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# CRM base in Ukraine & the possibilities of Ukraine-EU cooperation by the cluster approach

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## CRM base in Ukraine

Ukraine is one of the leading mineral and raw materials producing countries of the world. More than 5% of world mineral reserves are contained in the subsoil of Ukraine. The structure of the mineral resources of Ukraine includes deposits of raw materials, classified by the European Commission as critical (marked in red below).

# UA CRM by the 2017 list of Critical Raw Materials for the EU

Antimony	Coking coal	Indium	Phosphorus	PGMs
Baryte	Fluorspar	Magnesium	Scandium	HREEs
Beryllium	Gallium	Natural graphite	Silicon metal	LREEs
Bismuth	Germanium	Natural rubber	Tantalum	
Borate	Hafnium	Niobium	Tungsten	
Cobalt	Helium	Phosphate rock	Vanadium	

by red – deposits  
by yellow -  
prospects

# CRM base in Ukraine



**Coking coal.** Proved coking coal reserves are 12346,9 million tons. They are concentrated in 346 deposits, 100 fields are being developed.

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**Tantalum and niobium.** Proved reserves of tantalum and niobium ores are concentrated in 2 deposits.

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**REEs.** Proved reserves of yttrium lanthanides ores are 860524,0 thousand tons. They are concentrated in 2 deposits, 1 field is being developed.

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**Graphite.** Proved reserves of graphite ores are 244744,8 thousand tons. They are concentrated in 6 deposits, 1 field is being developed.

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**Hafnium.** Proved reserves of hafnium ores are 188106,9 thousand tons. They are concentrated in 1 deposits, it is developed.



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**Silicon metal.** Proved reserves of quartzite and quartz for refractories are 168466,67 thousand tons. They are concentrated in 9 deposits, 4 field is being developed.

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**Scandium.** Proved reserves of scandium ores are concentrated in 12 deposits, 6 field is being developed.

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**Vanadium.** Proved reserves of vanadium ores are 15,5 thousand tons by pentoxide vanadium. They are concentrated in 12 deposits, 5 field is being developed.

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**Germanium.** Proved reserves of coal with germanium are 7681764 thousand tons. They are concentrated in 220 deposits, 79 field is being developed.

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**Beryllium.** Proved reserves of beryllium ores are concentrated in 1 deposits.

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**Phosphate rock.** Mineral resources of phosphate rocks in Ukraine are represented by deposits of apatite and phosphorite. Proved reserves of apatite ores are 2174550,08 thousand tons. They are concentrated in 7 deposits, 3 field is being developed. Proved reserves of phosphorite ores are 390786,8 thousand tons. They are concentrated in 9 deposits, 3 field is being developed.

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**Fluorspar.** Proved reserves of fluorspar ores are 6084,5 thousand tons. They are concentrated in 3 deposits.

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**Magnesium.** Proved reserves of crude magnesium salts are 1141288,0 thousand tons. They are concentrated in 4 deposits, 1 field is being developed.



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**Barite.** Proved reserves of barite ores are 2522 thousand tons. They are concentrated in 1 deposits, it is developed.

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**Borate.** Proved reserves of borate ores are 62,4 thousand tons. They are concentrated in 2 deposits.

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**Cobalt.** Proved reserves of cobalt ores are 26677,0 thousand tons. They are concentrated in 11 deposits, 1 field is being developed.

