مؤسسة الإمارات للطاقة النووية Emirates Nuclear Energy Corporation



Sustainability Report



Powering a **Sustainable Future**



Powering a Sustainable Future



ABOUT THIS REPORT

Publishing an annual sustainability report is an expression of the Emirates Nuclear Energy Corporation's (ENEC) commitment to environmental, economic, and social responsibility as core principles. This report is designed to provide a comprehensive update on ENEC's progress in these areas in 2016. Details of the report scope and boundaries, as well as information on how the report was prepared using the GRI G4 Guidelines, can be found in Appendix A. For more information on the GRI, please visit www.globalreporting.org. This report follows the Global Reporting Initiative (GRI) G4 Guidelines 'in accordance' with core option. The report has successfully completed the GRI's Materiality Disclosure Service; a full GRI G4 Content Index and the Materiality Disclosure Service organizational mark can be found in Appendix D.

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ENEC has published this report to comprehensively communicate the corporation's environmental, economic and social performance in a transparent manner. It is important to note that ENEC does not currently offer any product or service. Since its inception in 2009, ENEC has worked diligently to deliver the United Arab Emirates (UAE) Peaceful Nuclear Energy Program in a quality-driven manner, in strict adherence to regulatory law and the commitments made by the UAE to the international nuclear community. ENEC is currently in the construction phase of its program, with 2016 marking a year of increased momentum for the project. This may result in significant variations in reporting figures between 2015 and 2016.

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ANY MADO TAKES THE OWNER CAMPS

This report contains forward-looking statements, reflecting management's reasonable and current expectations. No assurance can be given that such expectations will prove correct and such statements are subject to risks and uncertainties and should not be relied upon due to ever-changing future events that could materially change the outcome.

This document has not been subject to review by a third-party assurance provider. For questions or comments regarding this report and ENEC's sustainability program, please visit www.enec.gov.ae or contact sustainabilitycsr@enec.gov.ae.

MESSAGE FROM THE ENEC CEO



Mohamed Al Hammadi Chief Executive Officer

The UAE Government has a clearly defined strategy to maintain the nation's trajectory towards a diversified and thriving national economy, as described in the UAE Vision 2021 and the Abu Dhabi Plan.

It is my pleasure to welcome you to the ENEC's third annual sustainability report. The preparation of our sustainability report provides us with an opportunity to reflect on our past performance and set goals and targets for the future in the context of regional sustainable development challenges and goals.

The UAE Government has a clearly defined strategy to maintain the nation's trajectory towards a diversified and thriving national economy, as described in the UAE Vision 2021 and the Abu Dhabi Plan. Prime Contractor, The Korea Electronic Power Corporation (KEPCO), and established two new subsidiaries; Barakah One Company, which will represent the commercial interests of the Barakah project, and Nawah Energy Company, which has a

The UAE Peaceful Nuclear Energy Program is essential to realizing the national vision. Once fully operational, the Barakah Nuclear Energy Plant is expected to provide around a quarter of the UAE's electricity. Moreover, the positive economic impact of the nuclear sector cannot be understated, with

thousands of high quality jobs created and over a billion dollars in local procurement spending in the past three years alone.

In order to deliver effectively on these objectives, ENEC continues to grow and evolve its organizational structure and international partnerships. In 2016, ENEC signed a Joint Venture agreement with its Prime Contractor, The Korea Electronic Power Corporation (KEPCO), and established two new subsidiaries; Barakah One Company, which will represent the commercial interests of the Barakah project, and Nawah Energy Company, which has a mandate to operate the four units of the Barakah Plant.

ENEC's contribution to national sustainable development goals is captured by three main objectives which guide its approach to sustainability management.

ENEC's primary aim is to deliver safe, clean, reliable Finally, ENEC is responsible for training and and efficient electricity to the UAE grid. Safety is maintaining a highly skilled, knowledgeable and capable workforce. This entails encouraging the overriding priority, and systems are in place to continuously improve safety procedures and more Emirati Nationals to enter STEM (Science, promote a culture of safety across the corporation. Technology, Engineering, and Mathematics) fields In our efforts to increase efficiency and reduce that qualify them to work in the nuclear energy environmental impact during plant construction onsector. site electricity and water consumption decreased Employee satisfaction and retention is a priority at by 9% and 14% respectively in 2016 through ENEC, so we launched the Sa'ada ('Happiness') the implementation of improved maintenance Program in 2016, which consolidates many procedures and awareness campaigns. Fuel use employee satisfaction initiatives under a clearly on site more than halved due to the implementation defined strategy that fosters a sense of community. of more comprehensive monitoring and regulation. ENEC's efforts are ultimately meant to create a Targeted safety campaigns also succeeded in lowering heat stress incidents by 50%. In addition, sustainable future for UAE residents. These efforts are being noticed by a growing number of people, a pre-operations environmental baseline survey with measurable improvements in public was conducted in order to gauge and manage understanding of our company, and of the ENEC's environmental impact as Unit 1 approached completion and operations. importance of nuclear energy for the UAE. In a major survey carried out in 2016, 79% of the sampled Secondly, ENEC aims to contribute to the nation's UAE residents were highly in favor of constructing industrial and economic development. In this area, nuclear energy plants in the country, up from 68% ENEC is actively assisting Emirati companies to meet in 2013.

the high international nuclear industry standards and become nuclear-grade suppliers and service Some of our focus in 2017 will shift toward managing providers, allowing them to participate in the global the transition from the construction phase to the nuclear supply chain. In 2016, ENEC worked with operations phase, while placing safety above all Drydocks World to help them meet stringent quality else. We will continue to promote the corporation's sustainable practices, so that ENEC can deliver on standards. As a result, the company has become the UAE's first nuclear maintenance company. its mandate to contribute to the sustainable future of the UAE through a clean, efficient and reliable Also in 2016, ENEC set new requirements for key suppliers to implement and maintain business nuclear energy program. continuity programs.



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THE EMIRATES NUCLEAR ENERGY CORPORATION



1.0 About ENEC

ENEC, was established in 2009 to implement a civil, peaceful nuclear energy program in the UAE in order to address the country's growing demand for electricity while reducing its carbon footprint and diversifying its energy portfolio. ENEC is wholly-owned by the Government of Abu Dhabi with the mandate to develop, build, finance, operate, maintain, manage and own a fleet of nuclear reactors for the purposes of electricity generation.



1.0.1 The Barakah Nuclear Energy Plant

Under its mandate, ENEC is constructing the United Arab Emirates' first nuclear energy plant at Barakah, in the Al Dhafra Region of Abu Dhabi. The Barakah Nuclear Energy Plant consists of four Generation III+ APR-1400 nuclear energy generating units, and their associated facilities, with a combined capacity of approximately 5,600 MW, which is expected to meet up to 25% of the UAE's electricity demand.



Advanced Technology https://www.enec.gov.ae/barakah-npp/technology/

1.0.2 ENEC's Context

In 2007, the UAE Government conducted an extensive study to forecast the nation's long-term electricity requirements and generation capacity. The study found that peak annual demand for electricity is likely to reach more than 40,000 megawatts (MW) by 2020, reflecting a cumulative annual growth rate of roughly 9% from 2007 onwards.

Based on these projections, the UAE evaluated viable options to meet future energy demand and concluded that nuclear energy generation would be the most reliable, safe, commercially viable and environmentally friendly means of producing electricity. An investment in nuclear energy would diversify the nation's energy portfolio, support energy security, contribute to the achievement of UAE commitments made to support the Paris Agreement, and drive the growth of a major, high-tech industry in the country while providing thousands of high-value jobs for decades to come.



How Nuclear Energy Works



UAE Peaceful Nuclear Energy Policy https://www.enec.gov.ae/discover/nuclear-energy-in-the-uae/the-uaenuclear-energy-policy/

Federal Law and Regulation https://www.enec.gov.ae/barakah-npp/licensing/

International Support support/

مؤسسة الإمارات للطاقة النووية **Emirates Nuclear Energy Corporation**

https://www.enec.gov.ae/discover/how-nuclear-energy-works/

https://www.enec.gov.ae/discover/nuclear-energy-in-the-uae/international-

1.1 ENEC's Program and Progress

In 2016, ENEC's primary focus continued to be progressing steadily towards completion of construction, testing and commissioning, while also evolving its corporate structure and updating its strategy to prepare for the transition to operations.

1.1.1 Project Timeline and Update

Construction of the four units continues to progress safely and steadily. The overall program will be completed when all units become operational and start providing the UAE with emissions-free electricity to power the future growth of the nation.

As per UAE regulatory law, the construction, start-up and operations of nuclear energy plants are subject to regulations issued by the Federal Authority for Nuclear Regulation (FANR), and the loading of fuel and actual operation of Unit 1 will require the approval of FANR and the issuance of an operating license. FANR is conducting a rigorous and stringent review of the operating license application, which was submitted by ENEC in March 2015, and carrying out numerous inspections of construction and operational readiness to support this review.





Barakah Construction Program https://www.enec.gov.ae/barakah-npp/construction-program/

Vision to Reality (Detailed Timeline) https://www.enec.gov.ae/timeline/

1.1.2 Evolving Our Corporate Structure

As construction progresses, ENEC is preparing for the operational phase of its program by evolving its corporate structure to oversee a number of subsidiaries specializing in different areas that are needed for a successful nuclear energy corporation. In June 2016, ENEC launched Nawah Energy Company as an independent nuclear operating company with a mandate to operate and maintain the four units at the Barakah Nuclear Energy Plant.



Nawah Energy Company Website http://www.nawah.ae/

1.1.3 KEPCO – Prime Contractor and Joint Venture Partner



Enec Prime Contractor https://www.enec.gov.ae/barakah-npp/prime-contractor/

In October 2016, ENEC and the Korea Electric Power Corporation (KEPCO) signed a Joint Venture agreement that formalizes a long-term partnership to advance the UAE Peaceful Nuclear Energy Program. Under the terms of the Joint Venture, KEPCO, who is also the Prime Contractor managing construction of the Barakah Plant, obtained an 18 percent stake in ENEC's subsidiaries, Barakah One Company PJSC and Nawah Energy Company. ENEC remains the majority shareholder with an 82 percent stake in both companies. KEPCO is a South Korean government-owned utility, and maintains the world's fifth largest nuclear energy business, operating 25 commercial nuclear energy reactors with five more units currently under construction.



Press Release: ENEC and KEPCO Sign Joint Venture https://www.enec.gov.ae/news/enec-and-kepco-sign-joint-venture-for-uaepeaceful-nuclear-energy-program/

"With KEPCO as our partner, we now have the right structure to ensure the long-term sustainability of the Barakah project well into the future." - H.E. Mohamed Al Hammadi, ENEC CEO

1.1.4 Current Strategic Outlook

In 2016, ENEC updated its corporate strategy with the development of the Strategy House, which defines ENEC's short-term priorities, future considerations, and key enabling functions for the 2017-2021 period.

Based on the four corporate values of safety, integrity, transparency and efficiency, the primary focus is the completion of the nuclear units at Barakah and successfully transitioning from the construction to the operations phase. Additionally, ENEC will work with its subsidiaries, Nawah Energy Company and Barakah One Company, to define business processes, roles and responsibilities, and KPIs.

ENEC will continue to explore business development opportunities, including possible investments and ventures, and assess the potential for an additional nuclear energy plant in the UAE.

شـركـة نـواة للـطاقـة Nawah Energy Company





02 SUSTAINABILITY AT ENEC



2.0 ENEC's Sustainability Management Strategy

ENEC launched its sustainability strategy in 2013 to support the on-going implementation of sustainability principles across the corporation. To manage the process, the Sustainability and CSR Working Group created ENEC's Sustainability Strategy, which defines:

- development.
- social development, and environmental protection.
- addressed.



• Sustainability Value Pillars – ENEC's long-term contribution to the UAE's sustainable

• Sustainability Aspects - the topics ENEC must act upon to ensure it is operating in a sustainable manner on a day-to-day basis and contributing to long-term economic and

• Application Phases and Functions – the different areas in which these topics must be

• Management and Governance – the fundamental organizational structures, systems and processes that form the foundation of ENEC's implementation of sustainability.

2.0.1 Alignment to National and Global Sustainable Development Priorities

In 2015, the United Nations ratified 17 Global Goals for Sustainable Development. ENEC's Sustainability Strategy is closely aligned to these Sustainable Development Goals (SDGs). The SDGs serve to focus global attention on sustainable development across the economy.

In 2007, the Abu Dhabi Government launched the Abu Dhabi Plan, designed to guide Abu Dhabi's growth and development toward a sustainable and globally connected future. ENEC will play an important role in achieving several of the Abu Dhabi Plan objectives, including sustainable electricity generation, meeting the needs of urban areas while maintaining a high standard of living, and the creation of new vital sectors that contribute to economic diversification.







2.0.2 Materiality Assessment

ENEC is committed to prioritizing the management of issues that are most relevant to the creation of long-term value for all of our stakeholders. ENEC has identified and prioritized these issues through a materiality assessment process aligned with the Global Reporting Initiative's G4 Sustainability Reporting Guidelines.

1. Identifying Relevant Issues

To initiate the materiality assessment process, a comprehensive list of sustainability topics/issues relevant to ENEC was compiled, based on a detailed review of international and national sustainable development initiatives and guidelines including:

- The United Nations Sustainable Development Goals
- The Abu Dhabi Plan
- The UAE Vision 2021
- The Abu Dhabi Sustainability Group Annual Report
- The GRI G4 material aspects
- The GRI G4 Sector Disclosures for Electric Utilities
- A review of 12 international nuclear energy company sustainability reports

From this list, 28 issues were identified as being of significance to ENEC's business and stakeholders, which were assessed and prioritized by ENEC's Sustainability and Corporate Social Responsibility Working Group (SCSR-WG). The group consists of representatives from all departments, and convenes regularly to benchmark, discuss, and improve the corporation's performance across its sustainability aspects. The group is also responsible for reviewing and providing input for ENEC's annual sustainability report and CSR internal reports.

2. Prioritizing Relevant Issues

ENEC's SCSR-WG evaluated the 28 material issues, analyzing the influence of each issue on the assessments and decisions of stakeholders, as well as on the ability of the organization to deliver its vision and strategy. Representatives from across the business who engage frequently with ENEC's various stakeholder groups provided input regarding the significance of the issues assessed to their stakeholders. All representatives assessed the impact of the issues on the realization of ENEC's vision and strategy.

3. Validation of Material Topics Selected

ENEC's SCSR-WG and senior management team conducted a final review of the corporation's materiality matrix to ensure that the range of issues included provides a reasonable and balanced representation of the organization's sustainability performance.

4. Review

A review of ENEC's 2016 sustainability report will be conducted in 2017 to evaluate the aspects identified as material in the 2016 reporting cycle against stakeholder feedback which was received in 2017, and the 2017 sustainability context.

