

# **SUSTAINABILITY REPORT 2009**



Our Vision, Our Future

"On land and in the sea, our forefathers lived and survived in this environment. They were able to do so because they recognized the need to conserve it, to take from it only what they need to live, and to preserve it for succeeding generations."

> Sheikh Zayed Bin Sultan Al Nahyan May Allah Almighty rest his soul in eternal peace.

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This report is also available at www.adnoc.ae/sustainability

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# ADNOC and its Group of Companies Sustainability Charter

On November 11<sup>th</sup> 2009, ADNOC's Deputy CEO and Exploration and Production Director and the General Managers of the Group Companies signed ADNOC's Sustainability Charter.

ADNOC's Sustainability Charter has been translated from Arabic and is presented below:

At ADNOC, we recognize that the challenges facing the world today, particularly in the oil and gas industry, make it imperative to focus greater efforts in creating suitable solutions to overcome these challenges, in accordance with the principle of sustainability. We recognize this principle as a comprehensive approach to achieving progress across all fronts.

As part of our interest to realizing the United Arab Emirate's vision for an all encompassing, comprehensive and sustainable progress, the Supreme Petroleum Council (SPC)/ADNOC has commenced a strategic initiative into each of its corporate decisions and policies with a view to achieving sustainable management.

We understand that sustainability, as a comprehensive approach, is a collective and shared responsibility. Through the implementation of SPC/ADNOC's initiative and strategy, we seek to achieve the maximum possible contribution of efforts, at both the federal and local levels.

Therefore by signing this charter, we declare our commitment to implementing an approach to sustainability, at the corporate level within the oil and gas sector, in alignment with the Government of Abu Dhabi's vision for the future.







The new ADNOC corporate headquarters building is currently under construction. The building will adopt 'Green Building' standards and will reflect the importance of ADNOC as one of the world's leading oil and gas companies.

# Message from the CEO

I am very pleased to present our first annual Sustainability Report. Although this is the first Sustainability Report for ADNOC and its Group Companies, our performance reporting dates back to 1997, when we officially started reporting on our health, safety and environment (HSE) performance in annual HSE Reports.

Our annual HSE Report has served as an important tool that helped us chart our progress and improve our HSE performance. It also helped to motivate our Group Companies to actively explore improvement opportunities.

In 2009, ADNOC, as a founding member of the Abu Dhabi Sustainability Group, committed to report on its sustainability performance. Consequently, our annual HSE Report has evolved into our annual Sustainability Report, through expanding the scope of reporting to include additional sections disclosing more details about our environmental, social and economic performance. Our annual Sustainability Report will continue to evolve as we enhance our sustainability reporting framework, and will continue to serve as a tool to continuously improve our performance.

As this is the first Sustainability Report, prepared according to the Global Reporting Initiative (GRI) framework, not all of the indicator data was readily available. However, systems and processes are currently being developed and implemented, so that in future years we can improve our sustainability performance reporting.

The safety of our employees is one of our most important concerns. As we always reiterate, one fatality is one too many. Regretfully, despite our continuous efforts to prevent accidents, there were seven work related fatalities in 2009, one employee and six subcontractors, amongst ADNOC and its Group Companies. To prevent such incidents from occurring in the future, we have thoroughly investigated the root cause of these incidents and implemented all necessary measures.

ADNOC has always strived to develop its business in a sustainable manner, and this is being conducted in alignment with strategic plans, that are environmentally, socially and economically responsible. For example, in 2009 we implemented the Rumaitha Enhanced Oil Recovery (EOR) pilot project, the first CO<sub>2</sub> EOR pilot project in the Middle East. This project was executed in collaboration with Masdar in an effort to maximize the amount of oil recovered from reservoirs and to reduce CO<sub>2</sub> air emissions.

As we are aware that much work remains to be done, and that many challenges need to be addressed, we remain committed to demonstrate leadership in sustainability performance and will continue to play a key role in the sustainable development of the Emirate of Abu Dhabi.

Yousef Omair Bin Yousef Secretary General of the Supreme Petroleum Council Chief Executive Officer - ADNOC

# **About ADNOC**

### Abu Dhabi National Oil Company (ADNOC)

Abu Dhabi National Oil Company (ADNOC) was established on the 27th of November 1971 to operate in all areas of the oil and gas industry in Abu Dhabi, United Arab Emirates (UAE). Since its establishment, ADNOC has steadily broadened its business interests through its Group Companies, creating an integrated network for oil and gas exploration, production, refining, processing, distribution and global marketing.

ADNOC's headquarters are located in Abu Dhabi city in the Emirate of Abu Dhabi, UAE. ADNOC's major operations are based in the UAE. Some of the joint ventures have offices in other countries, such as BOROUGE which has marketing operations across Asia.

As one of the world's leading oil and gas companies, ADNOC strives to maintain an outstanding sustainability performance. ADNOC's track record in occupational health and safety and protection of the environment leads the oil and gas industry around the Middle East and the Arabian Gulf. ADNOC has also established a number of educational institutions to train and develop UAE nationals.

In recent years, exploration activities have continued using state of the art seismic analysis in order to increase the proven reserves. Oil production capacity has been expanded, and recovery rates from existing oil reservoirs have been improved.

The Emirate of Abu Dhabi has the fourth largest proven national oil reserves and the sixth largest proven national gas reserves. ADNOC manages and oversees oil production of more than 2.5 million barrels per day (bpd), which ranks it amongst the top 10 oil and gas producing companies in the world.

### The Supreme Petroleum Council

The Supreme Petroleum Council (SPC) was established under law No. 1 of 1988. The law stipulates that the Council is the superior authority responsible for the petroleum industry in the Emirate of Abu Dhabi. The Council formulates and oversees the implementation of Abu Dhabi's petroleum policy, and follows up its implementation across all areas of the petroleum industry to ensure that the set goals are accomplished.

H.H. Sheikh Khalifa Bin Zayed Al-Nahyan, the President of the UAE and Ruler of Abu Dhabi, is the Chairman of the SPC.



### **Group Companies**

As a fully integrated oil and gas company, ADNOC's operations include all aspects of upstream and downstream processes in the petroleum industry.

ADNOC is essentially a holding company comprised of the following Directorates responsible for the Group Companies listed below. ADNOC operations are divided into separate Group Companies and independent operators. Some Group Companies are equity partnerships with other leading international oil and gas companies.

#### **Exploration and Production Directorate**

- Abu Dhabi Company for Onshore Oil Operations (ADCO)
   Oil exploration, production and export for onshore oilfields
- Abu Dhabi Gas Development Company Ltd. Exploration and production of gas
- Abu Dhabi Gas Liquefaction Company Ltd. (ADGAS)
   Liquefaction and marketing of natural and petroleum
   gases
- Abu Dhabi Marine Operating Company (ADMA-OPCO)
   Offshore oil and gas production
- Abu Dhabi Gas Industries Ltd. (GASCO)
   Processing and distribution of liquefied gas products
- ELIXIER
   Production of specialist gases
- National Drilling Company (NDC)
   Onshore and offshore drilling
- Zakum Development Company (ZADCO) Oil production of the offshore Upper Zakum, Umm Al-Dalkh and Satah fields

#### **Marketing and Refining Directorate**

- ADNOC Distribution
   Distribution, storage and transportation of refined
   products
- Abu Dhabi Oil Refining Company (TAKREER)
   Refining of crude oil and condensate, supplying
   petroleum products and sulphur granulation
- Abu Dhabi National Tanker Company and National Gas Shipping Company (ADNATCO-NGSCO) Transportation of crude oil, refined oil products and liquefied gas products

#### **Petrochemicals Directorate**

- Borouge
  - Abu Dhabi Polymers Company Ltd. Processing and production of ethylene and polyethylene
  - Borouge PTE Ltd. Marketing and sale of products
- Ruwais Fertilizer Industry (FERTIL)
   Production and marketing of urea and ammonia at a plant in Ruwais

### Shared Services Directorate

- ESNAAD
   Offshore support-supply base services
- Abu Dhabi Petroleum Ports Operating Company (IRSHAD)
   Managing operations of oil exporting ports such as
   Ruwais and Jebel Dhanna

#### **Independent Operators**

In addition to the Group Companies, ADNOC also has independent operators, and these operate under ADNOC/ SPC direction for HSE matters:

- Abu Dhabi Oil Company (Japan) Ltd. (ADOC)
- BUNDUQ
- Total Abu Al Bukhoosh (TOTAL ABK)

#### ADNOC Group Companies: Location, Role & Ownership



\* Independent Operators (Operate under ADNOC/SPC directions for HSE matters) Percentages refer to ADNOC's ownership stake in each Group Company

#### **Academic Institutions**

ADNOC established and supports three academic institutions and these are:

- **Petroleum Institute (PI)** Provides engineering and science programmes related to the oil and gas industry at a university level
- ADNOC Technical Institute (ATI)
   Provides oil and gas related technical training to UAE
   nationals
- Glenelg School of Abu Dhabi
   Offers the benefits of a world-class secondary
   education to UAE nationals and expatriates

#### Other

Civil Project Division (CPD)
 Manages ADNOC's civil construction projects

### **Production**

The largest market served by ADNOC's products is Asia.

#### Crude oil exported in 2009 (000 tonnes)

Destination	Total
Asia	402,075
Australia and New Zealand	1,955
Africa	1,168
Total	405,198

Seventy percent of the total annual production of ADNOC's refined products is exported. The distribution of refined exports is presented below.

#### Refined products exported in 2009 (000 tonnes)

Destination	Naphtha*	Jet A-1	Gas oil	Fuel Oil 380 cst	Total
Asia	4,595	198	362	196	5,351
Europe	-	2,258	83	-	2,341
Africa	-	193	247	-	440
South America	-	103	-	-	103
Total	4,595	2,752	692	196	8,235

\* Naphtha includes low sulphur naphtha, paraffinic naphtha and naphtha

#### Gas and sulphur exported in 2009 (000 tonnes)

Destination	LPG**	Sulphur
Asia	2,892	966
Africa	3	457
Australia	42	-
South America	32	31
Europe	-	35
Total	2,969	1,489

\*\* Total export of propane and butane

In 2009, 426,669 tonnes of ammonia, 457,753 tonnes of urea and 586,000 tonnes of polymer were exported.

### Changes In 2009

Significant structural changes took place in 2009. ADNATCO and NGSCO, both product shipping companies, were merged to increase efficiency. The ADNOC Human Resources and Administration Directorates were also merged as part of a reorganisation to better align management with the CEO's vision.

ADNOC entered into a joint venture to develop the Shah Gas Field forming a new company, the Abu Dhabi Gas Development Company Ltd. The Shah project is designed to produce, process and transport one billion cubic feet of sour gas per day by 2014 and will include one of the largest sulphur removal plants in the world.

In an effort to enter new markets, ELIXIER, a specialist gases manufacturer, was created as a joint venture with Linde.

BOROUGE signed a 10 year service contract with CWT Logistics Pte. Ltd, Singapore to establish the BOROUGE South East Asia Logistics Hub and to provide local logistics services for customers in South East Asia, Australia, New Zealand and the Pacific.



# **About This Report**

### **Report Parameters**

This is ADNOC's first annual Sustainability Report. It is replacing the annual HSE Report which commenced publication in 1997. This report covers the calendar year of 2009. Future ADNOC annual Sustainability Reports will address ADNOC's sustainability performance in the preceding calendar year.

Compiling this report generated invaluable data streams and helped us to better understand our own operations. We intend to use these findings to improve our operations. We look forward to sharing new policies, control measures and other developments in next year's report.

The content of this report has been guided by the Global Reporting Initiative's G3 Sustainability Reporting Guidelines (GRI G3). These guidelines provide a globally recognised framework for reporting on an organisation's economic, social and environmental performance. ADNOC has endeavoured to report on all relevant GRI G3 indicators.

### Scope of the Report

As part of the reporting process, a series of internal and external stakeholder workshops were held and material issues from the stakeholders' perspectives were identified. To ensure the quality of the information reported, the principles of balance, completeness, comparability, accuracy, timeliness, reliability, and clarity have been followed.

All ADNOC Group Companies that were fully operational during 2009 were included in this report. This report does not cover the Abu Dhabi Gas Development Company Ltd. which was formed in 2009. This report does not address the impacts of consumer use of products.

### About Our Data

Sustainability performance data included in this report has been collected from each ADNOC Group Company and combined to reflect ADNOC's overall performance.

Group Companies are required by ADNOC to submit an annual report of their sustainability performance to SPC. Data reported via these annual reports has been used in the past to produce ADNOC'S annual HSE Report. In 2009, the annual report was enhanced to incorporate GRI indicators. The Group Companies were responsible for data collection and verification. The data was then collated, analyzed, and interpreted by the SPC Environment, Health and Safety (EH&S) Division and used to produce this report.

Typically, quantitative indicators that correspond to data sets reported in previous annual HSE Reports, such as emissions generated, were calculated with greater precision than indicators which are being reported on for the first time. However, some indicators which were previously covered by the annual ADNOC HSE Letter have now been calculated using different methodologies. Therefore, the historical trends for certain indicators may not be comparable.

This inaugural ADNOC Sustainability Report has not been subject to external assurance.





### **Stakeholder Engagement**

We define stakeholders as groups or individuals who can be significantly affected by ADNOC and its Group Company activities, products and services, and whose actions can affect the ability of ADNOC and its Group Companies to successfully implement their strategies and achieve their objectives.

For this first Sustainability Report, ADNOC conducted targeted stakeholder engagement focusing on the stakeholders most directly involved in ADNOC's sustainability efforts – its own workforce. Numerous internal discussions surrounding what sustainability means for ADNOC took place as part of this engagement throughout the reporting process.

Four levels of internal stakeholders were engaged: Directorate management, Group Company management, sustainability specialists in each Group Company and general employees.

Over 25 sessions were conducted to help educate and engage the attending ADNOC employees. These sessions were followed by a documented conversation of significant issues and concerns to be addressed through the reporting process.

A two day workshop was also held with sustainability specialists from each Group Company to review reporting protocols, provide sustainability reporting training and ensure that the final report addressed their areas of concern.

Larger sessions were open to all ADNOC employees, and attendees were encouraged to complete a sustainability aspect ranking exercise.