# CLUSTER APPROACH

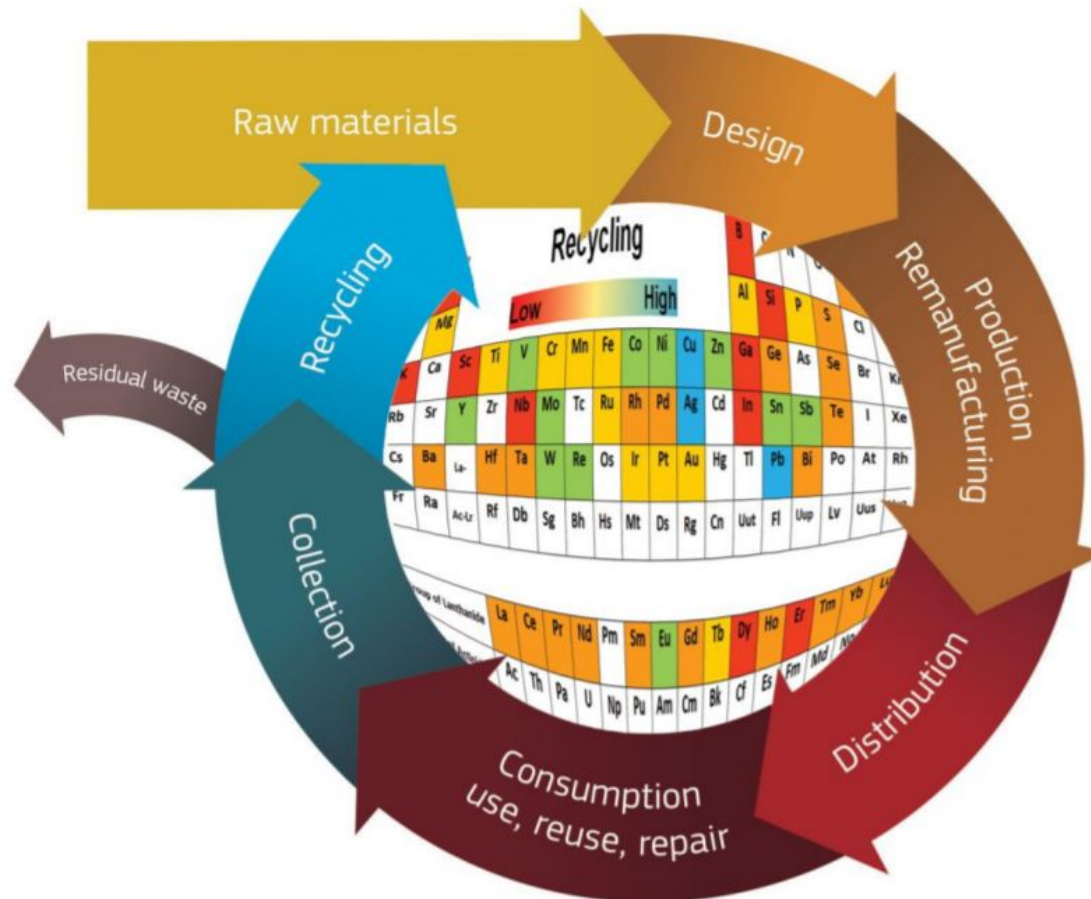
The main goal of the presentation of SGE «Heolekspertyza» is a fully disclosure of the role played by a cluster approach as an innovative way in the mineral field within the territory of Ukraine and the EU. The modern perspective is a fundamental premise and a major push to the new strategic revolution in the field of subsoil se. The Ukrainian potential of an extensive range of a strong mineral resource base that corresponds to the EC list of critical raw materials [http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical\\_en](http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en) will provide for European industries: strengthening of European companies' competitiveness in the global market; increase in capitalization and profitability of companies and increase in tax deductions; increase of employment of the population, creation of new jobs; covering the raw materials shortage by supply from Ukraine; increase of production in related areas, increase of orders for high technology products. SGE «Heolekspertyza» a



# The implementation the cluster approach between the EU and Ukraine in the field of subsoil use

The concept cluster strategy of the presentation is developed and approved focusing on, among other subsoil issues, the alignment of preserving the value of mineral resource base and their extreme effective economic importance, in order to upgrade their facilities, and put the rationalization process back on track. Mainstream international mineral chains are increasingly making efforts to reduce their environmental impacts within the territory of the EU and associated countries. The dynamic development of the mining cross-sectoral industrial value chains across the EU through the sustainable supply of Ukrainian CRM to the European mineral market. The cluster approach enhances securing mining investments, exploration projects and commodities trading, thus stimulating rapid and sustainable economic growth, creating employment both in the EU and Ukraine. The strategy reflects the global mining philosophy such as, discover and exploration of new CRM deposits in Ukraine, and expand it into other potential regions.