The result of ENEC's 2016 materiality assessment is presented in the matrix and table below:



MATERIAL ISSUES

1	Personal safety
2	Exposure to nuclear radiation
3	Emergency preparedness
4	Health of employees and contractors
5	On-time construction and transition
6	Radioactive waste management
7	Compliance with environmental regulation
8	Security of fuel supply
9	Localization and security of the supply c
10	Employment and development of the loc population
11	Training and development
12	Anti-corruption
13	Talent attraction, satisfaction and attrition
14	Workforce and contractor grievances
15	Delivery within budget
16	Engagement with the local community
17	Direct and indirect economic contribution
18	Support for nuclear education
19	Supplier environmental impact
20	Supplier social and human rights impact
21	Female representation and non-discrimin
22	Future financial planning
23	Waste hierarchy
24	Biodiversity impact
25	Energy and water management
26	Air quality and GHG emissions
27	Recyclability of materials used
28	Research and development

	BOUNDARIES
	ENEC, KEPCO, Nawah, subcontractors
	ENEC, Nawah
	ENEC, Nawah
	ENEC, KEPCO, Nawah, subcontractors
	ENEC, KEPCO
	Nawah, ENEC
ion	ENEC, KEPCO, Nawah
	ENEC, Nawah, suppliers
chain	ENEC, KEPCO, Nawah
ocal	ENEC, KEPCO, Nawah
	ENEC, Nawah
	ENEC, Nawah, Barakah One, KEPCO
on	ENEC
	ENEC, KEPCO, Nawah, subcontractors
	ENEC, Barakah One
	ENEC
on	ENEC, KEPCO, Nawah
	ENEC, Nawah
	ENEC, KEPCO, Nawah, subcontractors, suppliers
ots	ENEC, KEPCO, Nawah, subcontractors, suppliers
ination	ENEC, Nawah
	Barakah One
	KEPCO, ENEC
	KEPCO, Nawah
	KEPCO, Nawah
	KEPCO, ENEC
	KEPCO, ENEC
	ENEC



2.0.3 Involvement in National and International Sustainability Initiatives

ENEC's approach to sustainability is aligned with a range of national and international initiatives. Internationally, ENEC used the Global Reporting Initiative (GRI) G4 Guidelines for the preparation of this report and to help guide its sustainability program.

Nationally, ENEC is an active member of the Abu Dhabi Sustainability Group (ADSG). The ADSG is a membership organization whose mission is to promote sustainability management in Abu Dhabi by providing learning and knowledge-sharing opportunities for government, non-profit organizations and private companies in the spirit of cooperation and open dialogue. Members must sign the ADSG Declaration, commit to adopting sustainability management best practices, complete annual sustainability reporting and actively participate in ADSG events.

2.0.4 Sustainability Performance Dashboard

ENEC is continually improving its sustainability strategy and governance, while building a culture of sustainability within the corporation.

SAFE, CLEAN, RELIABLE AND EFFICIENT ENERGY FOR THE UAE

ENEC's aims to contribute to sustainable national development by providing significant volumes of safe and clean electricity for the UAE. This can only be achieved if a culture of safety is in place to protect employees and the larger community, while ENEC pursues the highest standards of excellence and implements nuclear industry best practices.







*LTIFR and TRCFR are calculated per million man hours



INDUSTRIAL AND ECONOMIC DEVELOPMENT

ENEC is responsible for the creation of a nuclear industry in the UAE that can contribute to national and international nuclear supply chains. As such, ENEC works closely with locally based suppliers to help them meet stringent nuclear-grade standards. ENEC also safeguards its own financial success through a combination of financial responsibility and effective operational execution.

Ke	ey Performance Indicators	2013	2014	2015	2016
	Total Capital Expenditure (USD millions)	2,171	3,127	3,545	3,132
(\$)	Total procurement spending (USD millions)	2,258	267	611	1,380
	Number of registered suppliers based in the UAE (Cumulative)	1,164	1,497	1,924	2,267
	Percentage of procurement spending on locally based suppliers	2%	87%	64%	48%



KNOWLEDGE AND EMPLOYMENT

ENEC generates thousands of jobs in the nuclear energy sector. As such, ENEC contributes to the development of a knowledge-based economy in the UAE, develops national talents in highly technical fields, and attracts international nuclear experts to the UAE.



2013	2014	2015	2016	
902	1,372	1,574	1,839	
11,886	16,997	19,885	21,491	
68%	62%	62%	61%	
24%	21%	20%	24%	
40	29	88	61	
276	342	320	253	



By engaging with stakeholders, assessing material issues, and analyzing past performance, ENEC sets commitments designed to enhance our impact in the areas that matter most to stakeholders.

Sustainability Pillar	2016 Key Achievements				
Safe, Clean, Reliable and Efficient Energy for the UAE	Integrate risk management into business planning activities across the corporation's departments.		Conducted a detailed opinion poll to gauge current attitudes and perceptions on nuclear energy.		Hosted national and international stakeholders at the Barakah Nuclear Energy Plant.
	Updated HSE procedures and Codes of Practice		Lowered heat stress incidents by 50% compared to 2015.		ncidents by 50%
	(CoP) to align with OSHAD System Framework Version 3	3.	Developed and implemented procedures to meet FANR medical requirements (Nawah).		
	Recorded zero significant or reportable environmental incidents.		Conducted Pre-Operations Marine Environmental Baseline Survey		
Industrial and Economic Development	Set requirements for key suppliers to implement and maintain business continuity programs.		Signed Joint Venture agreement with KEPCO (Prime Contractor) to ensure the long-term sustainability of the Barakah project.		
	Established the UAE Nuclear Insurance Pool (UNIP).		Organized 'Innovation Week' in which employees and		
	Created a Procurement and Supply Chain Governance Framework.		strategic partners worked to refine work methods and improve productivity.		artners worked ork methods and roductivity.
Knowledge and Employment	Launched the Sa'ada ('Happines of happiness and positivity acros working environment and increas		ss') Prog ss ENEC sed proc	ram in sı luctiv	to instill a culture upport of a healthy <i>r</i> ity.
	Hosted the World 'Nuclear Fuel Cycle' Conference.	Ho: Wo Glo Coi	Hosted the 24th Women in Nuclear Joined Lynda.co Global Annual e-learning platfor Conference.		oined Lynda.com -learning platform.

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Sustainability Pillar	2017 Targets			
Safe, Clean, Reliable and Efficient Energy for the UAE	Conduct a 3 rd party maturity assessment of risk management frameworks and practices.	Work with EFQM to validate ENEC's "Committed to Sustainability" approach to business excellence.	Set regulations for workers operating under high temperature conditions (Nawah).	
	Get accreditation from the World Institute of Nuclear Security (WINS).	Finalize an Operational Environmental Management Plan (OEMP) in compliance with the environmental permit requirements issued by the Environment Agency Abu Dhabi (EAD).		
	Increase	Increase percentage of waste recycled.		
Industrial and Economic Development	Develop insurance pool to cover nuclear property operation.	Set waste management targets for applic contractors that drives the efficient use or resources.		
Knowledge and Employment	Maintain 60% Emiratization target.	Organize public forums that raise aware about the nuclear sector and encourag Nationals to pursue education and care that prepare them to join this field.		

2.1 Stakeholders and Engagement

Effective engagement with ENEC's various stakeholder groups is a key priority for the UAE Peaceful Nuclear Energy Program. ENEC focuses on achieving four objectives as part of its pro-active approach to stakeholder engagement:

- and efficient electricity.
- development.
- genuine two-way communication.

ENEC has a large and diverse stakeholder base, which includes a variety of individuals, groups and communities who have an interest in the UAE Peaceful Nuclear Energy Program. More detail on the stakeholder groups and how ENEC interacts with them can be found in Appendix B.

With its outreach activities, the corporation prioritizes direct communication based on objective and scientific data presented in a user-friendly manner. All communication with stakeholders is provided in Arabic and English.

• To ensure on-going education about nuclear energy as a source of safe, reliable, clean

• To ensure awareness and understanding about the program at every stage of its

• To ensure ENEC's stakeholders have the opportunity to provide input into the program.

• To continue to listen and respond to stakeholder feedback, issues and concerns through



2.1.1 ENEC Forums and Public Perception of Nuclear Energy

ENEC hosts regular public forums to increase awareness and understanding of the UAE's Peaceful Nuclear Energy Program. During these forums, members of the public receive key program updates directly from ENEC's CEO, as well as members of the corporation's senior leadership team. Forums include an open question and answer session where attendees can raise any questions with a panel of Emirati experts and receive direct responses in Arabic with simultaneous translation into English. The events are also covered on social media, with followers posting comments and questions for the panel.

Since 2009, ENEC has held 25 forums across 'Al Dhafra', attracting more than 7,000 attendees. In 2016, ENEC hosted events in the Western Region and at the Abu Dhabi National Exhibition Centre, attended by around 570 people. Topics covered in the forums included common misconceptions about radiation, the social benefits of a nuclear industry in terms of job creation, and the environmental impact of various energy production techniques.

As a result of these forums, public perceptions of nuclear energy are shifting. In 2016, ENEC contracted the market research firm Taylor Nelson Sofres (TNS) to conduct a detailed opinion poll, in order to gauge and understand the current attitudes and perceptions of people in the UAE around the various aspects of nuclear energy. The poll covered the Al Dhafra Region, Abu Dhabi, Dubai, Sharjah and the Northern Emirates with a total sample size of 750 individuals, consisting of UAE Nationals and expats. These are some of the key findings:

- The vast majority of respondents, 79% of the sample size, highly favor the construction of peaceful nuclear energy plants in the country, up from 68% in 2013.
- 68% of UAE's residents mention nuclear energy when asked to list sources of energy, up from 55% in 2013.
- 81% of UAE residents recognize ENEC when prompted, up from 56% in 2013.
- The perceived importance of the UAE Peaceful Nuclear Energy Program has seen an increase of nearly 6%.
- A majority of residents continue to have a positive perception of the nuclear energy initiative in the UAE.

2.1.2 International and Industry Engagement

ENEC continues to work closely with industry bodies and attends both local and international events, in order to update international stakeholders on the latest progress from Barakah.

Some of the key engagements from 2016 include:

- address the latest developments of the nuclear fuel sector.

- corporate HQ.

Quotes from the respondents:

"We need to encourage our children to study sophisticated processes like nuclear energy so that we can make them safer."

"It [nuclear energy] is sustainable and used in many countries. The power generated is strong and can cover many homes, factory units. It costs a lot to set up but the main issue is disposal of waste."

• ENEC provided a project status update to international nuclear industry leaders who attended the inauguration of the World Nuclear Fuel Cycle (WNFC) conference, which was held in Abu Dhabi on 5-6 April 2016. Abu Dhabi was selected to host the WNFC, a key conference that brings together nuclear energy leaders from around the world to

• The Director General of the International Atomic Energy Agency (IAEA) visited Barakah in February 2016 to observe the significant progress being made towards construction.

 ENEC hosted the Women in Nuclear Annual Global Conference in Abu Dhabi on 21-23. November 2016. Under the theme Powering Generation, the conference welcomed participants from 56 countries who shared their experiences and promoted Science, Technology, Engineering and Mathematics (STEM) subjects among women.

• In total in 2016, ENEC hosted 42 delegations to the Barakah site and 8 delegations to

2.1.3 Corporate Social Responsibility (CSR)

ENEC is focused on investing in corporate social responsibility (CSR) programs that deliver tangible positive impact for the community. The SCSR-WG has created a CSR framework that aligns with the sustainability value pillars, and sets clear criteria to support the SCSR-WG in selecting CSR programs for investment.



The framework sets out three major objectives for ENEC's CSR program; encourage Small Medium Enterprise (SMEs), promote safety, energy and water efficiency, support primary and secondary education, and boost skills development.



ENEC is considering the adoption of a process to define CSR screening and selection criteria and monitor the performance of the CSR initiatives that have been implemented. The process would require that initiatives pass through four essential filters to ensure that the most appropriate and effective are adopted:

- 1. Alignment with ENEC's Sustainability Value Pillars.
- 2. Focus on engaging with ENEC's most important stakeholders.
- which ENEC is investing.

2.2 Governance and Management



Excellence in Governance

ENEC's approach to organizational sustainability is based on robust governance and management structures which enhance ENEC's ability to manage risk and maintain accountability.

2.2.1 Board of Directors

The ENEC Board of Directors is the ultimate authority responsible for the oversight of the corporation, and is accountable to the Government of Abu Dhabi. It is composed of some of the UAE's leading executives, as well as international energy experts, all of whom are independent and non-executive members. All ENEC's Board Members receive training in nuclear energy and nuclear safety, and are committed to ensuring the corporation's adherence to extraordinarily high standards of nuclear safety.







Board of Directors board-of-directors/

3. Maximization - of the value of financial, human and organizational resources with

4. Measurability - Produce measurable results that can be easily monitored and reported.

https://www.enec.gov.ae/about-us/leadership-and-governance/governance/



https://www.enec.gov.ae/about-us/leadership-and-governance/

The Board has four standing committees overseeing the corporation's activities and giving clear direction. Each of the Board's four committees has a written Board-approved charter detailing its responsibilities.

ENEC Board of Directors Committees

Committee	Description	Sustainability Issues Addressed
Committee on Nuclear Power (CNP)	The committee oversees and advises the Board on issues of nuclear safety, security, reliability, regulation, and environmental matters that relate to the construction and eventual operation of ENEC's nuclear units. The Committee on Nuclear Power consists of three Board members along with external members who have extensive prior nuclear industry experience.	Health and safetySecurityQuality and reliabilityEnvironmental management
Audit, Risk and Compliance Committee (ARCC)	The committee assists the Board in the discharge of its responsibilities overseeing the Audit, Governance, Risk Management and Compliance functions at ENEC. The ARCC is composed of four members, and chaired by the Board Deputy Chairman. One member of the committee is independent from the ENEC Board (not an ENEC Board member).	 Health and safety Governance and accountability Risk management Ethics Regulatory compliance
Human Capital Committee (HCC)	The HCC, which is composed of at least two Board members, reviews and advises the Board on issues regarding human resources and staffing, compensation and senior executive succession planning.	Resourcing and successionEmiratizationTraining and development
Executive Committee (EC)	The EC is composed of at least three members, two of whom must be Board members. The EC assists the Board in fulfilling its oversight responsibilities for project deliverables of a non-nuclear nature and in liaising with external stakeholders to resolve any outstanding multi-party issues associated with the project.	 Project budgeting and financing Project progress Review emergency and security preparedness

2.2.2 Auditing and Accountability

ENEC has a well-established internal audit function that acts as an assurance provider to the Board of Directors, reporting directly to the board via the ARCC. It conducts annual risk assessments across the full program covering aspects such as project, schedule, performance, finance, ICT, human resources and any audit-related issues that arise on an annual basis. The ENEC Internal Audit department adheres to the standards of The Institute of Internal Auditors and the requirements set by Abu Dhabi Accountability Authority (ADAA), and is subject to periodic assessments by ADAA.