The following table shows the internal stakeholder feedback gathered from ADNOC employees. In keeping with an arid region, the issue deemed to be most important was the use of water. Preventing environmental pollution was second. The primary focus of stakeholder engagement for this report was internal. Some external feedback was collected via surveys. The primary areas of concern identified by the external stakeholders were preventing environmental pollution and ADNOC's consumption of natural resources. ADNOC plans to conduct additional formal external stakeholder engagement in the future and will not only include these findings in subsequent reports but use them to guide operations.

Issue	Importance (0-100)
Use of water	95
Preventing environmental pollution	95
Occupational Health and Safety	93
Impacts on the UAE economy	90
Worker rights	87
Waste and effluent control	86
Climate change/air emissions	86
Energy efficiency	86
Employee satisfaction	86
Impacts on surrounding community	84
Profitability	83
Reputation	82
Consumption of natural resources	82
Sustainability awareness	82
Contractor operations and impacts	80
Transparency	80
Conservation of biodiversity	79
Impact of products	76
Use of renewable energy	76
Supplier operations and impacts	74

The table on the next page summarises our key internal and external stakeholders and how we engage with them.

Our Key Stakeholders How We Engage With Our Key Stakeholders		
Customers	<ul><li>Face to face interviews</li><li>Phone interviews</li><li>Self-administered survey and feedback</li></ul>	<ul><li>Fax survey forms or online survey forms.</li><li>Call centres</li></ul>
Employees	<ul><li>Team meetings</li><li>Employee appraisals</li><li>Suggestion scheme</li><li>Surveys</li><li>Intranet and e-mail</li></ul>	<ul> <li>Newsletters and company magazines</li> <li>Training programmes</li> <li>Seminars</li> <li>Workshops</li> <li>Social and environmental activities</li> </ul>
Government Organisations	<ul><li>Meetings</li><li>Workshops</li><li>Strategic planning forums</li></ul>	<ul><li>Visits by government representatives</li><li>Providing access to company information and data</li></ul>
Partners and Shareholders	<ul><li>Meetings</li><li>Reports</li></ul>	<ul><li>Newsletters and company magazines</li><li>Joint project communications</li></ul>
Press/Media	<ul> <li>Press releases in newsletters, newspapers and magazines</li> <li>Visits by the press</li> <li>Phone calls</li> </ul>	<ul><li>Conferences</li><li>Seminars</li><li>Exhibitions</li></ul>
Public	<ul> <li>Meetings</li> <li>Participation in events</li> <li>Sponsorship of and involvement in social and environmental activities</li> <li>Conferences</li> </ul>	<ul> <li>Seminars</li> <li>Exhibitions</li> <li>Reports</li> <li>Press releases, newsletters, newspapers and magazines</li> </ul>
Suppliers	<ul><li>Meetings</li><li>Conferences</li><li>Seminars</li></ul>	<ul><li>Workshops</li><li>The tender process</li></ul>

### **Key Stakeholder Issues**

The three primary areas of concern for our stakeholders preventing environmental pollution, the use of water, and the consumption of natural resources - are issues which we have long been concerned with and devote a large amount of resources to, as detailed in this report. In 2009, ADNOC spent 4.66 million UAE Dirhams (AED) supporting a number of industry and community events as shown in the table below. This reflects ADNOC's diverse external stakeholder engagement.

Event	Location	Date	Sponsorship Cost (AED)
	Industry		
Exhibition and Conference on the Environment, 2009	Abu Dhabi, UAE	19-21 January 2009	500,000
World Future Energy Summit 2009	Abu Dhabi, UAE	19-21 January 2009	800,000
Annual Conference for Energy	Abu Dhabi, UAE	2-4 February 2009	145,000
Gas Arabia 2009	Abu Dhabi, UAE	12-14 February 2009	60,000
MEOS Exhibition 2009	Manama, Bahrain	15-18 March 2009	450,000
Hanover International Industrial Exhibition	Hanover, Germany	20-24 April 2009	350,000
Annual Technical Meeting of the Manufacturers	Abu Dhabi, UAE	6 May 2009	95,000
Association Gas GPA-GCC			
GASTK Conference 2009 in Abu Dhabi	Abu Dhabi, UAE	25-28 May 2009	900,000
International Conference on Petroleum Technology IPTC 2009	Doha, Qatar	6-9 December 2009	590,000
	Community		
Camel Race Festival	Alothbah, UAE	21 March 2009	500,000
Sponsoring the Traffic Week 2009	Abu Dhabi, UAE	15-21 March 2009	20,000
Care competition for the best projects, research and reports	Western Region, UAE	December 2009	50,000
Auspices of the FA Youth Cup Campaign	Egypt	24 September – 14 O	ctober 2009 200,000
TOTAL			4,660,000

## **ADNOC Governance and Strategy**

The Supreme Petroleum Council (SPC) formulates and oversees the petroleum policies of Abu Dhabi. It establishes government positions and provides oversight of ADNOC's operations.

ADNOC aims to have a sustainability performance it can be proud of. It aims to be a good neighbour, contribute to sustainable development and earn the confidence of customers, joint venture partners and the society at large. To do so, ADNOC has established the following statement of commitment, HSE Policy and HSE objectives, as shown below.

### **Statement of Commitment**

ADNOC and its Group Companies are committed to:

- Pursue the goal of no harm to people and the community
- Reduce greenhouse gas emissions in order to mitigate climate change
- Promote the use of renewable energy in our business
- Protect the environment and biodiversity
- Promote Corporate Social Responsibility and report on sustainability performance
- Develop and use energy and water resources efficiently
- Manage HSE matters with the diligence accorded to any of its other critical business activities
- Play a leading role in promoting best practices in our industries
- Promote a culture in which all Group employees share this commitment
- Be transparent in the public reporting of the Group's HSE performance

Sustainability in ADNOC is being built from the solid foundation of our long standing HSE Policy and commitment to an outstanding HSE performance. ADNOC's HSE Policy drives much of our operations and we aim to perform as well as, if not better than, our international joint venture business partners.

#### **HSE** Policy

ADNOC Group Companies shall:

- Have a systematic approach to HSE management designed to ensure compliance with ADNOC Codes of Practice, Abu Dhabi and U.A.E. Laws and Regulations, and applicable international standards;
- Conduct activities in a manner designed to minimise HSE risks to a level which is As Low As Reasonably Possible (ALARP);
- Set targets for continuous HSE performance improvements;
- Measure, appraise and report on HSE performance;
- Hold appropriately empowered line management staff accountable for HSE performance;
- Include HSE competencies and performance in the appraisal and reward of all staff;
- Develop and maintain business continuity plans;
- Empower employees to refrain from actions that are considered a threat to HSE values; and
- Require contractors to manage HSE in line with this policy.

ADNOC and the Group Companies will implement this policy through a documented HSE Management System and conduct periodic audits to verify compliance.



To further the HSE Policy, ADNOC has developed a comprehensive set of HSE objectives in an effort to build on its track record and continue to improve its HSE performance.

### **HSE Objectives**

Health and Safety	No harm to people and surrounding communities		
Flaring	Strive towards ultimate elimination of hydrocarbon flaring		
Green House gases	Reduce emissions, improve energy efficiency and promote renewable energy		
Sustainable Development	Promote sustainable development and corporate social responsibility		
Venting	Elimination of continuous venting of hydrocarbons and other toxic gases		
Biodiversity	Protect and restore natural biodiversity		
Halons and CFCs	Zero losses of halons and CFCs by gradual elimination and replacement		
Resources	Sustainable use of resources - land, energy and raw materials		
Oil-based drilling mud and cuttings	Minimize the use of oil-based mud, recycle and dispose of drilling mud and contaminated cuttings in ways that does not release contaminants to the environment.		
Solid wastes	Minimize and control all domestic, industrial, medical, hazardous and special waste. Treat and dispose as per ADNOC Codes of Practice.		
Water	Minimize water consumption and promote water conservation		
Oil and chemical spills	Prevent oil and chemical spills. If they do occur, control and mitigate the impact		

Aside from specific HSE commitments, policies and objectives, a respect for human rights and an appreciation for community engagement are embedded in our operations. We fully comply with the UAE labour law that covers social aspects and human rights issues and expect people who do business with us in Abu Dhabi to do the same.

### Abu Dhabi Sustainability Group

ADNOC is a member of the Abu Dhabi Sustainability Group (ADSG) and as such has committed to:

- Raise awareness and understanding of the principles of sustainability;
- Encourage the integration of sustainability management practices;
- Support sustainability initiatives within the Emirate of Abu Dhabi and enhance opportunities for international recognition; and
- Issue an annual Sustainability Report.





ADNOC is a signatory and founding member of the ADSG as shown below.



As part of its commitment to the ADSG, ADNOC launched 'The ADNOC Sustainability Performance Initiative' in 2009 with the following aims:

- Improve our understanding and awarenes of sustainability and our corporate vulnerabilities and strengths;
- Make informed decisions to develop and implement sustainability policies and programs; and
- Apply our sustainability strategy to ADNOC's management frameworks with the overall goal to treat our employees well, to respect the communities in which we operate, to develop sound corporate governance, to ensure environmental preservation, and to actively support philanthropy, human rights and economic prosperity.

ADNOC is striving to implement the Sustainability Performance Initiative because it is an integral element of ADNOC's commitment to achieving excellence within its overall HSE performance, and is in line with ADNOC's corporate strategic objectives. Furthermore, the initiative promotes Corporate Social Responsibility (CSR) which has been a theme of increasing importance to ADNOC and its Group Companies, as demonstrated by the number of CSR publications that Group Companies are producing. Finally, the Sustainability Performance Initiative enhances ADNOC's contribution to preserving the UAE's rich cultural heritage.



The Sustainability Performance Initiative aims to achieve the following objectives in 2009-2010:

- Improve ADNOC and Group Companies' ability to identify and understand sustainability benefits, vulnerabilities, and strategy adaptation steps, in order to efficiently and effectively implement practical management actions;
- Enhance cooperation between ADNOC, the Group Companies and the relevant internal and external stakeholders, with the aim of constructively developing and executing an overall sustainability strategy and policy framework;
- Produce ADNOC's first Sustainability Report which will transparently report the performance of ADNOC and its Group Companies; and
- Integrate ADNOC and the Group Companies' sustainability strategy, results and policy, into ADNOC and its Group Companies' long-term sustainable development plans.

#### **Sustainability Website**

ADNOC has launched a sustainability website which provides an overview of ADNOC's commitment to sustainability and covers the following topics:

- What is Sustainability;
- Policies and Strategic Objectives;
- Success Stories; and
- Upcoming Events.

The website address is: www.adnoc.ae/sustainability

### **HSE/Risk Management**

Over the years, ADNOC has steadily maintained the balance between accomplishing core business objectives and mitigating potential adverse impacts on surrounding communities and the environment.

ADNOC places great emphasis on HSE risk management at every stage of its operations. As a result, Group Companies are required to prepare Health, Safety and Environmental Impact Assessments (HSEIAs) for all projects, and conduct additional technical risk studies depending on the nature of the project.

ADNOC and its Group Companies manage HSE at three different levels:

1. ADNOC Group HSE Steering Committee (AGHSESC) (Corporate Committee) – members consist of HSE managers of each ADNOC Group Company and they oversee, monitor and co-ordinate, at a corporate level, all aspects of HSE functions in ADNOC Group Companies.

AGHSESC has four specific sub-committees: the Environment Sub-Committee; the Oil Spill and Crisis Management Sub-Committee; the Safety Sub-Committee and the Occupational Health Sub-Committee.

2. Corporate Environment, Health and Safety Division in SPC – functions include environment protection, health, safety, oil spill and crisis management. Roles and responsibilities include corporate HSE policy and strategy development, corporate governance and professional services.

3. Individual HSE Divisions in each Group Company – responsible for all managerial and operational aspects of HSE within the Group Company.

ADNOC and its Group Companies employ a range of measures to control and minimize risks including:

- Risk assessments;
- Business interruption and liability studies;
- External and internal audits;
- Technical Assessments including HSEIAs, Quantitative Risk Assessment (QRAs), Hazard and Operability studies (HAZOPs); and
- Health, Safety and Environmental Managemant Systems (HSEMS).

ADNOC Codes of Practice (CoP) are the standards by which ADNOC manages HSE. They are specific to our operations and to the UAE regulatory framework. The HSE CoPs manual was launched in 2005 and new documents and guidance continue to be produced.

The CoPs provide formal guidance for all Group Companies and form the basis of each Group Company's HSEMS. The HSEMS incorporates a rigorous auditing regime to monitor performance, which covers Group Company activities as well as contractors' activities; it also incorporates studies that look towards the future and ensure continuous improvement in performance.

HSEMS is the main vehicle used to implement ADNOC's policies in these areas. Group Companies have an HSEMS that is audited regularly by a dedicated team, appointed by the SPC and formed of experts from SPC, Directorates and Group Companies ensuring proper implementation of HSE principles and CoPs, verifying HSEIAs and other control measures.

Group Companies audit their own operations as well as contractors' operations in accordance with 5 year and annual plans that are agreed upon with the SPC EH&S Division.

Group Companies are encouraged to obtain international certifications for their operations. The table below shows Group Company ISO 14001, ISO 9001 and OHSAS 18001 certified systems in 2009.

GROUP COMPANY	ISO 14001	ISO 9001	OHSAS 18001
ADCO	$\checkmark$		$\checkmark$
ADGAS	$\checkmark$		
ADMA OPCO	$\checkmark$		$\checkmark$
ADNOC DIST			
ADOC			
BOROUGE	$\checkmark$	$\checkmark$	
BUNDUQ			
ESNAAD		$\checkmark$	
ELIXIER			
FERTIL	$\checkmark$	$\checkmark$	$\checkmark$
GASCO		$\checkmark$	
IRSHAD		$\checkmark$	
NDC	$\checkmark$		
ADNATCO-NGSCO	$\checkmark$	$\checkmark$	
TAKREER		$\checkmark$	
TOTAL	$\checkmark$		
ZADCO	$\checkmark$		



### **HSE Management System**

Encouragingly, the Group Companies' HSEMS implementation has been rising year on year over the last five years. The annual rate of HSEMS implementation slowed in 2009.



2007

2008

2009

2006

2005

#### HSEMS OVERALL IMPLEMENTATION TREND



# While implementation is increasing overall, various HSEMS elements are at different stages. Auditing in particular needs to be improved.



