

# Assessment of Resource Availability in Uganda Using INPRO Methodology

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BY

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**UGANDA**

# Presentation Layout

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# Policy, Legal and Institutional Framework

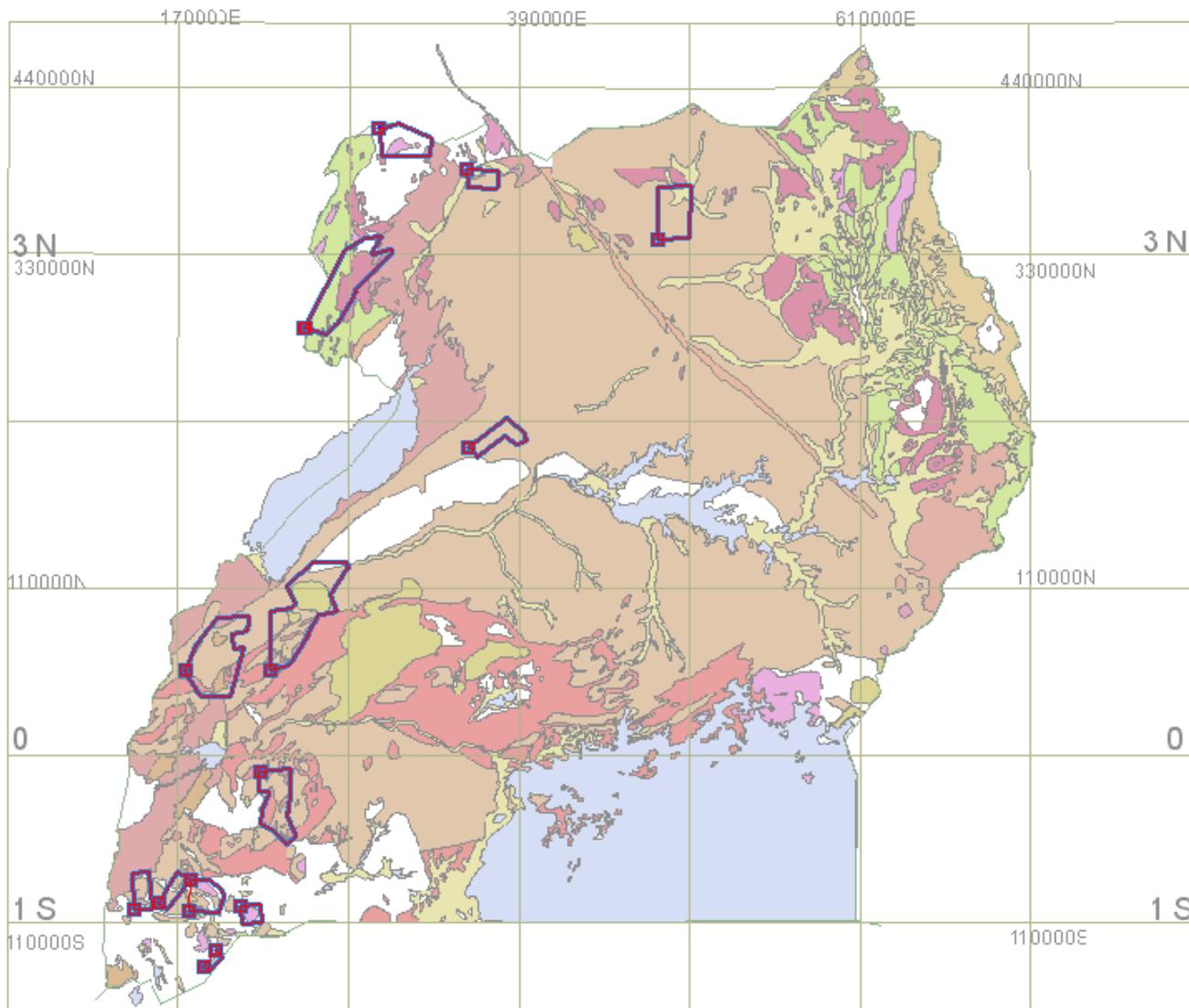
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- Mineral Policy for Uganda 2001- Constitutes a formal framework for the mineral sector.
- Energy Policy for Uganda, 2002 -Guides peaceful uses of nuclear energy.
- Atomic Energy Act, 2008
  - Established Atomic Energy Council as an independent regulatory authority.
- The Mining Act,2003 gives the Commissioner, Geological Survey and Mines Department authority to grant a prospecting licence and as appropriate revoke any such a licence.

