, they do not represent an efficient tool for regulating subsoil use in Ukraine. Without a standardized model and robust enforcement mechanisms, they are likely to lead to corruption, rent-seeking, and an uneven distribution of benefits between the government and the company. In the meantime, obtaining licenses via electronic auction is seen as the most common and transparent way of acquiring the right for subsoil use.

5. Access to geological information / Operational geodata

Derzhheonadra began opening access to geological data in 2021. However, development and operationalization of Nadra geoscience portal as well as introduction of regulations for ensuring effective and efficient access to good quality geological data is yet to happen in Ukraine. Old-school methods are currently employed to record and store geodata. Large amount of information is available only in non-digital form (for example, in a single copy paper book). It results in a complicated procedure of accessing the data and makes it expensive and time consuming.

Digitalization should enable a greater pool of investors to source necessary data, increasing the chances of more and better investment by appropriately qualified and adequately funded operators. In addition, accessible geological data will also reduce exploration risk for potential investors. Furthermore, it will help to understand the country's resource potential and regulate respective activities in a sustainable manner. Finally, accessible geodata leads to transparency and helps to counter corruption.

Therefore, digitization of Ukraine's geological data and simplification of procedures to obtain the right to review geological data on minerals which are classified as "for official use" or "state secret" should contribute significantly to transparency and accessibility of a vital resource for the sustainable development of the Ukrainian Raw Materials Resources Sector.

6. Consolidating a multi-faceted regime into a single one and providing subsoil use permits as a ready to start mining project

Consolidated regime can improve the permitting process. Consolidating a multi-faceted regime into a single one means that one authority evaluates multiple interests – from the local community and to protect the natural environment, through to visual impact and defence considerations – awarding (or recommending award of) a comprehensive consent (or permit) for a development. This streamlines the permitting stage considerably, even if multiple consultations are still necessary – and are indeed advisable – to maintain effective communication and provide appropriate consideration of all interests. Such countries as Denmark and Canada successfully introduced "one stop shop" regime where in the process of issuing a license or agreement that grants subsoil use rights, a single body coordinates the entire process and makes decisions, including regarding EIA. Using the "one stop shop" principle is also a recommendation of a report prepared

by the European Commission “Legal framework for mining and procedures for obtaining exploration and development permits in the EU”(2017) [33]. Reduction of common vulnerabilities of market players in sustainable international investments in the mining and refining sectors should be provided by selling subsoil permits as a ready to start project which include environmental impact assessment and obtained land plots.

7. Indoctrinating principles for sustainable raw materials which aim to align EU understanding of sustainable extraction, processing, and recycling

Sustainable investments for CRM development which integrate circularity in their design necessitate accessibility to harmonized social and environmentally referenced information and knowledge. Such information encompasses aspects of: (a) Social contract on natural resources; (b) Adherence to sustainable investment guidelines; (c) Alignment to the principles of sustainable resource management; (d) Life cycle transparency and traceability; and (e) Strategic environmental management [34]. Transparent and responsible production of CRMs is also essential to de-risk investments, including those underpinned by climate finance. Rising demand for “sustainable” investment prompted investors to change the strategy or investment profile, helping to push assets invested with an environmental, social or governance tilt [35]. At the same time, the analysis of policies, in particular of those mining companies that have joined the pan-European industrial alliances ERMA and EBA, indicates that considerations of sustainable development are not integrated into the strategy of conducting their economic activities.

Introduction of ESG reporting standards in the national critical raw materials sector will correspond to progressive international practices. It could also increase the investment attractiveness of the sector, as well as the chances of national mining companies and projects with their participation to receive a loan from international financial organizations. Finally, transparency and sustainability are vital criteria in the EU’s decision-making processes on supply chain partnership in the CRM’s sector.

8. Export and trade policy / Removing artificial obstacles

Ukraine has regulations governing the export and trade of critical minerals. These regulations may include export quotas, export duties, or export licensing requirements to control the export of critical minerals and ensure their availability for domestic use and strategic purposes.

The State Export Control Service of Ukraine (State Export Control Service) approved the order of 6 July 2022 on the need to obtain permits for the export of a number of dual-purpose goods, including ilmenite concentrate (titanium ore) based on Article 10 of the Law of Ukraine «On State Control of International Transfers of Military and Dual-Use Goods».

The specified procedures of the State Export Control and the inclusion of critical minerals, among which only titanium (Ilmenite concentrate) is included in the list of goods subject to export control (licensing) in accordance with the provisions of Article 10 of the Law of Ukraine «On State Control of International Transfers of Military Purpose and Dual-Use Goods» may slow blurring the critical minerals sector and creating artificial barriers to investment in potential projects.