**HSEMS IMPLEMENTATION BY ELEMENT 2009** 

Group Companies evaluated their own HSEMS performance via a self assessment protocol and the results are presented here. Overall, the Group Company HSEMS performance scores are good. The Petroleum Institute (PI) is a relatively new institute and is still in the process of developing its systems and therefore has a low HSEMS performance score.

#### INDIVIDUAL COMPANY HSEMS PERFORMANCE 2009



### Health, Safety and Environmental Impact Assessments (HSEIAs)

HSEIAs are one control measure that demonstrates ADNOC's commitment to HSE risk management. The table below is a list of the HSEIAs that were approved in 2009.

Company Name	HSEIA Title	
Abu Dhabi Gas Company, Ltd.	JV Shah Gas Development (SGD) - Phase 1	
ADCO	ADCO 1.8 MMBPD Project	
ADGAS	<ul> <li>Flare Handling &amp; Emission reduction project (FHER) - Phase I</li> </ul>	
ADMA-OPCO	<ul> <li>Addition of 10 New Wells on Existing Wellhead Towers in Zakum Field - Phase 2</li> </ul>	
ADOC	<ul> <li>CFP &amp; Mubarraz Island - Phase 3</li> <li>Installation of Low Pressure Sour Gas Recovery Compressor - Phase 2</li> <li>Installation of V-123 ST Separator at AR Site Terminal - Phase 1</li> </ul>	
GASCO	<ul> <li>ABBR Project (Asab 3 Package) - Phase 1</li> <li>GASCO Elixier 2 Project - Phase 2</li> <li>Natural Gas Supply to Emirates Steel Project - Phase 1 and 2</li> <li>NGL Pipeline Project - Phase 4</li> <li>Ruwais Train 3 Project - Phase 3</li> <li>Habshan 3 Project - Phase 3</li> </ul>	
TAKREER	Ruwais Refinery Expansion Project	
ZADCO	<ul> <li>Zakum Facilities UZ Full Field Development - Phase 1</li> </ul>	

In addition to the previously listed HSEIAs, the table below is a list of the HSEIAs prepared in 2009 and their approvals are in process.

Company Name	HSEIA Title		
ADCO	<ul><li>Rumaitha and Dabbiya EPS - Phase 4</li><li>ADCO HSEIA for Existing Facilities</li></ul>		
ADMA-OPCO	<ul> <li>Zakum Gas Processing Facilities (GPF) Project - Phase 2</li> <li>ADMA-OPCO IGDP US-WHT - Phase 2</li> <li>ADMA-OPCO Zakum Water Injection Pressure Upgrade &amp; New Water Injection Plant - Phase 1</li> <li>Umm Shaif Gas Injection Facility Project (USGIFP) - Phase 2</li> <li>PreKhuff Appraisal Drilling &amp; Testing HSEIA in Total ABK Field</li> </ul>		
ADNOC DISTRIBUTION	<ul><li>Multi Product Depot Mussafah - Phase 3</li><li>LPG Bottling Plant Mussafah - Phase 3</li></ul>		
ADOC	Mubarraz Pipeline Project - Phase 1 and 2		
ELIXIER	• ASU Ruwais Elixier Project - Phase 3		
FERTIL	Urea Debottlenecking Project - Phase 3		
GASCO	<ul> <li>Natural Gas Distribution - Phase 2</li> <li>Habshan Gas Complex Expansion Project (Habshan 4) - Phase 3</li> <li>Existing Operating Facilities and Pipelines</li> </ul>		
TOTAL ABK	Total ABK HSEIA Phase 3		
ZADCO	<ul> <li>Upper Zakum Facilities Replacement of 18" West Oil Trunk Line - Phase 2</li> <li>P8276-UZ FFD Thammama II WAD Phase I Gas Injection Topsides Facilities - Phase 1</li> </ul>		



# **Environmental Performance**

### Emissions

ADNOC's HSE objectives regarding air emissions include striving towards the ultimate elimination of hydrocarbon flaring, reducing emissions, improving energy efficiency, promoting renewable energy, eliminating continuous venting of hydrocarbons and having zero losses of halons and chlorofluorocarbons (CFCs), whilst gradually phasing them out.

In line with ADNOC'S HSE policy and objectives, ADNOC established an Air Quality Monitoring System (AQMS) in 2007, which comprises of a network of eight ambient air quality monitoring stations and continuous stack monitoring of major sources, both onshore and offshore. Emission monitoring guidelines are currently being developed for all Group Companies. As a result of the AQMS, ADNOC is now able to:

- Publish an Air Quality Index (AQI) on a monthly basis, which is a measure of overall air quality;
- Compare actual ambient air quality with air quality objectives;
- Provide an information and simulation tool to develop and implement an air quality management program; and
- Forecast potential changes in air quality resulting from proposed business development projects and to develop abatement strategies, if required, in an efficient and cost-effective manner.

Emissions data are based on direct measurements and, where direct measurements are not available, on engineering calculations and estimations. Group Company emissions from mobile sources, such as marine service vessels and road transport, are not included. For greenhouse gas reporting, the Intergovernmental Panel for Climate Change (IPCC) 4th assessment report, 2007 CO<sub>2</sub> equivalent conversions for a 20 year time horizon were used. The data is presented in the graphs on the right, and the observations include:

- Greenhouse Gas (GHG) emissions increased in 2009 by approximately 0.7 million tonnes relative to 2008. This is predominantly attributed to equipment failure, plant commissioning and start-up activities.
- Volatile Organic Compound (VOC) emissions are at a 5 year low and can be attributed to a successful Leak Detection and Repair (LDAR) campaign.
- NO<sub>x</sub> and SO<sub>x</sub> emissions both increased relative to 2008. The increases were partly the result of an increase in flaring in the E&P sector, as discussed in the flaring section.









#### **Ozone Depleting Substances**

In 1997, ADNOC initiated a halon (an ozone depleting substance) phase out programme. The decommissioned halon stock is purified and stored at a centralised facility in order to be traded properly or disposed of through high efficiency thermal destruction. In 2009, ADNOC Group Companies recovered 5.8 tonnes of pure recycled quality halon. Unfortunately, eight tonnes of chlorofluorocarbons (CFCs) were released into the atmosphere during maintenance activities.

#### **Partnerships with MASDAR**

In April 2006, the Government of Abu Dhabi created the Abu Dhabi Future Energy Company (MASDAR) to establish a new local industry dedicated to alternative and sustainable energy. ADNOC and its Group Companies have partnered with MASDAR on several projects, primarily associated with Carbon Capture and Storage (CCS) and the Clean Development Mechanism (CDM). The projects below are examples of some of these MASDAR partnerships.

**ADCO** is undertaking a one year pilot project to explore the reinjection of Carbon Dioxide (CO<sub>2</sub>) into an aging field as part of an Enhanced Oil Recovery (EOR) project. Currently one Million Standard Cubic Feet per Day (MMSCFD) of CO<sub>2</sub> (approximately 55 tonnes per day) is being injected.

**ADGAS** formed a partnership with MASDAR in 2007 that continues, as part of a joint CDM project, to examine flare handling and emission reduction schemes.

**FERTIL** is partially recovering  $CO_2$  from its ammonia plant stack, using Mitsubishi technology, as part of a CDM project in collaboration with MASDAR. It is capturing 400 tonnes of  $CO_2$  per day, representing 20% of the  $CO_2$  emissions, which is reused as feedstock.

# **CASE STUDY**

### Fugitive Emissions Detection



#### Background:

GASCO has a comprehensive in-house Leak Detection and Repair (LDAR) program for fugitive emissions control. LDAR serves to protect the environment by controlling and preventing emissions, conserving resources by minimizing leaks, improving occupational health by reducing the exposure levels and assuring plant integrity and process safety.



#### Approach:

GASCO purchased an infra-red (IR) based optical imaging device 'Gas FindIR', for detecting and recording gas leaks from equipment. This approach is a considerable improvement from the traditional time consuming approach of using handheld gas detectors.

#### Outcome/Future:

A multidisciplinary team with members from HSE, maintenance, operations and inspection has been trained in using the device. Equipment can now be scanned more frequently and effectively, leaks can be identified safely from a distance and the source can be easily pinpointed. Identified leaks are reported immediately to operations for immediate action to stop the leak.

#### Flaring

The reduction of flaring has been an important and successful effort. The combined efforts of the Group Companies resulted in a substantial reduction of 75% in the amount of hydrocarbons flared since 1995. However, flaring in 2009 increased by 9% compared to 2008 because of equipment failures; gas compressors and plant commissioning activities in particular. The increase in flaring in 2009 is in part the cause for increased emissions of greenhouse gases, Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulphur (SO<sub>x</sub>).

We aim to continue the flaring reduction trend in the future. New project designs are scrutinized to ensure that flaring is minimised during the design phase. Existing assets are being retrofitted to optimise efficiency through sour gas separation and re-injection into reservoirs and the implementation of Best Available Technologies (BAT).

HYDROCARBON FLARING BY BUSINESS SECTOR 2005-2009





HYDROCARBON FLARING TREND



#### **Group Company Efforts to Reduce Flaring**

Group Companies have made significant progress in reducing their flaring since 1995 as evidenced below.

Group Company	1995 MMSCFD	2009 MMSCFD	% Reduction
ADCO	28.0	4.9	82
ADGAS	24.0	13.5	44
ADMA-OPCO	48.0	5.6	88
ADOC	15.0	0.7	95
BOROUGE *	80.0	16.3	80
GASCO	23.5	6.8	71
TAKREER	9.4	1.8	81
TOTAL	53.0	23.1	56
ZADCO	59.0	2.4	96

\* Data is from 2002 to 2009

Several Group Companies have taken significant steps forward in 2009 with regards to air emission reductions. Some of these initiatives are described here.

The recovery of flared gas in the Asab Field by 2012 as part of Shah, Asab and Sahil (SAS) Full Field Development project will reduce the **ADCO** flaring by 3.4 MMSCFD, a net reduction of 100,000 tonnes of CO<sub>2</sub> equivalent per annum.

**ADMA-OPCO** is reducing gas flaring by reducing production during shutdown periods, modifying existing flare pilot ignitions, monitoring regularly and replacing hydrocarbon purge gas with nitrogen purge gas.

**ADNOC DISTRIBUTION** is reducing the emissions associated with its operations through a Vapour Recovery Project at depots and service stations.

**ZADCO** conducted a field survey in the Zirku Plant to measure fugitive emissions from process related components. The survey indicated that less than 1% of the 68,000 measured sources were leaking. This is thought to be indicative of the thoroughness of the maintenance programme.

# **CASE STUDY**

### Sustainable Buildings



#### Background:

GASCO hosted a seminar which addressed the future of sustainable buildings and their benefits and shared their own efforts and lessons learned with other ADNOC Group Companies.

#### Approach:

GASCO has developed its own guidelines for sustainable buildings based on the Leadership in Energy and Environmental Design (LEED) green building rating system and Estidama, the UAE's green building code. GASCO's guidelines highlight practices

that can improve public health, safety and general welfare by integrating positive environmental impacts into the building concepts.

#### Outcome/Future:

GASCO has completed the Front End Engineering and Design (FEED) stage of a new sustainable building at the Bu Hasa field that will house field management and an auditorium. The structure's design, construction and demolition aim to minimize impacts on the environment by reducing energy usage, waste generation, water consumption and emissions to the atmosphere. Another key benefit will be the substantial savings in operational costs.



### Energy

ADNOC Group Companies reported generating and consuming approximately 22 billion kilowatts (kW) of energy in 2009, of which 13 million kW were produced by renewables.

This is the first year that ADNOC has reported on this indicator and the accuracy and completeness of the Group Companies' data was varied.

Group Companies have many remote operations where connections to the power grid are impractical, if not impossible, such as offshore platforms and remote fields in the desert. In these locations, combustion of produced fluids or gas is often the primary source of energy, though solar power is increasingly being looked at as an alternative.

In 2009, Group Companies introduced a range of significant energy efficiency initiatives as described below.

**ADCO** introduced energy efficient equipment such as variable speed drivers in the compressors and pumps and standardized the installation of solar systems for well head control panels, cathodic protection wells and domestic water heating applications. ADCO also adopted Green Building standards for new offices and residential projects.

**ADMA-OPCO** performed energy management studies for its facilities. Initiatives in 2009 included installing solar panels on Das Island and on well head towers on offshore platforms in the Umm Shaif and Zakum fields. In the main office building, light timers and energy efficient light bulbs were installed. As a consequence of these actions ADMA-OPCO reduced its energy consumption by 14% compared to 2008.

**ADOC** powered their office computers from solar panels installed on the roof of their office.

**BUNDUQ** launched a 6 month energy saving campaign focusing on minimising electricity consumption in its operations.

**ESNAAD** started monitoring their power consumption by including it in their quarterly performance review meetings and added it as a Key Performance Indicator (KPI) for 2010. They also decided to provide energy efficient lighting for newly built facilities and conducted a feasibility study for the shift to solar powered area lighting.

**FERTIL** installed light sensors to control lighting in their buildings and have started to utilise day time natural light in their offices.

**GASCO** focused on the reduction of steam consumption during the Habshan 1 start-up and shutdown and achieved energy savings of approximately 20,000 kW. GASCO has also introduced an energy KPI and initiated an energy efficiency training and awareness programme.

The **PI** developed an Energy Conservation and Carbon Footprint Reduction Program in 2008 to formulate a more comprehensive approach to manage their carbon footprint. One of the successful initiatives of this program in 2009, was a reduction in energy consumption by 24% relative to 2008, achieved by optimising the temperature settings of their Heating, Ventilation and Air Conditioning (HVAC) system to reflect the differing demands during day and night.

![](_page_22_Picture_13.jpeg)

# **CASE STUDY**

Energy Management System

![](_page_23_Picture_2.jpeg)

#### Background:

Part of ADCO's corporate mission is to 'operate at maximum efficiency and optimum cost with minimum impact on the environment'. One way this vision is manifested is in ADCO's initiative to reduce energy consumption and associated emissions.

In 2009, ADCO established an energy efficiency team who determined and benchmarked ADCO's energy profile in 2008. The team then developed a comprehensive strategy to reduce ADCO's energy consumption and associated GHG emissions.

#### Approach:

The first task was to develop a monitoring and reporting mechanism to track performance. Specific actions were then taken to reduce consumption and incorporate energy optimisation into project designs.

