## United Nations Framework Classification for Resources Supplemental Specifications for Nuclear Projects

King Lee Chair EGRM Nuclear Fuel Resource Working Group



#### **RESOURCE MANAGEMENT WEEK 2021**

**ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT** 



## **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.



Uranium reactor requirement (tU)

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



#### 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.

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## **Nuclear fuel cycle**

 The nuclear fuel cycle can be seen as a fully integrated system.

INFCF

 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.



\* 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

NECE

- 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

NFC

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



#### **RESOURCE MANAGEMENT WEEK 2021**

**ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT** 



#### **Thank you!**

**King Lee** Director Harmony Programme

#### **World Nuclear Association**

Date 27 April 2021, Geneva