In Ukraine today, titanium-containing ores are mined mainly in the United Mining and

Chemical Company PJSC (UMCC), to whose management the Vilnohorsk Mining and Metallurgical Combine (VGMK, Dnipropetrovsk Region) and the Irshan Mining and Processing Combine (IGZK, Zhytomyr region), as well as Mezhyrichenskyi GZK LLC and Valky-Ilmenit LLC (both LLCs - Irshansk, Zhytomyr region).

9. Enhancing involvement of territorial communities

Government should work closely with territorial communities to establish a strategic vision on the development of critical raw materials. This cooperation can be enhanced through geological investment passports which are to be prepared by all territorial communities. The latter can be encouraged to develop local programs for exploring geological resources. In addition, the mechanism of PSA conclusion requires improvements. In particular, participation of the representatives of the local government in the Interagency Commission on PSAs should become mandatory. Furthermore, EITI reporting should explicitly cover CRMs and enable local communities to get access to information on mining activities in their areas as well as to better understand their economic opportunities.

Increased deductions from rental tax for subsoil use for critical raw materials production should be made in favor of local administration.

10. Capacity building in CRMs sector

Identifying a single state body that will be responsible for the development of the raw materials sector is required. Technical capacity building within relevant ministries in Ukraine should be conducted to a better understanding of the critical raw materials industries' and, therefore, to more effective and meaningful policymaking. Simultaneously, significant investment in human capital should be made to fill the current gap in expertise and capacity regarding mining, refining and other processes within CRMs supply chains.

1. Sustainable raw mineral development should be of utmost importance for Ukraine.

Executive summary

Given the apparent abundance of minerals in Ukraine, the sector will be expected to play a crucial role in the reconstruction of the country following the end of war. Furthermore, due to our country's natural resource wealth, Ukraine could become one of the key Europe's major suppliers for critical minerals.

2. Even though significant changes have been taking place in the Ukrainian subsoil sector, the area of Ukrainian raw materials resources is still lacking transparency, predictability and long-term vision.
3. Our team developed a list of measures which will help to unlock Ukraine's potential in the raw materials resources as well as attract necessary investments in the sector. Implementation of these measures will also allow to enhance governance, increase transparency, counter corruption in the sector.
4. The following tools need to be equipped to develop the Ukrainian raw materials resources sector as a transparent one:
 - **Introduction of the methodology of assessment of CRMs and SRMs and identifying these materials according to the approved methodology. Lists of CRMs and SRMs and the way how these minerals are to be distributed should not be any longer the issue where one person or small group decides.**
 - **Development of the national Raw Materials Strategy. The government should make explicit the manner in which the development of the raw materials can be expected to lead to economic growth in Ukraine.**
 - **Identifying national strategic projects and projects which could be deemed as strategic for the EU under the Proposal of the CRM Act Regulation. These steps will help to boost our country's autonomy and economic growth.**
 - **Refusing to use existing PSA mechanism for distribution of subsoil areas for CRMs and SRMs exploration and production. Obtaining licenses via electronic auction is the most common and transparent way of acquiring the right for subsoil use.**
 - **Complete digitization of geological data and simplified access to it. Accessible geodata encourages mineral resource companies to invest through reducing exploration risk.**
 - **Consolidation of a multi-faceted permitting regime into a single one and providing subsoil use permits as a ready to start mining project will reduce common vulnerabilities of market players.**

- **Indoctrinating principles for sustainable raw materials which aim to align EU understanding of sustainable extraction, processing, and recycling. Mandatory ESG reporting for the raw materials industries will help to ensure regulatory compliance on international level.**
 - **Removal of artificial barriers from the state export and trade policy. Development of the Ukrainian raw materials resources sector cannot be provided due to the deregulation of the subsoil sector only. Other state policies should be aligned.**
 - **Enhancing involvement of territorial communities. Government should work closely with territorial communities to establish a strategic vision on the development of critical raw materials.**
 - **Further development of knowledge, skills and technical capacity in CRMs sector will allow to drive innovation, education, and entrepreneurship in the sector.**
5. The transition to a raw materials economy calls for a systems-thinking approach and the involvement of businesses, government, and society at large. The lack of a clearly defined approach to this issue in Ukraine requires more active participation of independent influencers in the establishment of transparent and balanced state policies and decision-making processes in the raw materials sector.