Power import performance tests from the Abu Dhabi Water and Electricity Authority's (ADWEA) grid were conducted in September 2009 in the Bab and Bu Hasa fields.

#### Outcome/Future:

Based on the results, ADCO recognised that the gas turbines in its fields were less efficient than ADWEA power plants and a new power generation operating philosophy (running one generation unit and importing the rest of the demand from ADWEA) has been successfully implemented in the Bab and Bu Hasa fields.

Importing from the ADWEA grid, when compared to the business as usual on-site power generation scenario, will result in a reduction of annual GHG emissions of approximately 40%.

![](_page_23_Picture_12.jpeg)

### Transport

As leaders in the oil and gas industry, we strive to continually improve both our operations and how we report our impacts. As such, we have investigated the environmental impacts of ADNOC's associated transportation, such as road transport and marine service vessels, and we have included the results in this report. We examined a range of transportation operations including the transportation of employees to work, both onshore by bus and offshore by barge and helicopter, and the distribution of products to overseas markets. Group Companies provided their available transportation data; however, as this was a new indicator for 2009, not all Group Companies had systems in place to record the data. It should be noted that data regarding the impacts of shipping of crude products was not available for 2009. The available transportation statistics are presented in the table below.

Our most significant transportation impacts are from ADNATCO-NGSCO, who are responsible for shipping our products across the world. The key sustainability goals that ADNATCO-NGSCO is currently focusing on are:

- The continued roll out of the Ballast Water Management Plan across the fleet;
- Focus on zero spills;
- A boiler management programme aimed at proper maintenance and replacement if necessary to reduce fuel consumption, minimise emissions and water consumption;
- Reduce the amount of Freon gas lost to the atmosphere and to source a more environmentally friendly replacement;
- Continue the reduction of NO<sub>x</sub> and SO<sub>x</sub> emissions by better scheduling of vessels;
- A pro-active approach to engine and equipment maintenance;
- Pro-active education of staff, suppliers and contractors; and
- Encouraging the reduction in the use of consumables.

ADNOC Transportation Statistics								
	Vehicles	Number of Group Company Responses	Planes	Number of Group Company Responses	Helicopters	Number of Group Company Responses	Vessels	Number of Group Company Responses
Kilometres travelled in 2009	113,931,040	14	171,624,632	9	3,535,470	7	1,429,288	7
Energy use (GJ)	590,283	12	9,299,628	7	6,144,845	8	5,451,265	7
Emissions of NO <sub>x</sub> (tonnes)	2,075	10	71	4	84	5	17,082	6
Emissions of SO <sub>x</sub> (tonnes)	53	9	8	4	11	5	11,151	5
Emissions of CO <sub>2</sub> (tonnes)	26,701	11	5,145	6	4,503	5	1,363,054	6
CO <sub>2</sub> Equivalent GHG emissions (tonnes)	271	3	242	4	-	3	16	3
Total spills (m <sup>3</sup> )	226	12	0	11	0	11	0	11

#### Initiatives to Reduce Transport Impacts in 2009

ADCO Transport pool played an active role in clubbing field visit trips to save fuel and to reduce the exposure of people to road risk. ADCO also promoted the concept of mass transportation by providing shuttle bus services from Abu Dhabi to the Fields & Terminal. They also increased waste skip capacities from 8m<sup>3</sup> to 9m<sup>3</sup> in order to reduce the number of trips required to final disposal sites.

FERTIL minimised business related travel by video conferencing, minimised commuting by changing shift rotations and provided company buses for employee commuting.

#### **Ship Vetting System**

Stemming from the commitment to protect the environment and preserve the marine life in Abu Dhabi, and to further enhance the way ADNOC conducts its shipping business, ADNOC implemented a Ship Vetting System in 2005. The Ship Vetting System policy states that no ship will be accepted or entered into contractual agreement for ADNOC business unless it has been screened for compliance with the international mandatory legislations and recognized industry standards e.g. the International Convention for the Prevention of Pollution from Ships (MARPOL).

### **Materials**

As an oil and gas producer, the majority of ADNOC's products are hydrocarbon products extracted from the ground and refined for consumers. A relatively small amount of input materials is required. Our primary material consumption comes from necessary support activities.

#### Material Saving Initiatives in 2009

ADCO, ADGAS and BUNDUQ collectively recycled 364 tonnes of containers/cans/drums (336, 23 and 5 tonnes respectively).

**ESNAAD** is moving towards a paperless office management system and they have introduced a new software programme to monitor paper consumption.

FERTIL collected 1,029 tonnes of spilled waste urea and recycled it.

PI recycled 12.9 tonnes of paper over the year.

**TOTAL ABK** achieved a reduction of approximately 20% in their paper consumption this year as a result of an effective awareness campaign.

Material consumption is not as significant as other environmental indicators. As this is the first time we have examined this area, Group Companies are in the process of developing more reliable material data tracking systems.

![](_page_25_Picture_9.jpeg)

# **CASE STUDY**

### Paperless Day Campaign

![](_page_25_Picture_12.jpeg)

#### Background:

For the last two years, ADGAS has held an annual Paperless Day Campaign during which only essential papers were printed by any department or facility. This campaign promotes efficiency, conservation and waste reduction.

#### Approach:

While the campaign is officially limited to one day, its impact lasts throughout the year. Prior to the campaign, ADGAS generated nearly 8 tonnes of paper waste in 2007. In 2008, after the first Paperless Day Campaign, ADGAS produced only 6.7 tonnes. In

![](_page_25_Picture_17.jpeg)

2009, a greater emphasis was placed on getting all departments to commit to the day and to follow its spirit over the year. As a result, paper waste was reduced to 3.5 tonnes, over a 55% reduction from 2007.

#### Outcome/Future:

It is envisaged that this campaign and the lessons learned can be transferred to other Group Companies.

### Waste

ADNOC's hazardous wastes are treated at BeAAT (Central Environment Protection Facilities), a state of the art waste treatment facility. BeAAT was designed specifically to safely receive, manage, treat and dispose of hazardous waste generated by ADNOC, its Group Companies, and independent oil and gas operators. The commissioning was completed in July 2009.

BeAAT is an integrated hazardous waste treatment facility, combining a range of specific treatment processes on a single site. Liquids, slurries, Poly Chlorinated Biphenols (PCBs), heavy metals, and even highly flammable and high toxicity metal organic compounds can be treated safely at BeAAT. The plant includes the following waste management options:

• Solidification: for the immobilisation of highly

contaminated inorganic wastes;

- Centrifugation: for the separation of oil/water phase and solids;
- Thermal Desorption: for the thermal treatment of organic refinery wastes;
- Incineration: for the thermal destruction of highly toxic and carcinogenic wastes;
- Physical/Chemical Treatment: for the oxidation of high toxicity cyanides/reduction of carcinogenic chromates;
- Mercury Distillation: for the recovery of mercury;
- Oil/Water Separation: for the recycling of oil-
- contaminated process water by Dissolved Air Flotation;
   Landfills: class I and II landfills with geocomposite lining systems for disposal of certified materials; and
- Recycling: safe recycling of waste oils, empty drums and containers, batteries, transformers and capacitors.

# **CASE STUDY**

### Reed Bed Technology

![](_page_26_Picture_15.jpeg)

#### Background:

FERTIL's products include ammonia and urea. The effluent of this production is nitrogen rich and is discharged to the sea. In order to reduce the nitrogen content of the effluent prior to its final discharge and the resulting impacts to the natural system, an innovative solution was developed.

FERTIL installed reed beds which naturally host bacteria in their roots capable of degrading chemical pollutants.

#### Approach:

The reeds have an extensive root system which provides an ideal habitat for natural soil bacteria to thrive. The microorganisms in aerobic, anoxic, and anaerobic zones process the effluent. In effect, the nitrogen in the effluents is used as a fertilizer before discharge into the sea.

![](_page_26_Picture_21.jpeg)

A pilot project capable of handling 10 cubic metres of effluent per day was installed to process the effluent on its way to the sea.

#### Outcome/Future:

After the completion of the pilot project, it is expected that the system will be improved and expanded. The pumping system will have to be upgraded to increase the flow of effluents. Likewise, the reed beds will have to be replanted to accommodate an increased volume of effluent.

The results of the pilot project will also be shared with other ADNOC Group Companies looking for alternative ways to treat their effluent.

In 2009, ADNOC generated a total of 13,581 tonnes of hazardous waste, compared to 12,222 tonnes in 2008. 210,679 tonnes of municipal waste was generated in 2009, compared to the reported 66,000 tonnes in 2008. The significant increase in municipal waste in 2009 is attributed more to an accurate method of recording waste than an actual increase in the quantity of waste generated. The increased accuracy of reporting is due to training provided as part of the 'Sustainability Performance Initiative'. The municipal waste was disposed of at municipal landfills.

In 2009, Group Companies undertook a number of waste management initiatives as described below.

**ADCO** has utilised several programmes to reduce, reuse, recycle and dispose of hazardous drilling waste appropriately.

**ADCO** has a recycling plant specifically designed to recondition drilling oil based muds from the rigs. ADCO has another treatment plant dedicated for treatment of oil based mud drill cuttings by indirect thermal desorption technology. The recovered oil, water and solids are reused for beneficial applications including power generation; camps irrigation; and construction fill, respectively. Water based mud is injected into two deep disposal wells.

**ADMA-OPCO** is continuing to improve its waste management system and generated 4,238 tonnes of municipal waste in 2009, 22% less than in 2008.

**TOTAL ABK** introduced new recycling options for paper and cardboard, plastic bottles, scrap metal and empty metallic containers, toners and cartridges and computer materials.

**ZADCO** reduced the amount of waste generated, resulting in approximately 20% decrease. A notable achievement was the composting of 311 tonnes of waste.

### Spills

A total of 599 cubic metres of petroleum products were spilled in 36 significant incidents onshore. The spills were promptly cleaned up and their impacts mitigated in compliance with ADNOC Codes of Practice. A total of 1.5 cubic metres of petroleum products were spilled in one significant incident offshore but it was contained in a vessel and did not reach the sea. No significant chemical spills were reported. For the purpose of reporting, ADNOC considers spills larger than one cubic metre to be significant.

### **Emergency Preparedness and Response**

SPC/ADNOC has a number of crisis response measures and facilities in place, including tier-two oil spill response centres at Mussafah and Ruwais, an incident command system, and a crisis management steering committee. The two world class oil spill response centres have trained manpower, well-maintained specialist pollution response equipment, dedicated offshore pollution response vessels and dedicated transport permanently on call ready to support the Group Company teams, and also support any national or regional needs in the event of an oil spill incident.

SPC/ADNOC has over 50 offshore vessels equipped with dispersant spray capabilities and three tow back tugs equipped with built-in oil spill recovery capabilities. SPC/ ADNOC ensures 'best practice' contingency plans and emergency response procedures are in place for every Group Company, facility and operation and carries out regular training drills and exercises to test preparedness and improve response processes.

In addition, SPC/ADNOC maintains a state of the art Corporate Crisis Centre and Emergency Support Centre in the ADNOC Headquarters with trained staff permanently on call. Staff participate in national, regional and international forums to share knowledge and to continually review and improve response systems.

ADNOC and its Group Companies are committed to continually develop a world-class crisis management capability. To this end, ADNOC has ordered 10 escort tugs with oil spill response capabilities and plans to purchase a number of high speed offshore response vessels and escort tugs in 2010 to strengthen its emergency response preparedness.

![](_page_27_Picture_14.jpeg)

### Water

#### Water Consumption

The vast majority of ADNOC's water requirements are for non-contact cooling water and in 2009, Group Companies used approximately 4.8 million cubic metres per day.

Group companies also use a significant amount of potable water and in 2009 consumed over 7.5 million cubic metres of municipally supplied water.

#### Water Discharge

Approximately 365,000 cubic metres per day of produced water were re-injected into deep wells both onshore and offshore in 2009.

One of ADNOC's key environmental objectives is to re-inject offshore produced waters and other effluents, unless their discharge is compatible with the marine environment and can be discharged, in line with the UAE Cabinet Regulation for the Protection of Maritime Environment.

In 2009, Group Companies discharged over 18,700 cubic metres per day of process effluent to the sea.

On offshore platforms, if the oil content exceeds 40 parts per million (ppm) on average in any calendar month or 100 ppm

as a maximum, it is not permitted to be discharged to the sea. Oil based drilling muds, plastic materials and wastes are not allowed to be discharged to the sea and food waste can only be discharged to the sea 12 nautical miles from shore.

Onshore, ADNOC and its Group Companies reuse millions of cubic metres of water a year for irrigation and dust suppression.

Group Companies are increasingly focusing their attention on water saving initiatives and some initiatives in 2009 are described below.

#### Water Saving Initiatives in 2009

ADCO switched to utilising brackish water from shallow water supply wells to conserve the fresh water resources.

ADMA-OPCO modified their water taps to reduce water consumption.

ADNOC DISTRIBUTION recycled the car washing water at its service stations, through four cycles on average.

**BOROUGE** reused its treated process wastewater for irrigation and landscaping.

**GASCO** installed water saving faucets on showers and taps at accommodation facilities in Bab, Habshan and Mirfa.

PI installed water saving fixtures on taps.

![](_page_28_Picture_19.jpeg)

# **CASE STUDY**

# Water for the World

![](_page_29_Picture_2.jpeg)

#### Background:

Water for the World is a programme developed by BOROUGE and one of its owners, Borealis, to foster local knowledge and partnerships throughout the value chain to provide sustainable solutions for the availability of safe drinking water and sanitation. It was launched in 2007.

It addresses one of the major challenges facing the world today – how to help the more than one billion people who lack pure drinking water and the 2.6 billion who lack access to basic sanitation.

#### Approach:

Since Water for the World was launched, BOROUGE has undertaken a number of field projects in India, China, Vietnam and the UAE and actively supported the water and sanitation projects in Africa.

BOROUGE is able to leverage its role and reputation to bring other groups to a project, forming partnerships with NGOs, customers, installers and other funding agencies. BOROUGE is also able to provide leak free and sustainable solutions tailored to the project.

For one project in 2009, BOROUGE partnered with the National Hospital of Paediatrics in Hanoi, Vietnam, to provide safe water to the hospital which serves 400,000 children each year.

#### Outcome/Future:

Borouge will continue its work in India and Vietnam to demonstrate the use of modern plastic materials in water and sanitation projects and will extend its activities into Africa by developing new contacts and partnerships within the value chain in the continent.