2.2.3 Business Principles, Ethics and Compliance

The ENEC Code of General Business Principles and Ethics ('The Code') frames the ethical and legal practices that ENEC expects all employees and contractors to uphold.



Code of Ethics https://www.enec.gov.ae/about-us/leadership-and-governance/codeof-ethics/

ENEC upholds the highest standards of business compliance and expects its employees and contractors to comply with its clearly stated approach to ethical business practices. A zero-tolerance approach is taken to any and all forms of fraud or misconduct. ENEC has an Anti-Fraud and Misconduct Reporting Procedure in place, which allows confidential reporting through e-mails, a mailing system, Intranet (ENET), Internet and a 24/7 Toll-free Hotline. All reports are investigated and actions are taken immediately with the oversight of the Board ARCC.

As part of the ENEC compliance framework, ENEC maintains a compliance library for all government circulars, directives, national and international laws and treaties that apply to ENEC. As new laws, rules and regulations come into force, they are tracked through the compliance library and classified based on potential impact to ENEC. Risk-based monitoring is in place to ensure on-going compliance.

To date, ENEC has not received any fines or sanctions related to non-compliance with any laws or regulations that apply to the corporation.



2.2.4 Risk Management

To ensure that ENEC adheres to industry best practices in risk management, the corporation's Enterprise Risk Management (ERM) Integrated Framework takes reference from the ISO 31000 Risk Management principles and the Committee of Sponsoring Organizations (COSO) ERM standards and frameworks.

In 2016, several improvements were made to the ERM Integrated Framework. The risk management team can now flag risks independently of risk owners and bring them to the attention of the Enterprise Risk Management Committee (ERMC). The corporation's CEO and deputy-CEO have joined the Risk Committee as Chairman and Vice-Chairman respectively. In addition, the risk management team has become more deeply involved in business planning across various departments, thereby helping to identify dependencies between departments that could be potential sources of risk. Finally, the risk management team has continued to develop its mitigation plans for top-level risks.

In 2017, ENEC plans to complete a quantitative risk analysis cycle in addition to conducting a 3rd party maturity assessment of its risk management frameworks and practices.



Risk Management

https://www.enec.gov.ae/about-us/leadership-and-governance/risk-management/



2.2.5 Excellence

ENEC has established a dedicated program to embed excellence across the corporation. Based on the European Foundation for Quality Management (EFQM) Excellence Model and the model of the Abu Dhabi Award for Excellence in Government Performance (ADAEP), the program focuses on designing and implementing organizational best practices in order to improve performance.

ENEC has seen a dramatic improvement in this area, receiving the Most Distinguished Government Entity Award at ADAEP in 2015. The highly prestigious honor is awarded every two years, with feedback provided to the over 50 entities that apply.

To reinforce a culture of performance excellence, ENEC runs its own internal excellence awards every two years, which are known as the Barakah Excellence Awards. This motivates departments, project teams, and individuals to continuously strive for the highest standards in everything they do. In 2016, the structure and criteria of the award were updated to comply with the newly introduced federal business excellence model. Due to the dedication and exceptional performance of its staff, the Finance and Accounting Department was the 2016 winner of the Barakah Excellence Award.





Business Excellence https://www.enec.gov.ae/ab excellence/

Across the corporation, the continued development of a culture of excellence resulted in an increase in the Excellence Maturity Index.

In 2017, ENEC plans to work with EFQM to receive 3rd party validation of its "Committed to Sustainability" approach to business excellence.

https://www.enec.gov.ae/about-us/leadership-and-governance/business-



03 SAFE, CLEAN, EFFICIENT AND RELIABLE ELECTRICITY

ENEC's primary contribution to national sustainable development is the creation of significant volumes of safe and clean electricity for the UAE. This will help reduce the UAE's greenhouse gas (GHG) emissions and provide long-term energy security for a rapidly growing population.

Our Sustainability Objectives

- Culture of Safety and Security.
- water and energy resources and handle waste effectively.
- contractors and the local community.
- implementation of industry best practices from around the world.



• Safety and Security: ensure the safety and security of the public, ENEC employees, and contractors, through the design and execution of world-class safety and security processes and systems, and the development of a robust

Environmental Management: adhere to the highest available standards and regulations while working to prevent pollution, preserve biodiversity, conserve

• Health and Wellbeing: safeguard the health and wellbeing of all employees,

• Quality, Efficiency and Reliability: achieve operational excellence and the

3.0 Introduction

Nuclear energy is a reliable and sustainable source of electricity. It also has environmental benefits, with nuclear energy plants emitting virtually zero carbon emissions during operation. ENEC was established in 2009 to deliver safe, clean, efficient and reliable 'electricity' to the UAE grid and contribute to the sustainable energy future of the UAE.

Under the Paris Climate Change Agreement, which entered into force in 2016, nearly all countries from around the world have submitted voluntary contribution plans on how they will tackle climate change and reduce greenhouse gas emissions. The UAE has pledged to increase the clean energy contribution to its total energy mix from 0.2% in 2014 to 24% by 2021. The UAE Peaceful Nuclear Energy Program will significantly assist the UAE in meeting this commitment.

ENEC is working together with other nuclear energy plant operators, nuclear contractors, and NGOs to ensure the latest benchmarks in safety considerations are incorporated into the UAE's Peaceful Nuclear Energy Program. Safety is at the core of ENEC's decision-making process and has influenced decisions throughout the project, including site selection, incorporating seismic concerns, using the best available reactor technology, implementing triple quality checks during construction, and commencing simulator-based training years before the start of operations.

With construction ongoing at the Barakah Nuclear Energy Plant, and the first unit approaching completion, ENEC is continuing to improve safety, health, security, environmental and quality standards.

3.1 Health, Safety and Environment (HSE) Management System

ENEC ensures that its corporate activities and construction program are being managed to the highest health, safety and environmental standards at all locations. The Health, Safety and Environment Management System (HSEMS) has been in place since 2010, and is being continually updated to ensure alignment with regulatory requirements, international standards and the identification of new and emerging risks and opportunities. The system is both OHSAS 18001 and ISO 14001:2004 accredited, meaning that ENEC has applied the highest international standards.

To ensure compliance with local legislation, ENEC reviews and updates its HSEMS on a regular basis. Most recently, in 2016, a number of HSE procedures and Codes of Practice (CoP) were promptly updated to align with the Abu Dhabi Occupational Safety and Health Center (OSHAD) System Framework Version 3 released in July 2016. In 2017, ENEC plans to conduct a gap analysis against the ISO14001:2015 standard and to update its management system to address any gaps identified.

To ensure continued understanding and implementation of the HSEMS, ENEC conducts awareness sessions for employees and contractors both in Abu Dhabi and at the Barakah site. ENEC eLearning modules have been developed so that employees can access health and safety information in a flexible and convenient manner. Used in conjunction with inperson awareness sessions, this has contributed to improved employee engagement.



3.1.1 Working with Contractors

Throughout the construction phase at Barakah, ENEC is responsible for the oversight of contractors and subcontractors. ENEC observes the implementation of HSE management by KEPCO and other contractors to continually improve HSE standards and performance.

As such, ENEC has established a comprehensive inspection and auditing program to ensure that contractors are compliant with ENEC's HSE policies. Activities include:

- Holding weekly HSE meetings to follow up on actionable items and planned improvements.
- Reviewing HSE training courses provided by the Prime Contractor (KEPCO) to ensure they meet project requirements.
- Communicating with contractors on a daily basis regarding HSEMS compliance and performance.
- Conducting joint HSE assessments (Fire Hazard Assessment, HAZMAT Assessment, etc.)
- A Senior Management Cross-Organizational HSE Inspection is performed every Tuesday.
- Reviewing contractor procedures on a regular basis to ensure compliance with OSHAD regulations.

3.2 Safety and Security

Conforming to the highest standards of safety and security is one of the six commitments made by the UAE in its nuclear energy policy. The safety and security of staff, contractors, site and community are therefore of paramount importance to ENEC. Every effort is in place to ensure occupational safety and security at corporate and construction locations, as well as prepare for the safety and security requirements of nuclear material arriving in the UAE. The existing measures do not only cover prevention of safety incidents, but also emergency preparedness and business continuity should a minor or major emergency event occur.

3.2.1 Safety at ENEC

Safety is integral to every decision at every level of ENEC. It is the overriding priority of the corporation and is embedded throughout the organization. A rigorous approach to safety is continuously reinforced through clear processes, procedures, training and communication and will ultimately support ENEC in delivering a nuclear energy program that sets new standards for the industry.

The Executive Management Safety Charter guides ENEC's CEO and Executive Management in supporting and enabling ENEC and its subsidiaries to operate their businesses safely. All quarterly executive management meetings conform to this charter.

Each and every employee at ENEC receives annual training on ENEC's safety principles and procedures, and our leadership encourages our employees to voice any queries and concerns. All meetings at ENEC begin with a Safety Moment, so ENEC employees remain safety conscious at all times.

ENEC also conducts regular safety self-assessments and audits. The corporation's Condition Reporting program facilitates proactive reporting of safety risks and near-miss incidents. The program assigns responsibility for the implementation of corrective actions to the relevant party. In addition, all ENEC employees have responsibility to stop work activities where an existing or potential threat to safety is observed.

ENEC management's commitment to establish and maintain a culture of safety is founded on the Institute of Nuclear Power Operations (INPO) 'Traits of a Healthy Nuclear Safety Culture' (reference number 12-012), which outlines the core values and behaviors necessary to keep safety as the top organizational priority at all times.

ENEC also participates in international peer reviews of nuclear reactor safety practices by subscribing to industry organizations like INPO and WANO.



Safety Portal on ENEC Website https://www.enec.gov.ae/safety/

3.2.1.1 Occupational Safety Performance

The preceding sections describe the robust safety programs that are in place for both ENEC staff at the corporation's Abu Dhabi HQ, as well as for the thousands of employees, contractors and subcontractors from ENEC, KEPCO and KEPCO's subcontractors working at the Barakah site. In 2016, the number of people (ENEC employees, contractors, and subcontractors) working on-site continued to grow. Over 21,000 people were working on the project, which is an 8% increase compared to 2015.

Fatal Incidents

In 2016, ENEC recorded its first fatalities since the start of construction in 2010. These incidents were marked with somber reflection by the ENEC community. Thorough investigations were conducted to identify the root cause of the incidents, and all parties involved have taken corrective actions to ensure no further incidents occur.

Of the three fatalities, two were workers who died in an incident involving a mobile crane. The third fatality occurred when a worker fell from a high place. All three workers were employees for subcontractors of KEPCO.

Following each incident, a detailed assessment was carried out and a comprehensive investigation report was produced, identifying a number of root causes. Subsequently comprehensive corrective actions were developed and implemented to prevent the recurrence of such events.

In an additional effort to improve the culture of safety at the Barakah site, the 'Four Ps' observation checklist was introduced in 2016 (Personnel, Premises, Plants and Equipment, Procedures). Later on, it became mandatory for all on-site staff members to complete one safety observation per month. This requirement will be reflected and reported as a performance indicator.



Press Announcement: Summary of Root Cause Analysis and Lessons Learned https://www.enec.gov.ae/news-and-events/announcements/summary-of-

The total recordable case frequency rate (TRCFR) and the lost time injury frequency rate (LTIFR) for ENEC employees increased in 2016 due to a number of incidents that occurred at Barakah and at the corporate office. The relatively small number of ENEC employees means that even a few incidents can result in fluctuations in TRCFR and LTIFR.

TRCFR for contractors and subcontractors decreased in 2016, which can be attributed to HSE governance assessments leading to improved site supervision and inspections and targeted HSE training and awareness with management involvement and support. There was however an increase in the LTIFR for contractors and subcontractors, which is due to the three fatalities that occurred in 2016.

Number of ENEC employees

Number of contractor and subcontractor Fatalities

LTIFR (ENEC employees)

LTIFR (contractor and subcontractor empl TRCFR (ENEC employees)

TRCFR (contractor and subcontractor emp

*LTIFR and TRCFR are calculated per million man hours

root-cause-analysis-and-lessons-learned-12-may-crane-accident/

Safety			
	2014	2015	2016
	1,372	1,574	1,839
employees	16,997	19,885	21,491
	0	0	3
	0	0.81	1.10
oyees)	0.35	0.14	0.18
	2.17	1.61	2.20
oloyees)	3.37	3.49	2.21



3.2.2 Safety at Nawah

Nawah is developing it own interdependent HNSMS - that incorporates all of the minimum requirements of the ENEC HSEMS, Nawah Energy Company is responsible for operating and maintaining the four units at the Barakah Nuclear Energy Plant, once they become operational. As such, the Health and Safety team at Nawah is in the process of establishing written programs and procedures in line with FANR requirements, such as procedures for the provision of radiation worker medical surveillance to workers involved in receiving nuclear fuel assemblies. These are being developed through close coordination with operations and engineering teams that have the necessary understanding of nuclear safety concepts. A safety committee has also been created, known informally as 'Team Safety'.

Each department at Nawah has a lead person on the team, working to make sure that safety procedures are up-to-date and properly implemented throughout the company. A number of initiatives are planned for 2017, including setting regulations for workers operating under high temperature conditions.

The Nawah Health and Safety team is also working closely with the Training Department to develop Plant Access Training that covers various safety aspects including chemical and electrical safety and general industrial safety. Additional modules are being developed to qualify current employees for the operations phase. A Technical Training Group has been established to assist in this process.

3.2.3 Security

The Critical Infrastructure and Coastal Protection Authority (CICPA) is the Abu Dhabi Government agency tasked with handling the protection and security of vital assets and infrastructure, including the Barakah Plant. Under the regulation of FANR and with guidance from the IAEA, CICPA works together with ENEC to develop and implement the highest international standards of safety and security for Barakah.

As part of the requirement to submit the Construction License Application (CLA), ENEC submitted a Physical Protection Plan (PPP) for Construction, which outlines the physical protection measures and processes for units under construction until operations. The construction-specific PPP addresses the protection of nuclear materials and the nuclear facility against malicious acts, such as the unauthorized removal of nuclear material. The PPP for Construction was approved by FANR in December 2016, and is an integral part of the Fuel Handling and Storage License. This marks a significant milestone for the corporation, and signifies that security, as a function, is operationally ready to meet the key milestones of the program.

The Physical Protection Plan for Operations (PPP-O), which will govern post-fuel load security operations, continues to evolve and be refined under the guidance of FANR and in coordination with CICPA. The PPP-O addresses the organizational structure and staffing of security and, its physical protection including the designation of protected and vital areas, guard training and qualification, information security, cyber security, and responses to security contingencies including preparedness for concurrent nuclear safety related emergencies and security threats. The PPP-O provides assurances that physical protection strategies will neutralize any threats, including Design Basis Threat's, and ensures that the nuclear facility is protected from malicious acts and radiological sabotage.

