

12 Nov / Track IV: Hot topics and deep dives 14:00 – 17:30

Workshop: **Critical Raw Materials for Sustainable Energy Systems**

Organizers: United Nations Economic Commission for Europe (UNECE), International Atomic Energy Agency (IAEA), United States Geological Survey (USGS), State Commission of Ukraine on Mineral Resources

Target group: Open to all participants

Background: Many low-carbon technologies, including nuclear energy, requires vast amounts of critical raw materials. Nuclear energy, which is seen as one of the energy pathways to decarbonization along with renewable energy, energy efficiency, carbon capture and storage, requires uranium as a fuel. Renewable energy requires many critical elements not only for generation and structural systems but also for storage, transmission and distribution.

A large number of raw materials have been identified as critical by many studies such as antimony, beryllium, borates, chromium, cobalt, coking coal, fluorspar, gallium, germanium, indium, magnesite, magnesium, graphite, niobium, platinum group metals, phosphate rock, rare earth elements, silicon and tungsten. Hitherto, the production of some of the critical raw materials such as rare earth elements is tightly confined to a few production centres in a small number of countries.

IAEA estimates that demand for uranium is expected to grow from the current about 60 000 tonnes per year to more than 100,000 tonnes by 2035 in the high growth scenario. The expanded nuclear production additional resource to be identified, including from the undiscovered category and in unconventional resources and planning the opening of new production centres. The growth of renewable energy similarly requires large quantities of critical elements. For example, the demand for neodymium in Europe alone is estimated to be 8000 tonnes per annum, which is about a third of the current annual global production or about 10% of the projected production by 2030. In some examples of mineral deposits, there is a close association of uranium with other critical raw materials such as rare-earth elements.

In many cases, several critical raw materials including uranium could be produced as by-products or co-products. Production of some of the critical materials is impacted not only with the association of radioactivity due to both uranium and thorium with most of the deposits but also due to the complex chemical processes involved with the processing of the ores. Usually, significant volumes of radioactive wastes are produced in the process.

The current discussions on critical raw materials are focused on the demand analysis; however, a broad-based discussion encompassing the resource-base, demand, production and supply of the critical raw materials is required. In the interest of energy security, it will be essential to understand the geopolitics of current production and supply of critical raw materials and to explore widening of the supply base. It is also necessary to consider the socio-economics, environmental aspects and technological issues that are related to the production and supply of critical raw materials. An integrated global approach to the management, production and utilization of uranium and critical raw materials required for low-carbon energy technologies is thus a matter of urgency.

Session 1: Market outlook on CRMs: can CRM supply meet the growing demand for clean energy systems?		
14:00 – 14:20	<p>Chairs: Mr. Martin Fairclough, IAEA and Mr. Hari Tulsidas, UNECE</p> <p>Key note presentation Nuclear energy as a dominant pathway to energy efficiency for Sustainable Development and the role of critical materials</p>	Mr. Georgii Rudko, Chairman, State Commission of Ukraine on Mineral Resources
14:20 – 15:30	<p>Invited Presentations:</p> <p>Overview of uranium resource production and demand</p> <p>Uranium and REE raw material long term potential in Ukraine</p> <p>A guidance for the Application of the UNFC for Mineral Resources in Finland, Norway and Sweden</p> <p>Application of UNFC for the classification of U and REE resources: Argentina Case study</p> <p>Discussion/Question & Answers</p>	<p>Mr. Bob Vance, UMNP Consulting and formerly OECD NEA</p> <p>Mr. Ivan Virshylo, Mr. Taras Shevchenko National University of Kyiv</p> <p>Mr. Sigurd Heiberg, Petrad, Norway</p> <p>Mr. Luis Lopez, CNEA, Argentina</p>
15:30 - 16:00	Coffee break	
Session 2: Panel session on the governance and environmental management of CRM resources		
16:00 – 17:15	<p>Moderator: Mr. Julian Hilton, Chairman, EGRC SDGs Working Group</p> <p>Should uranium be considered a critical material?</p> <p>Redesign of Uranium Resource Pathway</p> <p>Towards socially, environmentally and economically sound management of mineral resources, United Nations Resource Management System (UNRMS)</p> <p>Internationally Standardized Reporting on the Sustainable Development Performance of Uranium Mining and Processing Sites</p> <p>Discussion/Question & Answers</p>	<p>Panellists:</p> <p>Mr. Martin Fairclough, IAEA</p> <p>Mr. Julian Hilton, Chairman, EGRC SDGD Working Group</p> <p>Mr. Hari Tulsidas, UNECE</p> <p>Mr. Serge Gorlin, World Nuclear Association</p>
17:15 – 17:30	Conclusions and Recommendations	