Attachments

Annex 1. Reserves&Resources of Critical raw materials in Ukraine

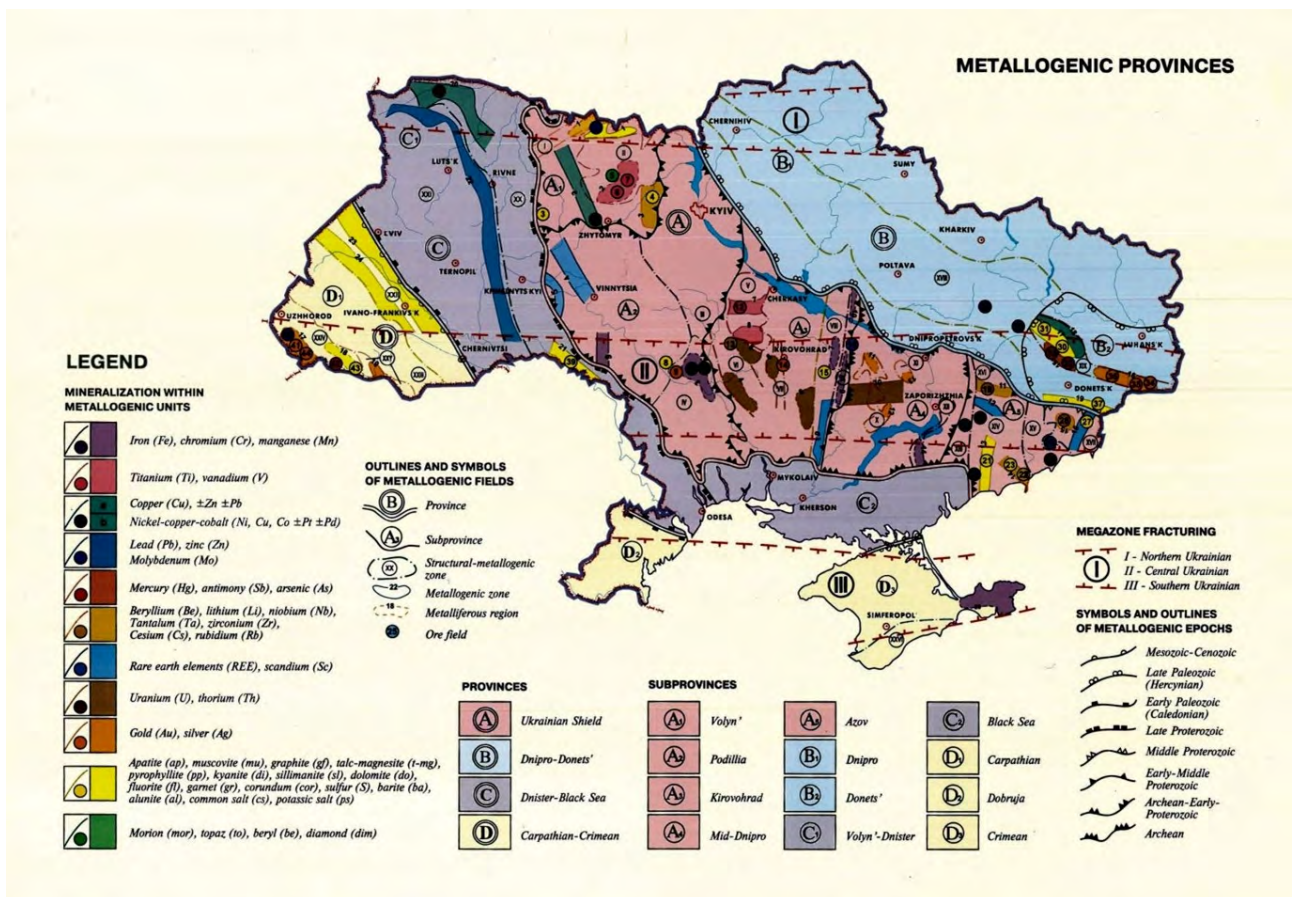
Material	Type and q-ty	Deposits		Reserves as of 01.01.2020			
		All	In use	On balance, all		On balance, in use	
				A+B+C1	C2	A+B+C1	C2
INDUSTRIAL AND CONSTRUCTION MATERIALS							
Baryte	ore, Ktons	1	1	2 522	415	2 522	415
	baryte, Ktons			1 009	166	1 009	166
Borates	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
	B ₂ O ₃ , Ktons	n/a	n/a	n/a	n/a	n/a	n/a
Fluorspar	ore, Ktons	3	0	6 084.5	24 288.3		
	CaF ₂ , Ktons			1 820.7	2 255.43		
Graphite	ore, Ktons	6	2	230 343.7	75 806.7	50 366.8	33 082
	graphite, Ktons			13 760.7	4 140.1	2 825.7	1 564.2
Phosphate rock	ore, Ktons	9	2	390 786.77	83 948.15	40.6	3 556.65
	P ₂ O ₅ , Ktons			11 090.04	4 018.46	3.66	245.87
Phosphorus	ore, Ktons	7	3	2 174 550.08	1 122 378.27	1 816 578.58	812 977.17
	P ₂ O ₅ , Ktons			71 911.72	24 276.40	66 621.72	16 179.20
FERROALLOY METALS							
Cobalt ores	ore, Ktons	11	1	22 677	2 888	1 813.8	
	cobalt (Co), Ktons			8 826.3	1 033	670	
Niobium and Tantalum	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
Titanium	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a