The security function relies heavily on its talented Emirati staff, and currently has an Emiratization rate of 85%. The Security function remains committed to developing local talent in this new industry sector. The Physical Protection System (PPS), which secures the plant, is to be maintained and monitored by a team of young Emirati engineers selected specifically for this key role. Training development commenced in 2016 and will continue in 2017, with staff gaining accreditation from the World Institute of Nuclear Security (WINS) for their studies and practical experience.

In November 2016, ENEC Security hosted a site visit from the IAEA International Physical Protection Advisory Service (IPPAS) mission that was inspecting the UAE Peaceful Nuclear Energy Program. The IPPAS team recognized the progress made by the UAE in developing "strong and sustainable" nuclear security, adding that the UAE has utilized "good practices in the nuclear security regime". The IPPAS mission provided feedback that ENEC will be utilizing to further develop its nuclear security capabilities.

3.2.4 Emergency Preparedness

Emergency preparedness is an intrinsic part of ENEC's approach to safety and security. The corporation has developed and implemented a comprehensive emergency preparedness and response program that covers office-specific and construction-specific emergency activities, deployment of first responders, emergency equipment, training and awareness.

ENEC has a Nuclear Emergency Response Center (NERC) that allows corporate level staff to monitor events remotely but provides no command and control function. At the Barakah site, KEPCO maintains the Barakah Emergency Operation Center that provides coordination between KEPCO and on-site Emergency Response Organizations (ERO).

Emergency drills are practiced at periodic intervals to test the effectiveness of ENEC's emergency management procedure. They cover emergency communication, the timely response of the Emergency Response Team (ERT), adequacy of emergency response resources, and coordination between the various agencies involved.

As the first unit at Barakah prepares for operation, ENEC has developed an Onsite Emergency Plan (OEP). The OEP embraces 16 Emergency Planning Standards and briefly describes how each standard will be addressed. Information is also provided on how to declare emergency classification levels, communicate with offsite officials, warn the public and take actions to prevent or mitigate accidents. Emergency Preparedness Implementation Procedures (EPIPs) were developed to support the implementation of the OEP. A dedicated emergency response facility has been constructed that is remote from the site, outside of the emergency-planning zone.

In line with federal regulations, residents living within a 16-kilometer radius of the site will receive regular information and training on what to do in the unlikely event of a declared emergency event.

These procedures, along with strategic planning and the integration of necessary support resources, have helped ENEC comply with all regulatory requirements on emergency training and response.

3.2.5 Business Continuity Program

Business Continuity plays an important role in ensuring the corporation has the necessary processes and procedures in place to maintain essential services in case there is a sudden event that halts or disrupts normal business operation.

ENEC's Business Continuity Management (BCM) Strategy follows a multi-phased approach. The program is designed to maintain essential and time-sensitive business processes first and then proceed with resuming processes that are not as time-critical. Once the operation of essential business functions is complete, the use of the primary site is restored, followed by a return to business-as-usual.

In 2016, ENEC took a major step forward in the development of its Business Continuity Program by developing a structured approach to ensuring the business continuity of its supply chain. This new approach requires selected suppliers to implement and maintain business continuity programs that comply with recognized standards (e.g. NCEMA 7000 and ISO 22301). In addition, ENEC surveys suppliers to monitor those who already have a BCM program, and to promote the development of programs for suppliers who have not yet started to implement BCM.

In 2016, the Business Continuity Program also achieved the following objectives:

- Working with Rabdan Academy, which specializes in training emergency preparedness and crisis management professionals, to deliver a variety of courses and presentations for ENEC employees.
- Conducting a BCM Program benchmarking visit to Etihad Airways.
- Organizing the 1st BCM Awareness Month at ENEC. •
- Providing a one-day knowledge sharing workshop for fifty attendees representing BCM functions in other government entities.

ENEC established its BCM Program in 2010. The program was certified to BS 25999, the British BCM Standard, in 2012 and to ISO 22301, the International BCM Standard. in 2014. The ISO 22301 certification was renewed in 2016. In addition, ENEC's BCM Program has been in compliance with AE/SCNS/NCEMA 7000, the UAE National BCM Standard, since 2014.

ENEC submits guarterly reports on the implementation of its BCM program to the General Secretariat of the Government of Abu Dhabi. In addition, the BCM Program submits annual and monthly reports to the Deputy CEO and annual reports to the ARCC.

In addition to the BCM Program, ENEC also has a Crisis Management (CM) Program. The purpose of its CM Program is to ensure the coordination of activity across the corporation in managing events that impact operations.

ENEC's CM Program began in 2011 and now comprises five teams:

- Executive CM Team that includes the CEO and other top management
- Corporate Headquarters Team in Abu Dhabi
- CM Team for Barakah Site
- CM Team for Crisis Communications
- CM Team for Human Relations and Family Support



3.3 Environmental Management

It is ENEC's responsibility to ensure that once operational, the Barakah Nuclear Energy Plant follows environmentally sustainable practices in its lifetime, having a minimal impact on the environment it operates in.

Environmental considerations played a crucial role in the selection of the Barakah site. Before construction of the plant commenced, ENEC conducted an extensive Environmental Impact Assessment to gather baseline data on the environmental state of the area and its surroundings. Subsequently, a Construction Environmental Management Plan (CEMP) was developed and approved by the regulator, Environment Agency Abu Dhabi (EAD), and has been implemented at Barakah since 2010. ENEC continues to conduct environmental assessments both at Barakah and at the organization's corporate offices in Abu Dhabi to identify strategies to minimize its environmental footprint and enhance the corporation's capacity for environmental stewardship.

ENEC's contractors and subcontractors also adhere to the corporation's environmental commitments. ENEC and KEPCO co-signed the Barakah Environment and Sustainability Charter in 2014, setting a series of obligations to ensure that environmental protection, habitat preservation, water and energy conservation, and sustainable waste management best practices are consistently applied at Barakah. Waste creation, waste disposal and dust have the most significant potential environmental effect during the program's construction phase. ENEC continues to work together with KEPCO to minimize the potential impact of construction as much as possible. Effective management of energy and water resources is another top priority.

Monthly monitoring and reporting of environmental performance is completed in accordance with EAD permit conditions and national environmental regulations. In 2016, ENEC recorded zero significant or reportable environmental incidents, zero breaches of environmental regulations or environmental permit conditions, and there have also been no significant hydrocarbon or chemical spills. A single spill incident occurred at the construction site, described in more detail in section 3.3.1. ENEC also works with EAD to regularly monitor the natural environments surrounding the plant, and proactively develop mitigation programs to offset any applicable marine, atmospheric and terrestrial impacts.

Planning is currently underway to ensure that ENEC is prepared for the environmental management requirements for plant operations. An Operational Environmental Management Plan (OEMP) is being developed in compliance with EAD-issued environmental permit requirements, federal regulations and international nuclear energy standards. In addition, Nawah has developed an Environment and Sustainability Policy, which mandates the implementation of an ISO-14001-2015 compliant Environmental Management System.

3.3.1 Materials Usage and Waste Hierarchy

Construction of the Barakah Nuclear Energy Plant requires significant volumes of materials to meet the requirements of regulators and ensure the highest standards of quality, safety and performance. Nuclear-grade concrete and steel are the primary materials being used.

In 2016, concrete consumption increased by 128% compared to the previous year, while steel consumption increased by 78%. With Unit 1 and Unit 2 nearing completion, concrete consumption is expected to decrease the remaining units are developed and eventually construction is finalized.



Given the scale of the project, a significant volume of waste material is generated during the construction process. Therefore, ENEC has developed and implemented a comprehensive waste management program.

The types of waste ENEC is currently generating include municipal waste and construction waste produced on-site. ENEC tracks all waste streams to document the chain of custody and monitor volumes against planned targets.

	Waste		
	2014	2015	2016
Non-hazardous waste disposed (metric tons)	62,394	89,930	104,807
Non-hazardous waste recycled (metric tons)	11,585	18,817	4,369
Percentage of total non-hazardous waste recycled	16%	17%	4%
Hazardous waste disposed (metric tons)	19	0	0
Hazardous waste recycled (metric tons)	12	0	0
Percentage of total hazardous waste recycled	39%	NA	NA
Wastewater disposed (liters)	301,947,780	397,867,596	691,992,200
Wastewater recycled (liters)	940,044,000	1,470,318,000	1,637,749,635
Percentage of wastewater recycled	76%	79%	70%
Hazardous liquid waste disposed (liters)	0	0	0
Hazardous liquid waste recycled (liters)	24,380	21,900	67,240
Percentage of hazardous liquid waste recycled	100%	100%	100%



Quantities of non-hazardous waste reflect the level of construction and pre-commissioning activities. With Unit 1 and Unit 2 nearing completion, construction activities are now expected to decrease as the remaining units are developed and eventually finalized. Nevertheless, 2016 was a challenging year, with recycling levels of non-hazardous waste falling below those of previous years, mainly due to the remoteness of the nearest recycling facility capable of processing construction material. A new waste management contract coming into effect in 2017 should enable increased recycling in the year to come.

In 2016, as in 2015, solid hazardous waste was neither disposed nor recycled. It was instead placed in temporary storage until the Abu Dhabi Centre for Waste Management (Tadweer) opens a new facility equipped to handle such waste. As a result, solid hazardous waste disposed and recycled is recorded as zero metric tons.

With regards to liquid waste, 70% of wastewater is being recycled or reused, including for the irrigation of on-site green areas. Hazardous liquid waste is 100% recycled and consists mainly of oils that are cleaned and reused by a third-party contractor. Sewage is processed by an off-site sewage treatment plant. A single incident occurred in 2016 in which approximately 80,000 liters of sewage was leaked at the construction site. The spill was contained and collected, and the area was remediated. Subsequently, the relevant work practices were reviewed and amended to prevent similar incidents in the future.

ENEC and KEPCO continue to implement campaigns to reduce the amount of waste produced and increase recycling rates. Once the plant becomes operational, radioactive waste will become an issue of national and regional importance. Shortterm storage plans are already in place for low and medium-level radioactive waste. ENEC is currently working with relevant national regulators and government officials to finalize long-term plans for the future storage, disposal and repurposing of used nuclear fuel assemblies.

3.3.2 Energy and Water Management

Significant amounts of energy and water are required in the construction of a nuclear energy plant and ENEC works closely with its partners to ensure these resources are managed as efficiently and responsibly as possible. Regular awareness campaigns are conducted at the corporate offices and on-site to encourage a culture of effective resource management.

Ancillary buildings outside of the Barakah Plant, constructed directly by ENEC, have been built in accordance with 2 Pearl Estidama sustainable building codes. This means smart and efficient resource consumption has been integrated into the design, construction and operation of the buildings.

In 2016, ENEC moved its headquarters to a building that was constructed in accordance with 4 Pearl Estidama sustainable building codes.

3.3.2.1 Energy Consumption

Direct energy is used in the form of fuel for the operation of vehicles and heavy machinery for construction activities and transportation. Indirect energy is used in the form of electricity for lighting, equipment and ancillary buildings, and is sourced from the national grid.

Energy				
	2014	2015	2016	
Fuel used on-site (liters)	1,108,872	1,233,904	654,924	
Fuel used in Abu Dhabi (liters)	499,760	686,023	899,978	
Total direct energy (liters)	1,608,632	1,919,927	1,554,902	
Electricity used on-site (kwh)	96,353,207	117,380,507	115,086,828	
Electricity used in Abu Dhabi (kwh)	1,731,535	13,422,776	49,403,013	
Total indirect energy (kwh)	98,084,742	130,805,298	164,489,841	
Total energy (GJ)	358,896	477,811	597,761	
Total energy intensity (GJ/ person)	20	22	26	

The amount of fuel used on site decreased significantly from 2015 to 2016 due to more stringent regulations on vehicle refueling, a rise in carpooling and the use of a bus service, as well as promoting teleconferencing instead of in-person meetings where possible. In addition, ENEC and KEPCO have promoted fuel-saving actions such as teleconferencing, carpooling, and utilizing the available bus services.

The amount of electricity used on site per person decreased by an average of 9% from 2015 to 2016. This was due to initiatives and campaigns carried out in cooperation with KEPCO, including more proactive maintenance and inspection, open forums with laborers, adjusting AC usage around work schedules, and switching to more environmentally friendly LED lighting.

3.3.2.2 Water Consumption

Fresh water is sourced from the Shuweihat Desalination Plant and the potable mains network, and is used primarily in the mixing of concrete as well as for worker accommodations and other ancillary buildings. Grey water utilized for irrigation and dust suppression is obtained from the on-site treatment of sewage to standards set by the Regulation and Supervision Bureau (RSB) and verified by monthly laboratory testing.

The amount of water used per person in construction decreased by an average of 14% from 2015 to 2016. This was a result of enhanced maintenance activities enabling a faster response to reported leaks, in addition to campaigns to promote water conservation.



With regards to the impact of construction on water sources, surface water is predominantly affected by effluents, dredging and excavation activities. As rainfall is infrequent, ENEC doesn't expect storm water runoff and the associated sediment loads to be a concern at the Barakah Units; however, daily inspections are undertaken during periods of rainfall to assess this issue. Water quality impacts due to dredging are considered temporary and reversible and are managed through mitigation measures set out in the CEMP and agreed upon with the EAD.



Groundwater at the site is hypersaline and is therefore not used as a resource. Groundwater monitoring wells are located throughout the site and quarterly monitoring reports are submitted to the EAD. To further ensure the protection of groundwater resources, the CEMP contains guidelines on spill prevention and cleanup.

3.3.3 GHG and Air Emissions

Nuclear energy currently accounts for 11% of global electricity production, and is one of the largest sources of low-carbon power. According to the World Energy Outlook 2016, published by the International Energy Agency (IEA), the commissioning of new nuclear energy plants will be one of the main ways of achieving emissions reductions in the future.

The low carbon benefits of nuclear energy are clear once the plant is operational; construction, however, is an energy-intensive operation that results in a high level of carbon emissions in the short term. The bulk of the GHG emissions currently generated by ENEC's program are classed as Scope 3 emissions, defined as indirect emissions arising from the activities of suppliers, materials purchased, or business travel. In 2016, ENEC Scope 1 emissions have decreased by 20%, Scope 2 emissions have increased by 26% and Scope 3 emissions have increased by 102%, owing to increased construction activity at Barakah. The total increase in GHG emissions is 81%.

GHG E

Scope 1 – fuel use on-site (metric tons CO2-e

Scope 1 – fuel use in Abu Dhabi (metric tons CO_2 -eq)

Total scope 1 (metric tons CO₂-eq)

Scope 2 – electricity on-site (metric tons CO_2 -eq)

Scope 2 – electricity in Abu Dhabi (metric tons CO_2 -eq)

Total scope 2 (metric tons CO₂-eq)

Scope 3 - emissions from bus travel (metric t

Scope 3 – emissions from concrete and steel (metric tons CO₂-eq)

Scope 3 - emissions from air travel (metric to

Total scope 3 (metric tons CO₂-eq)

Total scope 1, 2 and 3 GHG emissions (metric tons CO₂-eq)

GHG emissions intensity (metric tons CO₂-eq/person)

*All GHG emissions are presented in metric tons CO₂-eq and have been calculated using tools provided by the GHG Protocol a global standard for the measurement of GHG emissions and a partnership initiative between the World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD).

