UAE INTEGRATED APPROACH FOR ESTABLISHING HUMAN RESOURCES FOR ITS NUCLEAR PROGRAM

Arif Al Hammadi
Interim President
Khalifa University of Science, Technology and Research
OVERVIEW

• 01 Driving Forces for Change
• 02 Initiatives
• 03 Ensuring Long Term Stability
• 04 HR Development Objectives and Strategy
• 05 The Integrated Approach
• 06 The Skills Roadmap
• 07 The Challenge – Staffing Requirements
• 08 Telling Our Story So Far
• 09 Conclusions
DRIVING FORCES FOR CHANGE

GULF COUNTRIES WITH OIL BASED ECONOMIES ARE PLANNING FOR ECONOMIC DIVERSIFICATION, DUE TO TWO FACTORS:

• The high price of oil, and its impact on the environment, are leading consumers to seek alternative energy sources
• Deposits of oil and gas have a finite lifetime

“KNOWLEDGE BASED” ECONOMIES ARE THE DESIRED FUTURE STATE

• Plan is to invest current oil sale proceeds to develop future diversification
• Focus is on quality higher education programs that will provide the human capacity to initiate and support such new economic thrusts
• Direct investment in acquisition of diverse commercial ventures is proceeding
ABU DHABI INITIATIVES

PLAN FOR DIVERSIFICATION OF ECONOMY

• Premium education for human capacity building
• Research and development, leading to innovation
• Commercialization of R&D results
• Creation of a sustainable knowledge-based economy

MAJOR OBJECTIVES OF ABU DHABI PLAN

• Reduce GDP volatility through diversification
• Enlarge the enterprise base
• Enhance competitiveness

Nuclear Energy is a vital component to help us achieve our goals and human resource development of the nuclear workforce is key to this success
ENSURING LONG TERM STABILITY

**Nuclear Power Program**

- Preparation for Nuclear Power Plant Construction
- Plant Construction and Preparation for Operations
- Nuclear Fleet Operations

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
<th>2017</th>
<th>Ongoing</th>
</tr>
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**Education Strategy**

- Development and funding of human resource capabilities

**Short term**

HR Plan Development

**Mid-Term**

HR Plan Implementation for Construction and Operations

**Long Term**

HR Development for Sustainable Implementation
HUMAN RESOURCE DEVELOPMENT OBJECTIVE

Create a talent pool of nuclear professionals to support the deployment of a civil nuclear power program in the UAE producing power from the first nuclear unit in 2017

Engage a Prime Contractor with proven construction and operational skills as a long term partner

Touch and benefit the education system from grade school through advanced degrees

Encourage continuing education to assure a sustainable pipeline of talent far into the future

Engage the global nuclear business community to infuse existing expertise into the UAE Civil Nuclear Power Program
THE HR DEVELOPMENT STRATEGY

Strategy Creates Talent Pool for Emiratization of the Nuclear Industry

ENEC Corporate Staff

Nuclear Operator Plant Staff

Regulator Staff

Education Staff

UAE Nuclear Industry

Technical Competencies

Specific Industry Needs

Timing of Resource Needs

UAE Education System Capacity

UAE Labor Market

Accredited University Partnerships

Development of Nuclear Training Institute

Global Nuclear Business Relationships

Universities Labs & Research

Recruiting, Staffing, and Talent Pipeline

Fill the Talent Pipeline with Technically Qualified Local Expertise
## THE INTEGRATED APPROACH

<table>
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<tr>
<th>Organization</th>
<th>Roles and Responsibilities</th>
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| ENEC Program Office               | • Development and implementation of the Human Resource Development Strategy  
• Implement the recruiting, staffing and talent pipeline aspects of the Human Resource Development Strategy |
| Abu Dhabi Education Council       | • Provide analysis and support to identify UAE educational system capabilities relative to the future human resource requirements |
| UAE Higher Education System       | • Actively participate in Advisory Board as part of the Human Resource Development Strategy                                                                 |
| KUSTAR                            | • Implement agreed upon plans for institutions in the UAE to support the talent pipeline requirements  
• Engage in partnerships with international universities to support the talent pipeline requirements |
| Institute of Applied Technology   | • Implement agreed upon plans to support the talent pipeline requirements  
• Provide skilled trade workers and technicians to support the talent pipeline requirements |
| UAE Education System              | • Implement developed programs designed to prepare students (primary, preparatory, and secondary) for a career in civil nuclear power |
THE SKILLS ROADMAP

Nuclear Career and Educational Pathways

Commencement of Reactor Operation

Stakeholders:
ENEC
FANR
etc

PhD
Masters
Research

Degrees

Vocational Training inc:
Foundation Degrees, Apprenticeships,
Adult Training, Level 2 and 3,
Work Based training,
Train the Trainers, etc

Science, Engineering, Technology and Maths in schools and entry level.
STAFFING – THE KNOWLEDGE TRANSFER CHALLENGE

Strategy Creates Talent Pool for Emiratization of the Nuclear Industry

- ENEC Corporate Staff
- Nuclear Operator Plant Staff
- FANR Staff
- Education Staff
- UAE Nuclear Industry

Staffing Ranges*

<table>
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<tr>
<th>Role</th>
<th>Range</th>
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<tbody>
<tr>
<td>ENEC Corporate Staff</td>
<td>200 to 400</td>
</tr>
<tr>
<td>Nuclear Operator Plant Staff</td>
<td>1100 to 1300</td>
</tr>
<tr>
<td>FANR Staff</td>
<td>135 to 165</td>
</tr>
<tr>
<td>Education Staff</td>
<td>30 to 40</td>
</tr>
<tr>
<td>UAE Nuclear Industry</td>
<td>To Be Determined</td>
</tr>
</tbody>
</table>

*Initial Estimates

An Initial Opportunity Estimate of 2100 to 2300 Staff by 2020
Telling the Story.... so far

• Over the next four days members of our team will expand on my overview and discuss the following topics:
  • PS08 – Role of UAE Educational Institutions
  • PS19 – Lessons Learned in 18 Months
  • PS31 – A Coordinated Approach to Nuclear Knowledge Transfer
CONCLUSIONS

- The Arab world currently lags behind other regions in educational achievement, technical advances, and economic development.

- But the slope of the curve is positive – with measurable advances in education (including new universities) and more investments in research and development.

- The Emirate of Abu Dhabi has embarked on a particularly enlightened and aggressive program of economic development, aimed at transforming its current oil-bases economy to one based on knowledge and innovation.

- Abu Dhabi is making substantial investments in higher education, particularly in engineering and science, to develop the human capacity to accomplish the planned transition.

- Nuclear Energy is a vital component to help us achieve our goals and human resource development of the nuclear workforce is key to this success.
Thank you