

United Nations Framework Classification for Resources Supplemental Specifications for Nuclear Projects

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RESOURCE MANAGEMENT WEEK 2021

ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT

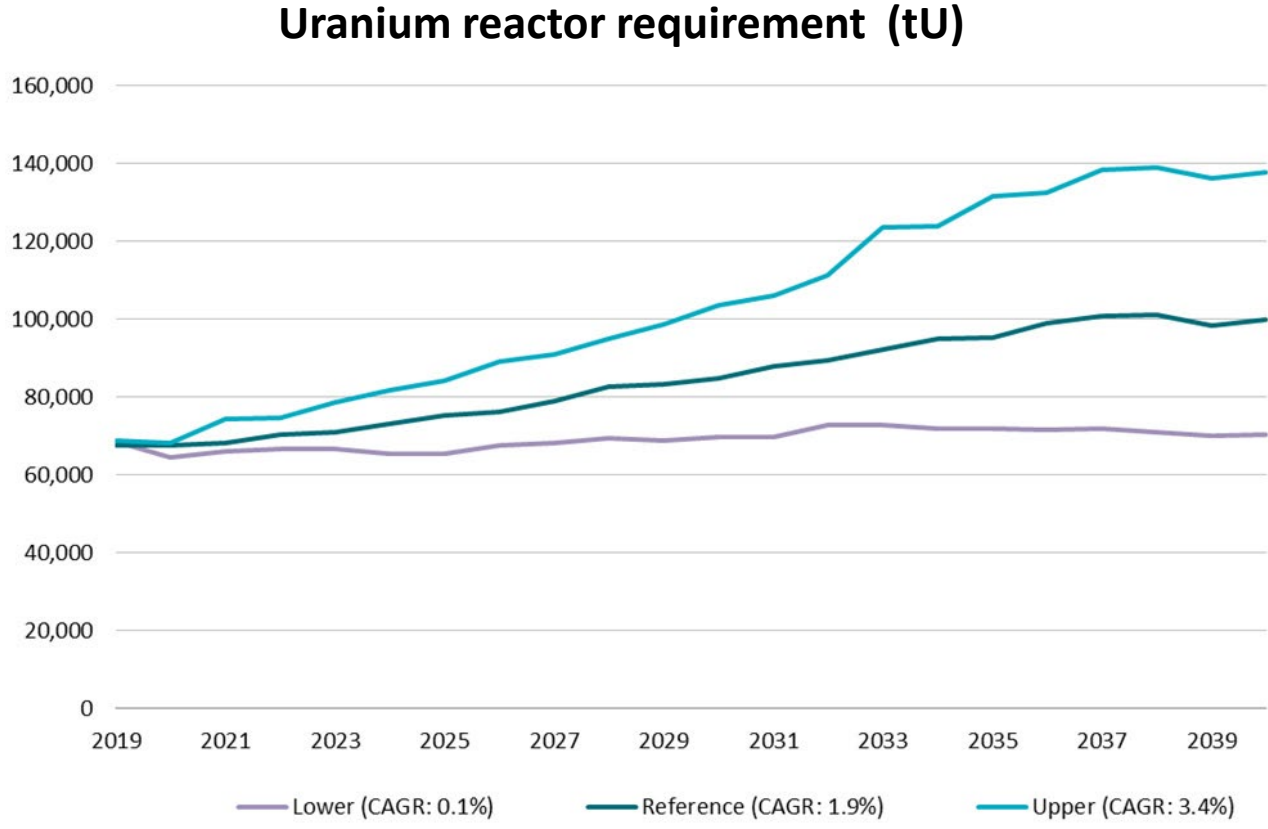


UNECE

Nuclear fuel requirement



- World Nuclear Association Nuclear Fuel report estimates that nuclear generating capacity will increase from 376 GWe (2019) to 776 GWe (2040)
- Uranium annual requirements would increase from ~70,000 (tU) to 139,000 (tU)
- To meet 2030 Agenda for Sustainable Development and Paris Agreement potentially more nuclear energy will be required.



Source: WNA The Nuclear Fuel Report 2019

Use of Nuclear Fuel Resources for Sustainable Development – Entry Pathways



The report supports policy formulation in interested nuclear countries to define locally relevant pathways for the introduction of nuclear energy to support sustainable development within the UNFC framework.