Borouge will also continue to actively support Water and Sanitation for the Urban Poor (WSUP) through whom we are already involved in many water and sanitation projects in Africa. WSUP's target is to bring water and sanitation to 3.5 million people by 2015.

More information can be found at: www.waterfortheworld.net

![](_page_29_Picture_14.jpeg)

### **Biodiversity**

The terrestrial and marine ecology of the UAE is rich and diverse and is home to several International Union for Conservation of Nature (IUCN) 'Red Data List' species such as the Arabian Oryx, the Dugong, the Green Turtle, the Hawksbill Turtle, the Greater Spotted Eagle, the Saker Falcon and the Sociable Lapwing among others.

ADNOC endeavours to ensure that its operational activities minimise and control impacts on the biodiversity of the UAE. This is achieved primarily through the incorporation of biodiversity considerations into the HSEIA process. Biodiversity monitoring is specifically defined and established through this process.

The waters of Abu Dhabi contain important species such as dugongs, dolphins and turtles as well as important habitats such as sea grass meadows, coral reefs and mangroves.

ADNOC and its Group Companies have made significant

efforts to protect and restore terrestrial and marine biodiversity in its operational areas by implementing projects such as mangrove plantations, sea grass transplantation, coral reef propagation, Osprey breeding and monitoring and a greening campaign with wild plants. Tens of thousands of mangroves were planted in 2009 and their growth is being continually monitored. Currently, more than 100,000 mangrove plants in ADNOC nurseries are ready for cultivation.

**ADCO's** efforts to protect terrestrial ecology include: developing detailed Biodiversity Action Plans (BAPs) to manage key habitats and species, conducting in-house training on biodiversity conservation to all key environmental personnel and producing a book that covers the major biodiversity groups found within ADCO's concession areas.

**TOTAL ABK** worked with National Geographic on a book entitled 'Abu Dhabi: Nature Preserved' which explores the rich biodiversity of the Emirate.

# **CASE STUDY**

### Dugong Conservation

![](_page_30_Picture_10.jpeg)

#### Background:

The Dugong Conservation Project is a research project funded and supported by TOTAL ABK aimed at conservation and habitat protection for the world's second largest population of dugongs, a poorly understood and endangered species.

#### Approach:

In 2009, the existing dugong habitat protection program was enhanced through the introduction of an active monitoring campaign. First, an aerial survey that was originally conducted in 2004 was repeated to confirm numbers and locations of

dugongs. Second, three dugongs were tagged and tracked via satellite to better understand the migratory behaviour of the species. The study revealed that dugongs did not travel as far as previously believed. The tagged dugongs stayed within the Marawah Biosphere Reserve waters, a protected area set up as the result of earlier research conducted as part of this project.

#### Outcome/Future:

Future plans focus on increasing awareness of dugongs and their sensitivities. The awareness campaigns will target local communities, schools and other oil and gas companies.

# **CASE STUDY**

Biodiversity Conservation on Zirku Island

![](_page_31_Picture_2.jpeg)

#### Background:

Zirku Island is home to some of ZADCO's operations but it is also home to a host of sensitive species including the Hawksbill Turtle, mangroves and migratory birds. In an effort to be a good neighbour and to minimize impacts on local habitats, a biodiversity management program was implemented.

#### Approach:

ZADCO employed a two-fold approach which involved firstly mapping the current Hawksbill Turtle nesting areas and secondly, creating and restoring habitats on the island, which included the mangrove systems shown below.

#### Outcome/Future:

From 2002 to 2009 the number of Hawksbill Turtle nests on the island increased dramatically. Hawksbill Turtles continue to find Zirku Island a viable location to thrive.

ZADCO has partnered with the EH&S Division, SPC to continue regular surveys of the effects of the conservation efforts. It has also continued to create and restore mangrove habitat making the island a richer home for its many residents.

In 2009 a technical paper written by ZADCO on this project won an award from Offshore Arabia.

![](_page_31_Picture_11.jpeg)

BEFORE - Photograph taken in 1999

AFTER - Photograph taken in 2006

![](_page_31_Picture_14.jpeg)

![](_page_32_Picture_0.jpeg)

# **CASE STUDY**

### Ballast Water Management

![](_page_32_Picture_3.jpeg)

![](_page_32_Picture_4.jpeg)

#### Background:

Ballast water management is focused on minimising the introduction of nonnative organisms from the discharge of ballast water; a serious threat to native species around the world.

#### Approach:

The Ballast Water Management Plan implemented by ADNATCO-NGSCO has been accredited by Lloyds

![](_page_32_Picture_9.jpeg)

Shipping. As part of the Plan, vessels exchange ballast water while on the open ocean to ensure that organisms are not transported between ports.

#### Outcome/Future:

The Ballast Water Management Plan will be implemented across the current fleet and new vessels as they are brought into service. Currently, it has been implemented on eight vessels.

# Social Performance

### **Labour Practices**

#### **Occupational Health and Safety**

ADNOC management takes an active interest in the health and safety of workers. HSE is managed by a range of HSE committees that are in place at sites and across organisations, as detailed previously in this report. In addition, senior Group Company management and SPC make periodic site visits.

ADNOC has a core interest in the health and safety of all employees. The concerned departments are firmly committed to translating this interest into effective action with full regard of statutory requirements. The responsibility for implementation of safe working practices rests with management, though every employee is required to treat safety as a subject of utmost importance and to ensure that all governing safety rules and operating procedures are followed.

ADNOC's Lost Time Incident Frequency (LTIF) of 0.24 injuries per million man-hours worked increased by 1% in 2009. It is significantly better than the OGP average of 0.45 injuries per million man hours in 2009. The Total Recordable Incident Rate (TRIR) for 2009 was the lowest achieved in the last 5 years.

Safety Statistics					
	2005	2006	2007	2008	2009
Exposure hours	171x10 <sup>6</sup>	191x10 <sup>6</sup>	230x10 <sup>6</sup>	298x10 <sup>6</sup>	313x10 <sup>6</sup>
Fatality	6	5	4	4	7
Fatal Accident Rate (FAR) (Per 100 million man-hours)	3.5	2.62	1.74	1.34	2.23
Disability	0	0	2	2	1
Fatality Non-Recordable	-	8	5	9	7
Lost Time Incident (LTI)	53	57	58	68	75
Lost Days	1952	1645	2081	1663	2372
Lost Time Incident Frequency (LTIF) (Per 1 million man-hours)	0.31	0.3	0.25	0.23	0.24
Total Recordable Incident Rate (TRIR) (Per 1 million man-hours)	1.27	1.08	1.09	0.79	0.68

Fatalities and lost time incidents (LTIs) are thoroughly nvestigated and action plans are developed in an attempt to prevent future recurrences.

![](_page_33_Figure_9.jpeg)

![](_page_33_Picture_10.jpeg)

Marketing and Refining (M&R) accounted for 13% of the exposure hours, however, M&R had the highest Lost Time Incident Frequency (LTIF).

EXPOSURE HOURS BY BUSINESS SECTOR

![](_page_34_Figure_1.jpeg)

![](_page_34_Figure_2.jpeg)

![](_page_34_Figure_3.jpeg)

Another analysis of our LTIs shows that plant operation and maintenance accounted for nearly half of the LTIs in 2009.

![](_page_34_Figure_5.jpeg)

![](_page_34_Figure_6.jpeg)

![](_page_34_Figure_7.jpeg)

![](_page_34_Figure_8.jpeg)

Our TRIR of 0.68 recorded incidents per million man-hours worked is 14% lower than the previous year. It is also significantly lower than the OGP average of 1.75 in 2009.

![](_page_34_Figure_10.jpeg)

![](_page_34_Figure_11.jpeg)

![](_page_34_Figure_12.jpeg)

TOTAL RECORDABLE INCIDENT RATE (TRIR)

#### Health and Safety Initiatives in 2009

ADCO launched awareness campaigns and screening for H1N1, breast cancer, diabetes and heart health.

ADGAS focused on heart health as a cover story of their employee magazine. They identified symptoms, risk factors, and suggested lifestyle changes to reduce risk.

FERTIL had a one day refresher course on basic life support skills for head office first aiders and fire wardens.

TAKREER adopted leading and lagging process safety indicators as developed by the American Institute of Chemical Engineers (AICE) to ensure the safety of its employees and track the integrity of its assets.

**ZADCO** ran a prostate disease awareness campaign. It included presentations by doctors and staff from the ZADCO clinics, as well as on the spot check-ups for employees.

### **Road Safety**

There were 34 less road traffic accidents in 2009 compared to 2008. This is due in part to the considerable effort spent on improving road safety throughout ADNOC and its Group Companies. We are concentrating on adjusting the behaviour of our workforce to comply with our strict company rules regarding speed limits and the use of seat belts.

One example of Group Company efforts to reduce traffic incidents is NDC's introduction of Vehicle Monitoring Devices (VMD) in 2005, to monitor the performance of the company drivers. Each month, three 'Best and Risky' drivers are identified and announced across the company and posters are displayed with their photos. In 2009, there were no drivers in the 'risky driver' category.

![](_page_35_Figure_9.jpeg)

#### ROAD TRAFFIC INCIDENTS

#### Training

ADNOC prides itself on its training and education programmes. Group Companies conduct a range of training courses to develop the skills and careers of their employees. In 2009, ADNOC and its Group Companies conducted over 705,000 man hours of training. Currently, Group Companies use several systems to track their training sessions.

ADNOC has a training programme known as the Competence Assurance Management System (CAMS) which is a 3-4 year programme offered to promising new local graduate employees. It comprises comprehensive competency development frameworks to develop skills and expose new employees to a range of roles.

#### Development

A critical part of employee development and talent management is providing structured feedback to help employees understand their own performance and identify opportunities for improvement. Across ADNOC and its Group Companies, over 90% of employees received a performance review in 2009.

ZADCO's Organization and Manning Taskforce conducted a 3 day workshop for team leaders and managers to improve their ability to evaluate the performance of their reportees and provide feedback. Participants gained practical skills including goal setting, performance monitoring, root cause analysis, and effective performance appraisal techniques.

In 2009, ADMA-OPCO launched a Talent Management Programme as part of its strategy to identify high potential employees and accelerate their development.

![](_page_35_Picture_18.jpeg)

#### **Sports and Recreation**

Group Companies provide their employees and their families with facilities for a wide range of sports such as football, volleyball, basketball, swimming and tennis. ADNOC encourages employees to participate in sports events and organises tournaments.

![](_page_36_Picture_2.jpeg)

## **CASE STUDY**

### **Green Hats Training**

![](_page_36_Picture_5.jpeg)

#### Background:

NDC developed a training program targeted at new recruits in response to statistics showing that new employees were more likely to be involved in a health and safety incident. NDC requires all new recruits to wear green hard hats for the first few months so that they are easily identifiable to their peers for guidance and on the job training.

The 'Green Hats Induction Program' was accredited by the International Association of Drilling Contractors (IADC). The program adds value to NDC by increasing awareness, promoting risk perception and improving behaviour.

#### Approach:

The 'Green Hats Induction Program' uses the HSE Rig Pass standardized core curriculum from IADC. The curriculum was established by leading industry safety and

training professionals. Over 6 weeks it prepares employees for any operating environment at any site, whether onshore or offshore. NDC adapted the curriculum to also serve as a 2 week refresher course to update senior employees on new issues.

The effectiveness of the program is monitored by assessing the behaviour of employees several months after the training.

#### Outcome/Future:

The program has helped enhance general HSE awareness and has increased the competency of new recruits. Familiarising new recruits with NDC operations, systems and procedures is the first step in ensuring personnel safety and a hazard-free working environment in all NDC operating areas. 127 employees have received this training to date.

![](_page_36_Picture_15.jpeg)

![](_page_37_Picture_0.jpeg)

### **Human Rights**

Human Rights are fundamentally built into ADNOC's operations and procedures.

ADNOC has a committee specifically to focus on the labour conditions of workers employed by contractors on ADNOC projects. The committee refers to the UAE labour laws, international best practice, and ADNOC Codes of Practice as reference to define violations of workers' rights.

The principle of 'Decent Work' is central to our relations with our employees. It is important to recognise the differences between the traditional practices and responsibilities of employees and employers in Abu Dhabi and other parts of the world. A significant difference is that labour unions are not permitted in the UAE under Federal Law. Also, under UAE Labour Law forced, compulsory and child labour is strictly forbidden.

ADNOC fully adheres to the UAE Labour Law.

#### **Non-Discrimination**

Discrimination based on origin, religion or gender is not acceptable within ADNOC.

### **Employment, Diversity and Equal Opportunity**

The total number of operational employees in ADNOC and its Group Companies at the end of 2009 was 21,885.

This figure excludes entry point employees and staff on study leave.

Our total workforce is made up of 6% female employees and recently more women have started to serve as engineers in our fields.

In 2009, the rate of employee turnover was approximately equal between men and women, around 6% per gender. Turnover by age reflected natural trends. Approximately 6% of employees under 50 years of age departed whereas turnover for employees over 50 years was higher at 11%, including those who retired.

ADNOC is committed to the UAE government's plan to create employment opportunities for UAE nationals, known as 'Emiratisation.' We employ 8,090 Emiratis, which accounts for 45.1% of our core workforce.

The ratio of management level employees, which is staff above ADNOC Job Grade 18, is 71% UAE national and 29% expatriate, totalling 547 employees. Senior Management, ADNOC Job Grade 20 and above, are all Emiratis.

The remainder of our workforce comes from around the world, primarily Asia, Europe and other Arab countries.

We are proud of our diverse workforce. We have employees from around the world and we value them and their contributions.

# **CASE STUDY**

# Females in the Field

![](_page_38_Picture_2.jpeg)

#### Background:

A regularly cited reason in the past for low female representation in management was the inability for women to visit fields, terminals and rigs while meeting cultural expectations. This resulted in female employees gaining less field experience which ultimately limited their career opportunities.

To address these obstacles, a management initiative and commitment was made in recruiting female employees to the fields and in developing innovative solutions that would open doors to female employees.

#### Approach:

Several critical actions were taken as part of the initiative.

A sexual harassment policy was established and disseminated to all employees which was accompanied by establishing flexible methods for reporting harassment.

