The SMR Option for Algeria

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Algeria is the largest country in Africa with an area of 2,200,000 Km² on the 30 millions Km² of the continent near 1/12 of the total area of Africa.

Coastline: 1300 Km
Population: 42 millions (resident)
Capital: Algiers
Climate: Mediterranean in the North & Arid Desert in the south.
Official Language: Arabic.
Main export: oil & gas.
Current Nuclear Status in Algeria

Basic infrastructure: Mainly Two research reactors

- **Nur reactor**: 1MW, MTR-type, light water moderated pool reactor.
  First Operation in 1989, devoted to training and research.

- **Es-Salem reactor**: 15 MW, heavy water moderated, tank type reactor.
  First operation in 1992; devoted to materials testing, radioisotopes production and training of reactor operators.
Energy and Water Demand

Over the past years Algeria’s demand for both primary energy and electricity has experienced a significant increase. The electric capacity installed is about 15000 Mw and the demand is growing at nearly more than 5% annually. Algeria’s electricity supply is derived from fossil fuel with natural gas accounting for 97%.
Algeria's annual water needs by 2030 will amount to 12.9 billion cubic meters, compared to 10.4 billion cubic meters currently.
ALGERIA NPP STATUS

Algeria did not plan to operate any NPP before 2035. However, it is taken into account:

- The clear demonstration brought by nuclear power as being a sustainable energy source for the production of sustainable electricity,
- NPP potentiality for the production of large quantities of fresh water through nuclear seawater desalination,
- The presence of natural resources of uranium in the Hoggar region (Tahaggart site),
- The availability of basic nuclear infrastructures capable of reliably supporting the introduction of nuclear power in the country.

Development of SMR is an attractive option for Algeria.
ADVANTAGES OF SMRs

Safety and flexible site selection
Less financial and project risk than NPP
Flexible non electricity application
Suitable to small industry and infrastructure
Possibility of installation in remote areas
Long life service of fuel (10 -15 years)
Opportunities and challenges in deploying SMRs

The consideration of SMRs by Algeria is based on their several advantages, offering solutions to relevant difficulties for the construction of NPP such as:

- site selection,
- transportation by inappropriate highway network to some sites,
- and lacks in the national heavy industry.

Indeed, many actual SMRs, with their reduced power equivalent to conventional power plants, have a real ability to integrate the local electrical grid without exceeding 10% of its full capacity (which is recommended by the electricity regulator for conventional Power Plants and by the IAEA).
Opportunities and challenges in deploying SMRs (2)

The modular approach should enable to match the growth in energy demand,

Non electrical applications including seawater desalination, district heating will satisfy the dynamic of the country
ACTIVITIES

IAEA INPRO SYNERGIES in 2013:
Algeria participated in two subtasks
- Scenario with SMR implementation
- Scenarios with non-electrical applications

IAEA RISC INPRO 2014-2016 (Review of Innovative Reactor Concepts for Prevention of Severe Accidents and Mitigation of their Consequences):
Models of SMRs considered in the project: SMART (Korea), AHWR (India) and SVBR-100 (Russia)
ACTIVITIES (2)

IAEA INPRO dialogue forum on global nuclear energy sustainability; licensing and safety issues for small and medium size reactors (SMR), Vienna, July-August 2013,

IAEA workshops

IAEA technical meetings
CHALLENGES

• Regain public acceptance after the Fukushima Daiichi nuclear accident

• Financing

• Competitiveness

• Supply chain

• Licensing and regulatory issues
THANK YOU