* 2015, we have adjusted our calculations for Scope 3 -emissions from concrete and steel and air travel.

missions*						
	2014	2015	2016			
eq)	2,738	2,973	1,600			
	1,135	1,558	2,044			
	3,873	4,531	3,644			
	56,742	69,125	67,775			
	1,020	7,904	29,093			
	57,762	77,030	96,868			
ons CO ₂ -eq)	239	212	694			
	196,385	223,271	458,171			
ns CO ₂ -eq)	9,456	5,533	3,885			
	206,081	229,017	462,750			
	267,716	310,578	563,262			
	14.6	14.5	24.1			

Background air quality monitoring of NOx, SOx, PM10 (particulate matter up to 10 micrometers in diameter) and O_a around the plant is conducted daily by a third party. The regulator, EAD, is notified if regulatory limits are exceeded. Monitoring is conducted and quarterly reports are submitted to the EAD for their review.

3.3.4 Biodiversity Impact

ENEC actively monitors the impact of its activities on the environment and is working with the EAD to agree on, and deploy, mitigation measures to mitigate potential negative impacts.

One of the factors which led to the selection of the Barakah site for the construction of the UAE's nuclear energy plant was specifically to minimize the environmental effect on sensitive areas designated as marine preservation sites and flora and fauna reserves. Additionally, ENEC has implemented a number of design modifications to the plant to comply with EAD regulations and adapt to the UAE's climate conditions.

As Nawah prepares for the start of operations, it has identified some of the major environmental aspects that must be actively managed. These aspects have been addressed in the Barakah Operation Environmental Management Plan (OEMP), and can be summarized as follows:

- Marine habitat loss, species mortality and displacement, due to cooling water intake and discharge.
- Seawater and marine sediment quality impacts due to cooling water intake and discharge.
- Risk of spills affecting seawater or soil.

In 2016, regular monitoring of marine and intertidal areas was introduced to locate distressed marine life. Four green turtles (Chelonia mydas) were rescued and transferred to a rehabilitation center prior to their eventual release.

Pre-Operations Marine Environmental Baseline Survey

In accordance with the environmental commitments set out in the OEMP, an extensive Pre-Operations Marine Environmental Baseline Survey of the marine environment around the Barakah facility was conducted in 2016. The survey was conducted to characterize the pre-operations marine environment under both summer and winter conditions.

While a pre-construction environmental baseline survey was conducted during the summer and winter periods of 2009/10, the recent pre-operations survey was conducted to better inform the OEMP, more effectively evaluate potential environmental effects during the operation of the facility, and provide valuable input to the Barakah Compensatory Mitigation Plan.

ENEC has identified limited coral communities within the vicinity of the site that may be impacted from cooling water discharges once the plant becomes operational. However, the thermal plumes generated by these discharges are not anticipated to impact any marine protected areas.

Barakah Artificial Reef project

ENEC completed the development of the Barakah Artificial Reef project in 2014. This reef provides shelter for marine life and encourages biodiversity before the plant becomes operational. The marine environmental survey of the coast conducted in 2016 revealed that a diverse and abundant marine ecosystem has taken root at Barakah.

The survey identified more than 63 marine species including a variety of algae, invertebrates, fish and one species of marine mammal utilizing the breakwater habitats, and 35 marine species utilizing the artificial reef habitat.



Coral Propagation Study

In accordance with the Barakah Compensatory Mitigation Plan, Nawah initiated a threeyear Coral Propagation Study in 2016. The study is being conducted in partnership with the

- of new coral reefs.
- experimental learning and direct participation in the study.



Barakah Artificial Reef nawah-energy-company-witnesses-rema/

Radiological Environmental Monitoring Program

In 2016, the Environmental Radiochemistry Laboratory (ERL) reached its full operational capacity.

The program was started in August 2014 to establish a two-year background radiation baseline for the Barakah site prior to the start of operations of the first unit, in accordance with the Radiological Environmental Monitoring Program (REMP). All results are within the anticipated background radiation levels. The program will continue throughout the operations phase to ensure the health and safety of the public.

The ERL issues a Semi-Annual Radiological Environmental Operating Report (SAREOR) to FANR. The report contains details of radiation levels in different samples such as soil, sediment, fish and invertebrates, air, seawater and drinking water.

EAD and Zayed University in Abu Dhabi. The purpose of the study is three-fold:

• Developing a reliable and repeatable coral larval rearing program that can be used for the restoration and rehabilitation of damaged or degraded coral reefs, or for the development

• Technical capacity building for UAE nationals involved in the study through integrative

Knowledge sharing with UAE and Gulf stakeholders through workshops and publications.

https://www.enec.gov.ae/news/emirates-nuclear-energy-corporation-and-

3.4 Health and Wellbeing

ENEC takes the health and wellbeing of its direct employees as well as the employees of contractors and subcontractors very seriously. This involves the implementation of a comprehensive medical screening program and occupational health program, as well as encouraging employees to adopt healthy lifestyles. Mechanisms for reporting and addressing grievances are also a key part of ensuring individual wellbeing.

3.4.1 Occupational Health

ENEC has conducted a thorough Occupational Health Risk Assessment (OHRA) that identifies health hazards in the corporation's working environment and assigns occupational health risks for each job category. This system allows ENEC to quantify the effects of unmanaged occupational health risks on employees.

To address these risks, ENEC maintains an annual Health Program that facilitates the ongoing development of health-related codes of practice. It is expected that ENEC's contractors and subcontractors deploy similar codes of practice to ensure risks are identified and avoided. In 2016, zero occupational health illnesses were recorded among ENEC's employees, contractors and subcontractors.

Occupational Health Performance	2014	2015	2016
Reportable occupational illness (employees)	0	0	0
Reportable occupational illness (contractors and subcontractors)	0	0	0
Heat stress incidents (employees, contractors and subcontractors)	34	32	19

3.4.1.1 Heat Stress

Since construction work takes place around the year, including during the summer months, heat stress has been identified as one of the highest occupational health risks. ENEC, together with KEPCO and its subcontractors, run extensive heat stress awareness campaigns to ensure employees remain hydrated and avoid potential heat-related incidents.

The number of heat stress incidents decreased by 41% between 2015 and 2016, even as the workforce grew by around 8% over the same period. This is due to the continuous efforts of all of the HSE teams across ENEC to raise awareness before the summer season, and to make sure control measures are in place to prevent heat stress incidents.



The results and recommendations are then processed in a highly confidential manner to manage the individual's occupational health while under ENEC employment. Each employee will undergo this assessment periodically based on the risks associated with their job category in order to conform to OSHAD and FANR statutory requirements and to continually improve the corporation's Workplace Wellness program.

3.4.1.3 Health Services

For health-related issues that are not classified as occupational health concerns. ENEC provides First Aid and medical services at the Barakah site. These services are inspected regularly and assessed on a quarterly basis to make sure they conform to all Health Authority Abu Dhabi (HAAD) standards and registration requirements.

First Aid boxes and automated external defibrillators are placed on each floor at every ENEC facility. A list of male and female First Aiders and their contact details is posted next to each First Aid unit.

ENEC investigates all health-related incidents that take place at the corporate office and on-site. The results of these investigations are used to develop targeted health and wellbeing programs and initiatives.

ENEC and KEPCO conducted a Thermal Work Limit Sweep and interviews over a period of three months starting in April 2016. The sweep revealed more than 80% of the selected workforce were knowledgeable and aware of the heat stress prevention program adopted at Barakah.

3.4.1.2 Health Screening and Medical Surveillance

ENEC's health screening and medical surveillance program is mandatory for all employees and consists of visiting an occupational health physician and completing a health history questionnaire in oder to determine current medical issues and identify previous occupational incidents that may have resulted in a medical issue. A full medical examination is then completed, including a medical investigation that is specific to the occupational risks associated with the employee's job category.



3.4.1.4 Health and Wellness Initiatives

As part of the 2016 Health Program, ENEC completed a wide range of health and wellness related initiatives to raise awareness and action among employees. These included:

- 8"Food for Thought" Sessions Medical experts present structured awareness sessions on various topics, including cardiovascular disease and work stress, while employees enjoyed a healthy lunch. The topics are identified by our employees, or focus on high risk areas derived from reports received from HAAD and the World Health Organization.
- 22 Internal Newsletter Articles Sharing information and useful links on various health issues, including breast cancer awareness, eye health and precautionary measures to take while working in heat.
- 11 First Aid Courses Hosted at the corporate office and on-site, training a total of 63 First Aiders. The First Aiders were issued with an internationally recognized First Aiders registration, which must be refreshed every two years.
- 6 Health Events Among others, ENEC held a flu vaccination drive, a blood donation drive, a breast cancer awareness campaign and a campaign focusing on office ergonomics. During some events, employees are given the opportunity to have one-on-one consultations with specialized physicians.

3.4.2 HSE Grievances

ENEC recognizes that feedback from staff and contractors is valuable, and is committed to an open and transparent process where all grievances are dealt with fairly and in a timely manner. In 2016, ENEC introduced Safety Observation Cards, which can be used by any worker to raise safety concerns.

The ENEC Condition Report system can also be used to escalate concerns or grievances within the corporation. These are inspected by FANR on a regular basis and monitored by ENEC according to established procedures. Furthermore, the Ministry of Labor has an office on site at Barakah to directly address and oversee worker grievances.

Addressing HSE Grievances in 2016

In 2016, a Condition Report was raised regarding the quality of catering services at Barakah and off-site facilities. In response, Corporate HSE established a bimonthly catering services inspection program, and a quarterly assessment to ensure that employees receive the highest quality hygienically prepared nutritious food products.

Another Condition Report was raised regarding health and safety issues pertaining to off-site worker accommodations. The Corporate HSE team initiated a periodic accommodation inspection program and a biannual assessment, ensuring that health and safety standards are maintained in order to provide our employees with safe, hygienic and comfortable accommodation.

3.4.3 Exposure to Radiation

The nuclear energy industry takes the safety and security of those who work at or live near its facilities very seriously. All nuclear energy plants, including ENEC's plant are designed and built to contain radiation, preventing any release of radiation to the environment. Since the Barakah Nuclear Energy Plant is not yet operational, there is no possibility of radiation exposure at this time.

ENEC is putting extensive measures in place and meeting strict federal and international regulations and standards to ensure zero harmful exposure once the plant is operational. The Radiological Environmental Monitoring Program is discussed in more detail on page 51. The risk of a radiological event is addressed through emergency response planning, and is discussed further in the 'Emergency Preparedness' section on page 41.

3.5 Integrated Management System

ENEC's Integrated Management System (IMS) is a framework that helps ENEC meet its goals and objectives while maintaining a focus on safety, security and quality. The system works by:

- activities and facilities.
- requirements.

ENEC MS maintains the following international accreditations:

ISO 9001: Quality Management System Standard

ISO 14001: Environmental Management Standard

OHSAS 18001: International Occupational Health and Safety Management System

ISO 20000: IT Delivery and Support

ISO 22301: Business Continuity Management

ISO 27001: Information Security Management System

BS 25999: Business Continuity Management

Investors in People: People Management Standard

PAS 99: Integrated Management System

The nuclear industry maintains the most stringent quality standards in the world, reflected by ENEC's rigorous Quality Assurance (QA) program. The program, which is an integral part of the IMS, applies to all ENEC activities and to the oversight of contractors and suppliers.

Audits are conducted on a regular basis to ensure the program's high standards are being met and continually improved upon. In 2016, ENEC conducted 43 audits (largely performance based) on all aspects of ENEC IMS and QA programs. This included 16 internal and 27 external (supplier) audits. A further 11 audits / assessments were undertaken for management systems.



Quality. Safety. Reliability. https://www.enec.gov.ae/about-us/leadership-and-governance/qualityassurance/

1. Identifying the statutory and regulatory requirements that apply to the corporation's

2. Outlining the systematic processes, functions and activities necessary to satisfy those



INDUSTRIAL AND ECONOMIC DEVELOPMENT

ENEC is supporting the nation's economic growth and diversification by building a local peaceful nuclear energy industry that can contribute to national, regional and international nuclear supply chains.

Our Sustainability Objectives

- standards of the nuclear industry.
- contributing to the UAE's GDP.



• Financial Responsibility: Deliver cost-effective power through a combination of financial responsibility and effective operational execution.

• Supply Chain Management: Develop a supply chain that is increasingly locally based and that meets the environmental, social and quality

• National Development: Become a driving force behind the UAE's investment plan, providing business development opportunities and

4.0 Introduction

In the UAE, creating a peaceful nuclear energy sector is seen as a means of achieving higher levels of industrialization and economic stability. One of the most important objectives in establishing the program in the UAE was to support the growth of the country's economy, and specifically to support the development of a local nuclear energy industry supply chain. The program is supporting the UAE's economic development by providing the critical energy needed to power the growth of industries and business, as well as by developing human capital in the UAE and providing high-value jobs for decades to come.

The investments made during the construction phase of the Barakah Nuclear Energy Plant are supporting economic growth and generating opportunities for new and existing local businesses. The development of the sector and its workforce, will also make it possible for the UAE to start exporting nuclear skills, technology, products and services required for the construction and operation of nuclear energy plants in the region and around the world.

Once the plant becomes operational it will bring an additional economic boost to the UAE. The diversification of the national energy portfolio will reduce reliance on oil and gas, making these resources available for other uses and preserving them for the future.

4.1 Financial Responsibility

In line with the guiding principles set out in the UAE policy for the development of nuclear energy, ENEC strives to conduct its business in an accountable and efficient manner to ensure the program makes optimal use of government resources. ENEC is continuously working to improve its systems and processes to ensure cost effectiveness across the corporation, utilizing insights from previous energy plant developments around the world.

Measures are in place to ensure funds are spent efficiently and within budget. Expenditures are monitored closely and before being committed, all expenses are approved by authorized personnel, as per the appropriate Delegation of Authority (DOA). Payments are then approved based on the limit authorized in the DOA / Sub-DOA, which is reviewed and updated periodically.



After the signing of the Joint Venture with KEPCO and the creation of the Barakah One PJSC subsidiary, ENEC established a comprehensive, sound financial structure that is allowing for the construction of the UAE's first nuclear energy plant and infrastructure to move forward towards delivery of Units 1 to 4. The overall project financing requirements are estimated at US\$ 24.5 billion, where:

- US\$ 19 billion has been as a direct loan from the Government of Abu Dhabi.
- US\$ 2.5 billion has been provided as a direct loan from KEXIM.
- and KEPCO.