Cultural gender obligations were addressed by dedicating daily transportation to and from the fields for female employees and by redesigning field offices to accommodate women.

Perhaps most noteworthy, a safe coverall was designed by females that is culturally sensitive and meets HSE requirements.

#### Outcome/Future:

The initiative as a whole was endorsed by a formal 'Fatwa' that addressed both female work in the fields and acceptance of the proposed coverall.

The initiative has helped ensure that there will be no obstacles to females progressing as fast as their male counterparts.

Group Companies are prepared to receive the projected increase in the number of female graduates, and are confident that they can provide them with excellent role models to follow.

![](_page_38_Picture_15.jpeg)

### Society

#### Community

Group Companies are responsible for assessing and managing their impacts on local communities.

Our petrochemical and refining industries are in close proximity to communities at Ruwais and Abu Dhabi. With the exception of one community, Bida Zayed, which is approximately 20 km from the main processing facility in the Bab Field, there are no communities adjacent to onshore exploration and production activities. Regardless of location, we take the utmost care to ensure impacts are minimised and that we remain a good and involved neighbour.

Impacts on the nearby communities are assessed through HSEIA studies which include baseline surveys on physical, biological, social environments and archaeology. HSEIAs assess and manage the impacts of operations on communities, including entering, operating and exiting. Furthermore, the project risk assessments evaluate risk to society and develop mitigation measures to reduce them to a level that is 'As Low As Reasonably Practicable' (ALARP). Regular environmental monitoring is performed during project operations.

ADCO participates in Western Regional Development Committee meetings as a way to involve the public and identify opportunities for improvement regarding their activities in the area. The engagement of the local communities includes arranging visits for the public and school children, emergency response training, provision of medical services and employment priority for the western region residents.

#### **Medical Services Division (MSD)**

MSD is situated at ADNOC's Headquarters and also has a clinic in Sas Al-Nakhal, a hospital in Ruwais, and satellite clinics which comprise the Remote Area Medical Services (RAMS) located in Asab, Bu-Hasa, Dhubbaya, Habshan, Jebel Dhanna and Shah. The MSD is committed to providing quality healthcare services. To do so, it has embraced changes, new ideas and new ways of working, whenever and wherever necessary to provide the highest quality care possible. Continuing Medical Education (CME) and Continuing Professional Development (CPD) are programmes targeted at ADNOC medical staff to ensure they are aware of recent developments in the medical community. In 2009,

![](_page_39_Picture_8.jpeg)

MSD won certificates of appreciation and recognition for the second consecutive year from the Health Authority of Abu Dhabi (HAAD) for these programmes.

The Ruwais Housing Complex (RHC), which is home to employees and their families from several Group Companies, is served by a purpose-built local clinic and a modern general hospital administered by the MSD situated 10 km from the industrial area. The Ruwais Hospital is an acute-care facility providing the full range of general and emergency medical services, including cardiology, maternity, pediatrics, dentistry and ophthalmology, on both an out-patient and in-patient basis. The emergency department, staffed by highly-skilled medical officers and well-trained nurses, is open 24 hours a day and operates an ambulance service, not only for ADNOC employees and their families but for the whole neighborhood. Ambulance crews are on hand to attend road accidents along the highway between Tarif and Sila.

A major part of the MSD's operations is focused on increasing awareness and prevention. MSD is responsible for a range of health awareness campaigns that use lectures, emails, competitions, screening, posters and pamphlets targeted at employees and their families. In 2009, the MSD conducted an HSE Awareness Week, a Diabetes Awareness Campaign and a Dental Hygiene Awareness Campaign. In the future, MSD is planning to focus on connecting with employees' families. An example of prevention is the mandatory screening for Hepatitis B for all employees who work in healthcare facilities, from doctors to cleaners. The programme was initiated in 2008 and is aimed at preventing infection. In 2009, over 250 medical staff were screened and 150 vaccinated. Future plans include expanding Group Companies' participation in the programme.

MSD has also initiated a programme to train Group Company employees as emergency responders. In 2009, over 190 employees were trained.

### **ADNOC's Family of Learning Institutions**

Realising that the future of any successful company relies on the development of its people, ADNOC and its Group of Companies established and support a number of educational institutions which contribute to the advancement of young UAE nationals. ADNOC's family of learning institutions includes the Petroleum Institute (PI), the ADNOC Technical Institute (ATI), the Glenelg School of Abu Dhabi (GSAD), the Achiever Oasis Programme (AOP) and the ADNOC Scholarship programme. These educational institutions nurture a specialized, competitive and highly professional young workforce for the local oil and gas industry and help create educated and engaged citizens for Abu Dhabi.

#### The Petroleum Institute (PI)

The Petroleum Institute (PI) was launched in 2000 in collaboration with the Colorado School of Mines in the United States of America (USA). The PI has the goal of creating a

![](_page_40_Picture_4.jpeg)

world-class institution in engineering education and research in areas of significance to the oil and gas and the broader energy industries. The PI currently offers bachelor degrees in chemical, electrical, mechanical, petroleum engineering and petroleum geosciences, as well as master degrees in chemical, electrical, mechanical and petroleum engineering. The PI graduated its first class of engineers in 2006 and witnessed the enrolment of 104 female students in the same year. PI graduates often go on to join ADNOC Group Companies. In 2009, the PI proudly produced 151 graduates.

#### **ADNOC Technical Institute (ATI)**

The ADNOC Technical Institute (ATI) was established in 1978 as the first vocational training institute in Abu Dhabi to offer training programmes that meet the needs of ADNOC and

![](_page_40_Picture_8.jpeg)

its Group Companies for skilled national manpower. The ATI produces entry-level technicians in the oil and gas industry and contributes to the community by providing an alternative to conventional academic education for young UAE nationals. Since its establishment, the ATI has trained over 3000 technical staff in a range of disciplines. ADNOC Group Companies assist the ATI by providing job instructional training (JIT) opportunities for trainees in relevant areas within each company's operational sites. These JIT sessions

provide the trainees with invaluable experience in the field and environment in which they will eventually work. In 2009, over 200 students graduated from the ATI.

#### The Glenelg School of Abu Dhabi (GSAD)

The Glenelg School of Abu Dhabi (GSAD) was founded in 2008 by ADNOC in collaboration with the Glenelg Country School in Maryland, USA to offer the benefits of a world-

![](_page_40_Picture_13.jpeg)

class secondary education to UAE nationals and expatriate students. The GSAD opened September 2009 and will graduate its first class in 2010. The mission of the school is to create and conduct a challenging and rigorous secondary academic curriculum for Emiratis and other nationalities, as well as offer artistic and athletic extracurricular offerings. A two-campus, college preparatory school based upon an American curriculum, GSAD prepares boys and girls for leading local and foreign universities.

![](_page_40_Picture_15.jpeg)

#### Achiever Oasis Programme (AOP)

ADNOC has an innovative summer training programme known as the Achiever Oasis Programme (AOP) which was established in 2002. The programme aims to motivate

![](_page_41_Picture_2.jpeg)

young nationals to pursue studies in the fields of engineering, exploration and production and management engineering. Graduates from the AOP often go on to join the Petroleum Institute, enroll in local universities or are awarded scholarships abroad to pursue their university studies. The AOP provides financial incentives in addition to free summer courses during the elementary, preparatory and secondary school education stages. The AOP students are given a stipend, while outstanding students are rewarded with bonuses and incentives.

#### ADNOC Scholarship Programme

ADNOC also contributes to the advancement of UAE nationals through its Scholarship Programme which sponsors talented high school graduates and sends them to pursue their post-secondary education in reputable academic institutions locally and abroad, to specialize in the various technical disciplines essential to the oil and gas industry. ADNOC started its Scholarship Programme in 1974 and the programme initially sent scholars to study in the USA and the United Kingdom (UK). The first graduating class of 10 students was in 1979. Today, there are several hundred students, both men and women, studying in undergraduate and postgraduate programmes around the world, a clear testament to the success of the programme.

# **CASE STUDY**

### **Emiratisation**

![](_page_41_Picture_8.jpeg)

#### Background:

Recruitment of UAE nationals is one of the top strategic priorities of ADNOC and its Group Companies. The current 5 year target (from 2010-2014) is to achieve 75% Emiratisation by the end of 2014.

![](_page_41_Picture_11.jpeg)

#### Approach:

Since 1999, ADNOC has had a specialized

body of top management members, the National Recruitment Committee (NRC), and an entire department, the Group Nationals Recruitment Department (GNRD), oversee and facilitate the Emiratisation process. The GNRD applies an efficient strategy in its employment programme which matches the individual's qualifications with the needs of the Group Company.

#### Outcome/Future:

ADNOC and its Group Companies have adopted a centralised 5 year planning process, which is further divided into well-integrated and structured annual sub-plans. These annual intake plans are fulfilled and monitored on a monthly and quarterly basis. From 1999 to 2009 the GNRD has managed to raise the national workforce in ADNOC and its Group of Companies from 23% to 45.1%.

# **Corruption and Actions Taken in Response to Incidents of Corruption**

ADNOC policy bans employees from making use of their jobs or positions to acquire an illicit personal benefit or interest, financial or otherwise, from accepting, directly or indirectly, any gift, commission or donation from any person who has work relations with ADNOC.

The ADNOC Disciplinary Code specifies that misusing a position in ADNOC or a Group Company for the acquisition or acceptance of bribes or personal benefits from other employees or outsiders will result in dismissal without notification or benefits.

While ADNOC has developed a policy to address corruption and takes the issue very seriously, at present there is no formal anti-corruption training programme or corruption review of ADNOC business units.

In 2010, ADNOC plans to deploy international fraud experts to conduct a Fraud Risk Assessment and a Corporate Risk Assessment, covering all directorates, divisions, departments and functions, with the aim of producing a Corporate Risk Register and a risk based internal audit work plan for ADNOC. The Audit and Assurance Division (A&AD) has future plans to initiate a forensic risk management framework which is intended to cover:

- Fraud and misconduct risk assessment;
- Code of conduct and related standards;
- Third party due diligence;
- Process specific fraud risk control;
- Hotlines and a 'Whistle-Blower' mechanism; and
- Proactive forensic data analysis.

#### **Security Practices**

Security for all oil and gas facilities is provided by the Critical National Infrastructure Authority (CNIA), which was established in 2007, to ensure the safe and uninterrupted operation of assets critical to the economy of Abu Dhabi. The CNIA, a separate body of the government of Abu Dhabi, works closely with ADNOC to develop plans and procedures regarding the security of ADNOC installations.

### Product Responsibility

Not all of our Group Companies deliver products to the market and those that do often deliver to different markets around the world and are therefore held to differing standards. Product responsibility is handled by each Group Company based on its own specific situation.

Of the Group Companies, ADNOC DISTRIBUTION, BOROUGE and FERTIL have the most significant obligation towards product responsibility as they deliver products directly to customers.

An example of a new product that has recently entered the local market is Natural Gas for Vehicles (NGV). ADNOC DISTRIBUTION is currently in the process of establishing conversion centres to retrofit vehicles and is upgrading its service stations to supply natural gas fuels to consumers. ADNOC DISTRIBUTION is targeting fleet vehicles in the first stage to raise the initiative's profile and maximise the positive environmental impact of this new product which is the reduction in associated emissions compared to petrol.

### **Product Labelling**

**ADNOC DISTRIBUTION** reported nine incidents in which their products were cited as non-compliant with health and safety labelling requirements. A warning was issued but this did not result in a fine. No other Group Companies reported incidents related to labelling.

**BOROUGE's** sole product presently is polyethylene which is widely accepted as non hazardous.

Group Companies generally consider health and safety implications throughout the entire product development lifecycle.

![](_page_42_Picture_21.jpeg)

#### **Customer Satisfaction**

Customer satisfaction is critical to our outward-facing Group Companies as our success at home and aboard is determined to a large extent by the reputation of our products and operations. ADNOC DISTRIBUTION engages with its customers at its convenience stores and also for its bulk services such as aviation fuel. It has a hotline specifically for customer feedback and complaints.

The following Customer Satisfaction surveys were conducted in 2009:

#### Retail Fuel Sales and Auto care (UAE):

• Overall Satisfaction (Refuelling) 88%

- Overall Satisfaction (Lube change) 78%
- Overall Satisfaction (Car wash) 78%

#### Convenience Store (UAE)

• Overall Satisfaction 89%

#### Commercial Customers (UAE)

- Overall Satisfaction (Gas Oil) 59%
- Overall Satisfaction (Lube) 76%
- Overall Satisfaction (Gasoline) 76%

#### Aviation Customer (All UAE airports except Dubai)

• Overall Satisfaction (Commercial Aviation fuel) 92%

# **CASE STUDY**

### Service Stations – Shared Responsibility

![](_page_43_Picture_17.jpeg)

#### Background:

ADNOC DISTRIBUTION arranged an HSE seminar 'Service Stations - Shared Responsibility'. All service station operating companies of the UAE were invited as well as government organizations such as the Police and Civil Defence.

#### Approach:

Experiences and best practice examples were shared through a series of presentations and discussions. The seminar allowed organisations to identify gaps in their own operations and develop action plans that draw from the lessons of their peers.

#### Outcome/Future:

Communication lines were established between organisations which will allow service centres across the UAE to manage HSE issues more effectively while continuing to serve customers.

![](_page_43_Picture_24.jpeg)

**BOROUGE** has conducted an annual Customer Satisfaction Survey every year since 2003. Each year they survey more customers about their opinion of BOROUGE in terms of technical and product performance, supply chain performance, commercial and marketing performance, and their general relationship.

In 2009, 178 customers across the Indian Subcontinent, North East Asia, South East Asia and the Middle East and Africa regions were interviewed by a third party consultant via telephone. In the Middle East, Africa and the Indian Subcontinent, Borouge exceeds customer expectation and industry average on all attributes. The conclusions and recommendations for improvement were reviewed by senior management in order to design concrete actions for improvement.

Likewise, **FERTIL** engages with its customers regularly to understand their perceptions of the company. Over the last 2 years, 85-90% of customers claimed to be satisfied with FERTIL's products and services.

No incidents of loss of customer data or breaches of customer privacy were reported by Group Companies in 2009.

### **CASE STUDY**

### Green Diesel Project

![](_page_44_Picture_7.jpeg)

#### Background:

The Green Diesel Project is a major project being implemented by TAKREER at its Ruwais Refinery. The Ruwais refinery currently produces three grades of diesel with sulphur contents of 500 ppm, 250 ppm and 50 ppm.