# The scheme of a cluster importance and mineral generation



# MINERAL RESOURCE-PRODUCTION-DISPOSAL



For centuries, traditional approach has been standard to production and consumption. Companies take raw materials and transform them into products, which are purchased and used by consumers, who ultimately toss them out, creating waste. Increasingly, consumers are starting to challenge the sustainability of this model. The cluster approach is an ecological economy with a



## THE MAIN AIM IS TO FOCUS ON AN EXTERNAL MINERAL CLUSTER EFFECT

The priority as cluster economy policies will contribute to reducing negative environmental impacts, while simultaneously contributing to higher employment levels. By moving towards a more circular economy. The list of CRMs should help: strengthen the competitiveness of European industry in line with the renewed industrial strategy for Europe stimulate the production of CRMs by enhancing new mining and recycling activities in the EU foster efficient use and recycling of critical raw materials, a priority area in the EU circular economy action plan increase awareness of potential raw material supply risks and related opportunities among EU countries, companies and investors negotiate trade agreements, challenge trade distortion measures, develop research and innovation actions and implement the 2030 'Agenda on sustainable development and its sustainable



# THE RELEVANCE OF MODERN COOPERATION BETWEEN UKRAINE AND THE EU

An innovation and industrial policy between Ukraine and the EU is to strengthen the competitiveness of European industry in line with the renewed industrial strategy for Europe by:

- identifying investment needs which can help alleviate Europe's reliance on imports of raw materials;
- guiding support to innovation on raw materials supply under the EU's Horizon 2020 research and innovation programme;
- drawing attention to the importance of critical raw materials for the transition to a low-carbon, resource-efficient and more circular economy

It will act as a strong boost for Ukrainian and European economies.

# COOPERATION BETWEEN THE EU & UKRAINE

Ukraine is open to working with the EU and with the European industrial and geological communities, as a whole, to strengthen the integration process and to promote development in the critical raw material area. The Public Service of Geology and Subsoil of Ukraine is focused not only on the tight cooperation in the field of subsoil use, but also on the constantly growing quality of the development process. Ukrainian geological society always strive for being on the crest of the wave of the constant technological growth and are open to the collaboration! Mineral resource base of Ukraine has the capacity to bring positive change to European industrial communities and to create a smooth and permanent CRM value chain.

# Ukraine-Europe

European industrial market opportunities will be widely expanded as a result of Ukraine-Europe mineral cooperation. The clustering of CRM dependent industries will create benefits for all members of the project. The tight interrelated collaboration between stakeholders in the field of CRM production processes will reduce the risk of critical raw material shortage. The identification and involvement CRM deposits within the territory of European and associated countries will create new shorter geographic supply chains and market advantages for the EU. The current main cluster goal underpins Ukrainian and European stakeholder integration in the field of subsoil use, including CRM consumers into the

## The concept of the cluster approach is of considerable significance in the context of European and Ukrainian development in the field of subsoil use

The cluster approach is attracting significant interest worldwide, as evidenced by the numerous government strategies, business commitments and partnerships devoted to its development. At the EU level, the Action Plan for the Circular Economy and several other policy documents have demonstrated a strong commitment to move towards a low-carbon and circular economy in the context of the cluster approach. This report is the outcome of their deliberations. The EU and national level where support can act as a catalyst for market transformation through the tight cooperation between associated countries, taking as an example a pilot project with Ukraine, due to the fact that Ukrainian mineral database could a

# The objective of the potential cluster creation between the EU and Ukraine is:

- identification of alternative sources of critical raw materials;
- cover CRM deficit for making final vital products for European strategic industries;
- creation final products, based on new sources of Critical Raw Materials concentrations, for consumers and end-users within the territory of the EU, associated countries, etc.;
- involvement of stakeholders into mutual cooperation and both upstream and downstream industries to use alternative resources of raw materials and finished products;
- long-term decline in the CRM prices for the members of the cluster due to development of healthy competition and macroeconomic stability;
- ensuring effective industrial protection and minimization vulnerabilities in the European economy;
- gender compliance will be respected and strengthened by the signing of agreements by project members

# Impact of Ukrainian CRM

We consider it appropriate to create an international cluster on studying, production, processing, production of the final product, sale and disposal of waste regarding one of the areas of interest to the EU. Understanding was reached with dozens European companies

Implementation of the project will open wide doors for large-scale and comprehensive cooperation between Ukraine and the European Union.

Ukraine and the EU will create an "safety cushion" for the high-tech industry.



Thank you for your attention  
&  
Welcome!