ENEC reports its financial performance regularly to the General Secretariat of the Executive Council (GSEC), the Department of Finance (DoF) and the RSB. To ensure timely, meaningful and reliable disclosures of its financial performance, the following mechanisms are in place:

- of ENEC's Internal Auditors to ensure compliance.
- processes and results.

4.1.1 Financial Investment

The financial investment into this nationally strategic project is captured in the table below. Capital Expenditure (CAPEX) represents payments made towards ENEC's \$20 billion contractual agreement with the Prime Contractor (KEPCO). During 2016, our CAPEX decreased by 12% compared to the previous year. ENEC's relatively short construction period compared to most nuclear energy plants makes the project economically competitive and sustainable.

Financ 2 **Total Capital** Expenditure (USD millions) **Total Operational** Expenditure (USD millions)

• US\$ 250 million in loan agreements with five local and international commercial banks.

• A total of US\$ 4.7 billion in equity commitments for the establishment of the Barakah One Company in exchange for equity interest in the company, shared between ENEC

1. Statutory Audit: conducted by the government auditor (Abu Dhabi Accountability Authority), which performs the role of a Statutory Auditor and also audits the activities

2. Internal Audit: regularly reviews and audits ENEC's financial and non-financial systems,

3. External Audit: a financial audit is carried out annually by an independent third party organization, with the findings reported directly to the ENEC Board of Directors.

ial Investment					
013	2014	2015	2016		
2,171	3,127	3,545	3,132		
212	338	490	508		

Operating expenditure covers the costs of ENEC's employees and service contractors, communication, administration and capacity building, including the scholarship program. In 2016, OPEX increased by 4% in comparison to 2015, a reflection of the continued growth of the corporation necessary to complete construction and prepare for operation of the first unit.

4.1.2 Creation of Nuclear Insurance Pool

In 2016, a management agreement was signed between a number of insurance companies in the UAE to form the UAE Nuclear Insurance Pool (UNIP). The UAE is a party to the IAEA's revised Vienna Convention on Civil Liability for Nuclear Damage, and UNIP is the first nuclear insurance pool in the Gulf Cooperation Council (GCC) area to carry nuclear risks.

To cover a number of insurable risks related to the operation of the Barakah Nuclear Energy Plant, UNIP issues several types of insurance policies:

- 1. Property All Risks insurance policy to indemnify Barakah plant owner against physical loss or damage to the plant.
- 2. Nuclear Site Liability policy to indemnify Nawah Energy Company, as the operator of the Barakah Plant, against third party liabilities due to any radioactive contamination during operations, as required by UAE federal law.
- 3. Nuclear Transit Liability policy to indemnify Nawah, as the operator of the Barakah Plant, against third party liabilities due to any radioactive contamination during transportation of fuel assemblies from any port in the Republic of Korea to the Barakah Plant.

In 2017, UNIP shall be asked to issue the Property All Risks insurance, subject to the agreement of the Executive Committee. The placement should be finalized prior to the loading of fuel assemblies into the reactor of Barakah Unit 1.

4.1.3 Business Intelligence and Automation

Starting in 2015 and continuing into 2016, the Finance Department undertook a major initiative to automate part of its functions in order to streamline certain processes and provide up-to-date financial information to ENEC employees and senior management.

Automation of Financial Performance Report the automation of financial management and financial control reports using business intelligence software was a major initiative of the Finance Department during Q4 of 2015. The automated report allows respective ENEC functions to view their financial performance on a daily basis. With access to up-to-date financial data, senior management can assess their position and make realistic decisions in line with organization's visions and strategic goals. In 2016, further enhancements were made to increase the system's efficiency and usefulness.

E-Invoicing ENEC launched the E-Invoicing initiative in Q2 of 2015 and has continued to improve the system in 2016. The system enables suppliers to submit their invoices online through the ENEC Supplier Portal, available on the ENEC public website.



4.2 Supply Chain Management

The supply chain required to construct the Barakah Nuclear Energy Plant project is extensive and global. The majority of construction procurement is being directly managed by the Prime Contractor (KEPCO) with guidance, oversight and performance tracking by ENEC, to ensure its standards and UAE requirements are implemented.

ENEC is responsible for its own corporate procurement requirements, including expert services, ICT equipment and site-related support services. ENEC's Procurement and Supply Chain (PSC) function provides a central procurement and contracting service ensuring that ENEC's goods and services are procured to the best contractual terms and conditions and in full compliance with the legal requirements safeguarding ENEC's interests.

As part of ENEC's commitment to safety, security and transparency, ENEC established a rigorous Quality Assurance (QA) program to ensure that the UAE's first nuclear energy plant is designed, constructed, commissioned and operated in line with the best industry practices, governing codes and standards, regulations and license requirements. ENEC's QA program applies to nuclear safety and safety-related equipment, structures, components and systems. It also applies to equipment and activities that may not be directly safety related, but support safe plant operations, or where the national nuclear regulator, FANR, establishes program requirements.

By extending the QA program to all activities, ENEC aims to achieve the highest standards in quality, safety, availability and reliability. ENEC believes that everyone is responsible for quality, and it is this approach that will drive continual improvement in everything the company does.

Areas of focus with regards to supply chain sustainability include the localization and security of the supply chain, and assessing the suppliers environmental, social and human rights impacts.

4.2.1 Localization of the ENEC Supply Chain

ENEC is committed to, as much as possible, procuring its goods and services from suppliers based in the UAE, stimulating local economic growth and bringing greater security to the supply chain. As ENEC is still in the construction phase, the procurement profile varies substantially from year to year.

In 2016, 48% of ENEC's procurement spending was on local suppliers, totaling \$664 million. The actual spending represents a significant increase over previous years. ENEC has 2,800 suppliers registered in its system, 81% of which are based in the UAE. To further boost local procurement and support national entrepreneurship, ENEC is an active supporter of the Khalifa Fund for Enterprise Development. To date, 36 Khalifa Fund suppliers have registered as suppliers with ENEC, and they are being actively encouraged to bid for future contracts.

L	Local Procurement					
	2013	2014	2015	2016		
Total procurement spending (USD millions)	2,258	267	611	1,380		
Total procurement spending on suppliers based in the UAE (USD millions)	47	232	389	664		
 Percentage of procurement spending on locally based suppliers (%) 	2%	87%	64%	48%		
Number of registered suppliers (Cumulative)	1,384	1,827	2,344	2,800		
Number of registered suppliers based in the UAE (Cumulative)	1,164	1,497	1,924	2,267		
Percentage of registered suppliers that are locally based (%)	84%	82%	82%	81%		
Number of Khalifa Fund suppliers registered (locally owned SME companies funded by Sheikh Khalifa) (Cumulative)	8	11	34	36		

4.2.2 Procurement and Supply Chain Governance and Security

To ensure that ENEC is procuring to the highest ethical and governance standards, the Procurement and Supply Chain (PSC) department introduced a comprehensive Procurement and Supply Chain Governance Framework in 2016. The framework includes a procurement process situations matrix, a register of reported situations, a process for verifying and reporting identified situations, and a process for identifying opportunities for improvement.



In addition, ENEC conducts quarterly feedback surveys with active suppliers to obtain insights about their experience with the ENEC procurement process. This enables ENEC to identify areas of further improvement.

The security and continuity of the supply chain is also of high importance to ENEC. Therefore, ENEC has developed a formalized process for identifying risks in the supply chain using the Business Continuity Management framework. This is discussed further in section 3.2.5 on our 'Business Continuity Program' on page 42.

4.2.3 Supplier Environmental, Social and Human Rights Impacts

ENEC takes an active role in ensuring its supply chain is implementing the environmental, social and human rights standards necessary to safeguard the corporation from risk and to satisfy ENEC's internal HSE requirements.

Selected suppliers go through the ENEC pre-qualification process, which helps identify levels of compliance with necessary standards and regulations. For products and services being procured that are classed as having potential significant HSE risks attached, bidders are assessed against a range of project-specific HSE requirements. Should a bidder fail to achieve the necessary HSE score, they will automatically fail and be removed from the selection pool. In 2015, ENEC began to ensure suppliers and contractors have a verified commitment to comply with labor practices before they are awarded a contract. To date, 1,118 registered suppliers have signed a statement of compliance regarding worker welfare.

As of 2016, suppliers with significant amounts of waste to manage must also produce a certificate of compliance with Abu Dhabi waste management requirements. In 2017, ENEC plans an increased focus on ensuring effective and sustainable waste management across its supply chain, to exceed minimum legal requirements.

ENEC's contracting process is integrated with risk management. All contracts require HSE considerations to be incorporated and all suppliers registered through ENEC's supplier portal agree to the 'Supplier Code of Conduct', which sets out the principles and standards of conduct expected of every supplier. The document covers topics such as fraud, ethical behavior, conflicts of interest, whistleblowing, compliance with the law and ENEC's environmental and sustainability leadership.

The recently redesigned ENEC website includes a tab for Procurement, where suppliers and site visitors can download the Supplier Code of Conduct and the Contractor HSE Management Procedure.



ENEC's Supplier Code of Conduct

https://www.enec.gov.ae/doc/psc-ref-111-02-supplier-code-of-conduct-rev4-supplier-portal-5937c63de21a2.pdf

4.3 National Development

The economic impact of the nuclear energy project provides employment opportunities for residents and stimulates the domestic economy. This economic stimulus can be both direct and indirect in the form of job creation, the procurement of construction material and the positive impact of suppliers achieving nuclear-grade standards, and the development of local infrastructure.



4.3.1 Job Creation

In 2016, ENEC had over 1,900 direct employees based in the corporate offices and Barakah, and over 21,000 indirect employees working for contractors and subcontractors on-site, most of whom are construction workers. Such a significant workforce has a direct impact on the economy of Abu Dhabi and the UAE as a whole. While some of the wages of international employees are remitted, many internationals bring their families to the country, spurring additional economic activity by either renting or buying property, and through spending on transportation, education, health, food and goods and services within the UAE.

In 2016, ENEC filled 102 new open positions with Emirati talent. By 2020, when the project reaches its full operational phase, this highly skilled nuclear workforce is expected to increase to 2,500, with an Emiratization target of 60%. To learn more about ENEC's Emiratization efforts, please refer to section 5.2.1 of this report (page 73).

4.3.2 Material Procurement and Industrial Development

The Barakah project is creating significant economic activity through the purchase of materials, equipment and services needed for the construction of the plant. The financial impact of this is considerable since ENEC's activities draw resources and bring benefit to thousands of other companies based in the UAE and overseas. Since the start of the project, 1,400 companies in the UAE have been awarded contracts totaling \$3.25 billion.

4.3.3 Raising Levels of Quality across UAE Industry

The presence of a nuclear project in the UAE has helped to improve and develop other industries within the UAE, thereby opening up new export markets. Any company that aspires to supply materials used in the construction of a nuclear energy plant must achieve nuclear-grade quality assurance standards, depending on the classification of the material. ENEC has established an Industrial Development Team that works with potential local suppliers to implement the necessary standards, allowing them to compete for contracts and become suppliers of the UAE's Peaceful Nuclear Energy Program.

As a result, several major contracts have been awarded to locally based suppliers; for example, major contracts for nuclear-grade steel, concrete and cables have been awarded to Emirates Steel, National Cement, and Dubai Cable Company (Ducab) respectively. Having successfully supplied the Barakah Nuclear Energy Plant project, these companies are now actively bidding and winning new work to supply other nuclear energy plant construction projects around the world, resulting in the UAE joining the international nuclear supply chain.

In 2016, ENEC worked with Drydocks World in Dubai to help them obtain the ASME Nuclear Component Certification which is the most demanding quality assurance program for any company involved in the nuclear industry. As a result, Drydocks has become the UAE's first nuclear maintenance company. In 2017, ENEC plans to work with other UAE-based companies to help them become certified nuclear maintenance service providers.

4.3.4 Local Infrastructure

The Al Gharbia Investment Roadmap, developed by the Western Region Development Council, found that the nuclear energy industry will contribute \$16 billion to the economy of the Al Dhafra Region over the lifetime of the Barakah Plant. Furthermore, public services and infrastructure are being developed as part of the project, including new housing and the upgrade of communications systems and highways, contributing to improved quality of life for residents of the Al Dhafra Region. It is expected that real estate prices will also increase as a result of ENEC's activities.



05 KNOWLEDGE AND EMPLOYMENT

The UAE Peaceful Nuclear Energy Program will deliver high-value jobs for our citizens, while also bringing new knowledge and expertise to the country. The Program represents an opportunity for talented and highly skilled Emirati Nationals to become leaders in a rapidly growing and international sector.

Our Sustainability Objectives

- people within ENEC and the nuclear energy sector.
- at ENEC and in the nuclear energy sector.
- Knowledge creation: Contribute to the development of a knowledge-based class training and education programs.



• **Highly skilled employment:** Generate jobs, recruit and retain high-quality

• National talent development: Development of Emirati talent for employment

economy benefiting from international experience and the provision of world-

5.0 Introduction

G

One of the main objectives of the UAE Vision 2021 is to create a country that is 'United in Knowledge'. The goal is to create a diversified and flexible economy powered by a highly-skilled Emirati workforce and by investments in research and development in high value-adding sectors that contribute to non-oil GDP growth. The creation of a peaceful nuclear energy sector will help the UAE achieve this vision.

UAE Vision 2021: United in Knowledge



https://www.vision2021.ae/en/our-vision/united-knowledge

ENEC is tasked with capitalizing on this opportunity by promoting STEM (Science Technology, Engineering and Mathematics) education, and investing heavily in the development of a highly skilled and diverse national workforce capable of building and operating the Barakah plant. By 2020, it is estimated that ENEC will require a team of approximately 2,500 highly skilled professionals.

5.1 Highly Skilled Employment

ENEC's employees are the most crucial factor behind achieving the corporation's ambitious construction and operation targets. Therefore, recruiting and retaining experienced professionals from the UAE, and around the world, is a major organizational priority. With a workforce that is steadily scaling up for the operation of the first unit, ENEC aims to be a model employer that attracts the best talent.

ENEC has conducted an integrated assessment of the number of personnel and skillsets required for the program, and has been building the necessary human capacity to construct and eventually operate and maintain the Barakah units. ENEC has also incorporated the IAEA's guidance on human resource development, which has provided useful benchmarks and an international perspective.

5.1.1 The Workforce

The ENEC team has grown from 386 people in 2011, to 1,839 professionals in 2016 at ENEC and Nawah. This growth reflects the on-going expansion of the construction project at Barakah, which became the the world's largest nuclear energy plant construction site in 2015, and the on-boarding of professionals required to operate the plant. UAE Nationals currently make up 61% of the workforce at ENEC.