Tungsten	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
	WO ₃ , Ktons			n/a	n/a	n/a	n/a
Vanadium	ore, Ktons	13	6	5 527.3	995.2		
	ore/sand, thous.m3			217 955.2	14 407.2	217 955.2	
	V ₂ O ₅ , Ktons			15.5	316.26		250.82
RARE-EARTHS							
Yttrium lanthanides	ore, Ktons	3	1	860 524	106 771.22	859 627.6	95 858
	TR2O5, Ktons			1 939.74	291.66	1 938	274
Scandium	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
	TR ₂ O ₅			n/a	n/a	n/a	n/a
Other REE	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
	TR2O5			n/a	n/a	n/a	n/a
OTHER NON-FERROUS METALS							
Antimony	ore, Ktons	n/a	n/a	n/a	n/a	n/a	n/a
Aluminium ores	bauxite, Ktons	1	0	6 403	12 482		
Beryllium ores	ore, Ktons	1	1	2 065.9	769.8	1 711.2	732.7
	beryllium oxide, Ktons			11 441.2	3 866.6	9 825.4	3 696.6
Germanium	coal, Mtons	222	70	8 466.8	8 139.2	3 488.8	1 254.9
	germanium, tons			33 929.17	47 738.02	9 860.66	6 085.57
Hafnium ores	sand, thous.m3	2	2	206 752.2	315 624	200 200.2	
	hafnium oxide, tons			4 413.42	11 297.04	3 982.22	11 297.04
Lithium	ore, Ktons	3	0	n/a	n/a	n/a	n/a
Magnesium salts	raw salts, Mtons	4	2	1 141.3	579 204	698 861	579 204
	MgO, Ktons			90 359.28	48 988	67 873.28	48 988
Silicon metal	sand, thous.m3	n/a	n/a	n/a	n/a	n/a	n/a
	SiO ₂ , Ktons			n/a	n/a	n/a	n/a

Strontium	ore, Ktons	1	1	859 627	95 858	859 627	95 858
	strontium oxide, Ktons			865	87	865	87
BIO AND OTHER MATERIALS							
Brown coal	Ktons	80	3	2 593 360	299 181	9 332	
Black coal	Ktons	1052	470	41 253 228	11 199 985	8 413 939	815 630

Mineral Resources of Ukraine, 2021, No. 2, ISSN 1682-721X.
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Annex 2. Metallogenic map of Ukraine