Chapter outline

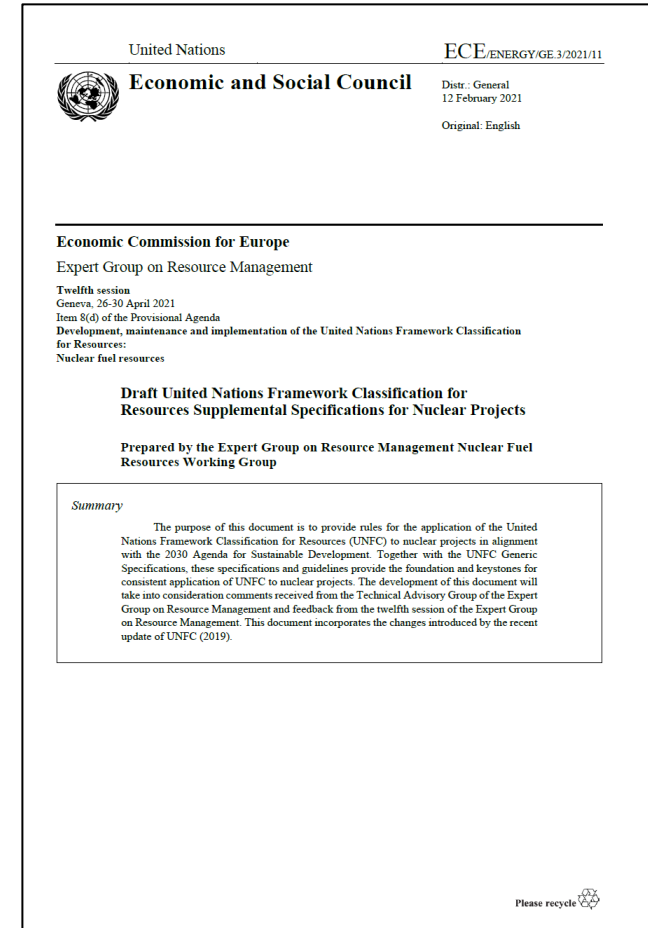
1. Introduction
2. Sustainable Development and Nuclear Energy
3. Nuclear Development Considerations
4. National and Regional considerations
5. Nuclear Technology Options
6. Nuclear Energy Entry Pathways

A screenshot of the UNECE website. The top navigation bar includes the UNECE logo, 'SUSTAINABLE DEVELOPMENT GOALS', and an 'Advanced Search' button. Below this is a 'COVID-19 Response' banner with a link to 'Find out about UNECE's Latest Developments'. The main content area shows a breadcrumb trail: 'UNECE > PUBLICATIONS > SUSTAINABLE-ENERGY'. On the left is a sidebar menu with links to 'Sustainable Energy', 'About Energy Programme', 'Committee on Sustainable Energy', 'Areas of Work', 'Meetings and Events', 'Publications', 'Press Releases', 'Media', and 'Contact us'. The main content displays the title 'Application of the United Nations Framework Classification for Resources and the United Nations Resource Management System: Use of Nuclear Fuel Resources for Sustainable Development - Entry Pathways' with a 'Published: March 2021' date. The abstract text follows, discussing the energy sector transition and the report's focus on nuclear energy as a sustainable alternative. At the bottom, there is a 'Download this publication' link and social media icons for Facebook, Twitter, and LinkedIn.

Draft supplemental specifications for nuclear projects



- The purpose of the document is to provide guidance for the application of UNFC to nuclear projects in alignment with the Sustainable Development Goals (SDGs).
- UNFC provides a unified classification scheme for nuclear projects, including raw material (uranium (U) and thorium (Th)) production, refining, conversion, enrichment, and spent fuel management.

