

Nuclear Power Generation – A Necessary Option for Africa



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1. Status Quo

- So much energy, so little power!
- Only a small amount of the huge energy resources have been put into use (<10% hydro potential exploited [Deloitte])
- Electricity penetration is about 20% (5% in RA)
- Low tariffs, poor project preparation, issues with Power Purchase Agreements, and poor regulatory frameworks
- Pricing and infrastructure hurdles such as grid connections, manufacturing, and quality testing impede development of the region's renewable energy potential.
- Weak infrastructure and foreign commitments inhibit use of the region's abundant petroleum and natural gas resources
- Large investments required for transmission and distribution infrastructure.
- Extensive geography means long transmission networks > losses
- Demand exceeds Supply – hence unreliable supply.
- Many experts prescribe solutions for the region

2. Advantages of SMRs

Flexibility

- **Size**
- **Location**
- **Use**
- **On or Off Grid**

Safety & Security

- **Passive Safety Systems**
- **Can Be Buried Underground**
- **Use lower enrichment fuel**

Lower Upfront Costs

Lower Lead Time

Lower risks – hence lower interest rates

Shorter Construction Time

Advantages Cont'd

Standardization and Modularization

Fleet Approach – Localization

Modularization – Factory Fabrication

Quality Control

Predictability

Scheduling

3. Main Challenges

Public Perception of nuclear

“Nuclear Bomb”

3 Accidents always quoted

3 Mile Island, Chernobyl and Fukushima

Nuclear Waste disposal

Regulatory and & Institutional Obstacles

**Need to licence – Cumbersome process
Technology Leadership**

Performance History, Reference Plant

Safety Concerns

Having several plants instead of 1 or 2

Role of Municipalities

Central Government and Large Projects

Electrical Power is a basic utility

Integration with Water, Health Care etc

Map of Global SMR Technology Development

