



United Arab Emirates

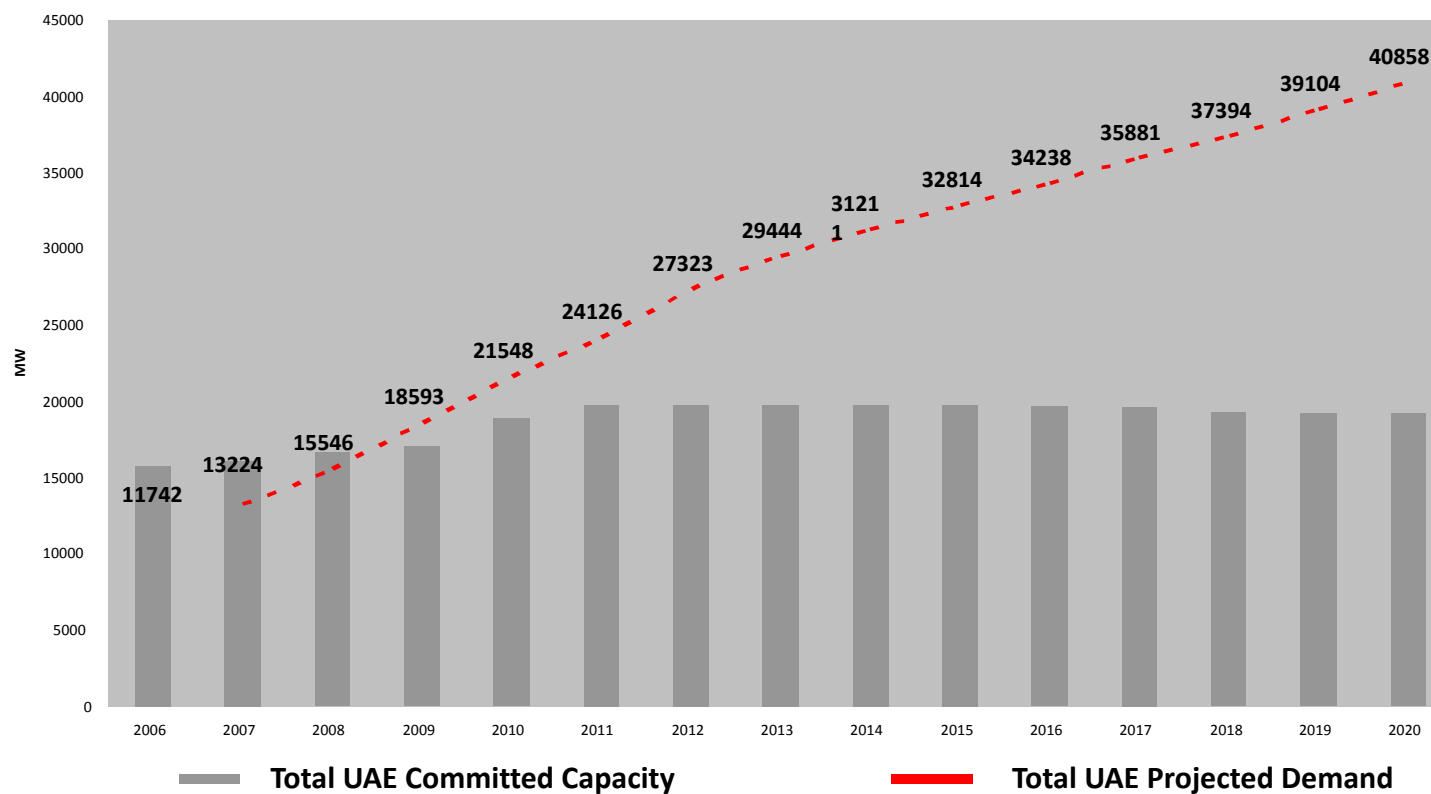
UAE Nuclear Power Programme : Embarking on the Development of Nuclear Energy

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Developing National Position : UAE Electricity Demand



Evaluation of future energy sources options :

Nuclear power is a proven, environmentally attractive and cost-competitive electricity-generation option