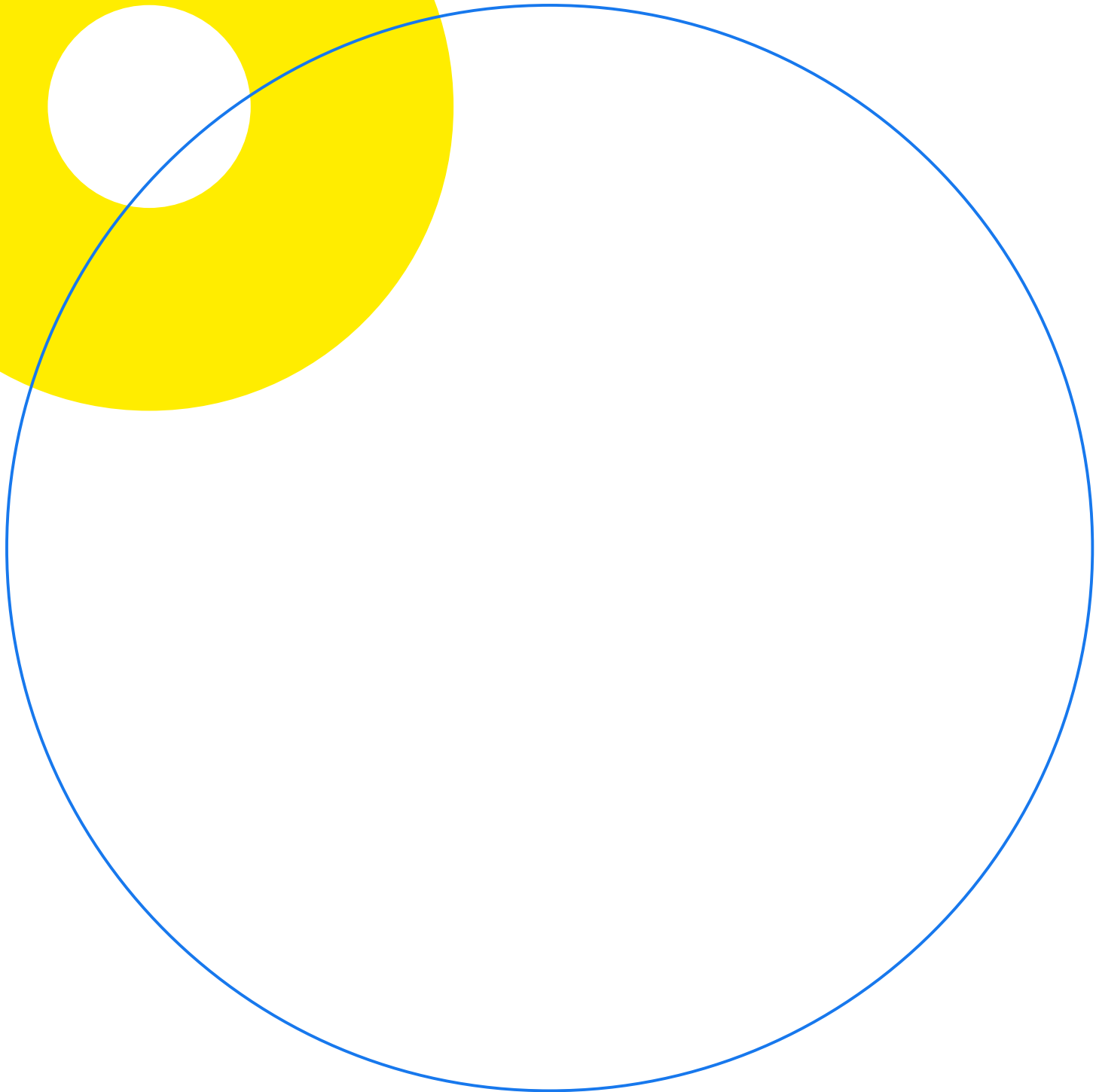
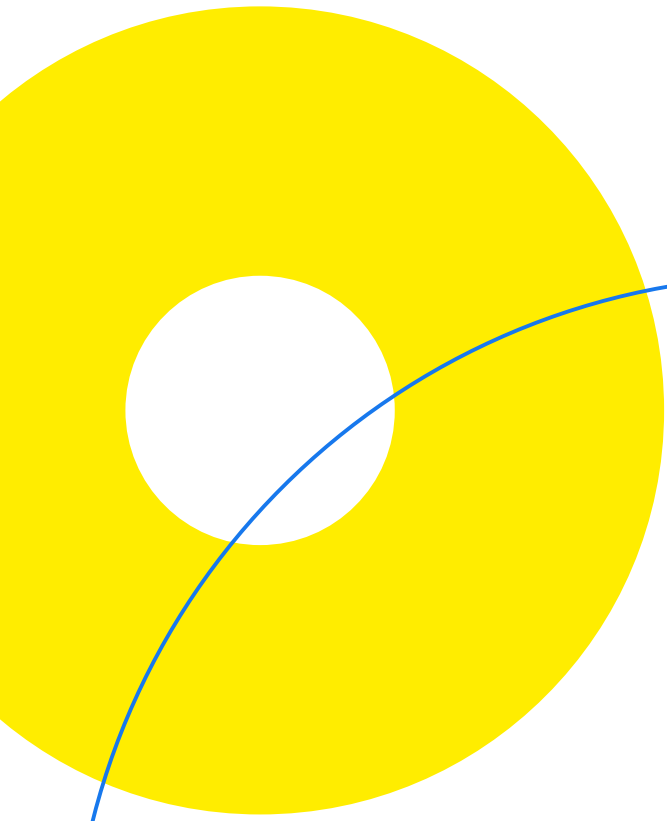


Source: SRDE "Geoinform of Ukraine & Geological Survey of Norway

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