Green Diesel is ultra low-sulphur gas oil which, according to the latest international specifications, contains a maximum of 10 ppm of sulphur.

#### Approach:

This project is a major undertaking

![](_page_44_Picture_13.jpeg)

because it requires the redevelopment of current process units, utilities and offsite facilities, in addition to the construction of new units. Upon the completion of the project, TAKREER will be able to provide a product to customers in the UAE and around the world with a lower environmental impact. The capacity will be 84,000 bpd.

#### Outcome/Future:

The Green Diesel Project is improving the final product as well as being used as an opportunity to improve the efficiency of existing process units. TAKREER is installing a Shell Claus Off-gas Treatment plant to achieve 99.9% sulphur recovery, becoming the first installation in the UAE with this technology. Ultimately, this will result in reduced emissions from the refinery.

# **Economic Performance**

ADNOC has a first class balance sheet; its financial metrics typically equal or exceed the 'super major' oil and gas companies. ADNOC's economic performance directly impacts the fiscal health and reputation of the Emirate and Nation as a whole and is a major contributor to Abu Dhabi's credit rating and sovereign debt perception.

ADNOC does not have individual investors or shareholders. The SPC functions as its governing Board and oversight committee. Details of ADNOC's financial performance are regarded as highly confidential under both ADNOC and Abu Dhabi protocols. ADNOC reports directly to the SPC on matters of strategy and financial performance. Additionally, The Abu Dhabi Accountability Authority (ADAA) provides independent external assurance and scrutiny of the company's activities as part of its mandate to review all key government owned entities.

ADNOC receives little direct support from the government. Its operations, new capital investment and major developments are funded primarily from the company's own cash flow. After reinvestment and working capital, surpluses are available for distribution as annual dividends, these are paid to the Abu Dhabi Investment Authority (ADIA) and Abu Dhabi Investment Council (ADIC), two of Abu Dhabi's sovereign wealth funds.

ADNOC serves as the primary engine for the organic growth of Abu Dhabi and has plans to infuse billions of Dirhams annually into local oil and gas projects, in line with the Abu Dhabi 2030 Plan for the development and growth of the Emirate.

Examples of some significant publicised projects in 2009 include, GASCO signing over 33 billion AED in contracts for its Integrated Gas Development (IGD) project; FERTIL commencing a 4.4 billion AED turnkey expansion project 'FERTIL 2'; ADNOC entering into a joint venture to develop the Shah sour gas field, and the construction of the 'BOROUGE 3' ethane cracker unit, was awarded to The Linde Group in a contract worth over 3.9 billion AED.

In 2009, the Group Company total gross manpower costs were some 10 billion AED. ADNOC's entry level compensation package is highly competitive. Standard ADNOC benefits for employees include life insurance, health care, disability coverage and maternity leave. ADNOC provides housing for the majority of employees either through direct provision or a stipend.

National employees receive their pension entitlements, in accordance with the provisions of the statutory pension scheme. For UAE nationals of all pay grades, the company contributes to a pension programme managed by the government. Expatriate employees receive the company's end of service benefits which equates to one month of salary for every year worked that increases to 1.5 months of salary for every year worked after three years of service.

![](_page_45_Picture_9.jpeg)

#### **Environmental Expenditure**

While no study of the financial implications of climate change on ADNOC operations has been conducted, ADNOC recognises the significance of climate change. In an effort to minimise our contributions ADNOC is investing heavily in the environment.

![](_page_46_Figure_2.jpeg)

Fourteen Group Companies provided environmental expenditure data. This is a new indicator for the Group Companies and as such some did not have systems in place to collect the data. The reporting Group Companies spent over 500 million AED on environmental investments in 2009, the most significant portion 67.5% was spent on emissions treatment. Waste disposal accounted for 21.6%, environmental management 8.5%, prevention 2.2% and remediation 0.2%. The emphasis on emissions treatment reflects the significance that ADNOC, our stakeholders and the global community place on the issue. As discussed earlier in this report, we have made significant progress in reducing our air emissions, as a result of our sustained commitment and financial investments. The small percentage spent on remediation is due to the fact that our fields are still relatively young and have been well managed from the start.

![](_page_46_Picture_4.jpeg)

### Market Presence

ADNOC has developed strategic agreements with many of the largest international oil and gas companies, and with governments around the world.

Seventy percent of the total annual production of ADNOC's refined products is exported. The remaining refined products are sold domestically through a fast-expanding distribution network. ADNOC has over 170 filling stations in Abu Dhabi, Al Ain, the Western Region and the Northern Emirates and provides aviation re-fuelling services to over 50 airlines at regional airports.

![](_page_46_Picture_8.jpeg)

#### Locally based suppliers

There is a well documented procedure for the selection of suppliers and the evaluation of bids. This includes technical criteria and several mandatory requirements that comprise factors relating to HSE, Quality Assurance and ISO Certification. Generally, the selection of suppliers is based on the greatest value offered on a balance of quality, timeliness and price.

ADNOC requires that all foreign suppliers of goods and services operate with a local sponsor. The sponsorship arrangement often requires the supplier to share a percentage of the contract with their sponsor, ensuring that at least some percentage of the value of any contract leaving the country is directly realised locally.

Many of the larger contracts which are granted to leading engineering companies from around the world use local suppliers for the provision of supplies, labour and other services. The definition of a locally based supplier used is a provider of materials, products and services that are based in the UAE.

Contractors are required to comply with ADNOC's HSE standards, which helps improve performance along the value chain.

### **Indirect Economic Impacts**

ADNOC creates talent for the oil and gas industry and beyond through its flagship educational institutions including the ADNOC Technical Institute (ATI), the Petroleum Institute (PI), the Glenelg School of Abu Dhabi (GSAD) and the Achievers Oasis Programme (AOP), as well as its scholarship programme and training centres within Group Companies. The overall aim of these initiatives is to enhance the knowledge, skills and capabilities of ADNOC's Emirati workforce.

In line with the integral role ADNOC plays in the UAE economy, it is deeply committed to the growth of the UAE community. ADNOC sponsors a number of events on an annual basis, and makes significant contributions to the community such as the Ministry of Labour and Social Affairs, Children with Special Needs Centre, hospitals, the Red Crescent, educational organisations such as Zayed University, Higher Colleges of Technology and Abu Dhabi Educational Zone as well as cultural and sports clubs.

ADNOC and its Group Companies help to build and maintain roads, hospitals, mosques and schools for the benefit of local communities in Abu Dhabi. The indirect impacts are difficult to quantify because of their vast scale and diversity.

![](_page_47_Picture_9.jpeg)

### **Annual HSE Awards**

The Annual HSE Awards programme aims to recognize outstanding accomplishments, enable knowledge sharing pertaining to best practice, and foster an atmosphere of friendly competition that ultimately drives continual improvement in the Group Companies' performance.

The Annual HSE Awards programme was created in 1997 and has since evolved remarkably. Submissions were accepted then under one category only. Today the system has expanded to include five categories: HSE Performance, Environment, Health, Safety and Sustainable Development.

A total of 186 very diverse submissions were received for the 2009 ADNOC HSE Awards, compared to 175 in 2008. The breakdown of submissions by category is provided in the chart below:

![](_page_48_Figure_4.jpeg)

Submissions undergo two rounds of judging. The first is carried out by an independent consultant and the second by ADNOC Senior Management. Submissions are then scored and rewarded according to these categories, in addition to being considered for reward in a sixth category, Innovation, and in two further award categories that were newly created in 2009: Progressive Energy and HSE Champion.

The ADNOC CEO presented the awards to the winners in a special ceremony that was held on 25<sup>th</sup> May 2010.

In addition to the main categories described above, the following awards were also presented:

#### **Group Company/Contractor Partnership Awards**

- Hyundai Heavy Industries through ADMA-OPCO
- FLOWSERVE through GASCO

#### **Special Recognition Awards**

- ADNOC Medical Services Division
- BUNDUQ
- FERTIL
- NDC
- TOTAL
- ZADCO

![](_page_48_Picture_18.jpeg)

**1st place: BOROUGE** with entry *'Reduced Flaring during Cracker Start-Ups.'* The volume of ethane lost through the start-up flaring procedure was considered to be unacceptable. Borouge therefore developed an improved start-up procedure which reduced flaring by over 50% (from 20.7 to 9.8 kilotonnes of hydrocarbon) in comparison with the old start-up procedure developed by the licensor. The recent start-up also set a new time record reducing the overall downtime of the ethane cracker. It is estimated that total economic benefits of the reduced flaring procedure to be approximately AED 37 million a year, in addition to considerable reductions in CO<sub>2</sub> emissions.

![](_page_48_Picture_20.jpeg)

**Runner-up: ADGAS** with entry 'CO<sub>2</sub> Emission Reduction by Minimization of Flaring and Improvement of Boiler Stability and Efficiency.' A comprehensive FEED study was commissioned which identified significant efficiency and flare reduction opportunities, including installing on-line tools for calorific value measurement, restructuring boiler control systems and implementing "Connoisseur" Advanced Process Control (APC) technology. This resulted in 4% increase in boiler efficiency, 75% reduction in flaring, 60% reduction in boiler operation variability, Fuel Gas savings of AED 1.8 million and Liquid Natural Gas production worth AED 9.5 million.

#### **Sustainability Category**

![](_page_49_Picture_1.jpeg)

**1st place: GASCO** with entry *'Introduction of a GASCO Green Buildings Standard.'* A second phase of major expansion at all GASCO sites offers the opportunity to adopt sustainable building concepts which will seek to: improve air and water quality; reduce CO<sub>2</sub> emissions, pollution, environmental degradation and waste; reduce water, energy consumption; and improve public health, safety and general welfare. The Green Building standard has the additional benefit of reducing the life cycle costs. GASCO has shared the Guidelines with other Group Companies in accordance with the ADNOC initiative for Knowledge Management and Best Practice sharing.

#### HSE Performance Category

![](_page_49_Picture_4.jpeg)

**1st place: Hyundai Heavy Industries** with entry 'Use of Dynamically Positioned Vessel to reduce risk.' The installation of Umm Shaif Gas Injection Facilities (USGIF) Project Platforms utilising a Self Propelled Dynamically Positioned Vessel (DP II Vessel) was the first in the Arabian Gulf and only the fifth in the world. DP II Vessel maintains its position using GPS and hydroacoustic positioning coupled with automatic thrusters, rather than anchors. This positioning system minimises the possibility of damage to existing assets and resultant oil and gas pollution. The method has the other incidental benefits of minimising transportation and operation times, and hence cost.

![](_page_49_Picture_6.jpeg)

**Runner-up: The Petroleum Institute** with entry '*PI*'s *Carbon Footprint Management Program Generates Savings: Phase II.*' In 2008, Phase I of the Petroleum Institute's carbon footprint management program identified the major contributions to the carbon footprint and the associated costs. Phase II aimed to develop and implement strategies that had the greatest effect on reducing PI's carbon footprint and energy consumption, measure the results of these strategies, improve estimates of PI's carbon foot print by enhanced data collection, and ultimately increase awareness on energy sustainability through conferences and poster campaigns.

![](_page_49_Picture_8.jpeg)

**Runner-up: ADMA-OPCO** with entry 'Communicating HSE Performance using 'Dashboard Tool.' The 'HSE Performance Dashboard' is a dynamic, interactive tool that enables management to quickly analyse HSE statistical data, gain insight, and make better informed business decisions. The Dashboard produces daily and monthly HSE statistical reports with an intranet linkage to facilitate employee access. Furthermore it incorporates data visualisations and can adapt to changing business requirements. It replaces existing software that could not handle certain reporting functions or perform historical trending and post-incident reviews.

![](_page_50_Picture_0.jpeg)

**1st place: TAKREER** with entry *'Expecting the Unexpected: Radiography Contingency Planning in Abu Dhabi Refinery.'* As a non-destructive tool, radiography is used for routine inspection and QA/QC activities. A Contingency Plan was developed and tested to deal with the potential radiation hazards arising from the malfunction of equipment containing radiation sources whilst being transported between sites. The plan involved maintaining a set of specifically-designed safety gear and a dedicated vehicle containing radiationspecific PPE. The safety effectiveness of the plan was benchmarked against ADNOC, International Atomic Energy Association (IAEA) and US Nuclear Agency standards.

![](_page_50_Picture_2.jpeg)

**1st place: ADMA-OPCO** with entry *'Innovative Engineering to Avoid Failure of Subsea Pipelines.'* The relatively high temperature of the gas was considered to present a possible threat to the long-term integrity of the subsea gas transportation pipeline network. Instead of using a conventional technique that would have cost approximately AED 92 million, a cost-effective design was developed in-house to reduce the temperature of the gas over a short section of pipeline. This comprised alternating coated and uncoated sections of pipeline which function as a large heat exchanger. This is expected to avoid potential temperature-related problems developing further downstream.

![](_page_50_Picture_4.jpeg)

**Runner-up: ADMA-OPCO** with entry 'Heart Attack first response using Defibrillators.' Due to concern over heart-related disease amongst both the older and younger generations, Automated External Defibrillators (AED) were introduced into the workplace as is the requirement in many countries worldwide. Regular Cardiopulmonary Resuscitation (CPR) training as well as refresher courses were provided to 10% of employees. Such training increases survival rates within the first 3-7 minutes from 5% to 75%. The programme is also expanding into the community, with ADMA-OPCO trained employees acting as the programme's core.

![](_page_50_Picture_6.jpeg)

**Runner-up: ADMA-OPCO** with entry 'Comprehensive  $H_2S$  Training and Assurance.' Following the fatal accidents among temporary contractors exposed to  $H_2S$ , a full review of  $H_2S$  safety management was undertaken. Several educational solutions to improve the level of worker awareness of  $H_2S$  risks were used, and this resulted in a 30% increase in the reporting of  $H_2S$  near misses enabling appropriate action to be taken. Core criteria were that the training be mandatory, available and comprehensive to all, and that competence be confirmed by examination. Overall the campaign positively influenced behaviour towards  $H_2S$  management.