Developing National Position : UAE Policy Formulation

- Determination that peaceful nuclear energy represents a potentially valuable option for the UAE
- Development of guiding principles by UAE Government
- Establishment of NEPIO
- Wide consultation process
- UAE Nuclear Energy policy launched in *April, 2008*
 - *Make clear its peaceful & unambiguous objectives*
 - *Nuclear power represent only one of several alternatives to meet future energy needs*
 - *Denouncement of enrichment and reprocessing in the UAE*
 - *Hope to establish a new model for the introduction of nuclear energy with full support and confidence of the international community*



Policy Principles

- Complete operational transparency
- Highest standards of non-proliferation
- Highest standards of safety and security
- Close cooperation with the IAEA
- Partnership with governments and firms of responsible nations
- Long-term sustainability



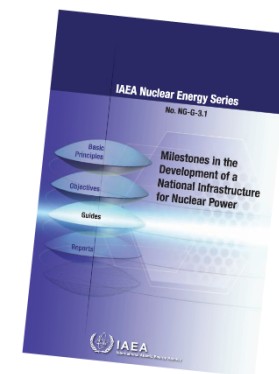
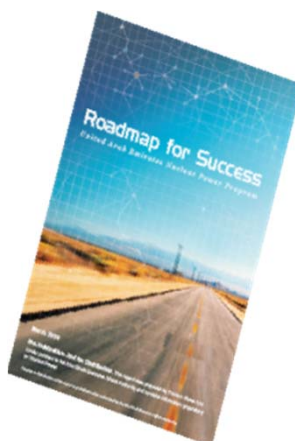


UAE Policy Formulation: Roadmap Strategy

19 Elements assessed

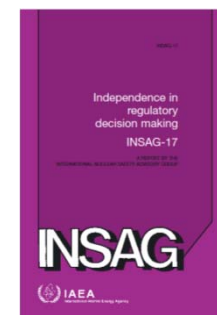
- National position
- Nuclear safety
- Management structure
- Legislative framework
- Regulatory framework
- Financing
- Human Resource Development
- Safeguards
- Security and physical protection
- Emergency planning
- Radiation protection
- Nuclear Fuel cycle
- Nuclear Waste
- Environmental protection
- Site and supporting facilities
- Industrial involvement
- Procurement
- Electric grid
- Stakeholder involvement

A Roadmap document was designed to translate the milestones of a successful nuclear power program (as identified by the IAEA) into an implementation plan customized to meet the needs of the UAE



IAEA documents used in programme development

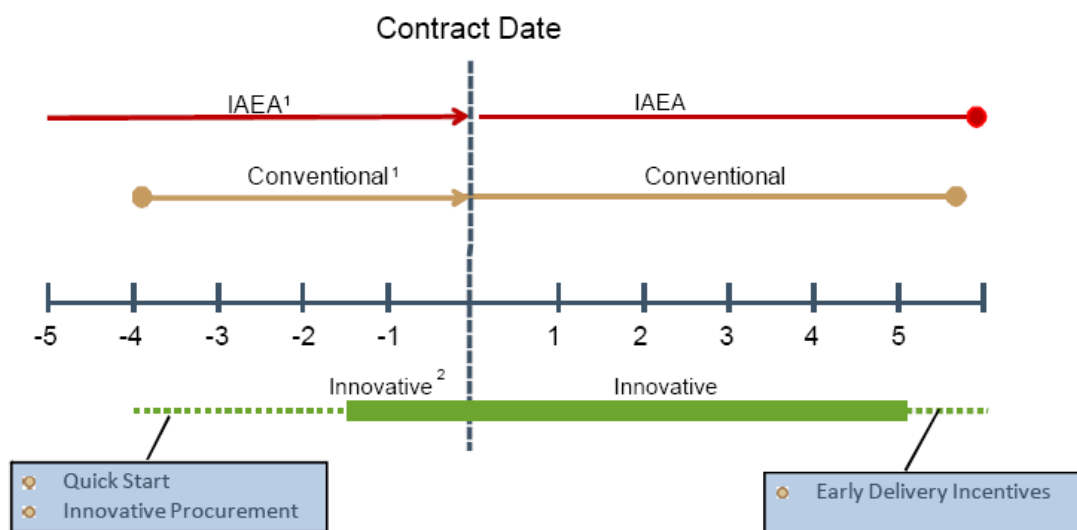
- Milestones in the Development of a National Nuclear Infrastructure
- Safety Standards
- Security guidance
- Nuclear law handbooks
- INSAG reports
- Safeguards agreements





Roadmap Example: Developing a Procurement Strategy

- Challenge : Procurement strategy to meet state requirements ,the timeline and viability from vendors point of view.
- UAE Approach: Innovative Procurement strategy to cut conventional procurement time.