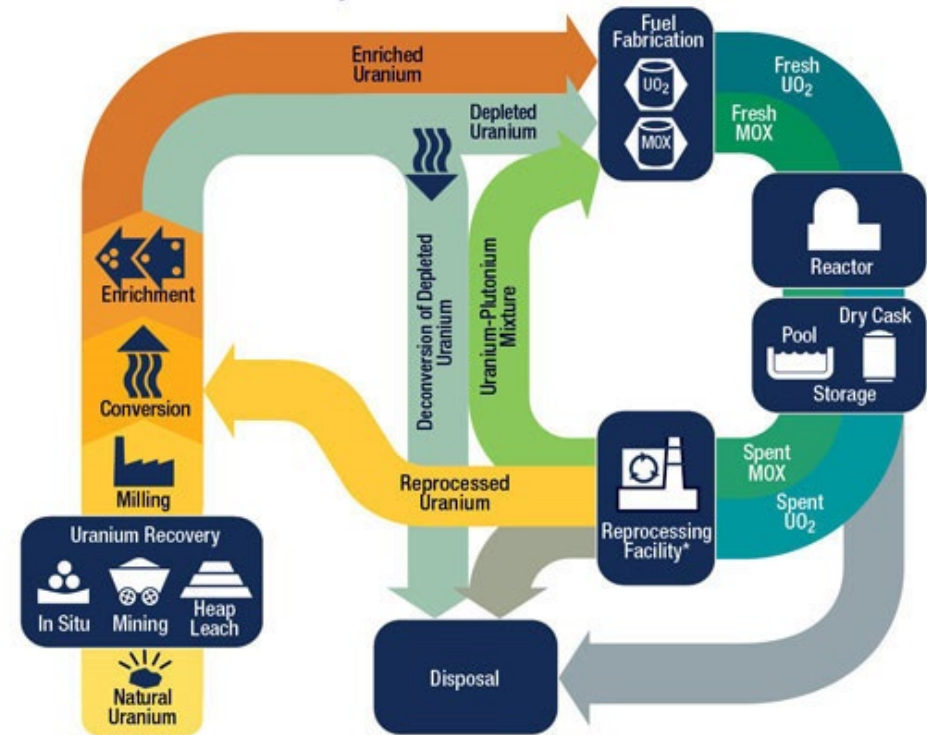


Nuclear fuel cycle



- The nuclear fuel cycle can be seen as a fully integrated system.
- Nuclear project – is defined as a operation in the nuclear fuel cycle that provides the basis for environmental, social, economic and technical evaluation and decision-making.

The Nuclear Fuel Cycle



* Reprocessing of spent nuclear fuel, including mixed-oxide (MOX) fuel, is not practiced in the United States.
Note: The NRC has no regulatory role in mining uranium.