# Uranium Prospects

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- The World Bank (IDA) African Development Bank, Nordic Development (NDF) and Uganda Government through Sustainable Management of Mineral Resources Project (SMMRP) recently conducted airborne geophysical survey (radiometric) covering 80% of Uganda.
- The airborne geophysical survey indicated several areas potential for uranium mineralization.
- They have been prioritized into 13 first priority areas and 17 second priority areas.



- A; Arua sheet**
- B; Packwach sheet**
- C; Kitigum west sheet**
- D; Kitigum East sheet**
- E; Masindi west sheet**
- F; Portal West sheet**
- G; Portal East sheet**
- H; Mbarara East sheet**
- I; Mbarara West sheet**
- J; Hoima sheet**

**FIRST PRIORITY URANIUM TARGETS**

# IAEA Support

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- **In addition Uganda is running a national Project**
- **UGA/2/002: Strengthening the National Capacity for Uranium Exploration and Evaluation .**
- Objectives
  - Strengthen the Uranium Analytical Services
  - Provide training to project staff.

# Consistency with resource availability-UR1

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- According to my analysis the most likely NES to be considered in Uganda is PWR. This is due to the fact that its technology has been proven to be safe and reliable.
- Considering a 1100 MW PWR plant; it takes a bout 193 fuel assemblies composed of over 50,000 fuel rods and some 18 million fuel pellets. This takes a bout 12-18 months. Therefore for 100 years, the number of fuel pellets required will be 1.2 billion fuel pellets.

# Consistency with resource availability-UR1

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- Therefore after the analysis of the amount we can then be certain that it will be able to satisfy the demand for the NES so that the quantity of the fissile/fertile available at any time  $t$  is more than that needed at any time  $< 100$  years (indicator IN1 and Acceptance limit AL1.1);

# Consistency with resource availability-UR1

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## **CR2. Non renewable materials**

- Analysis will be done to affirm that the quantity of the non renewable materials available for NES in Uganda is greater than the quantity needed for any t,100 years.

## **CR1.3 Power Supply to a NES.**

- The amount of available electricity supply is 870MW with more 780MW( 600 MW from Karuma and 180MW from Isimba)under construction. This will provide the NES with sufficient power for construction , operation.
- In addition more 600MW from Ayago hydropower plant together with 700mw thermal power plant is planned which will add to the capacity and will be sufficient for the decommissioning as well.

# Consistency with resource availability-UR1

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## **CR1.4 End use of uranium**

- All the energy uses throughout the lifetime of all the components of the selected NES(Say a PWR) will be integrated and the net energy generated determined per ton of natural Uranium used. This will be compared with uranium use efficiency of an existing NES(PWR) of a one through Nuclear fuel cycle say the determined value for Uo of 40.5 GWh per Mg of Uranium Used for a LWR.

## **CR 1.5 end use of Thorium;**

The thorium cycle cannot be assessed as per now since there is no NES is operating on a thorium cycle

# Consistency with resource availability-UR1

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## **CR 1.6 End use of other non-renewable resources**

- Uganda has reasonable amounts of the non renewable sources i.e. copper, iron and gravel.
- Exploration and evaluation of non renewable sources are being carried out.

# Adequate Net Energy Out Put-UR2

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- The PWR net energy output exceeds the energy required to implement, operate and decommission the NES.

# Conclusion

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- Nuclear energy can be used in generating low carbon base load electricity. Therefore careful planning is required as regards to the various resource needs to assure continuity of the industry.

**THANK  
YOU!**