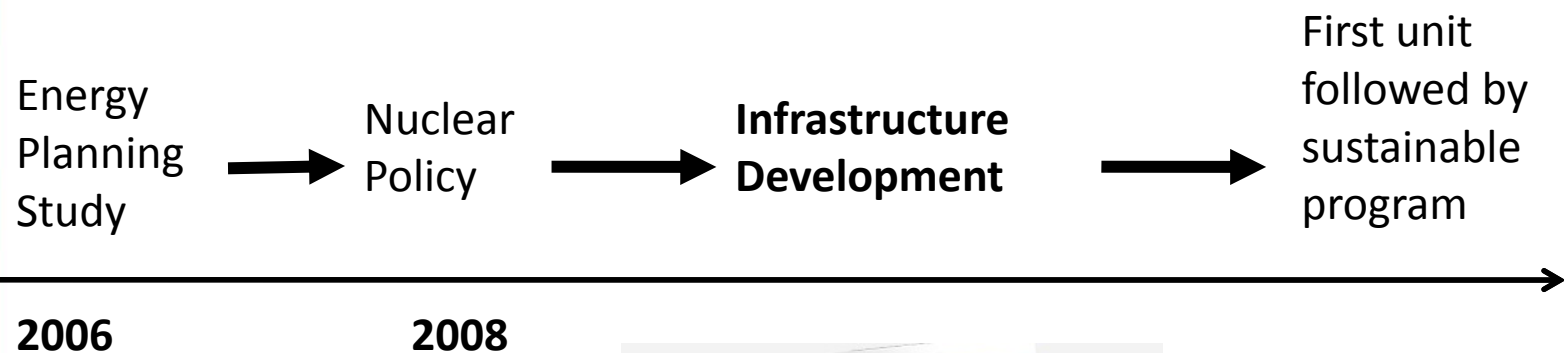
¹ Assumes the existence of a competent nuclear procurement organization.

² Assumes the creation of the Intelligent Customer.

- Program objective to safely deploy first plant by 2017
- This implies a first concrete in 2012
- Would represent one of the fastest deployment schedules

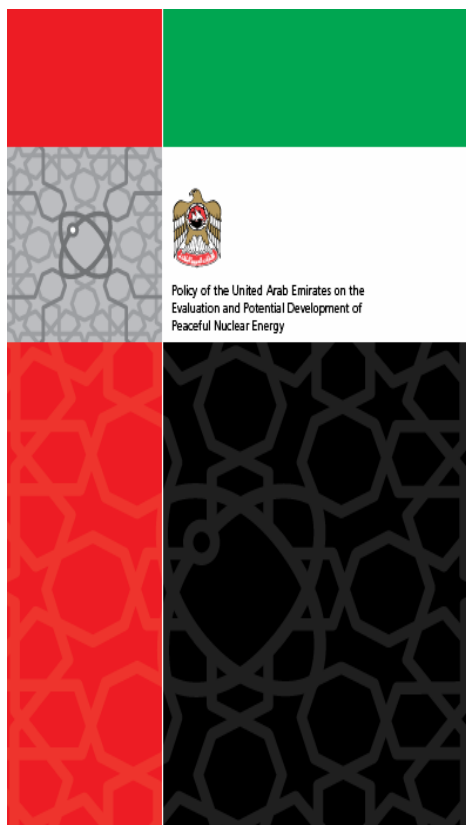


UAE Nuclear Power Programme: The Big Picture





Development of the Infrastructure: Legal Infrastructure



Policy into
Implementation





UAE International Commitments : In 2008 , before decision on Nuclear Power

UAE Party to :