As of January 2019

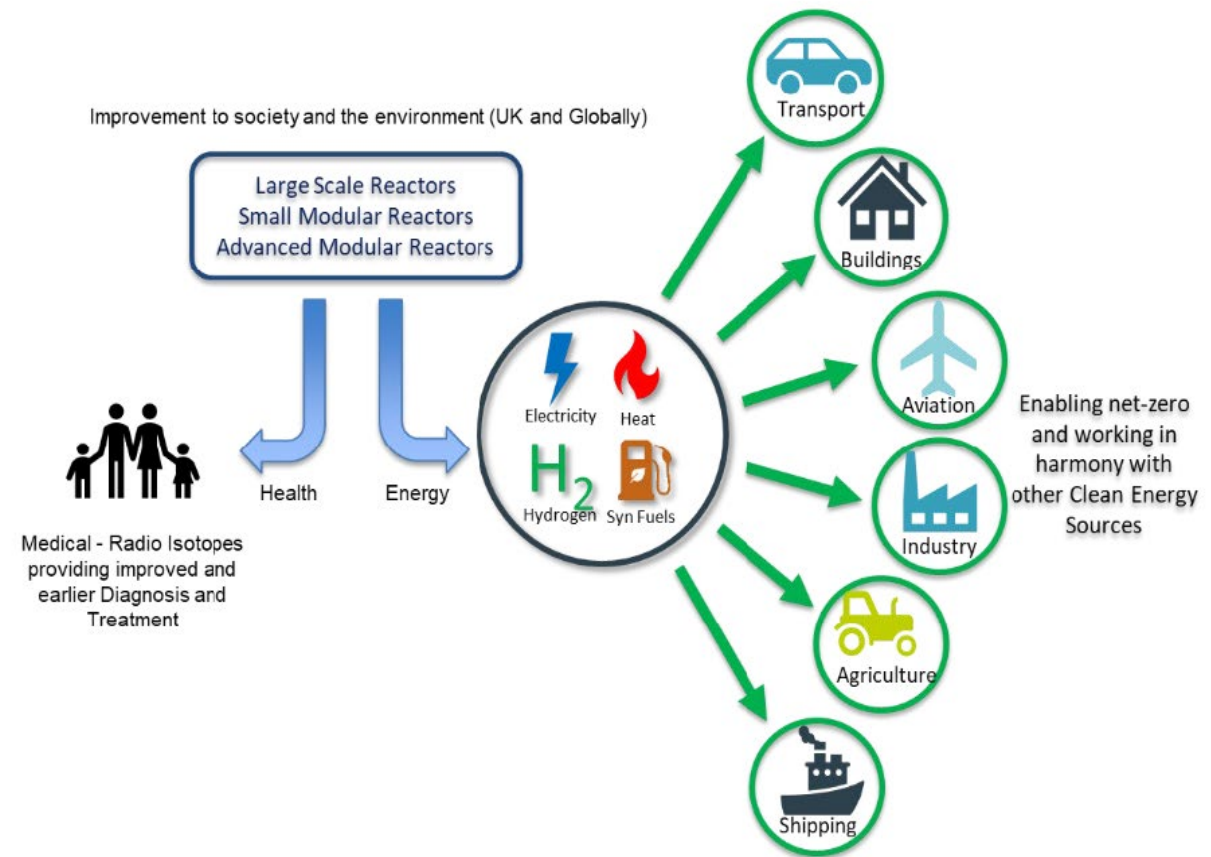


Energy-as-a-Service



Nuclear can support Energy-as-a-Service (EaaS) business model by providing a range of energy services

- reliable base load electricity
- low grade heat for district heating
- generation of hydrogen and synthetic fuel
- high temperature process heating



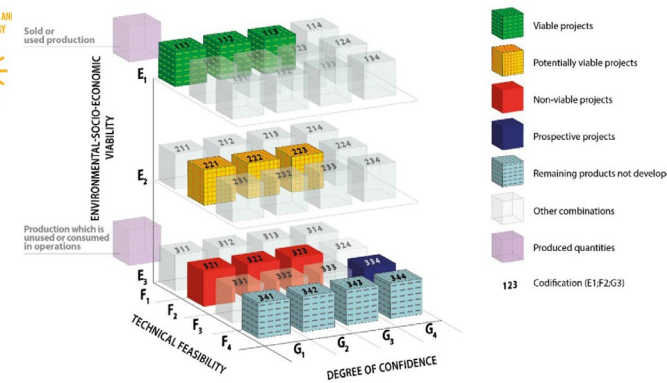
Source: U.K. BEIS

Classification of nuclear project



Environmental-socio-economic viability – E Axis

- Impacts on SDGs
- Climate action
- Policy, regulations and governance
- Sustainability principles for uranium production
- International safeguards
- Resource efficiency
- Radiation protection
- End of life and wastes
- etc



Classification of nuclear project



Technical feasibility - F Axis

- Baseline data collection
- Milestones and decision gates

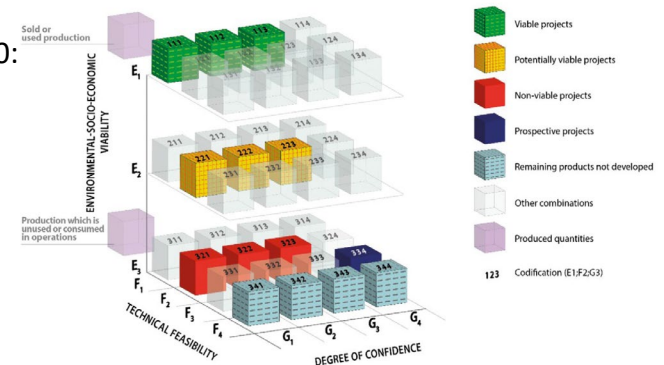
Level of confidence - G Axis

- Measurement of heavy metals
- Geologic type of uranium and thorium deposits

Global distribution of identified Uranium resources



Source: OECD NEA and IAEA 2020: Uranium 2020: Resources, Production and Demand



Thank you!

King Lee
Director Harmony Programme
World Nuclear Association
Date 27 April 2021, Geneva



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