Sustainable Development of UAE Peaceful Nuclear Energy Industry

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About ENEC

Mission
To deliver safe, clean, efficient and reliable nuclear energy to the UAE grid, develop our people and build sustainable nuclear sector capability, and ensure full alignment with UAE energy strategy.

Vision
Powering the future growth and prosperity of the UAE through a safe and sustainable civil nuclear energy program.
The Joint Venture
The Subsidiaries

Barakah One Company PJSC

- Represents commercial interests of Barakah project
- Sells electricity to ADWEC through the Power Purchasing Agreement
- Manages commercial relationship with lenders

Nawah Energy Company

- In charge of operating and maintaining Barakah Units 1-4
- Will hold the Operating License
- Emirati-led, multinational and multicultural organization with around 40 nationalities
Prime Contract and Technology
Overall completion: 88%  (As of end-May 2018)
Industrial Development

- More than $3.5 billion (AED13 billion) awarded to local companies
- Over 1,400 UAE companies involved in the project, supporting growth of the UAE’s economy through the Barakah plant
- Quality and safety standards raised to nuclear-industry level
- Ducab has qualified 60-year halogen-free cables meeting testing standards like IEEE
- Emirates Steel is certified under ASME Boiler and Pressure Vessel Code Section III Div 2 and Nuclear Quality Assurance NCA 3800
Creating a UAE Nuclear Industry - Strategic Roadmap

Wave 1
Initiate, Setup & facilitate
- Set up team
- Identify construction opportunities & capability
- Facilitate prequalification of existing capability to Kepco
- Coach selected companies to upgrade products/ QA

Wave 2
Focus, Educate and Deliver
- Training - supporting existing capability in up-skilling
- Partnerships - Facilitate international partnerships
- Contracting – building in in-country value in O&M phase
- Identifying investment opportunities

Wave 3
Institutionalize, Improve and transition
- Expand SQEP base (academy)
- Invest in Research & Development in products and IP
- Transition from international to UAE suppliers

Wave 4
Lead, Expand and Export
- Export
- Lead
- Centre of Excellence

Timeline
- 2013
- 2016
- 2017
- 2018
- 2020
- 2023
- Today
- 2028
Hurdles for Local Suppliers to Overcome

UAE companies perceive limitations:
- Current awareness
- Current skills
- Current capability
- Cashflow risk

Hurdles / barriers to entry
- Quality - Lack of knowledge of quality standards
- Cost - Cost base is too high
- Timing - Lack of visibility of opportunities
- Cashflow – Lack of investment equity/debt
- Technical – Lack of experience

Market opportunity
- Global market
- ENEC program
- Other UAE sectors
Enablers to Overcome Barriers

**UAE companies**
- Current awareness
- Current skills
- Current capability
- Cashflow risk

**Enablers**
- Quality – partnering/coaching/training...
- Cost – grants, equity, tax breaks, low cost land/rent...
- Timing – awareness of procurement timetable...
- Cashflow – loans, investment...
- Technical – acquisition/partnering/training...
- Incentives – scoring, obligations

**Market opportunity**
- Global market
- ENEC program
- Other UAE sectors
4 Elements to ENEC Strategy

Training (barrier – quality, experience)
- Identify specific 3rd tier UAE potential suppliers and provide direct training on QA/QC requirements
- Establish an ‘ENEC Nuclear Industry Academy’ to provide training in technical, commercial and management systems
- Coach on market opportunities, synergies across markets in respect standard requirements and project awareness

Partnering (barrier – experience)
- Foster partnerships between UAE companies and international experienced suppliers to the nuclear industry
  - Pumps, valves, heat exchangers, cables, testing & calibration, support services…

Contracting Strategy (barrier - cost, timing)
- Raise localization as a strategic imperative in the ENEC/Nawah procurement strategy
- Introduce incentivization mechanisms into tenders to increase inward investment and partnering eg.
  - Localization award criteria / targets
  - Staff rotation
  - Off-set

Investment (barriers - cost, investment)
- provide ENEC support to assist in provision of up-skilling, plant improvements, process improvements…
  - Grants, loans. equity etc
  - Managed by ENEC
  - Applications approved by ENEC
  - Performance managed by ENEC
Evaluating and defining localization proposition and priming local suppliers has to come before implementation to optimize local content

Localization area roadmap

Construction phase localization effort (≈$3.25BN)

Corporate localization effort (already at 89%)

O&M localization effort

Waste Management development & localization effort

Fuel (fabrication) development and localization effort

Engineering services

R&D development & localization effort

Industrial export potential (accompanied to export credit)

Key localization area priorities

1. Define and update localization targets for ENEC and subsidiaries
2. Evaluate feasibility of local content opportunities and prioritize
3. Develop value proposition and engage investors / local companies
4. Adjust procurement policy to enable sustainable localization
5. Engage with Industry

Actual construction phase - 2021
Actual corporate operations – 2080+
Actual plant operations – 2080+
Actual waste mgmt operations – 2080+
Actual provision of services – 2080+
Actual delivery of R&D programs – 2080+
Actual exports
Developing Skilled Professionals

• Knowledge-based economy and supply chain requires qualified professionals.

• Development of local science, technology, engineering and mathematics (STEM) professionals

• Recruiting, training and mobilizing a team of highly skilled professionals

• Promoting STEM subjects locally to ensure long-term, sustainable, high-value jobs
Human Capacity Development

Latest figures
• 156 students studying through an ENEC sponsored program
• Over 500 have graduated from a program through an ENEC scholarship
• 200 Reactor Operators in training

Employees
• ENEC and Nawah currently employ over 2,600 people
• Around 52% of these are local Emiratis
• 18% are female
• Over 55 nationalities
• Talented females make up an important part of our growing workforce.

• ENEC has made a particular effort to provide support, encouragement, and mentorship to female employees.

• The UAE’s Women in Nuclear (WiN) chapter, launched in 2014, which is the first in the region.
Strategic Outcomes

- Responsive supply chain
- Diversification of supply chain (greater competition, less single point failure)
- ENEC supply chain that is less exposed to external issues (currency fluctuations, international politics, shipping, split priorities)
- Creation of direct job opportunities for Emiratis
- Enhance and diversify UAE industry (help meet 2030 vision and 40% GDP via non-oil & gas)
- Human capacity development in support of local supply chain
- Multiplier effect to GDP on all jobs created
- Retention of profit in country and creation of wealth
- Lower cost for ENEC and the UAE Peaceful Nuclear Energy Program as a whole
Thank You