![](_page_51_Picture_0.jpeg)

**1st place: TAKREER** with entry 'Sealed with a Kiss: Maximum VOC Leak Prevention.' A new method for the replacement of fabric seals for in-service hydrocarbon floating roof storage tanks was developed at Ruwais Refinery. This technique enables seal replacement while the tank is in service. As a result, the safety of workers is uncompromised, exposure to VOC (Volatile Organic Compounds) is reduced, losses can be quickly and safely minimized, tankage area safety is improved and waste management and production costs are reduced. Overall the procedure provides annual economic benefits in excess of AED 3 million, largely due to eliminating the need for tank outages.

#### **Progressive Energy Category**

![](_page_51_Picture_3.jpeg)

**ADCO** with entry '*Rumaitha CO<sub>2</sub> Enhanced Oil Recovery* (EOR) Pilot Project.' The project is at the pilot stage in collaboration with Masdar and is understood to be the first  $CO_2$  EOR pilot project in the Middle East. Its objective is to test the concept of  $CO_2$  flooding in ADCO oil reservoirs. The success of this project demonstrates a milestone step in the implementation of the wider Carbon Capture and Storage (CCS) strategy. This strategy seeks to ultimately capture  $CO_2$  produced from large industrial point sources rather than allowing it to be emitted to the atmosphere, transport it to a burial location (e.g. depleting oil reservoir) and inject it into the underground geological reservoir.

![](_page_51_Picture_5.jpeg)

**Runner-up: TAKREER** with entry 'One Small Step in Operating Philosophy, One Giant Leap for Effluent Quality/ Abu Dhabi Refinery.' Selective routing of high concentration sour water streams and low concentration streams within the Abu Dhabi Refinery to the closed blow down system have reduced the H<sub>2</sub>S and NH<sub>3</sub> discharges to the marine environment by 74% and 92% respectively. These outcomes were achieved without material abatement equipment and the associated capital expenditure (estimated at AED 8 million), demonstrating that relatively simple changes in operating philosophy can have large environmental benefits.

![](_page_51_Picture_7.jpeg)

**HSE Champion Award** was awarded to Mr. Mohammed Sahoo Al Suwaidi, CEO of GASCO, for his visible efforts and active commitment to HSE matters. The award was received on his behalf by Mr. Abdul Aziz Al Ameri, GASCO Senior Vice President for Major Projects.

# **Acronyms and Abbreviations**

A&AD	-	Audit and Assurance Division	HSEMS	-	Health, Safety and Environment Management System
ADAA	-	Abu Dhabi Accountability Authority	HVAC	-	Heating, Ventilation and Air Conditioning
ADIA	-	Abu Dhabi Investment Authority	IADC	-	International Association of Drilling Contractors
ADIC	-	Abu Dhabi Investment Council	IGD	-	Integrated Gas Development
ADNOC	-	Abu Dhabi National Oil Company	IPCC	-	Intergovernmental Panel for Climate Change
ADSG	-	Abu Dhabi Sustainability Group	IR	-	Infra-red
ADWEA	-	Abu Dhabi Water and Electricity Authority	ISO	-	International Standards Organisation
AED	-	Arab Emirates Dirham	IUCN	-	International Union for Conservation of Nature
AGHSESC	-	ADNOC Group HSE Steering Committee	KPI	-	Key Performance Indicator
AICE	-	American Institute of Chemical Engineers	kW	-	Kilowatt
ALARP	-	As Low as Reasonably Practicable	LDAR	-	Leak Detection and Repair
AQI	-	Air Quality Index	LEED	-	Leadership in Energy and Environmental Design
AQMS	-	Air Quality Management System	LNG	-	Liquefied Natural Gas
BAP	-	Biodiversity Action Plan	LTI	-	Lost Time Incident
BAT	-	Best Available Technology	LTIF	-	Lost Time Incident Frequency Rate
BPD	-	Barrels Per Day	MARPOL	-	International Convention for the Prevention of Pollution from Ships
CAMS	-	Competence Assurance Management System	MASDAR	-	Abu Dhabi Future Energy Company
CCS	-	Carbon Capture and Storage	MMSCFD	-	Million Standard Cubic Feet per Day
CDM	-	Clean Development Mechanism	MSD	-	Medical Services Division
CEO	-	Chief Executive Officer	NA	-	Not Applicable
CFC	-	Chlorofluorocarbon	NGO	-	Non Governmental Organisation
CME	-	Continuing Medical Education	NGV	-	Natural Gas for Vehicles
CNIA	-	Critical National Infrastructure Authority	NOx	-	Oxides of Nitrogen
CO <sub>2</sub>	-	Carbon Dioxide	NRC	-	National Recruitment Committee
CoP	-	Codes of Practice	OGP	-	Oil and Gas Producers (Association)
CPD	-	Civil Projects Division	OHSAS	-	Occupational Health and Safety Accreditation System
CPD	-	Continuing Professional Development	PCB	-	Poly Chlorinated Biphenols
CSR	-	Corporate Social Responsibility	PPM	-	Parts Per Million
E&P	-	Exploration and Production	QRA	-	Quantitative Risk Assessment
EH&S	-	Environment, Health and Safety	RAMS	-	Remote Area Medical Services
EOR	-	Enhanced Oil Recovery	RHC	-	Ruwais Housing Complex
FAR	-	Fatal Accident Rate	RWDC	-	Restricted Work Day Case
FEED	-	Front End Engineering and Design	SAS	-	Sahil, Asab and Shah fields
FSU	-	Former Soviet Union	SO <sub>2</sub>	-	Sulphur Dioxide
GHG	-	Green House Gas	SOx	-	Oxides of Sulphur
GNRD	-	Group Nationals Recruitment Department	SPC	-	Supreme Petroleum Council
GRI	-	Global Reporting Initiative	TRIR	-	Total Recordable Incident Rate
G3	-	3 <sup>rd</sup> Generation of GRI inidicators	UAE	-	United Arab Emirates
H <sub>2</sub> S	-	Hydrogen Sulphide	UK	-	United Kingdom
HAAD	-	Health Authority of Abu Dhabi	USA	-	United States of America
HAZOP	-	A Hazard and Operability study	VMD	-	Vehicle Monitoring Devices
HSE	-	Health, Safety and Environment	VOC	-	Volatile Organic Compound
HSEIA	-	Health, Safety and Environment Impact Assessment	WSUP	-	Water and Sanitation for the Urban Poor

# **Report Contributors**

The following provided the data on which this report is based.

#### Exploration and Production Directorate

ADCO	- Abu Dhabi Company for Onshore Oil Exploration	ESNAAD	
	<ul> <li>Abu Dhabi Gas Development Company Ltd</li> </ul>	IRSHAD	<ul> <li>Abu Dhabi Petroleum Ports Operating Company</li> </ul>
ADGAS	- Abu Dhabi Gas Liquefaction Company Ltd		
ADMA-OPCO	<ul> <li>Abu Dhabi Marine Operating Company</li> </ul>	Independent Opera	ators (Operate under ADNOC/SPC directions for HSE matters)
GASCO	<ul> <li>Abu Dhabi Gas Industries Ltd</li> </ul>	ADOC	- Abu Dhabi Oil Company (Japan) Ltd.
ELIXIER		BUNDUQ	- BUNDUQ Company Ltd.
NDC	- National Drilling Company	TOTAL ABK	- Total Abu Al Bukhoosh Company
ZADCO	<ul> <li>Zakum Development Company</li> </ul>		
		Academic Institution	ons
Marketing and Ref	ining Directorate	PI	- Petroleum Institute
ADNOC DISTRIBUTI	ON	ATI	<ul> <li>ADNOC Technical Institute</li> </ul>
TAKREER	<ul> <li>Abu Dhabi Oil Refining Company</li> </ul>	GSAD	<ul> <li>Glenelg School of Abu Dhabi</li> </ul>
ADNATCO-NGSCO	<ul> <li>Abu Dhabi National Tanker Company</li> </ul>		
	<ul> <li>National Gas Shipping Company</li> </ul>	Other	
		CPD	- Civil Projects Division
Petrochemicals Di	rectorate		
BOROUGE	<ul> <li>Abu Dhabi Polymers Company Ltd</li> </ul>		
FERTIL	<ul> <li>Ruwais Fertilizer Industry</li> </ul>		

**Shared Services Directorate** 

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\*NA – Not Applicable { Case Study }

# **ADNOC Significant Dates**

November 1971	Incorporation of Abu Dhabi National Oil Company (ADNOC)
May 1972	Incorporation of National Drilling Company (NDC)
July 1973	Incorporation of Abu Dhabi National Oil Company for Distribution
April 1975	Incorporation of Abu Dhabi National Tankers Company (ADNATCO)
April 1976	Abu Dhabi's first refinery was commissioned at Umm Al Nar
April 1976	Building commences for ADNOC DISTRIBUTION service stations
March 1977	Incorporation of Abu Dhabi Gas Liquefaction Company Limited (ADGAS) in Abu Dhabi followed by plant inauguration on Das Island
April 1977	The first LNG shipment from Das Island to Tokyo Electric Power Company
July 1977	Incorporation of Abu Dhabi Marine Operating Company (ADMA-OPCO) as a National Company
November 1977	Incorporation Zakum Development Company (ZADCO) for the development of Upper Zakum reservoirs
October 1978	Incorporation of Abu Dhabi Company for Onshore Oil Operations (ADCO) as a National Company
December 1978	Incorporation of Abu Dhabi Gas Industries Limited (GASCO)
January 1979	Incorporation of Abu Dhabi Petroleum Ports Operating Company (ADPPOC) later became IRSHAD
October 1980	Incorporation of Ruwais Fertilizer Industries (FERTIL)
June 1981	The 120,000 barrel-a-day refinery was commissioned at Ruwais
March 1982	Ruwais Industrial Project and Ruwais Housing Complex inaugurated
January 1984	First shipment of product from FERTIL
April 1988	Drilling of first Horizontal well in Abu Dhabi
June 1988	Abu Dhabi Supreme Petroleum Council (SPC) was established as the ultimate authority on all matters relating to oil and gas in the Emirate
November 1993	Establishment of National Gas Shipping Company Limited (NGSCO)
July 1995	Habshan Residential Complex inaugurated
May 1998	Establishment of BOROUGE Pvt. Limited (Singapore), a joint venture marketing company and the Abu Dhabi Polymers Company Limited (BOROUGE)
May 1999	Establishment of the Group National Recruitment Committee
May 1999	ADNOC sets up HSE lab
June 1999	Establishment of Abu Dhabi Oil Refining Company (TAKREER)
April 2001	The merger of GASCO with ATHREER, making GASCO one of the largest gas processors in the world
January 2002	ADNOC, ADMA-OPCO and ZADCO completed the largest ocean bottom 3D seismic survey (1800 km) ever acquired in the world
June 2002	Formation of ESNAAD
January 2003	ADNOC phasing out leaded Gasoline and switching over to unleaded Gasoline
March 2003	Commissioning of first Zero Gas Flaring (pilot) project at BAB
April 2004	Commissioned the first LNG filling station in the region
April 2006	First cargo of low sulphur gas oil was exported to Brazil
October 2006	Introduction of Unleaded Gasoline (Octane 91)
December 2006	BOROUGE and Borealis became the first companies in the Gulf region to sign the Responsible Care Global Charter, the chemical industry's global voluntary initiative
September 2007	ELIXIER was established as a strategic partnership between ADNOC and Linde AG
December 2007	TAKREER awarded the Green Diesel Project for the production of ultra low-sulphur gas oil
December 2008	BOROUGE ground breaking event for a compounding facility and a logistics hub in China
May 2009	Commissioning of BeAAT facility to handle hazardous waste produced by ADNOC Group Companies
September 2009	ADCO started $CO_2$ gas injection for the first time in the Middle East, as a joint project with MASDAR
November 2009	Official Launch of the ADNOC Sustainability Performance Initiative and the commitment to produce ADNOC's first Sustainability Report

# **Readers' Survey**

Environment, Health and Safety Division         Supreme Petroleum Council         P.O. Box 898, Abu Dhabi UAE         Fax: +971 2 666 8089         Email: hse@adnoc.ae         Please tell us about yourself (optional)         Name:	Your feedback is important to us, please fill out the questions below and return to:	3) Do you have any suggestions to improve this report?			
Please tell us about yourself (optional)   Name:	Environment, Health and Safety Division Supreme Petroleum Council P.O. Box 898, Abu Dhabi UAE Fax: +971 2 666 8089 Email: hse@adnoc.ae				
Name:	Please tell us about vourself (optional)				
ADNOC's performance?   Organisation:   Email address:   Email address:   Country of residence:   Social impact   Social impact   Economic performance   Other:   1) What are your reasons for reading this report?   I wanted to understand the specific sustainability   issues of ADNOC	Name:	4) What issues are you most interested in regarding			
Organisation:   Email address:   Country of residence:   Country of residence:   Social impact   Social impact   Economic performance   Other:   1) What are your reasons for reading this report?   I wanted to understand the specific sustainability   issues of ADNOC		ADNOC's performance?			
Email address:	Organisation:	Environmental impact			
Country of residence:  Social impact Economic performance Other:  1) What are your reasons for reading this report? I wanted to understand the specific sustainability issues of ADNOC I I wanted a more general understanding	Email address:	Labour relations			
I wanted to understand the specific sustainability   I wanted a more general understanding    Economic performance  Other:   Economic performance  Other:  Economic performance  Other:  Economic performance  I conomic performance I conomic performance	Country of residence:	Social impact			
Other:		Economic performance			
<ol> <li>What are your reasons for reading this report?</li> <li>I wanted to understand the specific sustainability issues of ADNOC</li> <li>I wanted a more general understanding</li> </ol>		Other:			
<ul> <li>I wanted to understand the specific sustainability issues of ADNOC</li> <li>I wanted a more general understanding</li> </ul>	1) What are your reasons for reading this report?				
issues of ADNOC  I wanted a more general understanding	I wanted to understand the specific sustainability				
I wanted a more general understanding	issues of ADNOC				
	I wanted a more general understanding				
of ADNOC	of ADNOC				
I used it for research       5) Did this report adequately address your concerns?	I used it for research	5) Did this report adequately address your concerns?			
Other: Yes	Other:				
Please explain:		Please explain:			
2) Has this report changed your views of ADNOC2	2) Has this report changed your views of $\Lambda DNOC2$				
Ves. Lyiew ADNOC more positively now	Yes. Lyiew ADNOC more positively now				
Yes, I view ADNOC more negatively now	Yes, I view ADNOC more negatively now				

No change

Thank you for completing this survey.