- Nuclear Non-Proliferation Treaty, 1995
- IAEA Comprehensive Safeguards Agreement, 2003
- Convention on Physical Protection of NM, 2003
- UN Comprehensive Test Ban Treaty, 2000
- Implementing UN Security Council Res. 1540, 2004
- UN Convention for the Suppression of Acts of Nuclear Terrorism, 2005
- Early Notification & Assistance Conventions, 1987



Additional International Commitments following the decision for Nuclear Power

To meet the Policy commitments on transparency and international cooperation the UAE has:

- Ratified the Additional Protocol to the safeguards agreement, 2010;
- Become a party to:
 - ✓ Amendment to Convention on the Physical Protection of Nuclear Material;
 - ✓ Convention on Nuclear Safety;
 - ✓ Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management
 - ✓ Illicit Trafficking Data Base of the IAEA
- Adhered to Amendment Protocol to Vienna Convention on Civil Liability for Nuclear Damage for 1997 and the Joint Protocol on Implementing Vienna Convention and Paris Convention for 1988
- Issuance of UAE Nuclear Liability Law, October 2012
- Take active part in IAEA development of standards for safety and security
- Supports IAEA International Peer Review Services





The International Advisory Board (IAB)

- Headed by Dr. Hans Blix, the IAB is a select group of internationally recognized experts in the fields of nuclear safety and security, non-proliferation and the development of human resources



- Meets twice yearly with the entities involved in the UAE program and makes its reports public
- Most recent meeting topics included Fukushima, siting, fuel cycle and HR development
- All reports are available at <http://www.uaeiab.ae>



Program Management Structure

- **Federal Authority for Nuclear Regulation, FANR**
 - Regulations, licensing, inspections, accounting and control of nuclear material
 - Established in 2009
 - Regulations, Licensing process, Inspection procedures in place
 - CL for Barakah 1&2 issued in July 2012
- **Emirates Nuclear Energy Corporation, ENEC**
 - Promotion and development of required infrastructure for nuclear power program in UAE
 - Established in 2009
 - Resources and processes in place for NPP construction
 - Licensee for Barkah NPP, Construction on-going
- **Ministry of Foreign Affairs, MoFA**
 - Policy coordination and International Cooperation framework arrangements
- **Other entities are assigned with specific responsibilities (CICPA, Khalifa University, NCEMA, etc.)**
 - CICPA: Responsibilities for implementing physical security
 - Khalifa University: Human Capacity building & Research
 - NCEMA: Responsible for offsite emergency preparedness

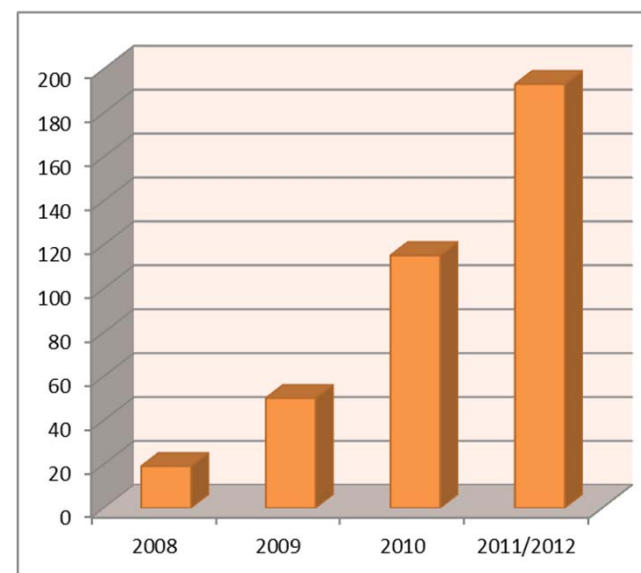


Development of Infrastructure : Establishment of FANR

- Article (2) of the Nuclear Law established the Federal Authority for Nuclear Regulation (“**FANR**”) as the **regulatory body of the UAE Nuclear Sector with independent legal personality, full legal capacity and financial & administrative independence**

FANR independence:

- the sole issuer of licences and regulations to conduct Regulated Activities
- Board Members are prohibited from engaging directly or indirectly in a Regulated Activity
- FANR aims to:
 - control & supervise UAE Nuclear Sector and achieve **Nuclear Safety & Security, Radiation Protection & Safeguards**
 - Ensures the fulfilment of national obligations under international treaties, conventions & agreements entered into by UAE