*2016 figures are for ENEC and its subsidiary Nawah Energy Company





The ENEC Workforce

Number of

Employees

Female

Male

2012

554

165

389

2013	2014	2015	2016*
902	1,372	1,574	1,839
220	291	315	353
682	1,081	1,259	1,486
442	582	642	698
372	574	669	818
88	216	263	323
638	890	1,005	1,186
10	17	21	40
84	199	218	225
53	94	114	146
117	172	216	242

5.1.2 Recruitment and On-boarding

Recruiting capable professionals is essential to achieving the ENEC organizational strategy, and guality control measures are in place that guarantee merit-based recruitment. The hiring process is informed by the broader goals of the UAE Peaceful Nuclear Energy Program, including those of culture, professional values and attitude.

In 2016 alone, ENEC and its subsidiaries recruited an additional 460 employees. New procedures were implemented to streamline the recruitment process, with the average time to fill a vacancy falling from 80 days in 2015 to 66 days in 2016.

New Employee Hires

	2013	2014	2015	2016*
Number of employees hired	404	533	290	460
Female	69	94	47	83
Male	335	439	243	377
18-30	241	208	149	183
31-50	108	197	87	164
51+	55	128	54	113
UAE National	124	282	164	240
Rest of the World	280	251	126	220

*2016 figures are for ENEC and its subsidiary Nawah Energy Company

Since working in the nuclear industry presents unique challenges and responsibilities, new employees joining ENEC undergo a rigorous induction program entitled 'Becoming a Nuclear Professional'. The training covers everything from ENEC's regulatory requirements, safety culture, radiological restrictions and risks, as to the corporation's policies, procedures and internal systems. In 2016, new modules were added to the program in order to cover additional requirements such as Plant Access Training ahead of Unit 1 becoming operational.

The induction program for new international staff includes lessons on cultural awareness, in order to familiarize them with the working culture in the UAE.

ENEC strives to create an environment where all employees can maximize their potential. Competitive salary and benefits packages provide the foundation, while proactive employee engagement, career development, and wellbeing initiatives help employees stay committed to ENEC's goals and values. ENEC also strives to create a transparent and open culture across the corporation where employees can voice their opinions and contribute to the corporation's success. ENEC recorded a total employee satisfaction rate of 89% in 2016.

Sa'ada (Happiness) Program

In 2016, ENEC employees launched the Sa'ada Program, which consolidates and expands upon efforts to improve employee satisfaction. The program aims to instill a culture of happiness and positivity across ENEC in support of a healthy working environment and an increase in productivity.

The Sa'ada team aims to do this in a thoughtful and consistent manner. The program has a detailed charter that explains its purpose and strategy, and there are dozens of Happiness Ambassadors across ENEC tasked with suggesting and organizing happiness initiatives. These include:

- discount cards to a variety of health and lifestyle services.
- maintaining a healthy and p ositive mindset.

- recreation center, and a Thinking Room.

Attrition						
	2012	2013	2014	2015	2016*	
Number of employees that left ENEC (forced or voluntary)				84	55	
Total turnover rate	11.7%	8.9%	7.3%	5.7%	6.5%	
Number of male leavers				62	37	
Number of female leavers				22	18	
Number of Emirati leavers				50	37	
Number of expatriate leavers				34	18	

*2016 figures are for ENEC only, excluding subsidiaries.

• The ENEC Life+ program, which focuses on making investments in employee health, well-being and work-life balance. Under the Life+ program, ENEC offers employees

• The Sa'ada Majlis's, a forum that seeks to raise awareness about the importance of emotional wellbeing, and encourages ENEC employees to take a proactive role in

Trips for employees and their families, and activities for the children of ENEC employees.

 Programs that recognize and reward employees when they demonstrate exceptional performance. These include department-level Employee of the Month awards, spot bonuses, professional certificates and recognition for academic achievements.

• Providing on-site facilities that foster health and wellbeing, such as a fitness and

5.1.4 Female Representation

ENEC strongly believes that gender equality is essential to the creation of a high-performing organization, and is deeply committed to promoting female participation in the workforce. ENEC's commitment to female representation starts at the top, with Her Excellency Sheikha Lubna Bint Khalid Al Qasimi, President of Zayed University, serving as Vice Chairwoman of ENEC's Board of Directors.

In 2016, ENEC and Nawah Energy Company had 353 female employees, an increase of 12% from 2015. Females make up 19% of the total workforce, a slight decrease from previous years primarily due to the limited pool of female applicants for the technical roles currently being recruited. ENEC is seeking to reverse this trend by actively encouraging women to participate in the Energy Pioneers educational program (for more information on this program, please see page 74), which will provide a strong pipeline of highly skilled women to join ENEC in the future.

5	Female Employment					
Ú		2012	2013	2014	2015	2016*
ĺ	Number of female employees	165	220	291	315	353*
ĺ	Female employment rate	30%	24%	21%	20%	19%*
Ĉ	Number of females in senior management positions	N/A	N/A	N/A	3	8
Ĉ	% of females in senior management positions	N/A	N/A	N/A	4.5%	10%

*2016 figures are for ENEC and its subsidiary Nawah Energy Company

ENEC established the Women in Nuclear (WiN) UAE Chapter in 2014. The chapter is the first of its kind in the region, and has allowed ENEC to lead the way on women's equality and empowerment in the workforce. The initiative provides a powerful support network for women in the nuclear sector, connecting them to over 5,000 members globally, which benefits them both professionally and personally, and helps bring valuable international knowledge and expertise to the UAE. The objectives of WiN ENEC Chapter are as follows:

- Collecting, evaluating, and addressing female employee needs to ensure that ENEC is a female employer of choice.
- Supporting global and UAE WiN chapters.
- Providing communication channels between the WiN Committee and other technical and professional organizations.
- Offering support to WiN members who are striving for professional excellence.
- Working with education centers and community organizations to promote careers in engineering and nuclear technologies for females, especially UAE nationals.

In November 2016, Abu Dhabi hosted the 24th WiN Global Annual Conference, the first such conference hosted in the Middle East. ENEC provided its full support as part of its commitment to encouraging the development of ENEC's female staff. The selection of Abu Dhabi to host the conference is a testament to the hard work and commitment of the women who are working to develop the UAE Peaceful Nuclear Energy Program.



5.2 Knowledge Creation and National Talent Development

ENEC works alongside industry and academic partners to create and implement a training and development infrastructure that will support the full spectrum of nuclear energy career paths, from technical and vocational jobs to those requiring specialized Bachelor's and Master's degrees. This multi-faceted approach to capacity building will ensure a pipeline of talent to the UAE's nuclear energy industry for decades to come.

ENEC's integrated approach to knowledge creation and national talent development is:

- Employ citizens in a meaningful and efficient manner.
- Help employees learn specific knowledge and skills.
- Create a sustainable educational system aimed at ensuring a continuous flow of skilled professionals throughout all phases of the program.
- Establish a sustainable nuclear technology program that provides nuclear expertise, training and research in the long run.

ENEC has deployed a number of programs in order to achieve these objectives, the main one being the Energy Pioneers, which brings together partners such as KEPCO, regulators, international associations and universities to create an intensive and comprehensive program of national nuclear professional development.

5.2.1 Workforce Emiratization

ENEC is focused on recruiting qualified national talent in order to reduce reliance on international expertise. It is vital that Emirati Nationals play a central role in the national nuclear energy program from construction through to 60 years of operation and maintenance, and eventual decommissioning of the plant. A specialized Emiratization department was established in 2016 to facilitate this.

ENEC aims to have 60% of its workforce be composed of UAE Nationals. The corporation has successfully met and surpassed this goal over the last five years. The Emiratization of senior management also reached 60% in 2015, a critical milestone that was achieved by fast tracking high-potential UAE Nationals to take on management responsibilities.

A						
	Emiratization					
	2012	2013	2014	2015	2016*	
Number of Emirati Nationals	361	610	857	970	514*	
Emiratization rate (%)	65%	68%	62%	62%	61%*	
Emiratization rate (%)	N/A	N/A	N/A	37	48	
Senior management Emiratization rate (%)	18%	33%	43%	64%	58%	

*These figures are for ENEC only, excluding subsidiaries.

ENEC has also invested in 12 high potential Emirati leaders to ensure quality leadership during the plant operation phase. These potential future leaders were enrolled in the world-renowned Westinghouse Management Senior Reactor Operator Equivalency Certification program. The program is intended to provide expertise in integrated plant and systems operation.

5.2.2 Energy Pioneers

The Energy Pioneers program was established in 2013, as part of a sustained long-term effort aimed at developing Emirati talents for the future of the UAE Peaceful Nuclear Energy Program. According to the IAEA, some specialists in the nuclear field require 5-10 years of training and experience to become qualified nuclear professionals.

The program aims to attract the best and brightest science students, engineering graduates and experienced professionals and train them to become leaders in the UAE's nuclear energy sector. Participants receive training of the highest international standards by the industry's leading global experts. To date, ENEC has awarded scholarships to 420 UAE Nationals in a range of nuclear-based programs, with 46 graduating in 2016.

The Energy Pioneers program covers a wide range of initiatives, including:

University Degrees in Nuclear Engineering: The foundation for ENEC's future workforce of nuclear engineers are the formal degrees in nuclear engineering offered domestically by Khalifa University of Science and Technology, and internationally through partnerships with overseas universities like Pennsylvania State University, Texas A&M University and North Carolina State University.

Higher Diploma in Nuclear Technology: To address the demand for skilled nuclear technicians and other non-engineering plant personnel, the UAE's Institute of Applied Technology (IAT) has developed a Post-Secondary vocational training program called a Higher Diploma in Nuclear Technology (HDNT). The HDNT program, which has been developed by IAT in coordination with ENEC and KEPCO, and is the flagship program of Abu Dhabi Polytechnic.

Senior Reactor Operator Program: To build a team of managers and senior-level supervisors, ENEC has instigated a Senior Reactor Operator Pilot Program. This training program, which is open to qualified engineers, includes basic training in plant systems and fundamentals of nuclear technology with over 480 hours of simulator training. The program is conducted in partnership with Westinghouse.

KEPCO Training Programs: ENEC's collaboration with KEPCO includes on-the-job training for senior Emirati personnel at Korea Hydro and Nuclear Power (KHNP), a subsidiary of KEPCO, as well as a mentoring program where experienced Korean professionals are assigned to trainees from the UAE.

SUDO High School Program: ENEC, IAT, KEPCO, and the Seoul-based SUDO Electric Technical High School have collaborated to train high school students through the "SUDO program". The program provides eleventh-grade high school students with the opportunity to travel to Korea during the summer to study the practical and theoretical aspects of the civil nuclear industry.

On-the-Job Training: ENEC provides Energy Pioneers with the knowledge and skills required to perform their assigned tasks independently for the safe operation of the plant.

Control Room Simulator Training

ENEC has two full-scope APR-1400 training simulators, which are some of the most advanced nuclear training devices in the world, and a third under construction. The simulators were modified to account for the unique environment of the Barakah Nuclear Energy Plant - allowing the devices to mimic the future conditions of the UAE plants, as closely as possible.



They are used in conjunction with classroom and on-the-job training to teach trainees the knowledge and skills needed to safely and efficiently operate a nuclear energy plant. Simulation training is part of the essential safety culture of the corporation and plays a critical role in ENEC's on-going operational readiness preparations for the start of operations.



5.2.3 Employee Training and Development

ENEC offers employees a comprehensive suite of internal and external training and development opportunities. This ensures they have the soft skills and technical knowhow necessary to deliver effectively in their roles, while also building their future career potential.

ENEC blends traditional instructor-led courses and workshops with mobile learning in the form of eLearning and eReads, providing the flexibility for employees to continue training at times suitable to them and other organizational schedules. International training opportunities are also provided should ENEC's internal training suite be unable to cover specific training requirements. To further encourage and facilitate eLearning opportunities, ENEC has joined a major eLearning portal and made the site's courses available to employees.

Training and Development*					
	2013	2014	2015	2016*	
° Total internal training hours delivered	25,766	24,748	52,024	84,321	
 Internal training hours delivered to UAE National employees 			29,132	37,515	
 Internal training hours delivered to international employees 			22,892	46,806	
• Total external training hours delivered	10,320	15,168	86,640	37,880	
• External training hours delivered to UAE National employees	8,432	12,224	78,328	36,896	
• External training hours delivered to international employees	1,888	2,944	8,312	984	
• Average hours of internal and external training per employee	40	29	88	61	
• Number of eLearning and eReads available			416	509	
Number of eLearning and eReads completed			16,860	35,994	

*Training hours delivered does not include operator program training as part of the Energy Pioneers program, or time spent on eReads and eLearning since these are untimed and completed at employees' own pace.

The number of internal training hours delivered increased significantly in 2016, while external training hours saw a marked decrease. This was due to an increased focus on internal training in an effort to reduce costs and rely on internal resources. ENEC employees on average received 61 hours of training in 2016, a decrease of 31% compared to the previous year.

In 2016, the Training Department has worked closely with the Nawah Health and Safety Department to develop Plant Access Training that covers safety, security and radiation protection requirements. Employees who have access to radiation-controlled areas must have additional specialized training.

5.2.4 Research and Development

ENEC values research partnerships, and participates in research and education aimed at strengthening radiation science and safety outcomes. Past collaborations have included the Electric Power Research Institute (EPRI) nuclear research program. The membership has enabled ENEC to participate in staff exchanges, and access a wide array of EPRI research results and technical guidance that can inform the development and operation of the Barakah Plant. The collaboration will also enable EPRI and its global membership to collect data and draw lessons from ENEC's plants under construction that can be shared with the broader nuclear industry.

APPENDIX A – REPORT SCOPE AND BOUNDARIES

The scope and reporting boundary of this report includes operations and activities that fall under ENEC's management control, including corporate offices and activities at leased buildings in Abu Dhabi, and construction-related activities at the Barakah site and ancillary venues. Where possible, the impacts of contractors are represented in the performance and management information provided. Because the Barakah site is in the construction phase, this report does not address the impacts of consumer use of products. The impacts of ENEC's two new subsidiaries established in 2016, Nawah Energy Company and Barakah One Company, are also represented in the performance and management information provided.

This report was prepared using data and information collected in cooperation with all ENEC departments. In addition, Health, Safety and Environmental data submitted monthly by KEPCO, ENEC's Prime Contractor on the Barakah site project has been used in combination with ENEC headquarters' data to produce this report.

The information discussed in this report is based on performance and company status as of December 31, 2016. The reporting period is January 1, 2016 to December 31, 2016.

Compiling this report has helped ENEC to better understand the impact of its operations and highlights data streams that ENEC will continue to monitor for future reporting. No limitations for reporting on scope or boundary were identified during the preparation of this report.