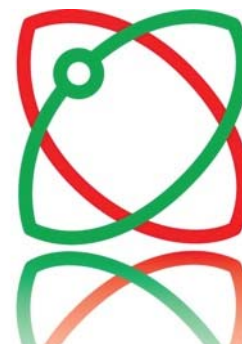


Establishment of the Emirates Nuclear Energy Corporation and Progress to date

- Established in December 2009
- ENEC specializes in the safe deployment, ownership and operation of nuclear power plants within the UAE

In December 2009, ENEC announced the selection of a consortium led by the Korea Electric Power Corporation as the winning bidder for the UAE first batch of nuclear power plants

The contract calls for KEPCO to design, build and jointly operate four APR1400 nuclear power plants.





Status of the Nuclear Power Programme in the UAE

- ✓ Start of safety-related Construction of Unit 1 of first NPP at Barakah in July 2012
- ✓ Start of safety-related construction of Unit 2 in May 2013



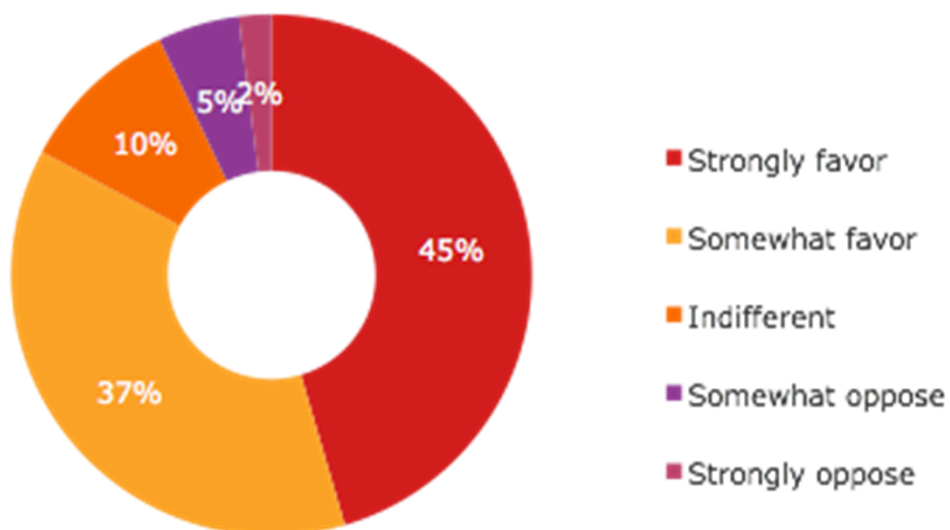
- ✓ First unit scheduled operation in 2017 (pending regulatory approval).





Public outreach Public Communication Programme

- communicating transparently regularly with UAE residents, employees, government agencies and the international community regarding the UAE Civil Nuclear Energy Program plans and activities
- The “ENEC Forums” and the “Regulatory open forums” provide an opportunity for residents to learn about the program and ask any questions they have about nuclear energy and UAE plans



Positive Public Attitudes towards nuclear energy: 82% of the residents are positive and are in favor to using nuclear energy as a source of electricity. The trend has been positive as compared to the last year and across nationalities.



Partnership with the IAEA



☐ Legal and Regulatory Framework

- Consultations with the Agency (e.g. nuclear law, FANR regulations on physical protection, safeguards)
- Benefit from IAEA standards and guidance in establishing FANR regulations and guides

☐ Licensing

- Direct support and advice, e.g. site assessment mission in 2011

☐ Infrastructure and capacity building

- Training events within or outside TC cooperation
- Expert advice in variety of areas
- Provision of technical support, e.g. monitoring, laboratory equipment
- Use of IAEA systems/data bases, IRS, ITDB, ..
- Security infrastructure, INSSP



☐ Safeguards implementation

☐ Peer reviews

- INIR Review (January 2011)
- IRRS (December 2011)



☐ UAE contributes to IAEA

- Safety/security standard committees
- Host international conferences (2010, 2013)
- Contribute our experience as a new comer country





United Arab Emirates

Thank you