APPENDIX B – STAKEHOLDER MAPPING

		ENEC Stakehold	der Groups
Stakeholder	Description	Interest/Role/ Expectations	Channels of Engagement
Employees	All persons directly hired and paid a salary by ENEC.	Safe, secure and dynamic work environment together with the skills development and support required to deliver effectively.	 Internal staff intranet. All staff and division meetings. Performance appraisals. Employee satisfaction surveys. Grievance system. Feedback/suggestion systems. Internal newsletters. Recognition and awards program. ENEC Life+. ENEC Women in Nuclear Chapter. Internal branding and collateral.
Potential Suppliers and Contractors	UAE and international companies that seek to supply a range of goods and services, for all phases of the program.	Regular information about volume and nature of contracts available, QA standards and requirements to tender. Transparency in the selection process.	 Visits to potential suppliers. Dedicated Industrial Development Team. Dedicated procurement portal on ENEC's corpo website. Supplier Code of Conduct.
Active Suppliers (with current contract with ENEC)	UAE and international companies that supply a range of goods and services, for all phases of the program.	Regular information about volume and nature of contracts available, QA standards and requirements to tender. Prompt payment and transparency in the selection process.	 Meetings with selected suppliers during contract duration. Bidding and tendering. Dedicated Industrial Development Team. Dedicated procurement portal on ENEC's corpo website. Supplier Code of Conduct.
Government Entities	Federal, regional and local government ministries and authorities.	Safety, security, environment, emergency preparedness, shared infrastructure and other resources.	 Site delegations, facility tours and inspections. Regular meetings and written correspondence. Program Executive Update. Stakeholder forums. Participation in governmental initiatives and campaigns. Regular reporting of environmental management and timely notification of significant incidents.
Communities and Individuals	Residents of the UAE, in particular of Abu Dhabi and the Al Dhafra Region; the location of the project site.	Potential impacts caused during project conception, construction, operations and decommissioning.	 Joint charitable and research initiatives supporting important local causes, infrastructure and events Regular community forums. Public opinion polls. Local community events and sponsorships. Access to Site Communication Officers. Engagement in partnership with government, industry bodies, and stakeholder groups (i.e. the Abu Dhabi Sustainability Group). Engagement and collaboration with a variety of NGOs.

Stakeholder	Description	Interest/Role/ Expectations	Channels of Engagement
			 Conducting community engagement meetings as required. Our own employees whose families live in the local communities. Public reports as required. Media relations activities.
Nuclear Industry Organizations	Nuclear-specific industry bodies including multilateral organizations, associations and advisory bodies.	Information sharing and knowledge transfer, industry best practices, safety and security, technology, etc.	 Regular meetings and workshops. Regular reports and program updates. Delegations to site. Shared initiatives. Knowledge-sharing forums. Interactive dialogue. Reporting. Media relations activities. International Advisory Board. Associated events, seminars, conferences and regional events.
Media	Local, regional and international media.	On-going access to timely, comprehensive information about the project.	 Regular press releases about the latest project updates and important events. In-depth background media briefings. Nuclear energy training for journalists. Executive Interviews and Q&As. Project news and updates. Media relations activities. Public reports. Press conferences and events. Social media.
International Organizations, Government and Financial Institutions	Multilateral organizations, governments of GCC nations, governments of civilian nuclear energy programs.	On-going access to timely, comprehensive information about the project.	 Delegations and events. Program Executive Update. Responding to on-going requests for information. Public reports. Conferences and workshops.
Academic Institutions	Federal, regional and international academic institutions.	Involvement in human capacity development, vocational and technical training, bachelors and masters programs.	 Energy Pioneers Programs. Regular events and career fairs at schools and universities, and dedicated ENEC forums for campuses.
Non- Governmental Organizations	Environmental and social interest groups.	Potential environmental and social impacts/ issues during all phases of the project.	 One-to-one meetings with NGOs as appropriate. ENEC Public Forums. Reporting. Media relations activities.

APPENDIX C – GRI MATERIAL ISSUES

	ENEC Material Issues
1	Personal safety
2	Exposure to nuclear radiation
3	Emergency preparedness
4	Health of employees and contractors
5	On-time construction and transition
6	Radioactive waste management
7	Compliance with environmental regulation
8	Security of fuel supply
9	Localization and security of the supply chair
10	Employment and development of the local population
11	Training and development
12	Anti-corruption
13	Talent attraction, satisfaction and attrition
14	Workforce and contractor grievances
15	Delivery within budget
16	Engagement with the local community
17	Direct and indirect economic contribution
18	Support for nuclear education
19	Supplier environmental impact
20	Supplier social and human rights impacts
21	Female representation and non-discrimination
22	Future financial planning
23	Waste hierarchy
24	Biodiversity impact
25	Energy and water management
26	Air quality and GHG emissions
27	Recyclability of materials used
28	Research and development

GRI Material Issues

Occupational health and safety Occupational health and safety Disaster / emergency planning and response Occupational health and safety Effluents and waste Environmental compliance Procurement practices Market presence Training and education Anti corruption Employment Economic performance Local communities Indirect economic impacts Local communities Supplier assessments Supplier social assessment Diversity and equal opportunity, nondiscrimination Effluents and waste Biodiversity Energy, water Emissions Materials Research and development

APPENDIX D – GRI G4 CONTENT INDEX



ENEC has developed this report 'in accordance' with the GRI G4 Guidelines core reporting option. As signified by the icon above, the report has successfully completed a Materiality Disclosure Service provided by the GRI. The table below is an index of the GRI disclosures included in this report as per the G4 Guidelines.

GENERAL STANDARD DISCLOSURES			
General Standard Disclosures	Page Number	External Assurance	
STRATEGY AND ANALYS	IS		
G4-1	6-7		
ORGANIZATIONAL PROF	ILE		
G4-3	The Emirates Nuclear Energy Corporation (ENEC)		
G4-4	11-13		
G4-5	Abu Dhabi		
G4-6	UAE		
G4-7	Government Owned		
G4-8	UAE		
G4-9	21-23		
G4-10	68-70		
G4-11	UAE labor law does not have a provision for collective bargaining		
G4-12	58-62		
G4-13	There were no significant changes during the reporting period.		
G4-14	7		
G4-15	38		
G4-16	38, 79		
IDENTIFIED MATERIAL AS	SPECTS AND BOUNDARIES	5	
G4-17	ENEC has no public financial statements		
G4-18	17-18		
G4-19	81		
G4-20	19		
G4-21	19		
G4-22	No restatements		
G4-23	No significant changes		

STAKEHOLDER ENGAGEMENT			
G4-24	79-80		
G4-25	25, 79, 80		
G4-26	79, 80		
G4-27	79, 80		
REPORT PROFILE	REPORT PROFILE		
G4-28	2016		
G4-29	2015		
G4-30	Annual		
G4-31	5		
G4-32	4, 82		
G4-33	5		
GOVERNANCE			
G4-34	29-32		
ETHICS AND INTEGRITY			
G4-56	31		

SPECIFIC STANDARD DISCLOSURES			
DMA and Indicators	Page Number	Omissions	External Assurance.
	CATEGORY	ECONOMIC	
MATERIAL ASPECT: ECO	NOMIC PERFORMANCE		
G4-DMA	58-59		
G4-EC1		The information is subject to specific confidentiality constraints as it relates to government finances and therefore can not be included	
G4-EC4	59		
MATERIAL ASPECT: MAR	KET PRESENCE		
G4-DMA	73		
G4-EC6	73, 74		
MATERIAL ASPECT: INDI	RECT ECONOMIC IMPACTS	3	
G4-DMA	59-62		
G4-EC8	59-61		
MATERIAL ASPECT: PRO	CUREMENT PRACTICES		
G4-DMA	62		
G4-EC9	62		
	CATEGORY: E	NVIRONMENTAL	
MATERIAL ASPECT: MATE	ERIALS		
G4-DMA	44-46		
G4-EN1	44-46		

MATERIAL ASPECT: ENE	RGY		
G4-DMA	47		
G4-EN3	47		
G4-EN4	47		
MATERIAL ASPECT: WAT	ER		
G4-DMA	47, 48		
G4-EN8	47, 48		
G4-EN10	47, 48		
MATERIAL ASPECT: BIOD	DIVERSITY		
G4-DMA	50		
G4-EN13	50, 51		
MATERIAL ASPECT: EMIS	SIONS		
G4-DMA	49		
G4-EN15	49, 50		
G4-EN16	49, 50		
G4-EN17	49, 50		
MATERIAL ASPECT: EFFL	UENTS AND WASTE		
G4-DMA	44-46		
G4-EN22	44-46		
G4-EN23	44-46		
MATERIAL ASPECT: CON	IPLIANCE		
G4-DMA	44		
G4-EN29	44		
	CATEGO	RY: SOCIAL	
S	UB-CATEGORY: LABOR PR	ACTICES AND DECENT WORK	
MATERIAL ASPECT: EMP	LOYMENT		
G4-DMA	70		
G4-LA1	70		
G4-LA2	71-74		
MATERIAL ASPECT: OCCUPATIONAL HEALTH AND SAFETY			
G4-DMA	38		
G4-LA6	38		
MATERIAL ASPECT: TRAINING AND EDUCATION			
G4-DMA	74-76		
G4-LA9	76-77		
MATERIAL ASPECT: DIVE	RSITY AND EQUAL OPPOF	RTUNITY	
G4-DMA	68-72		
G4-LA12	68-72		
MATERIAL ASPECT: SUP	PLIER ASSESSMENT FOR I	ABOR PRACTICES	
G4-DMA	63-64		
G4-LA14	63-64		

MATERIAL ASPECT: LABO	OR PRACTICES GRIEVANCE
G4-DMA	52, 54
G4-LA16	52, 54
	SUB-CATEGORY
MATERIAL ASPECT: NON	-DISCRIMINATION
G4-DMA	No grievances related to human rights were known or reported to the Ethics Helpline
G4-HR3	Zero
MATERIAL ASPECT: FOR	CED OR COMPULSORY LAI
G4-DMA	No risk for incidents of child labor or forced labor
G4-HR6	None
MATERIAL ASPECT: SECU	JRITY PRACTICES
G4-DMA	41
G4-HR7	41
MATERIAL ASPECT: SUPP	PLIER HUMAN RIGHTS ASS
G4-DMA	61, 63, 64
G4-HR10	62
	SUB-CATEG
MATERIAL ASPECT: LOC/	AL COMMUNITIES
G4-DMA	26, 27, 79, 80
G4-SO1	100%
MATERIAL ASPECT: ANTI	-CORRUPTION
G4-DMA	31
G4-SO4	31
MATERIAL ASPECT: COM	PLIANCE
G4-DMA	31
G4-SO8	No non compliance

E MECHANISMS	
Y: HUMAN RIGHTS	
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ORY: SOCIETY	
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APPENDIX E – ACRONYMS AND GLOSSARY

Acronyr	ns		
ADAA	Abu Dhabi Accountability Authority	IAEA	International Atomic Energy Agency
ADSG	Abu Dhabi Sustainability Group	INPO	Institute of Nuclear Power Operations
AED	United Arab Emirates Dirham	ISO	International Organization for Standardization
APR	Advanced Power Reactor	KEPCO	Korea Electric Power Corporation
ARCC	Audit, Risk and Compliance Committee	kWh	Kilowatt-Hour
BCM	Business Continuity Management	LTIFR	Lost-Time Injury Frequency Rate
CEMP	Construction Environmental Management Plan	m ₃	Cubic Meter
CEO	Chief Executive Officer	MW	Mega Watt
CICPA	Critical Infrastructure and Coastal Protection Authority	NERC	Nuclear Emergency Response Center
CSR	Corporate Social Responsibility	NGO	Non-Governmental Organization
EAD	Environment Agency - Abu Dhabi	NOx	Nitrogen Oxides
EC	Executive Committee	NPP	Nuclear Power Plant
ENEC	Emirates Nuclear Energy Corporation	O ₃	Ozone
EPRI	Electric Power Research Institute	OEMP	Operational Environmental Management Plan
ERM	Enterprise Risk (Threat and Opportunity) Management	OEP	Onsite Emergency Plan
ERMC	Executive Risk Management Committee	OHSAS	Occupational Health and Safety Advisory Services
ERO	Emergency Response Organizations	PSC	Procurement and Supply Chain
ERT	Emergency Response Team	QA	Quality Assurance
FANR	Federal Authority for Nuclear Regulation	SOx	Sulfur Oxides
GCC	Gulf Cooperation Council	SCSR- WG	Sustainability and Corporate Social Responsibility Working Group

GDP	Gross Domestic Product
GHG	Green House Gas
GRI	Global Reporting Initiative
HCC	Human Capital Committee
HSE	Health, Safety and Environment
HSEMS	Health, Safety and Environment Management System
HQ	Head Quarters

TRCFR	Total Recordable Case Frequency Rate
UAE	United Arab Emirates
U.K.	United Kingdom
USD	United States Dollar
WANO	World Association of Nuclear Operators
WBCSD	World Business Council on Sustainable Development
WiN	Women in Nuclear
WRI	World Resources Institute

Glossary

Notes:

Climate Change	Describes changes in the variability or average stage of the atmosphere over time scales ranging from decades to millions of years.
Emiratization	A natural program initiated by the government of the United Arab Emirates to proactively increase the number of UAE nationals in the public and private sectors to empower nationals and reduce dependency on foreign workers.
Environmental Management System	The management of environmental programs on a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection.
G4 Reporting Guidelines	A fourth generation framework for reporting on an organizations' economic, environmental and social performance, managed by the GRI.
Global Reporting Initiative (GRI)	A long-term multi-stakeholder, international process whose mission is to develop and disseminate globally applicable sustainability reporting guidelines.
Greenhouse Gas Emissions	Gas emissions which contribute to the trapping of heat inside the atmosphere (resulting in the Global Warming phenomenon). These gases include carbon dioxide, methane or hydro fluorocarbon emissions.
Gulf Cooperation Council	A political and economic union involving the six Arab states of the Arabian Gulf with many economic and social objectives.
Nuclear Energy	The energy released during nuclear fission or fusion, especially when used to generate electricity.
Nuclear Fission	When the nucleus of an atom splits and releases energy, primarily in the form of heat. Nuclear energy plants use steam, turbines and generators to turn the heat released by fission into electricity.
Nuclear Fuel Cycle	The series of industrial processes which involve the production of electricity from uranium in nuclear energy reactors. This can include uranium discovery, conversion, enrichment, deconversion, fuel fabrication, use of fuel in reactors, storage, reprocessing and disposal.
Occupational Health and Safety	A cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment.
Radioactive	Emitting or relating to the emission of ionizing radiation or particles
Renewable Energy	Energy from a source that is not depleted when used.
Stakeholder Engagement	The process by which a firm's stakeholder engage in dialog to improve a firm's decision- making and accountability toward sustainable development.
Stakeholders	A party that affects or can be affected by the actions of the business.
Sustainability	The definition of Sustainability derives from the definition of Sustainable Development; Sustainable Development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs - World Commission on the Environment and Development (WCDE) 1987
Sustainability Reporting	The voluntary public presentation of information about an organization's environmental, social and economic performance over a time frame, usually released annually. International standards around reporting, such as GRI make sustainability reporting a platform for sharing and benchmarking individual company, as well as sector wide performance. Sustainability reporting may be published as a stand-alone document, on a company web site or incorporated into an annual report.

Notes: