

أدنوك  
ADNOC



شركة بترول أبوظبي الوطنية

# Abu Dhabi National Oil Company 2011 Sustainability Report

Fostering Our Society, Securing Our Future





**“The Emirate of Abu Dhabi will continue to work towards its own comprehensive, multifaceted vision. That vision is to continue to create a confident, secure society and to build a sustainable, open and globally competitive economy.”**

- H.H. Sheikh Khalifa Bin Zayed Al Nahyan

# ABOUT THIS REPORT

Welcome to ADNOC's third annual Sustainability Report, covering ADNOC's performance and achievements for the 2011 calendar year

## Process for defining report content

The content of this report is guided by the Global Reporting Initiative (GRI) 3<sup>rd</sup> Generation (G3) Sustainability Reporting Guidelines 2006 and the International Petroleum Industry Environmental Conservation Association / American Petroleum Institute (IPIECA/API) Oil and Gas Industry Guidance on Voluntary Sustainability Reporting 2010. This report focuses on ADNOC's priority areas, which were identified through a process incorporating the principles of the GRI and IPIECA/API frameworks. These include:

- **Materiality:** We believe the report covers the major issues that reflect ADNOC's significant economic, environmental and social impacts, as well as the issues that would substantively influence the assessments and decisions made by our stakeholders.
- **Stakeholder Inclusiveness:** We have identified and considered the key stakeholders, and we have outlined in the report how the company engages them, identifies their priorities, and responds.
- **Sustainability Context:** We have considered global trends in sustainability for the oil and gas sector, and have also taken into account the regional and local contexts of our operations.
- **Reporting Cycle:** We will report on our sustainability progress annually.
- **Completeness and Boundaries of this Report:** We have attempted to make this report as complete as possible. The report pertains to ADNOC's 2011 performance, covering our operations in the United Arab Emirates unless stated otherwise. Where limitations have been identified in the scope of our data, it has been stated in the report within the relevant context.

The following should also be noted:

**ADNOC Group Companies:** Performance has been captured in all sections of this report, with an exception on some IPIECA/API reporting requirements where the number of responses received from the ADNOC Group Companies varied. Where this is the case, it has been highlighted in the relevant sections of this report. Our newest Group Company, Al Hosn Gas, has been actively developing tools to collect sustainability data since its establishment in March 2010. As such, and considering their non-operating status in 2011, Al Hosn Gas representation across the sections of this report is as follows: Introduction (all with the exception of 'ADNOC Products and Markets'), Environmental Performance (in part), Health and Safety Performance (in full), Social Performance (in

part), Economic Performance (in full) and ADNOC HSE Awards (in full).

**Independent Operators:** Performance has been captured in the Environmental Performance (in full), Health and Safety Performance (in full) and Social Performance (in part) sections of this report. The term "ADNOC Companies" has been used where the Independent Operators' performance has been included with that of the ADNOC Group Companies.

**Civil Projects Division (CPD):** Performance has been captured in the Health and Safety section of this report only.

**The Petroleum Institute (PI):** Performance has been captured in all sections of this report, unless otherwise stated. PI is excluded from reporting on certain metrics under ADNOC's sustainability reporting guidelines.

## Ensuring quality in our sustainability reporting

We recognize that ensuring the quality and credibility of the information presented in this report is of strong importance and we have therefore used the GRI "principles for defining quality".

- **Balance:** The report seeks to demonstrate transparency, presenting achievements while also highlighting the areas in which ADNOC believes there is an opportunity to improve.
- **Comparability:** Where possible, we have provided 5-year trend data (2007 – 2011), and in some cases earlier years. The reporting on some of the environmental parameters is provided for the reporting year (2011) only, due to the implementation of revised data collection protocols for which normalisation of previous year trend data in accordance with the revised approach could not be performed accurately.
- **Accuracy and Reliability:** Whilst significant effort remains on our reporting companies to improve their data collection practices, ADNOC is making year-on-year improvements in ensuring the accuracy and reliability of the data we report in our annual Sustainability Reports
- **Clarity:** This report targets a wide range of stakeholders with varying levels of awareness of sustainability. ADNOC has strived to make the report easily understandable for the anticipated readers.
- **Assurance:** This report has not been externally assured.
- **GRI Application Level:** ADNOC self-declares this report to meet GRI Application Level "A".

# CONTENTS

Message from the Director General	7	Environmental Performance	23
About ADNOC	8	Health and Safety Performance	41
ADNOC Corporate Structure	9	Social Performance	53
Our Performance	11	Economic Performance	65
ADNOC Group Companies	12	ADNOC HSE Awards	69
ADNOC Products and Markets	14	Report Contributors	74
ADNOC Strategy	16	Acronyms and Abbreviations	75
HSE Management Systems	17	GRI and IPIECA / API Index	76
HSE Management Framework	18	Reader's Survey	78
HSE Impact Assessments	19		
Stakeholder Engagement	20		

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## MESSAGE FROM THE DIRECTOR GENERAL

The year 2011 marked a special time in our company's history as we celebrated both the UAE and ADNOC's 40<sup>th</sup> anniversaries.

The year 2011 marked a special time in our company's history as we celebrated both the UAE and ADNOC's 40<sup>th</sup> anniversaries. The significance of these two events resides in the achievements and progress that the UAE and ADNOC have witnessed over the last four decades. Since the company's inception in 1971, ADNOC has been actively laying down the foundations for the UAE's development by pursuing a series of strategic development and expansion projects across the oil and gas sector in the Emirate of Abu Dhabi. These carefully executed projects have served to launch and uphold the UAE's respected and globally competitive economy of today, whilst creating favourable conditions to promote sustainable development and prosperous living in our society.

**Committed to continue this great march of achievements, ADNOC and the Group Companies have made significant investments in 2011 across our upstream and downstream operations, to ensure we continue to deliver upon our responsibility to secure steady and diversified energy supplies that meet domestic and international demand.**

In our pursuit of this objective, we are constantly searching for opportunities to reduce the environmental footprint of our existing and future projects. We are especially proud of our Group Companies' efforts to reduce the total amount of hydrocarbons flared in 2011 by almost 76% compared to 1995 levels, despite undergoing considerable expansion in both the nature and scale of our operations during this time. The year 2011 also witnessed the registration of ADNOC's first Clean Development Mechanism (CDM) project under the

United Nation's Kyoto Protocol. The project, undertaken by our subsidiary Abu Dhabi Gas Industries Company (GASCO) in association with Abu Dhabi Future Energy Company (Masdar), delivers on ADNOC's commitment to improve the energy efficiency and greenhouse gas intensity of our operations, whilst paving the way forward for future CDM projects that are currently under way by our Group Companies.

Despite our untiring efforts to reinforce the safety culture across our operations, there were thirteen regrettable work-related fatalities amongst the ADNOC Group Companies in 2011, affecting one employee and twelve contractors. At ADNOC, a single fatality is one too many. We will learn from these incidents and implement the necessary preventative measures to ensure we bring our workforce home safely and sustain their trust in our leadership and operations.

Realising that our people are our most valued asset, we have exerted maximum effort throughout our journey towards developing talented national cadres to assume their role in the UAE's oil and gas sector, by means of our internationally-recognised academic institutions, successful scholarship programme, and the core Competence Assurance Management System (CAMS) training programme that is offered to new hires. Our collaborative efforts will help ensure we are on target to achieve 75% Emiratisation across core company positions by the end of 2014.

ADNOC is embracing the future with confidence, and our commitment towards sustainable practice will continue to drive progress across the key pillars of our nation's development path.

**Abdulla Nasser AlSuwaidi**  
ADNOC Director General

# ABOUT ADNOC

Abu Dhabi National Oil Company was established on the 27<sup>th</sup> November 1971 to operate in all areas of the oil and gas industry in Abu Dhabi, United Arab Emirates

Abu Dhabi National Oil Company (ADNOC) was established on the 27<sup>th</sup> 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 enhanced its competitive position through its sound business interest in 15 specialist subsidiary and joint venture companies, known as the ADNOC Group Companies.

The Group's diversified operations cover all aspects of the upstream and downstream petroleum industry, including crude oil and natural gas exploration, production, refining, processing, distribution, global marketing, and the manufacture of petrochemicals.

ADNOC's efforts in the exploration and production field have concentrated on assessing undiscovered reserves and optimizing hydrocarbon recovery by improving reservoir management.

Today, ADNOC manages and oversees oil production of more than 2.5 million barrels per day (bpd), ranking it amongst the top ten oil and gas producing companies in the world.

In the last few years, significant achievements were made in the expansion and development of gas fields to meet the growing needs and development plans of Abu Dhabi, and in our bid to support the Abu Dhabi Economic Vision 2030 which seeks to diversify Abu Dhabi's energy supplies.

We are also improving techniques for oil and condensate recovery from our producing fields. In 2011, ADNOC saw the production of over 7.8 billion standard cubic feet per day (scfd) of natural gas (wet gas).

ADNOC is committed to sustainable development and ensuring a harmonious balance between people's needs and the Earth's resources. Our track record in occupational health and safety and protection of

## > 2.5 MILLION

BARRELS OF CRUDE OIL PER DAY (BPD)  
PRODUCED BY ADNOC IN 2011

## > 7.8 BILLION

STANDARD CUBIC FEET PER DAY (SCFD)  
OF NATURAL GAS (WET GAS) PRODUCED BY  
ADNOC IN 2011

the environment sets the standard for the oil and gas industry around the Arabian Gulf.

ADNOC's headquarters are located in the Emirate of Abu Dhabi, UAE. Our major operations are based in the UAE. Some of the Group Companies have offices in other countries, such as Borouge which has marketing operations across Asia.

We are also very proud of our three academic institutions. These were established by ADNOC to nurture a specialised, competitive, and highly professional young workforce for the local oil and gas industry, and help create educated and engaged citizens for Abu Dhabi.

### The Supreme Petroleum Council

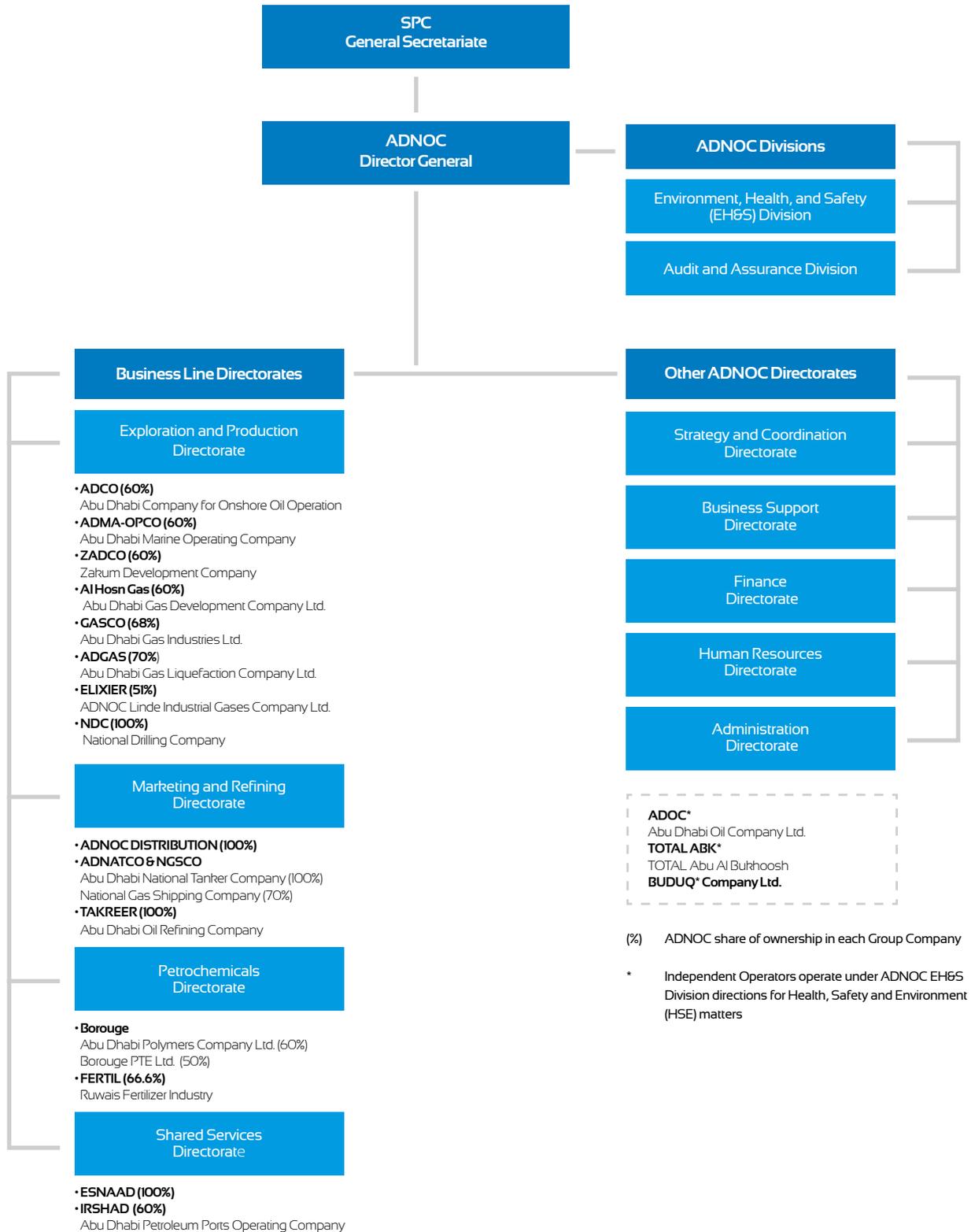
The Supreme Petroleum Council (SPC) was established under law No. 1 of 1988. The law stipulates that the Council is the superior authority responsible for the petroleum industry in the Emirate of Abu Dhabi. The Council formulates and oversees the implementation of Abu Dhabi's petroleum policy and follows 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.

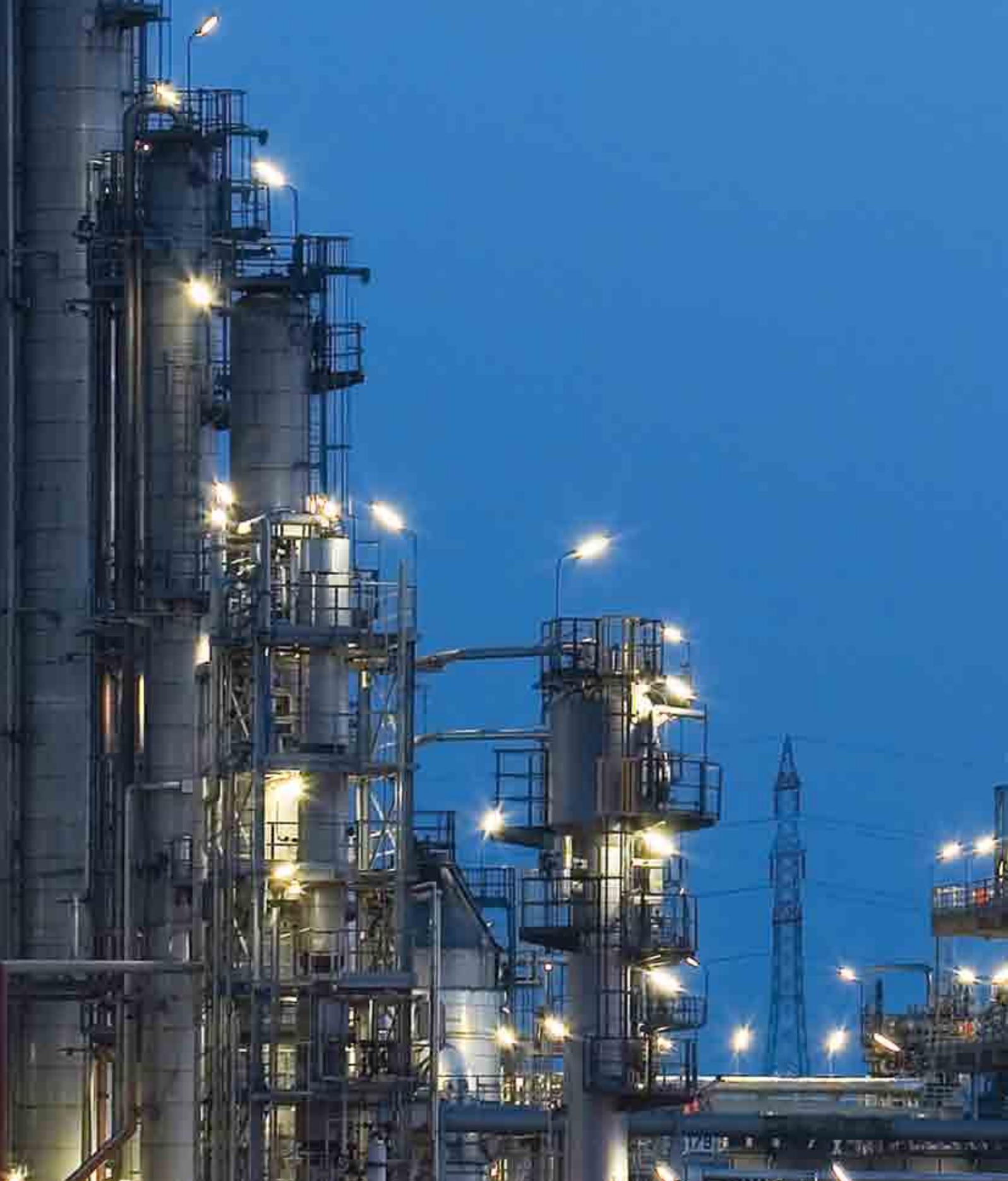
## 2011 KEY HIGHLIGHTS

ADCO complete their first "long horizontal well" and break the world record for distributed temperature sensing (DTS) installation. The 10,000 feet horizontal well was executed in Asab to demonstrate the potential for horizontal wells to improve well productivity in low permeability reservoirs, minimise the surface footprint and surface engineering (pipelines, wellheads etc.), optimise cost and rig time, and mobilise fewer rigs hence reducing HSE risks. The fibre optic DTS system will be used to monitor the well's water injection profile.

# ADNOC CORPORATE STRUCTURE



**ADGAS** oversee progress on their Das Island Development (DID) Project, where expansion and reclamation works are underway to accommodate future projects with ADMA-OPCO. ADGAS also inaugurates the new Das Training Centre, a state-of-the-art training and testing facility designed to meet the technical training demands of both ADGAS and ADMA-OPCO's workforce throughout the implementation of their shared Integrated Gas Development (IGD) Project. The centre will also be used to conduct training within ADNOC's Competence Assurance Management System (CAMS) programme.



ADMA-OPCO complete the construction and installation of the offshore gas processing platform, Integrated Gas Development Project Habshan Platform (IGD-HAP), at their Umm Shaif Super Complex. IGD-HAP is the first of several onshore and offshore packages to be delivered under the IGD Project, whose overall objective is to transfer an additional 750 MMSCFD of high pressure gas from Umm Shaif to Habshan through Das Island via a 30-inch Offshore Associated Gas (OAG) pipeline. The IGD and OAG projects, executed by ADMA-OPCO, ADGAS and GASCO, form part of ADNOC's strategic objective to process and supply gas to meet the growing needs and development plans of Abu Dhabi.

# OUR PERFORMANCE

## ENVIRONMENT

- 76% reduction in total amount of hydrocarbons flared compared to 1995 levels
- 1<sup>st</sup> ADNOC CDM project registered under the UN Kyoto Protocol
- > 15 million GJ saved due to energy reduction and energy efficiency improvement measures
- > 9% of water consumed was recycled / reused
- 100% of ecologically-sensitive operating sites have biodiversity management plans
- > 100,000 mangrove seedlings planted across our concession areas (out of a total 5 million seedlings produced in our mangrove nurseries)

## SOCIAL

- > 31,000 employees and > 37,000 contractors
- > 66.5% of governance body positions occupied by Emiratis (this represents 282 employees)
- > 930,000 man-hours of employee training delivered
- > 92% of employees receive annual performance review
- 0 incidents of child, forced or compulsory labour
- First cohort of female engineers to graduate from The Petroleum Institute (PI), one of ADNOC's flagship academic institutes

## ECONOMIC

- > AED 10 billion in gross man power costs
- > 77% of our services procurement budget was spent on local suppliers. This amounts to ~ AED 13 billion.
- > AED 25 million in community sponsorships and donations
- > AED 602 million on environmental expenditure
- > AED 9.5 million dedicated to hosting exhibitions and conferences regionally and internationally

## OPERATIONS

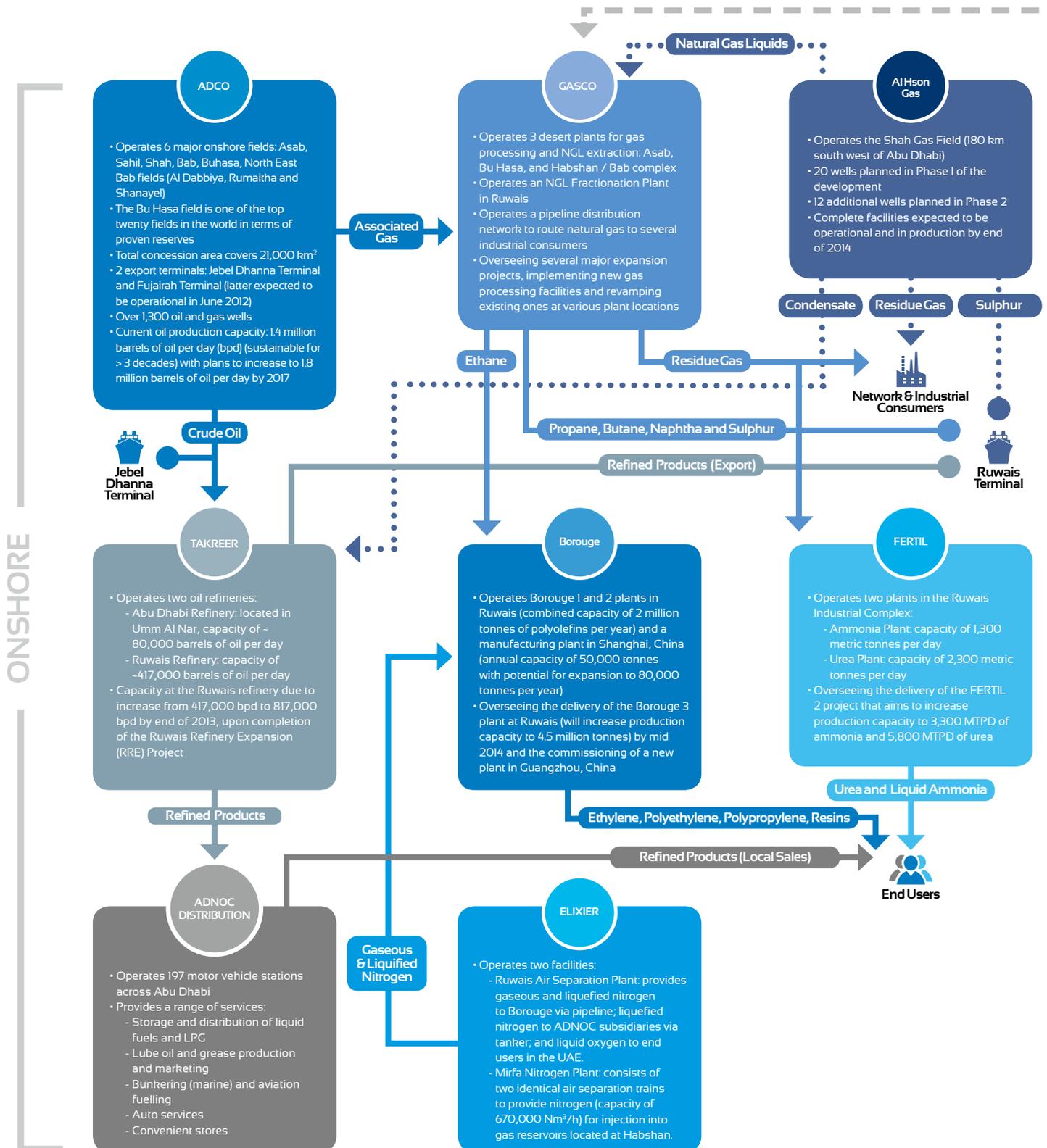
- > 1,637,900 feet drilled
- > 588 million man-hours worked
- > 2.5 million barrels of oil produced per day
- > 7.8 billion standard cubic feet of natural gas produced per day
- > 34,500 tonnes of lubricant and grease
- ~ 2 million tonnes of polyolefins (polyethylene and polypropylene)
- > 10 million tonnes of refined products exported to international markets

ADNATCO & NGSCO expand their fleet by taking delivery of 5 Oil Tankers, 6 Bulk Carriers and 2 Container Vessels. Their fleet expansion project reflects their mission to become one of the world's leading marine transportation companies.



ADNOC DISTRIBUTION oversee the first phase of their Compressed Natural Gas (CNG) Project, which entails the construction of 9 CNG vehicle conversion centres and 16 CNG filling stations across the country (10 in Abu Dhabi, 2 in Al Ain and 4 in Sharjah). The project is aligned with the Abu Dhabi Executive Council decision to run 25% of the Emirate's government vehicles on CNG by 2012. Around 1,700 vehicles have been converted to run on CNG since the project began in May 2010.

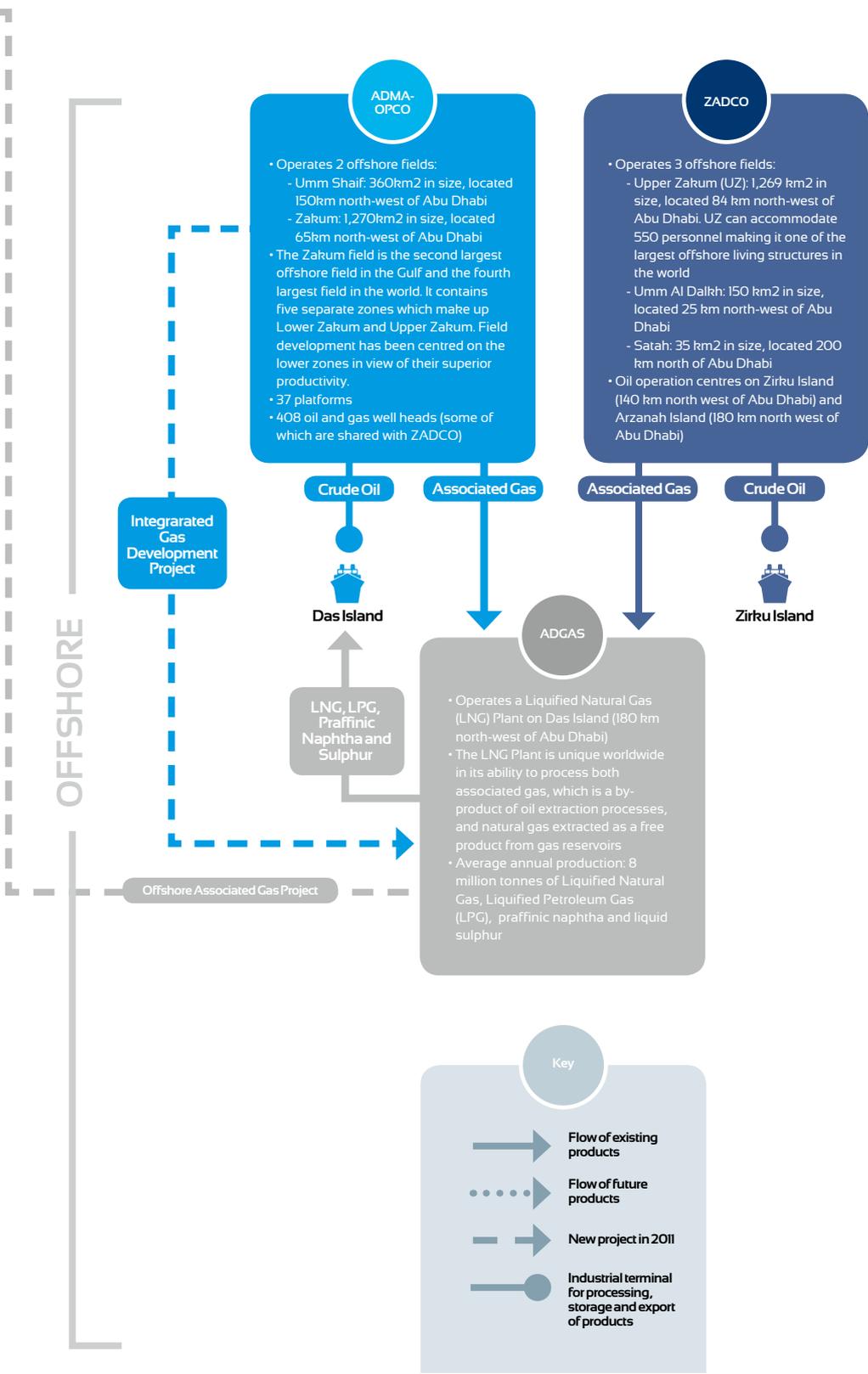
# ADNOC GROUP COMPANIES



AlHosn Gas commence well drilling in the Shah sour gas field, located 180 km south-west from Abu Dhabi. Production is due to start in the third quarter of 2014. When fully operational, the project aims to supply 33,000 barrels per day of condensate, 4,400 tonnes per day of natural gas liquids (NGL), and 9,200 tonnes per day of elemental sulphur.



Borouge award the contract for construction of an 80,000 tonne capacity cross-linkable polyethylene (XLPE) unit at its petrochemical plant in Ruwais, for the manufacture of innovative plastic solutions for low to high voltage energy cables. This is the final major contract to be awarded for the Borouge III mega-expansion project already underway.



**NDC**

- Provides onshore and offshore drilling services to the ADNOC Group Companies
- 1,637,920 feet drilled in 2011
- Operates:
  - 11 offshore jack-up drilling rigs
  - 24 land drilling rigs
  - 5 water-well rigs (to survey the quality, quantity and distribution of groundwater in the Emirate of Abu Dhabi as part of NDC's lead on the "Groundwater Research Programme")
- 1 multi-purpose service vessel

**ADNATCO & NGSCO**

- Provides shipping facilities for the trade of petroleum products in international markets, ship bunkering services and bulk sulphur transportation.
- Operates a fleet of 30 ships:
  - 8 LNG Carriers
  - 3 Oil / Chemical Tankers
  - 6 Oil Tankers
  - 9 Bulk carriers
  - 2 Container Vessels
  - 2 Ro-Ro Vessels

**ESNAAD**

- Provides a range of facilities, services and supplies to the oil and gas sector, including:
  - Offshore marine support services (ESNAAD operates a fleet of 47 vessels)
  - Berthing, bunkering and bulk supply
  - Port services
  - Well services
  - Drilling fluids services
  - Specialised production chemicals
- Operates a Grinding Plant, Blending Plant and Brine Plant in the Mussafah Offshore Supply Base.

**IRSHAD**

- Provides marine services to the petroleum ports of Abu Dhabi (Ruwais, Jebel Dhanna, Das Island, Zirku Island, Zakum Field and Mubarratz)
- Services include:
  - Pilotage, berthing / unberthing of O&G tankers and the loading of oil products
  - Offshore terminal maintenance (SBM), inspection and associated diving operations
  - Operational and technical management of a fleet of 51 vessels of which 10 ASD Tugs, 4 tail back boats and 4 pilot boats are ADNOC owned

ELIXIER oversee the construction and delivery of their Mirfa Nitrogen Plant. This plant consists of two identical air separation trains to provide nitrogen (capacity of 660,000 Nm<sup>3</sup>/h) for injection into GASCO's gas reservoirs in Habshan. The gas will be delivered to Habshan via a 48-inch, 43 km pipeline at a pressure of 53 bar and a purity of less than 10 ppm oxygen. The gas will be further compressed prior to injection.



ESNAAD take delivery of the ESNAAD 711 safety, standby and rescue vessel which will be used to patrol and perform activities in the offshore Upper Zakum oil field, adding new capacity to ZADCO's safety, rescue and marine control capabilities.

# ADNOC PRODUCTS AND MARKETS

ADNOC is undertaking major developments across our upstream and downstream operations to expand our products' base and their reach in domestic and international markets.



## Crude Oil and Condensate

The main onshore grade for our crude oil is Murban. Our offshore grades include Umm Shaif, Lower Zakum and Upper Zakum. ADNOC also produces two grades of condensate; Uweinat and Thamama.

ADNOC's equity of crude oil and condensate is sold in both international and local markets. The bulk of ADNOC's crude exports are mainly targeted to the Far East, although ADNOC also has a business relationship with the Indian subcontinent and Africa.

**ADNOC aims to maintain good business relationships with existing and potential end-users and to ensure reliable supply.**

Crude Oil and Condensate Exported in 2011 ('000 bbl)

Export Destination	Total*
Japan	176,045
Indian subcontinent	113,076
South Korea	72,005
Other Asian	112,308
Australia	3,576
Africa	2,050
Europe	765
<b>Total</b>	<b>479,825</b>

\*ADNOC Share

ADNOC aims to maintain good business relationships with existing and potential end-users and to ensure reliable supply. In 2011, ADNOC signed an agreement with China National Petroleum Cooperation (CNPC) for further cooperation on oil sales. Under the new agreement, which will be effective in 2014 for 20 years



## Petroleum Products

ADNOC also markets refined products, such as naphtha, jet kerosene, gas oil and fuel oil. These refined products are produced by Abu Dhabi Refining Company (TAKREER) and sold domestically and internationally.

In addition, ADNOC markets its 68% equity share of naphtha produced by Abu Dhabi Gas Industries Company (GASCO).

Refined Products Exported in 2011 ('000 tonnes)

Export Destination	Naphtha*	Jet Oil/ Kerosene	Gas Oil
Asia	5,209	118	753
Europe	-	3,419	-
North and South America	-	208	-
Africa	-	61	234
<b>Total**</b>	<b>5,209</b>	<b>3,806</b>	<b>987</b>

\* Naphtha includes low sulphur naphtha and naphtha.

\*\* ADNOC share



## Gas and Sulphur

Although oil will continue to provide the majority of the income for both economic growth and social services in the coming years, gas will play an increasing important role in the UAE's development.

ADNOC is therefore undertaking major developments to establish a comprehensive distribution network to ensure its steady and reliable supply in both domestic and global markets.

FERTIL oversee the delivery of their FERTIL 2 Project. Under this project, FERTIL will expand its production with a 2,000 tonnes per day single-stream Ammonia Plant, 3,500 tonnes per day single-stream Urea Plant, 100,000 tonnes capacity bulk storage area, and an upgrade of FERTIL's ship loading and conveyer system.



GASCO award the Engineering, Procurement, Construction and Commissioning (EPCC) contracts for two new major projects; the Ruwais New Sulphur Terminal and Habshan Sulphur Granulation Plant. The projects are part of a two-stage venture that seeks to support GASCO's expanding operations, install a rail system to replace the existing truck method of transporting sulphur to Ruwais, and commercialise the use of GASCO's sulphur product.

#### Gas and Sulphur Exported in 2011 ('000 tonnes)

Export Destination	LPG	Sulphur	Naphtha
Asia	5,636	798	1,938
Europe	315	-	-
Australia	180	41	-
North and South America	12	286	104
Africa	5	724	-
<b>Total*</b>	<b>6,148</b>	<b>1,849</b>	<b>2,043</b>

\* ADNOC share

#### Annual Capacity Overview ('000 tonnes)

Product	Current	Future (with Borouge 3)
Polyethylene	1,140	2,220
Polypropylene	800	1,760
Low Density Polyethylene	-	350
<b>Total</b>	<b>1,940</b>	<b>479,825</b>



#### Plastics

After the first complete year of operation for the Borouge 2 plants, Borouge's polyolefins (polyethylene and polypropylene) manufacturing capacity tripled to reach almost 2 million tonnes per year. Borouge is further expanding its petrochemical plant by 2.5 million tonnes with anticipated full operation by mid-2014. The project, titled Borouge 3, includes an ethane cracker, two polyethylene units, as well as for the first time, a low density polyethylene (LDPE) unit and a cross-linkable polyethylene (XLPE) unit.

Borouge also has dedicated logistics hubs in Asia with warehousing and packing facilities in Shanghai (600,000 tonnes per year), Ghanzou (246,000 tonnes per year) and Singapore (330,000 tonnes per year).



#### Urea and Ammonia

In 2011, FERTIL produced 465,159 tonnes of ammonia and 704,590 tonnes of urea.

**All our products are formulated to meet the highest international specifications.**



#### Lubricants and Grease

ADNOC's lubricants include a comprehensive range of specialty and conventional engine oils, industrial and hydraulic oils, and greases. All our products are formulated to meet the highest international specifications.

In 2011, ADNOC DISTRIBUTION produced approximately 34,500 tonnes of lubricant and 128 tonnes of grease for consumption in both the domestic and international markets.

IRSHAD receive 3 state-of-the-art Azimuth Stern Drive (ASD) tug boats to join their fleet of 51 vessels. This is the fourth batch of vessels to be received under the company's ambitious plan to replace their conventional fleet with modern, purpose-built vessels in order to meet the growing demands of Abu Dhabi's oil sector.



NDC acquire seven new high standard specification rigs to join its fleet of onshore and offshore drilling rigs, with the aim of minimising environmental impacts whilst keeping pace with ADNOC's production targets over the next five years. NDC also constructed permanent centralised camps for the land rigs to replace mobile camps, with the aim of improving employee welfare and maximising environmental protection.

# ADNOC STRATEGY

Sustainability is built from the solid foundation of our long-standing HSE policy and our commitment to an outstanding HSE performance.

## 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 UAE 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 Practicable (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
- Require contractors to manage HSE in line with this policy

## 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
- Protect the environment and biodiversity
- Promote corporate social responsibility and report on sustainability performance
- Develop and use 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 Company employees share this commitment
- Publically report on the Group's HSE performance

## ADNOC HSE Objectives

HSE Topic	Objective
Health and Safety	No harm to people and surrounding communities.
Flaring	Strive towards ultimate elimination of hydrocarbon flaring.
Green House Gas	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.
Water discharges	Re-inject produced waters unless their discharge is compatible with the surface environment and can be discharged in line with ADNOC and international standards. Treat and monitor effluents in accordance with ADNOC Codes of Practice.
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 do not cause release of 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

TAKREER oversee their major Inter-refineries Pipeline II (IRP-II) Project. The project involves the construction of approximately 955 km of pipeline, ranging from 10 to 28 inches in diameter, with the aim of transporting crude oil, refined products, intermediate products and end products between the Ruwais Refinery, Abu Dhabi Refinery, Al-Ain storage terminal, Mussafah terminal and the Abu Dhabi International Airport. The project is being implemented in anticipation of the increase in demand for refined products in the foreseeable future.

# HSE MANAGEMENT SYSTEMS

The ADNOC Codes of Practice provide structured guidance for the development of a comprehensive HSE Management System (HSEMS), covering all aspects of company employee and contractor activities.

**The HSEMS is intended to serve as an engine driving ADNOC policy implementation and continuous improvement in performance.**

Once the HSEMS is established, the ADNOC Companies are expected to evaluate their individual HSEMS performance via a self-assessment protocol. The scores and the HSEMS overall are audited regularly by a dedicated team of experts appointed by the ADNOC EH&S Division, with representation from the ADNOC Business Line Directorates and the ADNOC Companies. The ADNOC Companies are also required to audit their own performance, together with that of their contractors, in accordance with annual and five year plans that are agreed upon with the ADNOC EH&S Division.

## HSEMS



The ADNOC HSEMS framework is comprised of eight integral elements. The overall 2011 performance of the ADNOC Group Companies and Independent Operators against each element is presented above.

## HSEMS International Certification

The ADNOC Companies are also encouraged to obtain international certifications on their HSEMS, including ISO and OHSAS certifications. The status of this practice in 2011 is presented below:

### ISO / OHSAS Certification

ADNOC Company	ISO 14001	ISO 9001	OHSAS 18001
ADCO	✓	✓	✓
ADGAS	✓		
ADMA/OPCO	✓	✓	✓
ADNATCO-NGSCO	✓	✓	
Borouge	✓	✓	
ESNAAD	✓	✓	✓
FERTIL	✓	✓	✓
GASCO	✓	✓	✓
IRSHAD		✓	
NDC	✓		
TAKREER		✓	
TOTAL ABK	✓		
ZADCO	✓		✓

ZADCO award an engineering services contract for the Upper Zakum Re-development Project, one of the major offshore field development projects in the UAE. The project aims to increase production at the offshore Upper Zakum field from 550,000 to 750,000 barrels of oil per day by 2015, sustainable for at least 25 years. The project is unique in its application of artificial islands, and its utilisation of several "technology firsts", including Extended Reach Drilling (ERD) and Maximum Reservoir Contact (MRC) technologies.

# HSE MANAGEMENT FRAMEWORK

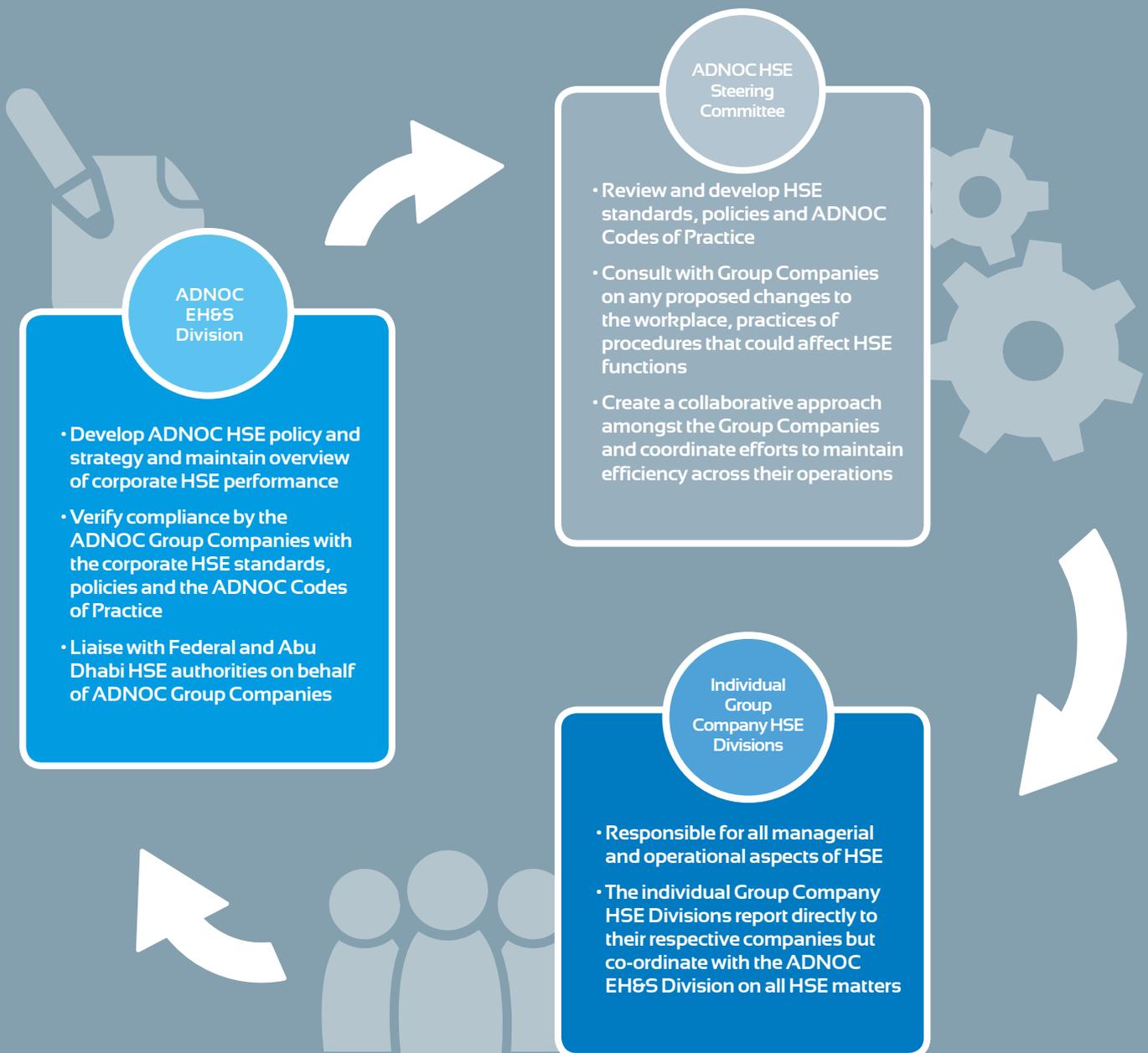
To ensure that all aspects of health, safety and environmental management are carried out successfully and consistently across the oil and gas sector in Abu Dhabi, ADNOC has established a centralised framework of operational standards against which compliance is mandatory.

These standards provide a comprehensive cover of petroleum industry activities with distinct HSE risks or impacts, and their requirements adhere to UAE Federal Laws and Regulations. The operational standards are collectively known as the ADNOC Codes of Practice.

The ADNOC Codes of Practice Manual was launched in 2003 and new guidance documents

continue to be produced, in keeping with emerging industry best practice and as necessary to support ADNOC's new uncharted ventures.

To monitor and evaluate Group Company performance against the ADNOC Codes of Practice, HSE is further managed at three distinct but integrated levels:





## HSE IMPACT ASSESSMENTS

At ADNOC, we place great emphasis on the identification and mitigation of HSE risks at every stage of our operations.

Group Company activities, including new project developments and major modifications to existing facilities, are subjected to compulsory Health, Safety and Environmental Impact Assessments (HSEIAs). The framework by which HSEIAs should be prepared prior to submission to ADNOC is clearly stipulated in the relevant ADNOC Code of Practice.

HSEIAs are then thoroughly reviewed by the ADNOC EH&S Division and the ADNOC HSE Steering Committee, and must ultimately be approved by the ADNOC HSE Steering Committee before project execution can proceed.

## 59 HSEIAs

WERE PREPARED ACROSS THE ADNOC COMPANIES IN 2011; 37 HAVE BEEN APPROVED AND 22 ARE CURRENTLY UNDER REVIEW.

Projects must ultimately be approved by the ADNOC HSE Steering Committee before project execution can proceed

### ADNOC HSEIAs Approved and Under Review in 2011

ADNOC Directorate / Division / Affiliate		No. of HSEIA's Approved	No. of HSEIAs Under Review
Exploration & Production Directorate	ADCO	4	1
	ADGAS	3	1
	ADMA-OPCO	8	2
	Al Hosn Gas	2	-
	GASCO	6	4
	ZADCO	1	3
Marketing & Refining Directorate	ADNOC DIST	2	3
	TAKREER	2	4
Petrochemicals Directorate	Borouge	3	2
	FERTIL	2	2
Shared Services Directorate	ESNAAD	1	-
ADNOC Civil Projects Division		3	-

# STAKEHOLDER ENGAGEMENT

The dialogue developed between ADNOC and our stakeholders allows us to appreciate different viewpoints and to understand better how our business value propositions can be aligned with the goals of our stakeholders and those of the society at large. We engage with our employees, customers, suppliers, communities, regulatory authorities and other stakeholders through various avenues of communication. These include

surveys, publications, annual meetings, confluences and open forums.

Our stakeholders and our engagement with them have evolved over ADNOC's long history, rather than as a result of a formal defined process. As we continue our progress, we will continue to define and redefine our stakeholders and our interaction with them.

**Maintaining good relationships with our stakeholders is a key component of ADNOC's business.**

## ADNOC Stakeholder and Engagement Practices

Stakeholders	Engagement
Customers	<ul style="list-style-type: none"> <li>• Customer surveys and follow-up feedback calls</li> <li>• Visits to facilities</li> <li>• Face-to-face interviews</li> <li>• Product specifications and safety datasheets</li> <li>• Exhibitions, conferences and seminars</li> </ul>
Suppliers/ Contractors	<ul style="list-style-type: none"> <li>• Regional supplier conferences</li> <li>• Technology-based financial risk management</li> <li>• Provision of lean improvement resources</li> <li>• Supplier development</li> <li>• Supplier Health, Safety and Environment (HSE) requirements and standards during the tender process</li> <li>• Audits</li> </ul>
Employees	<ul style="list-style-type: none"> <li>• Employee satisfaction surveys and suggestion scheme</li> <li>• Training and development programmes, seminars and workshops</li> <li>• New employee induction programmes</li> <li>• Annual performance appraisals</li> <li>• Employee appraisals</li> <li>• Regular communications from senior management on performance and business updates</li> <li>• Social activities for employees and their families</li> </ul>
Partners & Shareholders	<ul style="list-style-type: none"> <li>• Annual meetings of shareholders</li> <li>• Annual Sustainability Report</li> <li>• Facility tours</li> <li>• Conference calls to discuss business updates</li> <li>• Access to company information and data</li> </ul>
Government Organisations	<ul style="list-style-type: none"> <li>• Visits by and meetings with government representatives</li> <li>• Trade delegations</li> <li>• Strategic planning forums</li> </ul>
Public/ Community	<ul style="list-style-type: none"> <li>• Supporting educational and public institutions across Abu Dhabi</li> <li>• Career and recruitment fairs</li> <li>• Employee volunteerism and local contribution programmes</li> <li>• Monthly ADNOC Newsletters</li> <li>• Sponsorship of community events in Abu Dhabi and the Western Region e.g. International Day and National Environment Day celebrations, Liwa Date Festival and Al Dhafra Camel Festival</li> </ul>
Industry	<ul style="list-style-type: none"> <li>• Conferences, seminars and exhibitions e.g. World Future Energy Summit 2011, GASTECH 2011, Hanover Exhibition 2011, Middle East Oil &amp; Gas Show 2011, World Petroleum Congress 2011</li> <li>• Membership with trade/industry groups and associations, including Abu Dhabi Sustainability Group (ADSG), Oil and Gas Producers Association (OGP), Abu Dhabi Emergency Support Committee for Offshore Operators (ADESCO)</li> </ul>
Press/Media	<ul style="list-style-type: none"> <li>• Press releases in newspapers and magazines</li> <li>• Visits and interviews</li> <li>• Conferences, seminars and exhibitions</li> </ul>

# THE MATERIALITY TEST

As an active member of the community, we recognise the importance of continually enhancing stakeholder engagement and relations, and using these findings to guide ADNOC's operations and raise our corporate standards.

In 2011, we conducted a "Stakeholder Engagement Survey" whereby participants were asked to rank 34 wide-ranging sustainability issues in the order with which they perceive to be important. The issues were selected by ADNOC on the basis of their relevance to the petroleum sector's activities, and their inclusion in ADNOC's Statement of Commitments, HSE Policy and HSE Objectives. They cover the themes of business and practices, supply chain management, operations, environment, health and safety,

### Participants in the ADNOC Stakeholder Engagement Survey

Internal Stakeholders	External Stakeholders
<ul style="list-style-type: none"> <li>• Employees</li> <li>• Contractors</li> <li>• Suppliers</li> <li>• Shareholders</li> </ul>	<ul style="list-style-type: none"> <li>• Business &amp; Trade Organisations</li> <li>• Professional Associations</li> <li>• Educational Institutions</li> <li>• Investment Community</li> <li>• Media</li> <li>• Government/Regulators</li> <li>• Non-Government Organisations</li> <li>• General Public/Community</li> <li>• Customers</li> </ul>

employees and society. The participants represented the table to the left.

All the issues were considered by ADNOC to be important and stakeholders were therefore specifically requested to rank the issues (from one to five) on a relative rather than independent basis. A total of 100 surveys were collected, 50 from each of ADNOC's internal and external stakeholder groups.

On average, all issues were scored by our stakeholders between four and five. The consolidation of data from these two stakeholder segments made it possible to build the Materiality Matrix presented below.

To reflect this valuable stakeholder feedback, ADNOC has made an emphasis on addressing most of the topics that appear in quadrants II, III and IV and some of those in quadrant I in our ADNOC 2011 Sustainability Report.

ADNOC thanks everyone who participated in this constructive exercise, which helped make this a more objective report. We will continue to support our stakeholder views throughout our operations.

### Participants in the ADNOC Stakeholder Engagement Survey



#### Sustainability Issues

##### Environment

1. Consumption of materials and natural resources
2. Energy efficiency and renewable energy
3. Water consumption
4. Biodiversity protection
5. Climate change
6. Air pollution
7. Wastewater discharge
8. Hazardous waste
9. Non-hazardous waste
10. Oil and chemical spills
11. Transporting oil and gas products

##### Operations

12. Process safety and asset integrity
13. Risk and emergency management

##### Employees, Health and Safety

14. Employee engagement and satisfaction
15. Employee training and development
16. Equal opportunity and non-discrimination
17. Employee occupational health and safety

##### Society

18. Local hiring (Emiratization)
19. Local procurement and supplier development
20. Social investments (e.g. donations and sponsorships)

##### Business and Practices

21. Empowerment of women
22. Profitability / Market share
23. Image and reputation
24. Maintaining cultural integrity and values
25. Stakeholder engagement and practices
26. Public advocacy and lobbying
27. Governance
28. Compliance with laws and regulations
29. Business ethics and transparency
30. Respect for human rights

##### Supply Chain

31. Supply chain management
32. Innovation / Research & Development
33. Product stewardship
34. Customer satisfaction



# ENVIRONMENTAL PERFORMANCE

I

## Air Emissions

### Our Approach

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 achieving 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. At a capital cost of AED 10 million, the system comprises of a network of eight monitoring stations (seven fixed and one mobile) for monitoring the ambient air quality in the vicinity of the Group Companies' operating sites, as well as continuous stack monitoring of major sources both onshore and offshore. Emission monitoring guidelines are currently being developed for the Group Companies.

As a result of the AQMS, ADNOC is now able to:

- Transfer ambient air quality and meteorological data on an hourly basis from all monitoring stations to the Group Companies' database through a central server

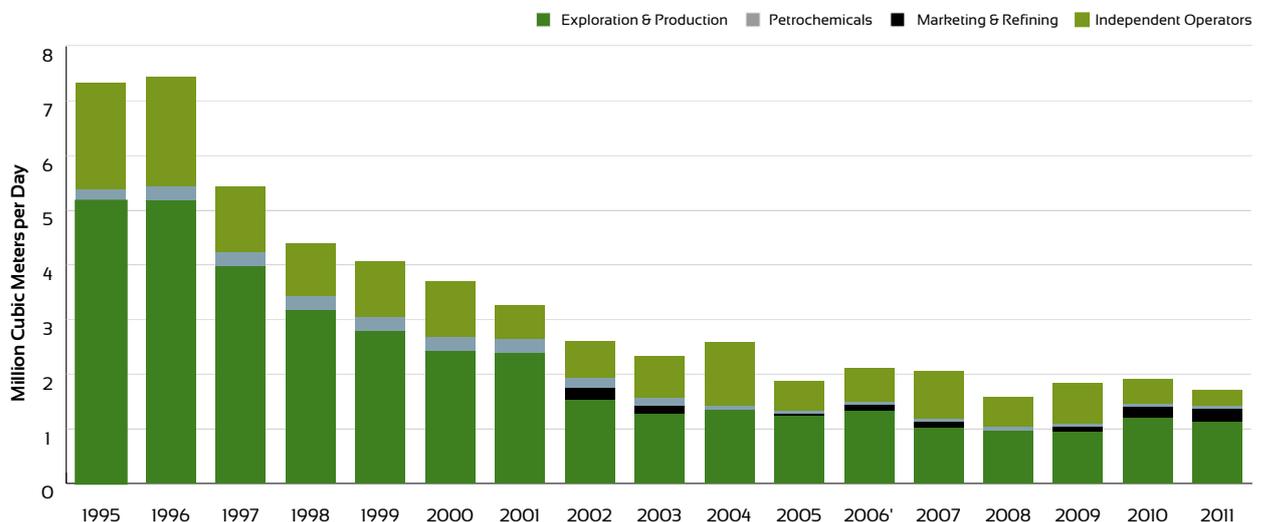
- Validate data on a daily basis with the help of a professional team established at the central station
- Receive continuous (every hour) stack monitoring data from the Group Companies' database to the central database
- Prepare and submit an ambient air quality monitoring report to the Group Companies on a monthly basis
- Compare actual ambient air quality with air quality objectives
- Publish a real-time Air Quality Index (AQI), where instant readings of the AQI are available to the Group Companies
- Publish real-time weather information on ADNOC's intranet web server and an extranet web server for Group Companies access
- Provide an information and simulation tool to develop and implement an air quality management programme

The ADNOC AQMS is currently under review and there are future plans to:

- Increase the number of continuous emissions monitoring systems installed at major emissions stacks
- Expand the AQMS network by installing three additional ambient air quality monitoring stations

ADNOC strives towards the ultimate elimination of hydrocarbon flaring, reducing emissions, improving energy efficiency and promoting renewable energy

Hydrocarbon Flaring Trend (1995-2011)



Despite undergoing considerable expansion in both the nature and scale of our operations, ADNOC has observed a reduction of almost 76% in the amount of hydrocarbons flared in 2011 compared to 1995 levels, marking one of ADNOC's greatest achievements to date.

#### Flaring Targets vs. Performance

ADNOC Company	Target for 2011 (MMSCFD)	Actual in 2011 (MMSCFD)	Achieved Target
ADCO	5.84	4.92	✓
ADGAS	8.9	8.5	✓
ADMA	5.5	4.7	✓
Borouge	7.04	7.76	✗
BUNDUQ	2.5	1.2	✓
GASCO	24	19.14	✓
ZADCO	3.48	2.89	✓
TAKREER	3	2.15	✓
TOTAL ABK	<11.9	11.3	✓

### Our Performance

#### Flaring

Flaring is a significant source of the air emissions resulting from our oil and gas activities. Our total flaring in 2011 amounted to approximately 63.37 MMSCFD. Despite undergoing considerable expansion in both the nature and scale of our operations, ADNOC has observed a reduction of almost 76% in the amount of hydrocarbons flared in 2011 compared to 1995 levels, marking one of ADNOC's greatest achievements to date.

The ADNOC Companies are at various stages of setting flaring targets to monitor their performance. In 2011, eight of our ADNOC Companies proceeded to set targets against their flaring activities. Seven were able

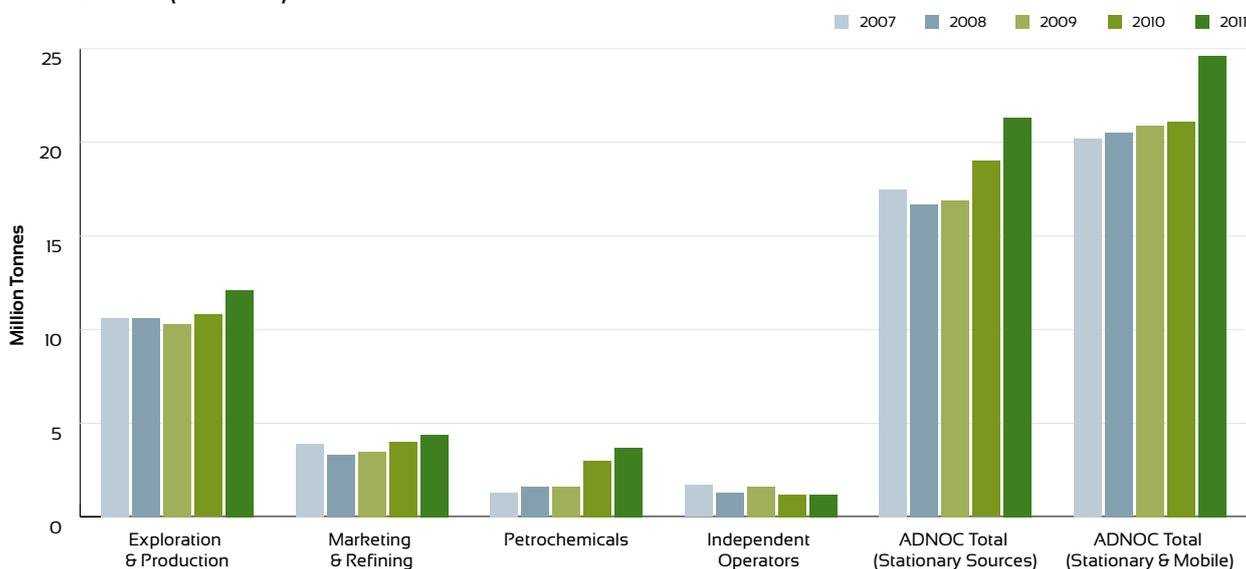
to successfully deliver against these targets. Despite their dedicated flaring initiatives and efforts, Borouge was unable to reach their target due to a series of process upsets during the month of October.

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 Techniques (BAT).

#### GHG Emissions

In 2011, ADNOC implemented the "equity share approach" for greenhouse gas (GHG) accounting and reporting. To

#### GHG Emissions (5 Year-Trend)\*



reflect ADNOC's new GHG reporting methodology, the values for our 2007 – 2010 emissions have been revised and will therefore differ from those disclosed in ADNOC's 2009 and 2010 Sustainability Reports.

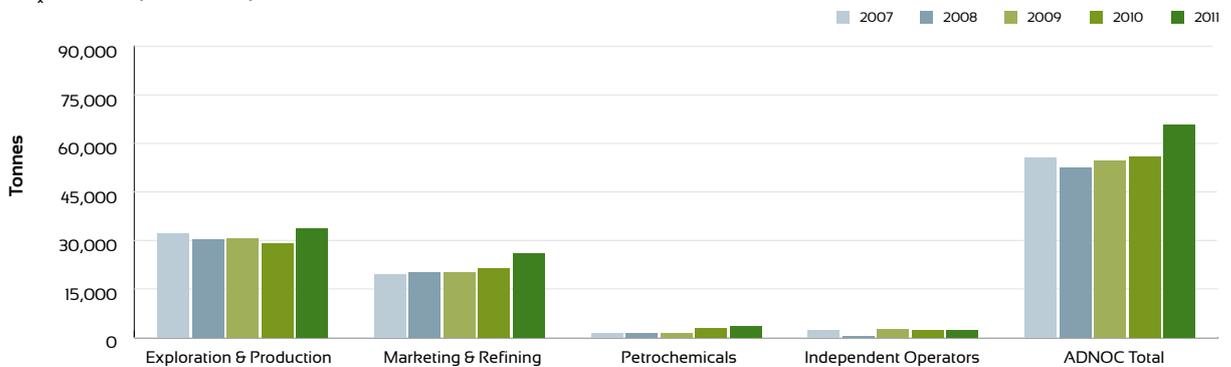
### NO<sub>x</sub>, SO<sub>x</sub> and VOC Emissions

Our NO<sub>x</sub> emissions increased by 18% between 2010 and 2011; this is largely accounted for by the expansion in operations experienced by our upstream and downstream operations (Exploration & Production and Marketing & Refining Companies in particular). Despite this expansion, our ADNOC Companies' efforts in managing SO<sub>x</sub> emissions resulted in a 5% reduction over this period.

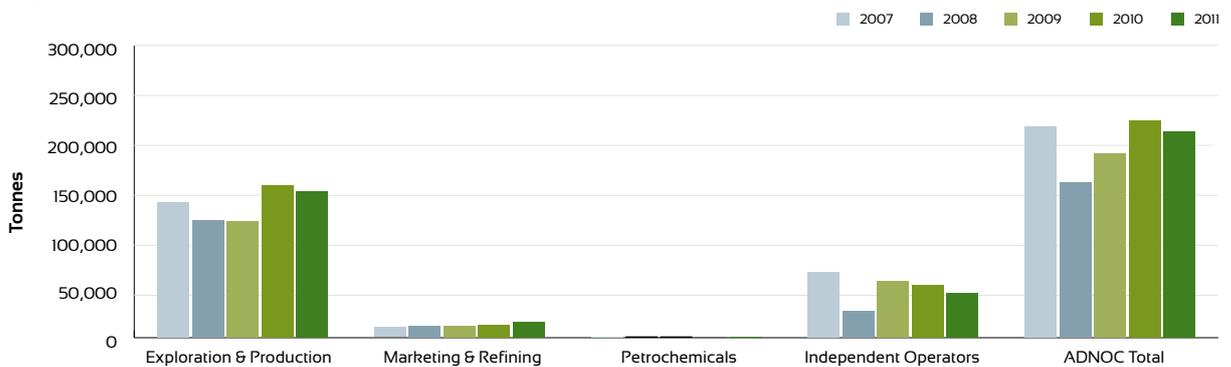
In 2011, ADNOC DISTRIBUTION implemented a revised protocol for estimating the VOC emissions associated with their offloading, storage and dispensing activities. The new methodology largely accounts for the 37% increase in VOC emissions from 2010 to 2011.

ADNOC DISTRIBUTION has plans to retrofit their existing service stations with vapour recovery systems (VRS) for road tanker loading and fuel dispensing operations, within a period of two years. New service stations will also incorporate VRS systems. Once complete, VOC reduction is estimated to reach up to 98% across ADNOC DISTRIBUTIONS's operations.

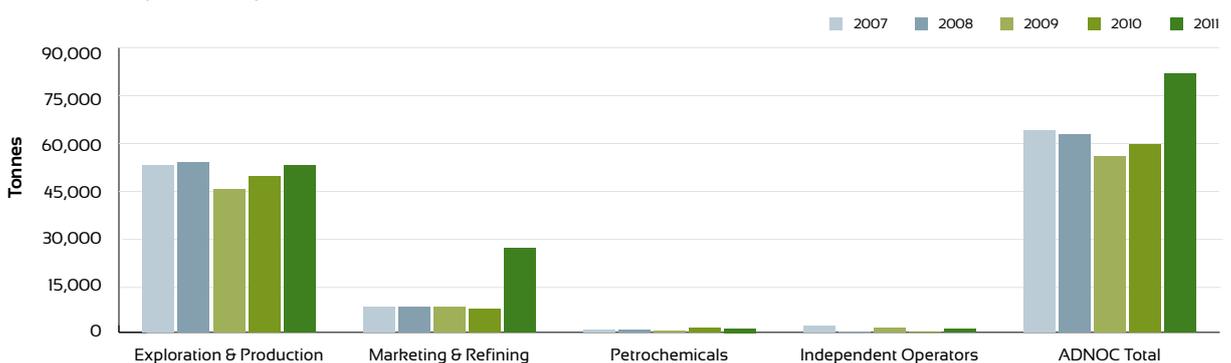
NO<sub>x</sub> Emissions (5 Year-Trend)



SO<sub>x</sub> Emissions (5 Year-Trend)



VOC Emissions (5 Year-Trend)



**Emissions from Ozone Depleting Substances**

In 1997, ADNOC initiated a phase-out programme for halon (an ozone layer depleting substance). The ADNOC Companies have since replaced large volumes from their facilities with zero ozone depleting fire-protection substances. The decommissioned halon stock is purified and stored at a centralised facility in Abu Dhabi in order to be disposed of through high efficiency thermal destruction.

With the exception of ADMA-OPCO and ZADCO, who are actively exploring viable alternatives that are appropriate for their complex offshore operations, all our ADNOC Companies operate halon-free.

The halon stock remaining in use is approximately 24 tonnes. This is largely accounted for by ZADCO's

halon stock at the Upper Zakum and Zirku crude oil storage tanks, which is planned to be phased-out by the first quarter of 2015 under a new progressive halon phase-out strategy that has recently received approval.

The ADNOC Companies are also investing in replacing existing Chlorofluorocarbon (CFC) and Hydrochlorofluorocarbon (HCFC) units with environmentally-friendly refrigerants.

No halons or CFCs are planned for use in any future developments and facility upgrades.

The table below provides a breakdown of ozone depleting substance (ODS) emissions and the corresponding CFC-II equivalent emissions from our operations in 2011.

**ODS Emissions in 2011**

	ODS Emissions (Tonnes)	CFC-II Equivalent (Tonnes)
Halons	0.6	4.1
CFCs	0.8	0.8
HCFCs	54.6	6.3
<b>Total</b>	<b>56</b>	<b>11.2</b>

**Background:** The damaging effects of hydrocarbon emissions motivated ADMA-OPCO to undertake a three-month leak detection and repair (LDAR) programme, where hydrocarbon and H<sub>2</sub>S leaks across their offshore operations were identified using Toxic Vapour Analysers (TVA) and VRAE Multiple Gas Monitor detection systems.

**ADMA-OPCO  
Control of Hydrocarbon Emissions through Leak Detection and Repair**

**Approach:** Under the leak detection programme, a total of 137,965 emission sources were monitored. Hydrocarbon leaks of 124 tonnes per year were identified in 820 of these sources, with a combined GHG emission equivalent of approximately 9,000 tonnes CO<sub>2</sub>

Eq. per year. Immediate actions were taken to stop the leaks from 141 sources displaying major leaks (determined as hydrocarbon leaks > 9 ppm and H<sub>2</sub>S leaks > 1 ppm), reducing the associated GHG emissions by 51%.

Repair orders were prepared for the remaining 679 sources, and a database using SFEMP and SNIFLARE software was set-up to monitor the leaks.

**Outcome / Future:** The LDAR programme demonstrates ADMA-OPCO's commitment towards environmental stewardship and providing a safer and healthier work environment for their workforce. The programme also benefits from economic savings and a heightened sense of ownership as users actively participate in the input of data and review of the database.

## OUR INITIATIVES

- **ADCO's** currently underway Shah, Asab and Sahil (SAS) Full Field Development Project (due for completion by the end of 2012), a spiking gas compressor unit will be installed to recover and utilise the associated gas from ADCO's operations, thus reducing flaring by 3.4 MMSCFD by 2013 and providing an annual reduction of approximately 100 kt CO<sub>2</sub> emissions. The Abu Dhabi Future Energy Company (Masdar) has acknowledged the eligibility of the flare gas recovery project for carbon credits under the Clean Development Mechanism (CDM). Registration of the project with the CDM board is expected in October 2012.
- **ADGAS** commissioned a Flare Handling and Emission Reduction (FHER) Project at Das Island, after embarking on a benchmarking exercise that revealed atmospheric emissions from the ADGAS LNG plant were higher than those from a peer group of global LNG plants. The successful implementation of the project resulted in the reutilisation of 6 MMSCFD of flared gas, providing a reduction of 124 kt CO<sub>2</sub> equivalent in GHG emissions per year. The project also provided an annual economic saving of approximately AED 30 million.
- **ADMA-OPCO** took drastic measures to reduce gas flaring by reducing production during shutdown periods, modifying existing flare pilot ignitions, and regularly monitoring and replacing hydrocarbons purge gas with nitrogen purge gas. This enabled ADMA-OPCO to meet and exceed their target of 5.5 MSCFD in 2011.
- **Borouge** undertook a benchmarking exercise (the first of its kind for petrochemical companies in the region), where the flare reports from 23 olefins and polyolefins plants were reviewed. The study identified scope for implementation of several flare reduction initiatives (e.g. using nitrogen as a sweep gas in flare headers, the installation of flare gas recovery systems etc.) that are currently in engineering or Front End Engineering Design (FEED) stage. At a combined investment of over AED 260 million, the implementation of these projects will enable Borouge to reduce their flaring by 85 kt per year, reducing GHG emissions by 240 kt CO<sub>2</sub> equivalent per year.
- **GASCO** is overseeing the completion of two ongoing flare reduction projects. The first is the Habshan flare gas recovery project which is set to minimize the flaring of hydrocarbon gases to the environment from the Habshan O, Habshan 1 and Habshan 2 plants. New facilities will be added to these flare systems to recover and recycle the flared gas. The second is the Habshan acid gas flare recovery project which will recover the flared acid gas and compress the recovered streams to the required pressure to be recycled for further processing. With the implementation of these projects, GASCO will reduce their greenhouse gas emissions by 70,000 tonnes per year.
- **TAKREER** Following the success of the flare gas recovery unit that was installed at TAKREER's Ruwais Refinery in 2010, a flare gas reduction committee was set up to provide recommendations on how to further reduce flaring from TAKREER's operations. The success of TAKREER's efforts enabled them to meet and exceed their target of 3 MMSCFD in 2011. A similar flare reduction approach is currently underway at the Abu Dhabi Refinery.
- **ZADCO** continues to pursue operational strategies to achieve a practicable minimum flaring level, including temporarily reducing crude production during planned / short-term shutdown events. Their collective efforts have enabled ZADCO to exceed their target of 3.48 MMSCFD in 2011.



## TAKREER Cleaner Power at Ruwais Refinery

**Background:** The TAKREER-operated General Utilities Plant (GUP) provides a vital stream of power and water to support the needs of TAKREER's Ruwais Refinery and the neighbouring industrial and residential users in the Ruwais Industrial Complex. The plant generates energy by means of four gas turbines which are fitted with special burners to control NO<sub>x</sub> emissions. In order to meet power demand, TAKREER's conventional operating philosophy was to keep all the turbines in continuous running condition. However, under this machine configuration the turbines were being operated at less than 60% of the relative load, which lowers the GUP's overall production efficiency and leads to higher NO<sub>x</sub> emissions.

**Approach:** TAKREER undertook a step-change in their operating philosophy to run fewer gas turbines at a higher load (>80%) by utilising

the Abu Dhabi Water and Electricity Authority (ADWEA) power grid interconnection. Operating with this arrangement improved the thermal efficiency of the plant and produced several environmental and economic benefits.

**Outcome / Future:** The following key improvements have been recognised: significantly reduced NO<sub>x</sub>, SO<sub>x</sub> and CO emissions; reduced fuel gas consumption in the range of 4,500 - 6,000 billion Btu / year (equivalent to 6,300,000 GJ / year); and a reduction in equivalent operating hours (EOH) thus reducing maintenance and inspection costs. The total economic savings generated by this initiative equate to approximately AED 38.5 million / year. Furthermore, the security of the GUP's energy supply is maintained through the ADWEA connection.

## II Energy

### Our Approach

The significant increase in the demand for energy across ADNOC's expanding operations, and the subsequent impact this has on the environment and our production costs, has necessitated the implementation of continuous and innovative energy efficiency measures across our oil and gas operations.

ADNOC is currently in the process of establishing a long-term energy efficiency target for our Group Companies' activities. A proposed overall target of 25% improvement in energy efficiency to be achieved by 2035 was put forward by our stakeholders, after undertaking a high-level and strategic energy management study that considers ADNOC's existing and future projects.

The target, although not formalised as an ADNOC Directive, has prompted our ADNOC Companies to pursue several innovative energy efficiency initiatives in 2011, as well as identify opportunities to use alternative renewable energy sources in their operations.

### Our Performance

In 2011, ADNOC's total energy consumption amounted to 450 million GJ in direct energy (of which approximately 37,000 GJ was generated from renewable sources), and 18 million GJ in indirect energy.

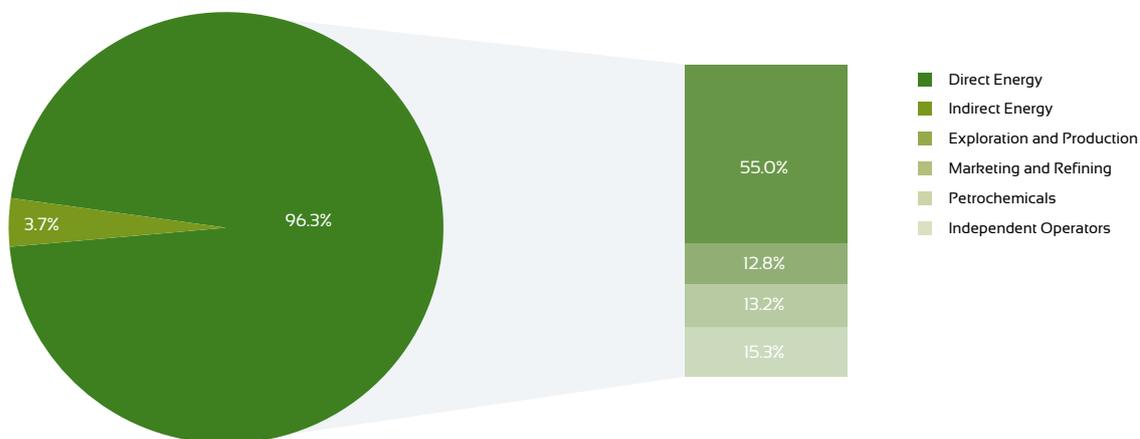
The majority of our direct energy consumption is accounted for by the Exploration and Production Companies, followed by the Independent Operators, Marketing and Refining Companies, and Petrochemicals Companies respectively. Due to the nature of their operations, the relative contribution of the Shared Services Companies to ADNOC's direct energy consumption is considered to be negligible.

Following the implementation of numerous energy efficiency-related initiatives, a total of 14 million GJ is reported to have been saved across the ADNOC Companies in 2011.

# 14 MILLION GJ

OF ENERGY WERE SAVED ACROSS THE ADNOC COMPANIES' OPERATIONS IN 2011.

Energy Consumption by Type and Operation



## OUR INITIATIVES

- **ADCO** continued their phasing out project which began in 2009, whereby onsite power generation at 20% efficiency was gradually replaced by imported electricity from Abu Dhabi Water and Electricity Authority (ADWEA), generated at higher efficiency. The implementation of this initiative in 2011 across ADCO's Bab, Bu Hasa and Asab fields resulted in primary energy savings of 5,239,600 GJ.

ADCO is currently undertaking a feasibility study for installing solar panels in EPC and permanent camps to replace the existing diesel generators.

- **ADMA-OPCO** installed solar panels at well-head towers, generating 17,787 GJ of renewable energy to replace conventional sources.
- **ADNATCO & NGSCO** is embarking on a hull treatment programme across their vessels, aimed at reducing drag and thus reducing fuel consumption.
- **ADNOC DISTRIBUTION** commenced a project to install LED lights in their service stations, reducing their service stations' energy consumption by 50%.
- **GASCO** implemented a number of energy efficiency improvements across

their facilities to achieve a combined energy saving of 730,000 GJ / year in 2011. GASCO also installed 24 solar water heater panels in the Asab accommodation facilities, and a card-powered saver system which only activates electrical power when the card is inserted into a card socket by the user. Implementation of this initiative will result in an estimated energy saving of 7,819 GJ per year.

GASCO is currently undertaking a comprehensive energy study across 18 of its process gas turbines to explore the most energy efficient means for their operation.

- **NDC** launched an energy metering strategy with the aim of establishing a baseline of its load distribution and to monitor and benchmark its energy consumption.
- **TAKREER** reduced temperature fluctuations in the distillation and stripper towers of their Abu Dhabi Refinery, resulting in annual fuel gas savings of approximately 168 tonnes / year (equivalent to AED 92,000 / year) and subsequent emission reduction of 900-1000 tonnes CO<sub>2</sub> equivalent / year. TAKREER also undertook a project to recover heat from steam fin-fan coolers to be reused for heating make-up water for their process facilities. The annual heat energy savings from this arrangement amount to approximately AED 337,000.

**Our Approach**

ADNOC began to examine the environmental impacts of transportation in 2009, upon the release of our first ADNOC Sustainability Report. Since then, our Group Companies have been putting in place systems to capture this data, whilst gradually expanding the scope to cover their local, regional and international operations.

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 are currently focusing on are:

- The continued roll out of the Ballast Water Management Plan across the fleet
- 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
- Encourage the reduction in the use of consumables

In 2011, we were able to expand our reporting scope to include GASCO’s sulphur truck movements between Habshan and Ruwais. Our Group Companies were also able to more accurately estimate the impacts of their business travels and workforce commute; this can be particularly significant in the case of our remote onshore and offshore work locations.

Efforts are still underway to capture the transportation impacts of some of our domestic product movements that are undertaken by contractors, and those of our international shipments that are performed by third parties (i.e. those not undertaken by ADNATCO & NGSCO).

ADNOC’s intention is to develop an accurate and comprehensive baseline of our transportation impacts before we embark on developing a high level and target-based approach for their management. In the meantime, the ADNOC Companies are driven by ADNOC’s overarching HSE objectives to devise strategies in order to minimise the transportation-related impacts associated with their operations.

**Our Performance**

The ADNOC Group Companies are at various stages of applying ADNOC’s guidelines on NO<sub>x</sub> emission calculations for their transportation-related operations. We have therefore excluded reporting on the NO<sub>x</sub> emissions associated with our 2011 transportation activities, with the aim of disclosing this data in ADNOC’s future Sustainability Reports.

**The ADNOC Companies are driven by ADNOC’s overarching HSE objective to devise strategies in order to minimise the transportation-related impacts associated with their operations.**

ADNOC Transportation Data in 2011

	Vehicles	Planes	Helicopters	Vessels
Kilometres travelled in 2011	296,282,759	33,246,548	1,780,289	109,885,663
Emissions of CO <sub>2</sub> (tonnes)	127,066	19,078	16,563	1,616,599
Emissions of SO <sub>x</sub> (tonnes)	356	175	40	14,747
Wastes produced (tonnes)	3,766	9	8	2,837

## OUR INITIATIVES

- **ADCO** converted 25 company transport cars (out of 95) to run on natural gas. Natural Gas for Vehicles (NGV) is a new fuel that has been introduced by ADNOC to the local market in 2011, and delivers significant environmental benefits in comparison to conventional petrol fuels (air emissions reduction by 20-25% for CO<sub>2</sub>, 50-80% for CO and 25-60% for NO<sub>x</sub>).
- **GASCO** is implementing the "Shah and Habshan Rail (SHR) Granulated Sulphur Transportation and Management" project to install a rail system in order to reduce the environmental and safety impacts associated with the existing truck method of transporting sulphur to Ruwais. More information on this project can be found in the Economic Performance section of this report.
- **TAKREER** owns approximately 1000 km of pipeline at present and it is anticipated to be

handling an additional 1000 km once the Inter-refineries Pipeline II (IRP-II) project is completed in 2014. Approximately 1,866 test point locations along these pipelines are visited weekly by plant integrity staff for measurements and visual inspections (these locations will also double in 2014).

To minimise the environmental impacts associated with driving along these pipeline corridors, in addition to the safety hazards associated with the desert (heat stresses, car accidents, snake bites, and sandstorms), TAKREER installed two electronic system technologies at these locations, the Supervisory Control Data Acquisition System (SCADA) and wireless global system for mobile (GSM)-based monitoring system, which have reduced the need for manual inspections.

### IV

## Materials

### Our Approach

As an oil and gas producer, the majority of ADNOC's products are hydrocarbon products extracted from the ground and refined for consumers.

Our primary material consumption comes from the necessary support activities. We started examining this in 2009 and Group Companies are in the process of developing more reliable material data tracking systems.

## ADGAS

### Reuse of Sour Oil from Feed Gas Compressor Carbon Seals

**Background:** The compressor units belonging to the ADGAS LNG Plant on Das Island are designed to handle a high (>7%) concentration of H<sub>2</sub>S in the feed gas it processes. To prevent H<sub>2</sub>S leaks, the compressor units are fitted with a wet-type carbon seal system that uses seal oil for a sealing and cooling effect at the seal contact surface. With time, the contact surface environment may become highly corrosive, due to the nature of the sour feed gas and the presence of water, necessitating the disposal and replacement of the contaminated seal oil. The rate of replacement was found to be approximately 10 gallons per day under normal operating conditions, increasing as the seal starts to degrade due to leakages.

**Approach:** In an effort to improve seal reliability, a buffer gas was introduced to improve the

environment around the carbon seals. As a consequence of this intervention, the seal oil was found to no longer be in contact with the sour gas. This was confirmed by an extensive period of monitoring and lab analysis. It was therefore concluded that the oil can be reused.

**Outcome:** By introducing the buffer gas and re-using the seal oil, ADGAS significantly reduced its original material consumption rate of approximately 300-350 drums of seal oil per month, resulting in an approximate economic saving of AED 3.5 million annually in material and waste handling fees. This low cost and well-executed initiative is an example of how a small investment can go a long way.

### Our Approach

The majority of ADNOC Companies implement their own specific waste management standards, developed in compliance with the requirements stipulated in the ADNOC Codes of Practice, with additional procedures tailored to each of their operating plants.

To ensure the centralised management of ADNOC's hazardous waste, ADNOC established the Central Environment Protection Facility (known as BeAAT) in Ruwais. Operated by TAKREER, the state of the art waste treatment facility combines a range of specific

treatment processes on a single site. Liquids, slurries, Poly Chlorinated Biphenyls (PCBs), heavy metals, and even highly flammable and ultra-toxic metal organic compounds can be treated at BeAAT.

BeAAT is planning to establish a Natural Occurring Radioactive Material (NORM) Plant in parallel with the existing hazardous waste treatment plant.

### Waste Drilling Fluids and Cuttings

Our upstream Group Companies engage in drilling operations through NDC, who takes every care to



**Background:** Over time, a layer of heavy hydrocarbons builds up at the bottom of oil tanks, reducing their utilizable volume for oil export. To maintain tank performance, frequent de-sludging is therefore required. The most direct way of performing the de-sludging process is to remove the sludge away manually or mechanically. However, this method is costly and may pose a safety and environmental threat considering the material is flammable and requires special facilities for transportation and disposal.

#### ADCO

#### Environmentally Friendly Decanter Technique to Recover Oil from Tank Sludge

**Approach:** ADCO deployed an innovative decanter technique in Jebel Dhanna to recover oil from sludge while emptying and cleaning two of their tanks. The new method involves the mixing of sludge with fresh crude oil inside the tank using a hydraulic-driven turbo mixer, and

processing the liquid sludge in a decanter unit to separate the sludge into two phases – solids and liquids. The recovered oil is sent back to the nearest tank and solids are collected and sent to the BeAAT waste disposal facility in Ruwais.

**Outcome / Future:** The deployment of decanter technology resulted in the recovery of 70% of the crude oil that exists in the sludge, and reduced the amount of sludge to be disposed by 20-30%. Fewer trips to BeAAT were therefore required, reducing the risk for potential safety and environmental-related accidents.

ADCO is the first group company to use decanter technology on-site for de-sludging operations. The costs incurred by the decanter unit are compensated by the recovered oil and reduced transportation and disposal costs. Upon successful utilization of this technology in Jebel Dhanna, its use has been recognized as best available technology and will be implemented at all sites for tank cleaning operations.

## BeAAT Waste Management Options

BeAAT

- **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 ultra-toxic 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
- **Recycling** for waste oils, empty drums and containers, batteries, transformers and capacitors

perform its activities in parallel to protecting the environment and safeguarding its assets. The choice of drilling fluid to be used in our fields (water-based drilling fluids, oil-based drilling fluids, or a combination of both) is determined by rigorous risk assessments of different drilling fluid systems, which consider and seek to balance the potentially conflicting health, safety and environmental requirements that each system presents. The choice is also made with due regard of ADNOC's overarching HSE objective to minimise the use of oil-based mud in our operations.

ADCO and ZADCO use a combination of oil-based muds (OBM) and water-based muds (WBM) in their fields. OBM is recovered, reconditioned and reused in future wells. OBM drill cuttings are treated by a thermal desorption technique in ADCO's Thermal Desorption Plant (for ADCO cuttings), and BeAAT

(for ZADCO's cuttings). No oil-based drilling mud and cuttings are discharged to the environment.

ADMA-OPCO, in addition to our three Independent Operators, use only water-based drilling fluids to perform their drilling activities.

Careful planning in our future Shah Gas Development (SGD) project, lead by Al Hosn Gas, has helped ensure that oil-based muds are only used at two intervals in SGD wells. Oil-based muds and cuttings will be taken to ADCO's Thermal Desorption Plant in Habshan and the resulting material recycled, to ensure that no oil-based muds are discharged to the environment.

### Our Performance

In 2011, our ADNOC Company operations generated a total of 64,226 tonnes of hazardous waste and 228,396 tonnes of non-hazardous waste.

#### ADNOC Waste in 2011

			Tonnes
Hazardous Waste	Generated		64,226
	Treated	BeAAT	12,366
		ADCO Facilities <sup>1</sup>	41,665
	Temporary Storage		223
	Other <sup>2</sup>		9,972
Non-Hazardous Waste	Generated		228,396
	Treated	Composting	485
		Recycling	3,206
	Disposal	Deep Well Injection <sup>3</sup>	79,308
		Incineration	1,584
		Landfill	20,148
		Other (unspecified) <sup>4</sup>	48,897
Temporary Storage		74,768	

<sup>1</sup> oil-based drilling mud and cuttings and reused hydraulic oil

<sup>2</sup> technique unspecified by the ADNOC Companies

<sup>3</sup> water-based drilling mud

<sup>4</sup> no breakdown of waste disposal method provided by the authorised waste management contractor

### Our Approach

The potential threat of spills does not only exist within our operations, but also from the industrial, commercial and political activities surrounding ADNOC's areas of operation.

The management of oil spills is dominated by the ADNOC Code of Practice on Crisis and Emergency Management, which calls for a tiered response structure.

The philosophy of the ADNOC tiered response system is that each facility shall have its own response capability which shall be supported incrementally by a regional mutual aid, group assistance and finally corporate oversight. The final tier of response is attained by promoting and expanding relationships with the regional and international oil industry and oil spill response providers.

ADNOC's Corporate Crisis Team (CCT) is strategically established across the Abu Dhabi Emirate, where we have two major oil spill response centres located at Mussafah

and Ruwais, a response outpost at Al-Dabbiya, and a response vessel anchored between Zirku Island and Das Island. Our well-trained teams are capable of providing support to the teams already established at each of the ADNOC Group Companies, and are equipped to deploy quickly with significant stockpiles of equipment to respond to larger Tier two spills.

We are looking to rationalize all oil spill response equipment to ensure uniformity across the ADNOC Group Companies. This serves the dual purpose of enhancing the capability for mutual aid and improving maintenance programmes, in addition to the benefits in economies of scale.

We have recently received delivery of several new vessels including the first of several fast response vessels, a small passenger ferry, a multi-purpose hovercraft, and several escort tugs permanently equipped with oil spill response equipment. The addition of these assets will improve our team's response time, even to locations with difficult access.

**Background:** The General Utilities Plant (GUP) operated by TAKREER provides a vital stream of power and water (potable and seawater) to support the needs of TAKREER and the neighbouring industrial and residential users in the Ruwais industrial area. The GUP is also the sole provider of drinking water in the area. To deliver its services, the GUP relies on seawater intake from two units, Sea Water Intake 1 (SWI1) and Sea Water Intake 2 (SWI2), where the seawater serves as a cooling medium for power generation and as a raw material for producing potable and drinking water. As such, significant interruptions

#### TAKREER

##### Protection of Sea Water Intake System Against Oil Spill Threat

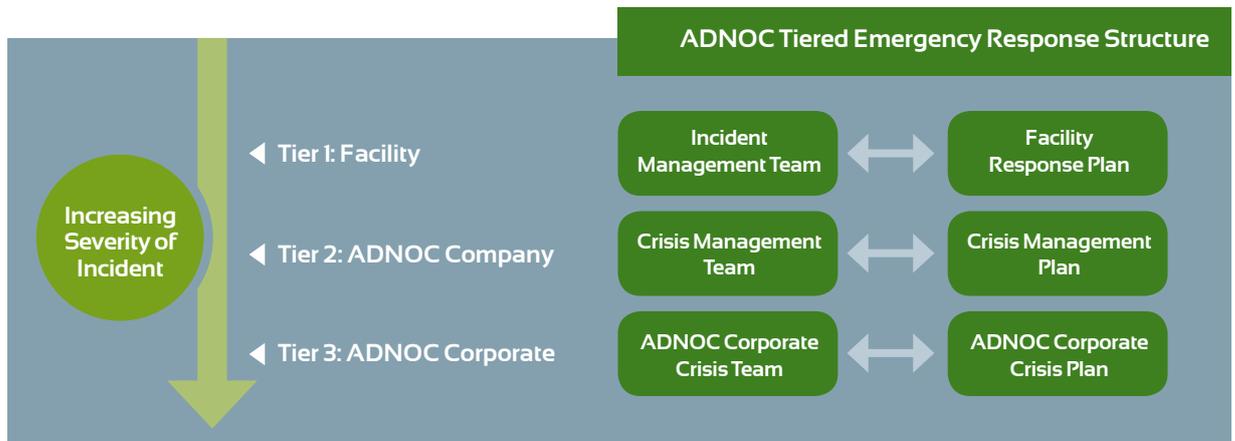
to the GUP's seawater intake system may severely compromise the activities of consumers that are dependant on the GUP's services.

**Approach:** The most significant threat to the GUP's seawater intake system was found to be a potential oil spillage incident from the nearby oil bunkering station and shipment jetties located offshore from SWI1 and SWI2. In such an event,

the oil accompanying the seawater may damage the industrial equipment through which the seawater is transmitted, and would contaminate the seawater rendering it unsuitable for drinking purposes. To mitigate this risk, TAKREER installed permanent oil containment booms at SWI1 and SWI2 to serve as a primary screening system against the oil. The booms also act as an additional filter to prevent marine mammals from entering the seawater intakes.

**Outcome / Future:** The proactive protection measure implemented by TAKREER has severely reduced the chances of a catastrophic disaster that would otherwise necessitate the forced shutdown of the GUP, hence avoiding billions of dirhams in environmental and economic losses. It has also helped secure energy, drinking water, and an uninterrupted supply of seawater to nearby businesses and consumers which include Borouge and FERTIL.

TAKREER is currently evaluating the possibility of introducing an additional "emergency boom" to the north of the intake breakwater, to serve as an added layer of protection and support.



To maintain the competency of our team's oil spill management, we undertook in 2011 an exchange programme with the Japan Cooperation Centre, Petroleum (JCCP), where our team shared knowledge with their local response teams and other international participants.

### Our Performance

In 2011, our ADNOC Company operations experienced seven significant hydrocarbon spill incidents at Jebel Dhanna, Asab (two incidents), Bu Hasa (two incidents), Ruwais and at the offshore El-Bunduq field, resulting in the release of 4,209 m<sup>3</sup> of hydrocarbons. Immediate corrective actions were pursued to mitigate the impact on the environment (including cleaning of impacted areas and appropriate disposal of contaminated soil or other materials), with investigations to address root causes. For the purpose of reporting, ADNOC considers spills larger than one cubic metre to be significant.

The incidents at Jebel Dhanna, Asab and Bu Hasa (involving the release of 3,180 m<sup>3</sup>, 12 m<sup>3</sup> and 367 m<sup>3</sup> of crude oil respectively) were mainly caused by internal corrosion in flow lines. Over 99% of the spill volume was recovered by ADCO and negligible impact on the environment was reported.

The incident in Ruwais, caused by Borouge's petrochemical operations, involved the release of 30m<sup>3</sup> of mineral oil from a damaged check valve bonnet gasket. The mineral oil spill incident resulted in 80 m<sup>3</sup> of contaminated soil, which was appropriately disposed at BeAAT.

The incident at El-Bunduq, involving the release of 505 m<sup>3</sup> of crude oil, was due to unprecedented water flow from the sea bed around one of BUNDUQ's well head platforms. The Tier-1 oil spill response team was deployed to contain the oil slick; their timely response helped minimise environmental impact.

## OUR INITIATIVES

In 2011, ADNOC's oil spill response capabilities were mobilized to assist and combat several incidents that occurred in the Emirate of Abu Dhabi. One of these incidents, a spill from the Abu Dhabi Water Electricity Authority (ADWEA) power plant, necessitated our deployment for the protection of TAKREER's Abu Dhabi Refinery water intake system at Sas Al-Nakhal. Another notable response was to the BW-Austria tanker incident at the GASCO Ruwais Jetty, where our teams contained and collected approximately 95 drums of oil. Our teams were also on stand-by to respond to the White Whale tanker incident that occurred off the coast of Ajman, where a tanker sank due to harsh weather and mechanical failure.

These incidents, though tragic, provided our response teams with good experience and lessons learnt for the handling of similar future situations. We identified a need to improve our communication and coordination with authorities, including the Environment Agency Abu Dhabi (EAD), as well as neighbouring parties whose operations present a risk of causing marine oil spills. We also identified a need to provide more training to our crisis team on small boat handling. These outcomes have been incorporated into our planning and competency strategies to ensure more effective responses in the future.

### Our Approach

Water is an essential resource in ADNOC's operations. We recognise the need for clear principles and tools for sustainable water management to ensure the responsible handling of this natural resource.

Minimising water consumption and promoting water conservation is one of ADNOC's key HSE objectives, and our ADNOC Companies continually assess the effectiveness of their water consumption and wastewater management strategies, whilst adhering to ADNOC's Codes of Practices on all matters relating to water and effluent discharges.

To this end, one of ADNOC's key environmental objectives is to re-inject offshore produced water and process effluents into deep wells, unless their discharge is permissible under the limits set in the ADNOC Codes of Practice.

For offshore platforms, where the oil content exceeds 40 parts per million (ppm) on average within a calendar month, or reaches a maximum of 100 ppm, it is not permitted to be discharged to the sea. Oil-based drilling

muds, plastic materials and wastes are not permitted to be discharged to the sea. Food waste can only be discharged to the sea 12 nautical miles from the shore.

### Our Performance

In 2011, approximately 3.7 billion cubic meters of water were extracted to support operating requirements across the ADNOC Companies. Over 96% of the total water withdrawn is extracted from the sea and used as non-contact cooling water. Most of this water is then discharged back to the sea.

In keeping with ADNOC's objective towards produced water, all produced water is normally discharged to deep wells. In 2011, there was one offshore incident that resulted in the unplanned discharge of approximately 100,300 m<sup>3</sup> of produced water to the sea, due to damage in the disposal line connecting to the disposal well. The circumstances did not allow for appropriate testing of water quality prior to discharge; however, remedial action was immediately pursued to minimise impact to the marine environment. A total of 95.8 million cubic meters was consumed internally.

# 9 MILLION m<sup>3</sup>

## OF WATER WERE RECYCLED OR REUSED ACROSS OUR OPERATIONS IN 2011

**Background:** Recognising the water-related challenges, risks and opportunities facing the petrochemical sector today, Borouge established and implemented a comprehensive Water Footprint Programme. The objectives of this programme, one of the first of its kind in the region, were to characterise the water-related business risks affecting Borouge, identify practical strategies to minimise or mitigate these risks, identify potential opportunity areas, develop an internal water management baseline to benchmark against with Borouge's future growth, and position Borouge as a leader in the field of water sustainability.

### Borouge Water Footprint Programme

**Approach:** A number of key activities were conducted, including the study and analysis of Borouge's current water management position

through data gathering, engagement of key Borouge personnel and facility visits; preparation of a report which includes Water Footprint, status, gaps, improvement plan, and potential benefits; and the preparation of an industry and regional position paper.

**Outcome / Future:** The programme identified several innovative measures that were already implemented by Borouge. It also highlighted areas for improvement, such as better metering and reporting of water use and wastewater discharge, reducing water usage, re-using treated wastewater effluent, and increasing operational efficiency of equipment using process water. The effective implementation of these improvement opportunities will enhance Borouge's performance through reduced environmental impact, increased plant efficiency and reliability, reduced costs, and increased awareness of water as a critical resource.

**Water / Effluent Statistics across ADNOC Companies in 2011**

	Major Streams	Volume Extracted (million m <sup>3</sup> )
Water Extracted in 2011	Surface water	3,669.5
	Ground water	6.5
	Municipal water	23.6
	Produced water	35.3
	<b>Total</b>	<b>3,734.8</b>
	Major Streams	Volume Extracted (million m <sup>3</sup> )
Water/Effluent Discharge	Cooling water (discharged to sea)	3,601.5
	Produced water (planned discharged to deep wells)	35.2
	Produced water (unplanned discharge to sea)	0.1*
	Process effluent	2.1
	<b>Total Discharge</b>	<b>3,639</b>
<b>Net Water Consumption (Million m<sup>3</sup>)</b>		<b>95.8</b>

(\*) Refers to the offshore incident

**Recycling**

In 2011, approximately 9 million cubic meters of water was recycled and reused across our ADNOC Companies. This represents 9.4% of our total water consumption in 2011.

This is largely accounted for by the recycling of treated sanitary waste water for on-site irrigation of green areas (practiced by ADCO, GASCO, Borouge and TAKREER), and by FERTIL who reuse the condensate from their ammonia plant.

**Sensitive Water Bodies**

Across the ADNOC Companies' operations, there is one water body that may be significantly affected by the withdrawal of water and the discharge of water and run-off. This water body is the Marawah Marine Protected Area, located 100 km west of Abu Dhabi, which lies within ADOC's concession area. The Marawah Marine Protected Area is approximately 4,255 km<sup>2</sup> in size. To minimise their impact, ADOC's wastewater discharges are regulated and are in accordance with the discharge limits and criteria stipulated in the ADNOC Codes of Practice.

**OUR INITIATIVES**

- **ADCO** completed installing water flow regulators in their offices in 2010, to deliver an annual 8% reduction in water consumption (equivalent to 10,950 m<sup>3</sup>). A project is currently underway to implement this method across all of ADCO's field accommodation units.
- **ADNOC DISTRIBUTION** implemented a strategy to reuse 80% of the water consumed by their car wash facilities across the UAE, resulting in a saving of 160,000 m<sup>3</sup> in 2011.
- **ADMA-OPCO** initiated the process of developing a KPI to monitor and improve their water consumption practices offshore.
- **Al Hesn Gas** continued to use their mobile vehicle washing station on their Shah Gas Development Project, to deal with the challenge of water scarcity in the desert region. The system has proven to be a major success with a water recycling rate of 70% (delivering approximately 372,000 litres per year in fresh water savings).
- **ZADCO** completed the installation of water saving devices (low-flow aerators, low-flow shower heads, low-flush toilets) in offshore living quarter platforms, delivering a reduction of 20% in their offshore sanitary water consumption (equivalent to approximately 4,820 m<sup>3</sup>).

### Our Approach

The ADNOC Companies operate in a variety of terrestrial and marine environments which range from areas of low biodiversity value to those of high ecological sensitivity. As part of ADNOC's commitment to the conservation of natural resources, ecosystems, wildlife and wildlife habitats, the ADNOC Companies take every care to integrate biodiversity considerations and management plans into their HSEIA process, in order to ensure their operating environments are protected and capable of delivering their ecological services.

These efforts are supplemented with regular inspections to monitor and mitigate potential adverse ecological impacts that may arise during project implementation.

ADNOC also takes a proactive approach towards enhancing the productivity and biodiversity of Abu Dhabi's marine environment, and has a dedicated team of marine specialists whose role is to complement marine protection activities through a number of rehabilitation and proliferation projects that involve mangrove plantation and the deployment of artificial reef structures across our concession areas.

### Our Performance

Across ADNOC's operations, there are a total of five operations located in or near areas of high biodiversity value. No significant biodiversity impacts from their activities were reported in 2011.

#### Biodiversity Protection Measures in 2011

ADNOC Company	Site	Biodiversity Management Approach	
		General	Site-Specific
ADCO	<b>North East Bab</b> Terrestrial-marine environment; sensitive habitats include deserts, sea, mangroves, salt marshes, coral reefs and sabkha.	<ul style="list-style-type: none"> <li>Desk-top studies to establish species present in ADCO's concession areas (birds, mammals, reptiles, plants).</li> <li>List of priority species based on IUCN Red List of Threatened Species.</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity Action Plan</li> <li>Botanical Survey</li> <li>Mangrove nursery</li> <li>List of priority species</li> </ul>
	<b>Qasahwira</b> Terrestrial environment; representative example of natural desert found in the UAE.	<ul style="list-style-type: none"> <li>Biodiversity awareness campaigns (targeted at employees and contractors).</li> <li>Book on biodiversity found in ADCO concession areas.</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity Action Plan</li> <li>Signage boards in three languages on the rare and endangered species present in Qasahwira</li> </ul>
	<b>Jebel Dhanna</b> Terrestrial-marine environment; sensitive habitats include sea grass and coral reefs.	<ul style="list-style-type: none"> <li>Leaflet "Why Biodiversity Matter" circulated across ADCO personnel and contractors.</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity Action Plan</li> </ul>
ADOC	<b>Mubarraz Island</b> Marine environment; located in the Marawah Marine Protected Area, which is home to important marine and coastal ecosystems including sea grass meadows, coral reefs and mangroves.	<ul style="list-style-type: none"> <li>Mangrove plantation project (111,310 seedlings planted in 2011, compared to 65,200 seedlings in 2010 and 13,000 seedlings in 2009). The project has been implemented on the island since 1983.</li> <li>Sea grass plantation and coral reef preservation projects.</li> <li>Breeding and monitoring of Ospreys.</li> </ul>	
ZADCO	<b>Zirku Island</b> Terrestrial-marine environment; Zirku Island is an important nesting ground for Hawksbill Turtles, which are listed as critically endangered species on the IUCN Red List of Threatened Species.	<ul style="list-style-type: none"> <li>The west coast of Zirku Island was self-declared by ZADCO as a protected exclusion zone.</li> <li>In partnership with the Emirates Heritage Club, trained volunteers conduct visual assessments of the turtles and their nesting grounds, particularly during their spawning season.</li> </ul>	

**Number of IUCN Red List Species Identified across ADNOC's Operations in 2011**

IUCN Red List of Threatened Species	Number of species identified	Species
Critically Endangered	1	Hawksbill turtle
Endangered	3	Green Turtle, Fin Whale, Arabian Tahr
Vulnerable	15	Saker Falcon, Spotted Eagle, Arabian Oryx, Sand Gazelle, Arabian Gazelle, Mountain Gazelle, Nubian Ibex, Dugong, Fossil Shark, Tawny Nurse Shark, Whale Shark, Leopard Shark, Bowmouth Guitarfish, Dalmatian Pelican, Cairo Spiny Mouse
Near-threatened	8	Sand Cat, Striped Hyaena, Estuary Cod, Whitecheek Shark, Pygmy Devil Ray, Tiger Shark, Pallid Harrier, Persian Shearwater
Least Concerned	>150	Include: Red Fox, Desert Hedgehog, Grey Dolphin, Arabian Hare, Wild Cat, Golden Eagle, Mouse-tailed Bat, Long-legged Buzzard and Lesser Egyptian Jerboa

## OUR INITIATIVES

### Mangroves

Mangroves are well-adapted to deal with natural stressors (temperature, salinity, anoxia, ultraviolet (UV) rays) and have enormous ecological value.

The mangroves of Abu Dhabi are represented by only one species, the grey mangrove, *Avicennia marina*. Efforts have therefore been made to introduce other species of mangroves by establishing five mangrove nurseries across our concession sites.

In 2011, the total capacity of our nurseries reached 5 million seedlings. 100,000 seedlings were transplanted onto Sas Al Nahel Island. The regular post-transplantation assessment showed a 90% survival rate. Five million seedlings are aimed to be transplanted by the end of 2012.

### Coral Reefs

The health of coral reefs continues to decline around the world and the Arabian Gulf is one of the areas most severely affected due to high sea water temperature fluctuations.

In 2010, an artificial reef site was established off Zirku Island by treating the surfaces of the concrete pipelines and covering them with a mixture of marine extracts of algae species and marine plants.

In 2011, monitoring of the underwater artificial reef structures was carried out to reveal a 99% survivorship rate. Various reef associated invertebrates were observed to have settled on and around the structures, and 14 different families of fish have permanently inhabited the structures, including black tip, fin shark and two grouper species.

### Seagrass

Seagrass beds serve as forage and nursery grounds for endangered species (such as dugong and sea turtles), fishes and crustaceans. They also act as carbon dioxide sinks, contaminant and sediment filters and natural water purifiers.

As such, the restoration of Abu Dhabi's seagrass beds will improve water quality, and also benefit important fishery species such as snook, sea trout and shrimp.

In 2010, we conducted two seagrass plantation projects in Mubarraz Island and in Al Dabbiya.

An assessment of the projects' was undertaken in 2011 to reveal a successful survivorship and outcome.



# HEALTH AND SAFETY PERFORMANCE

I

## Occupational Safety

ADNOC places the safety of our employees and contractors first across our lines of business, and we strive to build a workplace culture of zero tolerance to high risk conducts and incidents.

### Our Approach

Occupational safety across our operations is managed at an organisational level through the relevant ADNOC Codes of Practice.

The responsibility for ensuring the proper implementation of these operating standards rests with senior company management.

Occupational safety is also managed at a corporate level by the individual HSE committees that are in place across the ADNOC Companies' sites and operations.

The number of HSE committees per company ranges depending on size, number of operating sites and the level of risk. The majority of these committees have joint management / labour representation.

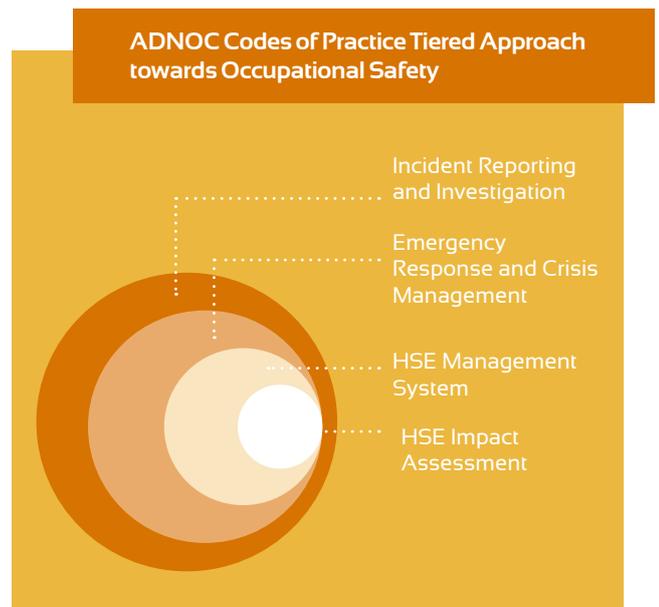
With oversight from the ADNOC EH&S Division, the ADNOC Companies ensure they have the necessary emergency preparedness and crisis management procedures and resources in place.

The responsibility for safety also extends to all our employees and contractors, who are required to ensure that all governing safety rules and operating procedures are followed.

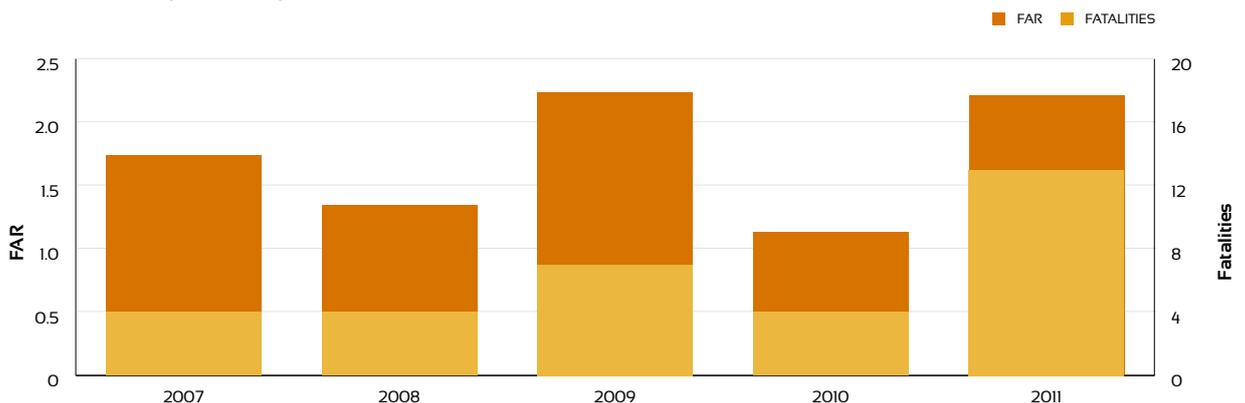
## Our Performance

Despite our untiring efforts to reinforce the safety culture across our operations, there were thirteen regrettable work-related fatalities amongst the ADNOC Companies in 2011, affecting one employee and twelve contractors. We will learn from these incidents and implement the necessary preventative measures to ensure we bring our workforce home and sustain their trust in our leadership and operations.

ADNOC's 2011 Fatal Accident Rate (FAR) of 2.21 fatalities per 100 million man-hours is higher than the industry benchmark of 1.88 fatalities per 100 million man-hours (International Association of Oil and Gas Producers (OGP) average).



Fatalities and FAR (5-Year Trend)

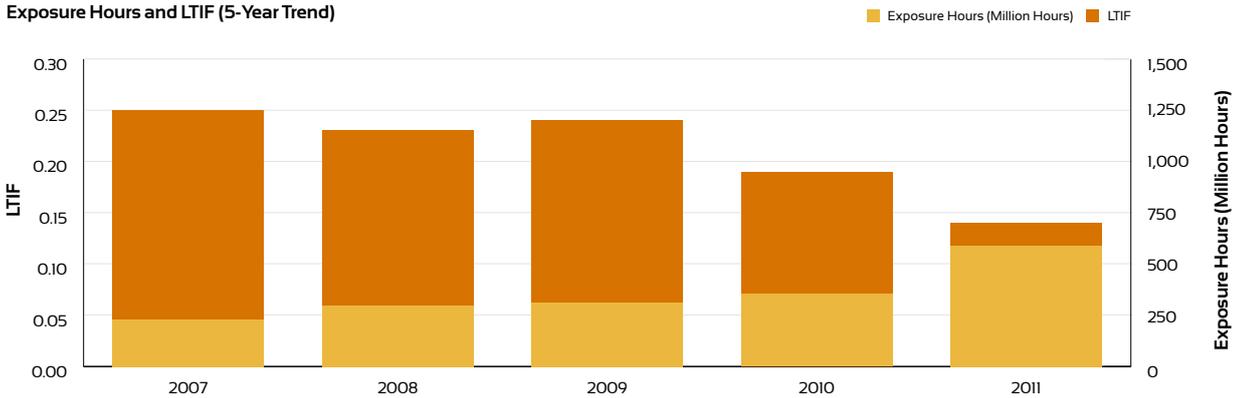


## Lost Time Injuries

In 2011, ADNOC recorded 80 Lost Time Incidents (LTIs) and over 588.5 million man hours. Our 2011 Lost Time Injury Frequency (LTIF) of 0.14 injuries per million man hours represents a 26% improvement from that reported in 2010 (where we recorded a LTIF of 0.19).

ADNOC's 2011 LTIF is lower than the industry benchmark of 0.43 injuries per million man-hours (International Association of Oil and Gas Producers (OGP) average).

Exposure Hours and LTIF (5-Year Trend)

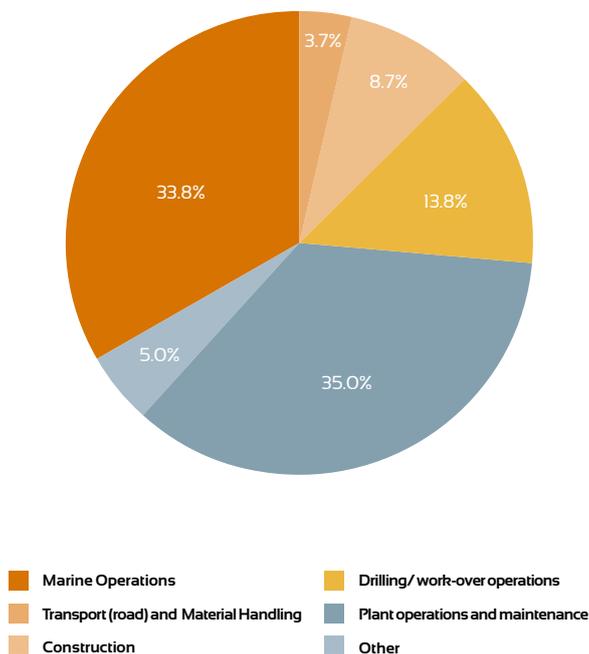


The following observations have been made in relation to an analysis of our 2011 lost time injuries (LTIs) by:

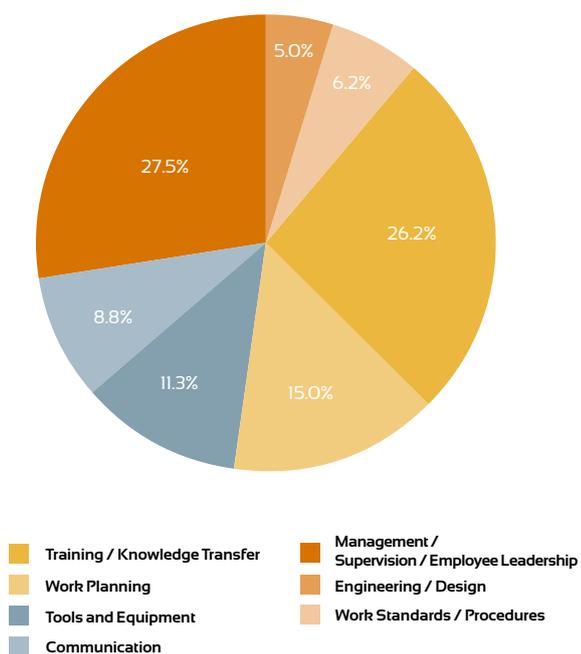
**i- Accident category:** Construction activities accounted for 35% of our LTIs in 2011, followed by plant operation and maintenance (33.8%) and transport and material handling (13.8%). Marine, drilling and other minor operations accounted for the remaining LTIs.

**ii- Causation:** The majority of our LTIs were attributed to inadequate supervision (27.5%), training / knowledge transfer (26.2%) and work planning (15%). We recognise the need for improvement in these areas and are committed to delivering better training in hazard recognition to our workforce and improved safety leadership and work planning protocols.

LTI Analysis by Accident Category



LTI Analysis by Causation

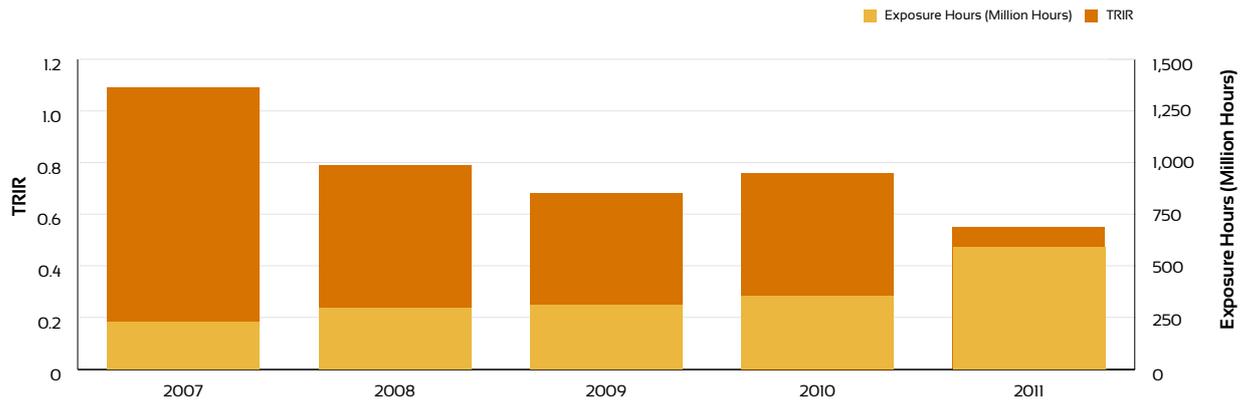


### Total Recordable Incidents

ADNOC's 2011 Total Recordable Incident Rate (TRIR) of 0.55 incidents per million man-hours represents a 27% improvement from that reported in 2010 (where we recorded a TRIR of 0.76).

Our 2011 TRIR is also lower than the industry benchmark of 1.76 injuries per million man-hours (International Association of Oil and Gas Producers (OGP) average).

### Exposure Hours and TRIR (5-Year Trend)



**Background:** In 2011, Al Hosn Gas was preparing to take over the management of drilling activities for the Shah Gas Development Programme. For a new Company, the easiest option would have been to adopt and build on existing practices. However, with Al Hosn Gas' Vision to be "a world-class company in the development of sour gas resources and a distinguished partner of choice", comes a responsibility to seek out opportunities for establishing benchmarks in the management of HSE in highly sour operations.

#### Al Hosn Gas

#### HAZARD study for Escape Evacuation and Rescue (HAZEER)

An example of how Al Hosn Gas adopts an 'unusual business' approach is demonstrated in how it develops critical safe systems of work such as crisis and emergency response systems. Through intensive stakeholder engagement, Al Hosn Gas implemented a process known as HAZEER which it uses to accurately identify fit-for-purpose Crisis and Emergency Response controls as part of its major accident hazard management programme.

**Approach:** HAZEER is an early step in the Hazard and Effects Management Process (HEMP), providing a systematic and detailed analysis of

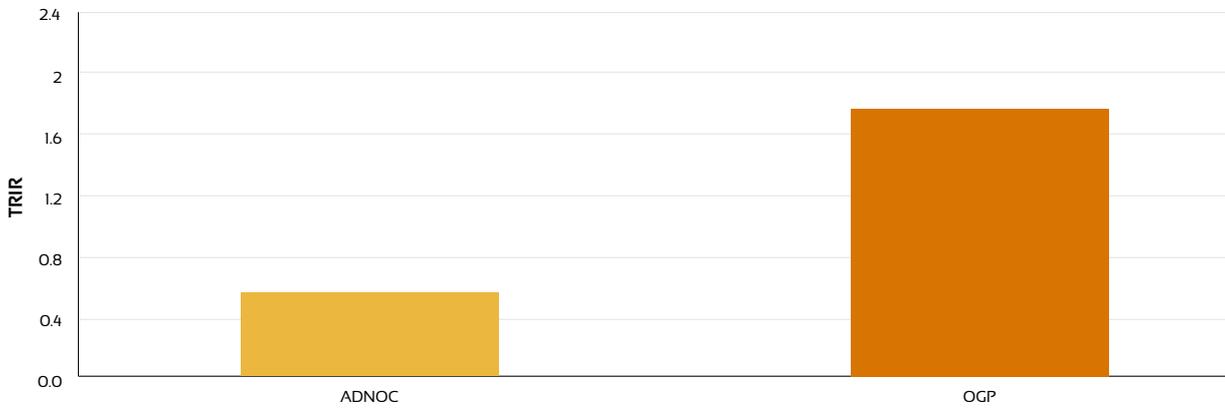
each step of the Escape, Evacuation and Rescue (EER) process. HAZEER studies examine emergency procedures for major accident hazards, and, using bespoke guidewords, identify barriers to the effective implementation of the EER step. The study results in an auditable trail with assigned accountability for decision-making on EER investment.

**Outcome / Future:** The study significantly reduces the likelihood of emergency system failure by identifying EER-related issues, with emergency plans prepared and necessary equipment identified in advance, thus preventing last minute delays. Emergency training, drills and exercises are conducted on a "Right First Time" basis, improving performance due to greater accuracy early in the learning process. Actions are shared across assets to identify similar controls and common failures.

Al Hosn Gas have successfully conducted further HAZEER studies on the Shah Gas Development Programme EPC packages and plan to apply the HAZEER process throughout the life of the Shah facilities.

The HAZEER methodology can be applied across the complete exploration and production value chain preventing major schedule and cost impacts.

ADNOC 2011 TRIR vs. OGP 2011 TRIR.



### Road Safety

Despite the considerable efforts of ADNOC’s Companies to improve road safety, a total of 284 road-traffic accidents were reported in 2011. Compared to 2010, road accidents reported by ADNOC Company employees increased by 9.5% (from 73 to 80), whilst those reported by our contractors nearly doubled (from 104 to 204).

We will continue to work to improve road safety for our employees and contractors by addressing the various behavioural and operational challenges associated with these cases.

## OUR INITIATIVES

- **ADCO** implemented an in-vehicle monitoring system (IVMS) across their fleet of light vehicles to enable real time tracking of vehicle locations in concession areas and the monitoring of driving behaviour. Contractors are also required to install and maintain IVMS devices for their vehicles and regularly provide ADCO with agreed reports.
- **ADMA-OPCO** undertook a thorough review of their lifeboat drills and maintenance procedures, the results of which ultimately lead to the issuing of a new ADNOC Code of Practice on Lifeboat Safety. The new procedure has also been recommended to oil and gas operators in the Gulf Cooperation Council (GCC) and to ADNOC offshore Group Companies in the UAE.
- **ELIXIER** established a well defined safety culture throughout the construction of the Mirfa Nitrogen Plant, which involved a continuous system of communication, monitoring and motivation throughout the organisation. This enabled ELIXIER to achieve in excess of 15 million safe working hours man hours without an LTI.
- **GASCO** launched a scheme called “GASCOIN” where employees were rewarded based on their contributions towards HSE. The scheme has been well-received by employees.
- **NDC** launched a system where all employees are empowered to stop any operation in the event a risk of an unsafe act has been identified, by issuing them with a “STOP” card that is signed by the NDC CEO. Raising the card will instantly stop the operation, allowing the employee to express their doubt. The operation will only resume after re-examination takes place and the doubt is cleared. The efficient application of this method has helped eliminate potential trade-offs between ensuring the safety of employees and maintaining operation productivity. Every STOP action is a potential HSE incident averted.
- **ZADCO** reinforced their emergency evacuation strategy at the Upper Zakum Central Complex by installing an evacuation bridging slide made of inflatable rubber material that connects the platform to the search and rescue marine vessels (SRV), without the need for the SRV to approach and connect to the platform. This slide solution will be available in almost all sea conditions, including the average 120 days of rough sea that is experienced at the Upper Zakum field.



**BUNDUQ**  
Breathing Apparatus Marathon Competition

**Background:** BUNDUQ's crude oil contains high concentrations of H<sub>2</sub>S (up to 11.2 %), necessitating workers to be appropriately trained to recognize and respond to accidental releases of H<sub>2</sub>S. In the past, offshore employees underwent structured training sessions on procedures for working with H<sub>2</sub>S. Part of that training required trainees to practice the donning of breathing apparatus sets and escape masks under differing conditions (open space and in confined areas). A post-training evaluation conducted by the HSE Team however found that employees were still struggling to meet the donning time targets set by the relevant ADNOC Codes of Practice.

**Approach:** In 2011, BUNDUQ developed an H<sub>2</sub>S breathing apparatus donning marathon competition as a motivational tool to enhance their offshore staff's performance. The

competition was held twice a month where employees, put into groups of 10, were requested to participate in the competition at least once every month. A safety technician records the time taken by each group to wear the breathing apparatus and escape sets, and the donning times are ranked accordingly. The top 3 employees to complete the task in the shortest duration (and within the targets set by the ADNOC Codes of Practice) receive a cash prize.

**Outcome / Future:** Donning times consistently improved as the competition progressed, enhancing the safety of BUNDUQ's employees whilst assisting BUNDUQ in complying with ADNOC's requirements. The competition-based model, may be tailored to fit BUNDUQ's future HSE objectives and targets.

**Background:** The concentration of hydrogen sulphide (H<sub>2</sub>S) at Habshan / Bab plants varies from 50 to 500,000 parts per million (ppm) and can be a significant risk to personnel safety in the event of accidental release.

**Approach:** "High H<sub>2</sub>S" areas were identified by performing dispersion modelling. These areas were then physically demarcated as red, yellow and green zones by installing dismantable barriers and sign boards. Personnel entering "High H<sub>2</sub>S" zones are trained for H<sub>2</sub>S competency and a 15 minutes duration Emergency Escape Breathing Device (EEBD) is mandatory to enter red and yellow zones.

Outdoor assembly points were also evaluated and found to be unsafe in the event of major H<sub>2</sub>S releases. To address this, GASCO installed two gas-tight and blast-resistant permanent refuge operator shelters equipped with continuous fresh air supply, auto decontamination facilities, and instrumented protective functions.

Some of the existing buildings in process/ non-process areas were also converted to safe

temporary refuge shelters. GASCO also developed a general specification for temporary refuge shelters that can be used for upgrading existing buildings or for installing new temporary refuge shelter buildings.

**GASCO**

H<sub>2</sub>S Zone Classification and the Provision of Permanent and Temporary Refuge Operator Shelters.

**Outcome / Future:** The demarcation of H<sub>2</sub>S classified areas resulted in several HSE improvements, including effective implementation of access control measures across H<sub>2</sub>S classified areas, safe access and exit locations for H<sub>2</sub>S classified areas, enhanced monitoring of personnel working in H<sub>2</sub>S classified areas, and the prevention of vehicle and equipment entry into H<sub>2</sub>S areas without safety precautions. With the success of this procedure in Habshan, the use of dismantable plastic barriers is in the process of implementing in Asab and Buhasa.



The safety of our workforce comes first across our lines of business. We strive to build a safety culture of zero tolerance to high risk conducts and incidents to ensure we bring our workforce home and sustain their trust in our leadership and operations.

Safety Statistics (5-Year Trend)					
	2007	2008	2009	2010	2011
Exposure Hours	230,000,000	298,000,000	313,000,000	354,901,856	588,543,178
Fatality (Work-related incidents)	4	4	7	4	13
Fatal Accident Rate (Per 100 million man-hours)	1.74	1.34	2.23	1.13	2.21
Fatality (Non work-related incidents)	5	9	7	11	19
Disability	2	2	1	0	2
Lost Time Incident (LTI)	58	68	75	66	80
Lost Days	2,081	1,663	2,372	1,482	1,747
Lost Time Incident Frequency (LTIF) (Per 1 million man-hours)	0.25	0.23	0.24	0.19	0.14
Total Recordable Incident Rate (TRIR) (Per 1 million man-hours)	1.09	0.79	0.68	0.76	0.55
Vehicle Incidents	116	169	135	177	284
Aircraft Incidents	1	2	5	2	4
Accidents Involving Third Parties	0	2	0	4	11
High Potential Near Miss Incidents	Requirement introduced in 2009		164	131	259
Near Miss Incidents	Requirement introduced in 2009		24,255	30,055	50,365

### Our Approach

Process safety focuses on preventing fires, explosions and accidental chemical releases in chemical process facilities or other facilities dealing with hazardous materials such as offshore platforms, pipelines and gas production and distribution systems.

At ADNOC, we manage and safeguard the integrity of our facilities, operating systems and processes by applying industry-wide and international safety standards and procedures throughout our facility and asset design, construction, start-up activities and modifications.

Process safety incidents are reported internally as part of the ADNOC Code of Practice incident reporting process. They are managed internally by the ADNOC Company and also by the appropriate business line directorate, with oversight from the ADNOC EH&S Division.

### Our Performance

Annual reporting of process safety incidents at a corporate level was not mandatory until 2010, when we introduced the process safety performance indicators for the refining and petrochemical sector, specified in the American Petroleum Institute Recommended Practice 754 (API RP 754).

#### Process Safety Performance

	No. of Events
Tier 1 Process Safety Events*	11
Tier 2 Process Safety Events*	19

\* Four companies did not participate due to a lack of available records.

The data also excludes the Petroleum Institute, for which process safety data is not applicable as per ADNOC requirements.

## OUR INITIATIVES

- **ADGAS** uses an Operator Training Simulator (OTS) as an effective training tool to provide a safe and economical means of training personnel on how to start up / shut down a unit, respond to upsets and emergencies, troubleshoot and optimize processes.

- **ADMA-OPCO** introduced a novel Long Range Ultrasonic (LRUT) technique to make the inspection of buried pipelines safer and more informative. The technique involves the transmission of mechanical stress waves along the pipeline, and provides a detailed image of pipeline wall thickness in both directions from the contact point for over 30 meters. This limits the requirements for excavation to one area every 100 meters. The technique replaces the original method for buried pipeline inspection, which involves excavating the full length of the pipeline and using non-destructive techniques (NDT) to establish pipeline conditions which entails a high safety risk, and is costly and time-consuming.

- **ADOC** designed and manufactured a pulley system to replace the conventional (manual) system of manoeuvring their offshore oil rig steel

hoses. The careful design of the pulley system helps to reduce the risk of accidentally dropping the hose into the sea (which can happen when the hose is manually lowered); it also help reduce damage to the hose itself and the safety risk to the personnel involved.

- **NDC** established a successful system known as Proactive Asset Integrity Reporting (PAIR), where the entire workforce is engaged in reporting asset integrity issues, which are then assessed by a team of integrity professions for consequence and corrective action. Reporting is rewarded and not criticised, encouraging staff to be more attentive and reducing the risk of asset failure.

- **TAKREER** undertook and successfully completed a project for the installation of low impedance bypass conductors to protect their floating roof tanks (with hydrocarbon storage) against lightning strikes.

TAKREER also uses a "rotating team" approach to their asset integrity tour at Abu Dhabi Refinery, in order to maintain a fresh perspective on their visual inspections.

**Background:** TOTAL ABK's offshore complex operates under sour conditions, with a 2% H<sub>2</sub>S stream. Due to these sour conditions, a key vessel-type slug catcher that was recently put in service demonstrated signs of pitting and cladding, necessitating its replacement or repair.

## TOTAL ABK

### Applying New Technology for In-Situ Vessel Repair: An Open Heart Intervention

**Approach:** The high cost associated with replacing slug catchers prompted TOTAL ABK to pursue an innovative technology, known as High Velocity Oxy-Fuel (HVOF), for performing

in-situ repair on the damaged pressure vessel. HVOF is a thermal spray technology which involves spraying melted metal on the prepped internal surface of the vessel. The thick protective coating that is created can reliably ensure long term integrity against internal cladding under sour conditions.

**Outcome / Future:** Despite the challenges of performing this procedure in a cramped offshore location, the technique was successfully performed in a safe and timely manner, and at 30% of the slug catcher vessel replacement cost. This type of intervention, undertaken for the first time in the UAE and across the TOTAL Group, has set a precedent for future repairs of this kind in the region.



**Background:** ADMA-OPCO operates 294 subsea pipelines, totalling 1,700 km in length. Managing all these pipelines is a complex undertaking. In 2011, ADMA-OPCO introduced the Pipeline Passports tool for their pipelines, as part of their Pipeline Risk Management System, to achieve effective and safe management.

**Approach:** Pipeline Passport is two page executive summary sheets providing current and future status of each pipeline in addition to required actions and way forward plan. The Pipeline Passport contains the following information:

1. Pipeline Identity - All technical details for the pipeline
2. Health Check - Overall risk prior and post mitigation resulting from technical / business diagnosis
3. Recommendations and Conclusions - Mitigation actions from risk assessment

4. Quantitative Assessment - Details pertinent to risk, including risk levels, technical evaluation and other important technical indicators

## ADMA-OPCO

### Pipeline Passport for Offshore Facilities

**Outcome / Future:** The Pipeline Passport provides readily accessible data necessary for the safe management of ADMA-OPCO's complex pipeline network. It also enables effective identification of pipelines which require replacement, maintenance intervention planning, as well as rationalising and optimising pipeline network operation. The ease with which the Pipeline Passport can be used is key in the prevention of major accidents from ADMA-OPCO's vast pipeline network.

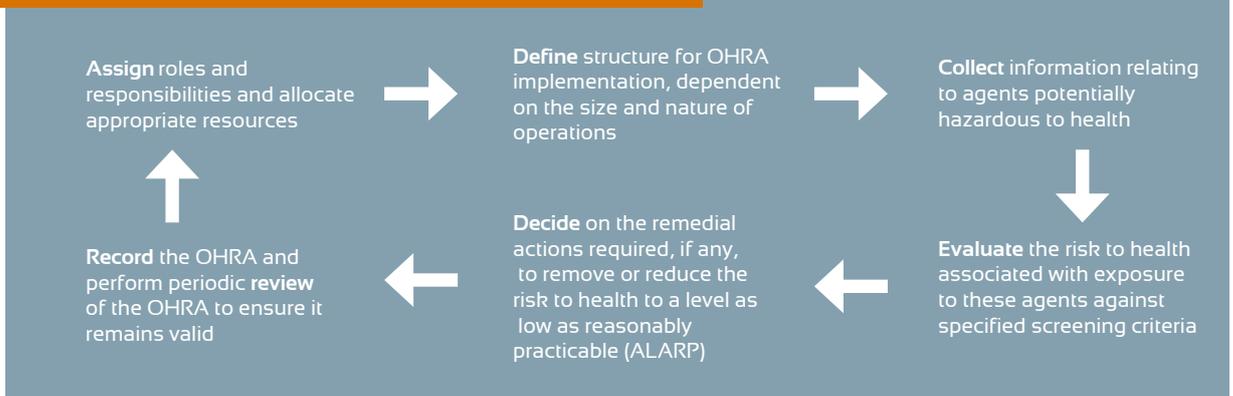
### Our Approach

The ADNOC Companies' diverse activities involve processes, operations and materials which can pose significant risks to occupational health.

ADNOC's approach to ensuring our employees' health begins at the employment stage. New employees are screened medically before employment and regular medical examinations are compulsory for all existing staff.

Occupational health hazards (chemical, physical, biological, ergonomic and psychosocial) are suitably controlled across ADNOC's operations through our effective oversight of worker training needs and line supervision, and through our ADNOC Codes of Practice guides, which require our operators to perform structured Occupational Health Risk Assessments (OHRA) across their operations.

### ADNOC Occupational Health Risk Assessment Process



### Our Performance

ADNOC is making year-on-year improvements in addressing the challenge of obtaining accurate health statistics for our workforce, particularly for our contractors who are at times reluctant to report such issues with a view to perceived potential contractual

repercussions. In 2011, significant efforts were made by our ADNOC Companies to provide the necessary resources, training and guidance on reporting occupational health cases in accordance with ADNOC's corporate reporting guidelines.

#### ADNOC Occupational Health Data for 2011

Type of Occupational Illness	Employees	Contractors
Back problems/lower limb disorders	146	56
Neck/Upper limb disorders	16	23
Noise-induced hearing loss	14	13
Respiratory diseases (asthma)	18	31
Skin disease	37	29
Heat-related illness	2	49
Cancer and malignant blood disease	0	0
Infections / preventable disease	42	40
Mental ill-health	0	0
Poisoning	0	0
Other occupational illnesses	4	8
<b>Total</b>	<b>279</b>	<b>249</b>

**Background:** Tobacco use is a common and preventable cause of death in the UAE. To this end, ZADCO launched a "Quit Smoking Clinic" at Zirku Island that uses a structured medical approach.

## ZADCO

### Quit Smoking Clinic at Zirku Island

**Approach:** The following actions were taken for each participant:

- Collect data about the smoker (by means of a questionnaire)
- Determine the degree of nicotine addiction (using the Fagerstrom test for nicotine dependence)
- Provide support and targeted medication on a case-by-case basis depending on the degree of nicotine addiction
- Perform weekly counselling sessions (> 30 min) where carbon monoxide (CO) levels in exhaled air are measured

The following measures were taken to ensure the clinic's success:

- Management support: budgeting for medications and supplies
- Media outreach: e-mails, lectures, presentations, and educational seminars
- Incentives: prizes for long-run quitters
- Record keeping: detailed medical history to help physicians prepare tailored programmes for each participant

**Outcome / Future:** The clinic was launched in Zirku Island with 36 participants. After 9 months of the programme, 33 patients (91.67%) quit smoking. Out of the 33 there were 7 cases of relapse which brought the overall success rate down to 78%; this is still significantly higher than international smoking quit rates.

ZADCO is planning to extend the clinic to other operating sites in near future as follows:

- Upper Zakum: clinic to open in 2012 with a target success rate of 40% of smoking population
- Arzanah and Umm Al Dalakh: clinic to open in 2013 with a target success rate is 45% of smoking population
- ZADCO Artificial Islands: clinics to open between 2013 and 2018

ZADCO also has an ambitious plan to convert all offshore areas into smoking-free worksites by 2018.

## Health Awareness and Disease Prevention

Medical and occupational health professionals across our ADNOC Companies conduct regular campaigns that focus on occupational health matters and general health and life style issues e.g. smoking, stress, diabetes, weight and food.

## Healthcare and Medical Treatment

ADNOC Group Company employees are provided with comprehensive health insurance coverage at selected private and public healthcare facilities in the Emirate of Abu Dhabi. Healthcare facilities are also available to employees internally through ADNOC's Medical Services Division (MSD).

The Medical Services Division (MSD) is ADNOC's umbrella organization for providing an international standard of healthcare to the employees and eligible family dependents of ADNOC, its Group Companies and academic institutions.

The Medical Services Division is situated at ADNOC's Headquarters and operates two medical centres, 18 clinics and several pharmacies across Abu Dhabi and the Western Region.

The MSD manages the previously outsourced medical facilities in the Western Region through the Remote Area Medical Services (RAMS) Department.

Its facilities serve the employees, contractors and sub-contractors of the Group Companies, in addition to the local communities within its areas of jurisdiction.

Through the RAMS Department, the Medical Services Division also operates one hospital in Ruwais, which has undergone renovation in January 2012 to become a state-of-the art health facility. The RAMS department will also soon manage one fixed camp-based clinic and two mobile clinics.

In addition to delivering medical treatment, some of our MSD facilities have been engaged in delivering the routine national immunization programme in elementary and high schools.

These include vaccines against poliomyelitis, tetanus, diphtheria, measles, mumps and rubella. Papilloma virus vaccination against cervical cancer was also initiated among female students in Grade 11.

In addition to the regular national immunization programme, the influenza vaccine was also provided to children and adults during the seasonal months of the flu.



**We are committed to annually improve upon our occupational health performance, and to prioritise management focus in the areas where additional resources to combat occupational health concerns are required**

## OUR INITIATIVES

- **ADCO** conducted an asset-wide heat stress campaign and hearing conservation campaign; participated in the 2011 Walkathon in Abu Dhabi to raise public awareness on diabetes; and exceeded their target for annual screenings against cancer by performing in excess of 500 screens against a target of 300.
- **ADGAS** responded to the findings of their OHRA, performed in 2009 for their operations on Das Island, by undertaking a two year monitoring cycle to evaluate the effectiveness of the controls implemented against their workplace hazards. The outcomes were reassuring and helped inform their occupational hygiene monitoring plan.
- **ADMA-OPCO** performed several "health awareness" campaigns at their Headquarter Office and offshore sites, under the themes of obesity, cancer & ergonomics.
- **Borouge** focussed on improving radiation safety protection activities (organisation, monitoring and awareness) in 2011. Borouge is developing an Occupational Health

Management System with a focus on the hearing conservation and heat stress prevention programmes.

- **BUNDUQ and NDC** performed heat stress campaigns involving the use of bulletins, posters, presentations and booklets. Water flasks were also distributed.
- **TAKREER** launched a competition titled "Fight the Fat", where an incentive-based scheme that offered monetary rewards was used to motivate employees to improve their health and reduce their Body Mass Index (BMI) to an acceptable range.
- **TOTAL ABK** undertook an occupational health surveillance and monitoring project with a focus on biological hazards, including bacterial and fungal contaminations, to understand their effect on indoor air quality (IAQ). A microbial air sampler was deployed at various locations, including living quarters, kitchens and offices. The findings of the project helped inform TOTAL ABK's IAQ Action Plan.



Our people, and the means with which we empower them, are ADNOC's greatest asset. In the competitive oil and gas industry of today, where a shortage of experienced and professional talent presents an ongoing challenge, ADNOC places great emphasis on remaining competitive and ensuring the right people are in the right jobs to support the growth of our business.

Across ADNOC's operations in 2011, we registered a workforce of over 68,000 employees and contractors.

### ADNOC Workforce in 2011

Total workforce	> 68,000
Total number of employees	> 31,000
Total number of supervised contractors	> 37,000

### Diversity and Equal Opportunity

ADNOC has a clear employment structure of job grades whereby employees are assigned specific grades on the basis of their entry level experience and qualifications. Job grades 1-17 constitute non managerial positions; grades 18-20 are senior management positions; and grades 20 and above are top management positions.

In recent years, more women have started to fill our positions and they represented 8.5% of our employees in 2011 (an increase of 2.5% on their representation in 2010). ADNOC applies a fair remuneration system whereby male and female salaries across all ADNOC job grades are largely equivalent.

Our employees come from around the world, primarily Asia, Europe and other Arab countries. We are proud of our diverse team and value them and their contributions.

### Emiratisation

ADNOC is committed to the UAE government's plan to create employment opportunities for UAE nationals, known as 'Emiratisation'.

Recruitment of UAE nationals is one of ADNOC's top strategic priorities of ADNOC and its Group Companies. The current five year target (from 2010-2014) is to achieve 75% Emiratisation across core company positions by the end of 2014. This five year plan is then passed down to each of the Group Companies in the form of annual plans. Each company prepares the annual intake plan in the beginning of the year and the progress on recruitment is monitored on a monthly, quarterly and annual basis.

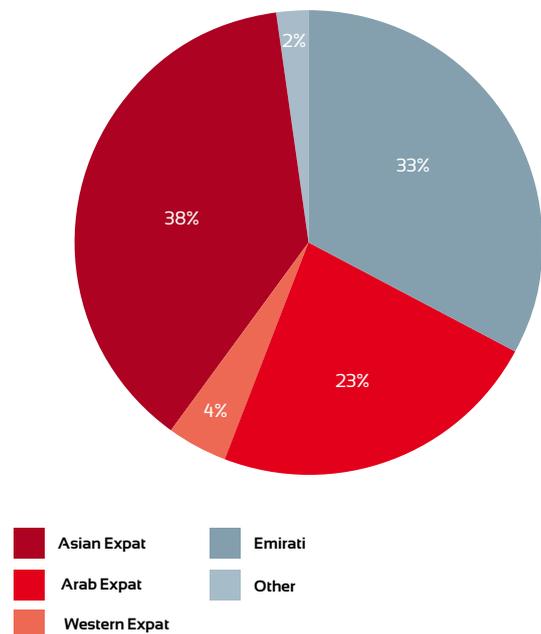
**ADNOC places great emphasis on remaining competitive and ensuring the right people are in the right jobs to support the growth of our business.**

Since 1999, ADNOC has had the National Recruitment Committee (NRC), and the Group Nationals Recruitment Department (GNRD), both based at the ADNOC Head Office, 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.

# 66.5%

**OF GOVERNANCE BODY POSITIONS ACROSS ADNOC AND THE GROUP COMPANIES WERE OCCUPIED BY EMIRATIS IN 2011. THIS REPRESENTS 282 EMPLOYEES.**

ADNOC's Employees in 2011



## Training and Development

At ADNOC, we take a comprehensive and long-term approach towards building the capabilities of our workforce.

Our training programmes cover a wide range of technical (operation-specific) and non-technical aspects (organizational development, project management, coaching and mentoring, IT skills, first aid etc.) that are tailored to the needs and responsibilities of employees within their respective roles, and centred on developing the employee's knowledge base, skill set and career. Training programmes are reviewed regularly to ensure they remain relevant to meeting the needs of the Companies' operations and ADNOC's wider objectives.

ADNOC also has a core training programme known as the Competence Assurance Management System (CAMS). This is a three to four year programme offered to promising new graduates who are keen to serve the UAE's national oil and gas economy. The CAMS programme is

shared amongst the ADNOC Group Companies and has an annual budget of AED 1.5 – 2 million per year.

In 2011, ADNOC inaugurated the new Das Training Centre on Das Island. The state-of-the-art training and testing facility has been designed to meet the technical training needs of both ADGAS and ADMA-OPCO's workforce, over the duration of their Integrated Gas Development (IGD) and Das Island Development (DID) Projects. The centre is equipped with a "Process Operation Training Simulator" that uses sophisticated technology to match the main computerised LNG control system, allowing operation supervisors and engineers to train in safe and real-life work situations. The facility will also be used to conduct training within the ADNOC's wider CAMS programme.

Some of the ADNOC Companies also offer programmes to assist with pre-retirement planning and budgeting. Furthermore, ADNOC goes beyond legal requirements to support individuals in transition.

### ADNOC Training in 2011

ADNOC Job Grade	Training (Hours Delivered)	Training (AED)
Grade 17 and above	25,211	7,283,133
Grade 14 - 16	214,635	21,412,671
Grade 11 - 13	340,676	30,521,364
Grade 10 and below	359,030	19,273,009

**To support ADNOC's business, the ADNOC Companies spent over AED 78.5 million in 2011 to deliver in excess of 939,500 man-hours of employee training.**

## Employee Turnover

### Employee Turnover in 2011

Category	Number of employees who left in 2011	Turnover Rate
Male	2,219	7.7
Female	131	5.4
<30 years old	623	8.6
30 - 50 years old	1,167	6.6
>50 years old	560	8.6

### Labour and Management Relations

The ADNOC Companies recognize the importance of developing and maintaining good working relationships between employees and their management. A combination of measures is applied to ensure employee performance, career development and underlying concerns are suitably addressed. These include open forums, workshops, employee satisfaction surveys and regular performance appraisals.

Approximately 91% of employees across the ADNOC Companies received a performance review in 2011, which is 10% higher than that accomplished in 2010.

### Contractor Relations

Due to the nature of our business, we hire numerous contractors to support us in executing our operations. We strive to maintain a stable and fair business relationship with our contractors throughout all stages of our projects, from procurement to delivery.

### Management of Change

Management of change is an integral component of the ADNOC HSEMS Audit Programme. In 2011, the ADNOC Group Companies had an overall compliance score of 72.5% against ADNOC's expectations in this regard. These expectations include the provision of:

- Control procedures to assess impact of changes, to people, organisation, plant, equipment, processes (and their controls), with a view to avoiding adverse HSE consequences



- Control procedures that document the evaluation and approval process, responsibilities and required competencies involved
- An auditable change control register in which changes are documented

The ADNOC Management of Change protocol does not stipulate the minimum notice period to be provided to employees prior to significant operational change. However, the ADNOC Companies have their own internal procedures to ensure employees are suitably informed of these changes, including the reason for change and how it impacts roles and responsibilities, well in advance of their implementation. Where details are not directly stipulated in the employment contract, the notice period has been reported to range from one to six months depending on the extent of the change.

**Background:** As part of valuing business with their contractors and suppliers, the Commercial Department at ZADCO developed a questionnaire to collect practical feedback and suggestions on how to improve the Department's handling of contracts, agreements and purchase orders.

### ZADCO Improving Supplier / Contractor Relations

**Approach:** The questionnaire, composed of 22 questions, was posted on ZADCO.com during February-March 2011. The questions were divided into five key categories: Pre-Tender (E-Registration and Pre-Qualification); Tender Strategy; Post-Tender (Contract Administration); General and Overall on ZADCO's Organization; and General and Overall on ZADCO's Commercial Department. Each question could be answered with one of five possible ratings: Excellent (EX), Very Good (VG), Good (G), Fair (F), and Poor (P). A total of 210

respondents provided their feedback within the requested timeline.

**Outcome / Future:** The questionnaires were analysed and the following key observations were made:

1. 86% of the questionnaires rated the Pre-Tender, Tender Strategy and Post-Tender categories as G, VG and EX. The remaining 14% rated these categories with an F/P combination.
2. Contractors and suppliers share a similar level of satisfaction (G) with the Commercial Department as they do with ZADCO overall.

The feedback received has prompted ZADCO to invest further resources in addressing the feedback provided against the F / P ratings, with a main focus on the Pre-Tender stage (where the majority of questions were asked), and to adopt and implement an E-Contract Management System in 2012.

## Non-retaliation and Grievance Procedure

The ADNOC Companies implement their own management approach towards non-retaliation and confidential employee grievance, in compliance with the requirements of the UAE Federal Labour Law. This is normally embedded within their HR Policy and ensures a fair and impartial approach. In 2011, a total of 281 issues were raised across the ADNOC Companies through this system. These issues largely relate to salaries and promotions, annual leave policies, training opportunities, management support, work structure, and end of service benefits. ADNOC does not currently have a policy to cover collective bargaining agreements.

## II Human Rights and Security

We have a committee that has been especially formulated to oversee the labour conditions of suppliers, contractors and 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. These principles are clearly defined in ADNOC's contractual agreements and their practice is evaluated prior to the decision making process of whether or not to proceed with an investment.

Employee labour associations and collective bargaining agreements are not permitted in the UAE under Federal Law. However, the principle of 'Decent Work' is central to our relations with our employees, and our Group Companies have various approaches to conduct regular engagement with staff members, individually and collectively.

ADNOC does not currently offer training on human rights issues to our employees or security personnel, but we fully adhere to the UAE Labour Law in our operations and practices.

Forced, compulsory and child labour is strictly forbidden under this law and ADNOC takes a firm stance on ensuring no violations of this kind take place amongst our workforce.

ADNOC does not hire anyone under the legal working age of 15. In 2011, no ADNOC operations were identified as having significant risk for incidents of child, forced or compulsorily labour.

### Non-discrimination

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

## Bribery and Corruption

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 complaints or allegations very seriously, at present there is no formal anti-corruption training programme or corruption review of ADNOC business units.

ADNOC's Legal Division is responsible for ensuring ADNOC's operations and activities are in compliance with the law and that ADNOC Group Companies abide by their contractual agreements. It also helps to ensure the legal protection of ADNOC's national and international interests. No legal actions for anti-competitive behaviour, anti-trust, monopoly practices and non compliance with laws and regulations were reported in 2011.

ADNOC Group Companies are subjected to regular audits by ADNOC's Audit and Assurance Division (A&AD) where the reliability and integrity of financial and operating information, as well as the means used to identify, measure and report such information, is carefully evaluated. Furthermore this ADNOC division assists Group Company management in the deterrence of fraud by evaluating controls in relation to the potential risk.

**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.**

Known incidents of fraud or corruption are reported to the ADNOC Head Office for immediate investigation and response.

The 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
- Proactive forensic data analysis.

## Security

ADNOC is committed to ensuring the security of our personnel, facilities, property and information.

Security for ADNOC's onshore and offshore 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.

The international shipment of our products necessitates that ADNOC adopt the highest security arrangements across our maritime operations, especially in the wake of piracy attacks that have become the biggest threat to the shipping industry in recent years. To ensure their safety in international waters, ADNATCO & NGSCO's vessels are fitted with the latest and most rigid non-lethal security measures. The unique security designs that have been adopted by their vessels have contributed towards establishing international maritime security standards, such as the Best Management Practice Guide No. 4 (BMP-4) For Protection Against Somalia Based Piracy.



**Background:** In spite of unprecedented reinforcement and security arrangements against piracy attacks onboard ADNATCO's vessels passing through the Arabian Sea, Gulf of Aden and routes to the Far East, the 37,000 tonne bulk-carrier Arrilah-I was attacked by Somali pirates on 1st April 2011 on her voyage from Australia to Jebel Ali.

### ADNATCO & NGSCO Piracy Attack, Kidnap, and Liberation of M.V. Arrilah-I

**Approach:** As a result of extensive training and regular anti-piracy emergency drills, the crew of 21 sailors and three security guards managed to instantly lock down the ship and secure themselves in a well-equipped stronghold, known as a citadel, where they remained safe against the pirates' incessant but failed attempts to infiltrate their safety room. In addition to being a critical life-saving arrangement, equipped with breathing apparatus, food, water and other important emergency supplies, the citadel allowed the crew to remain in control of the vessel, where they continued to navigate the ship towards UAE waters, and maintain communication

with the ADNATCO & NGSCO Crisis Management Team and nearby coalition forces guiding them to safety.

**Outcome / Future:** With the unfaltering support of ADNATCO and ADNOC management, the UAE Armed Forces and their coalition forces, and that between the crew members in their standoff, the vessel was successfully released within 36 hours of its attack, and was brought back safely to UAE waters where minor injuries amongst the crew were treated. The cargo was discharged to its recipients complete without damage, and the pirates were captured and trialled in Federal Courts.

The combination of exemplary safety measures and unarmed and non-lethal security measures that were adopted in the process were key to the successful liberation of Arrilah-I. They have emphasized the importance of upgrading all security measures, arrangements and procedures on ADNATCO & NGSCO vessels, strengthening citadel constructions, and ensuring advanced anti-piracy training is provided to all crew members. The incident has also strengthened ADNATCO & NGSCO's fervour to contribute towards advancing international maritime security standards.

### Managing our Impacts on the Community

Regardless of the location of our operations, ADNOC takes great care to ensure our community impacts are minimised and that we remain a good and involved neighbour.

Our structured HSEIA process forms the basis of our management approach and covers the duration of our project lifecycles. Risk assessments are also performed to evaluate the projects' risks to society, and our ADNOC Codes of Practice require our operators to develop mitigation measures to reduce risks to a level that is ALARP. These control measures are supplemented with a regular monitoring requirement throughout the operating and decommission stages.

Across ADNOC's onshore and offshore operations, the impacts of our petrochemical and refining operations in the Ruwais Industrial Complex are of particular sensitivity as they lie in close proximity to ADNOC's Ruwais Housing Complex (RHC), which is home to over 15,000 of our workers and their families.

In 2011, ADNOC received a complaint from members of the local Ruwais community regarding smoke, later determined

to be nitrogen oxides (NO<sub>x</sub>), which was observed to be released from a stack at TAKREER's Ruwais Refinery.

The incident was investigated immediately by site management and traced to one of the refinery's gas turbines which was operating at below-optimum conditions. TAKREER responded to the situation by undertaking an innovative approach towards reconfiguring their gas turbines (for more details of TAKREER's approach, refer to the Case Study in the Energy section of this report), which instantly reduced their NO<sub>x</sub> emissions to compliant levels and eliminated the yellow cloud that was previously observed. The ADNOC EH&SD was informed of the situation and TAKREER's mitigation approach and progress throughout their remedial course of action.

ADNOC also has operations in close proximity of the community of Bida Zayed, which involve ADCO's Bab processing facilities located approximately 20 km from the community. No substantiated complaints from residents relating to ADCO's operations were reported to ADNOC in 2011.

**Our ADNOC Codes of Practice require our operators to develop mitigation measures to reduce risks to a level that is ALARP.**

### Enriching our Community

The passing year 2011 was particularly dear to ADNOC as it marked the 40<sup>th</sup> anniversaries of both our company and the UAE. The significance of these two events resides in the close bonds that have forged between ADNOC and the UAE over the last four decades, and reaffirms ADNOC's commitment to foster the cultural values of our national heritage and build upon the strong foundation of our nation's development path.

ADNOC's far-reaching community sponsorships extend across all the key pillars of our society, including the academic, professional, cultural and recreational. In 2011, ADNOC and our Group Companies spent in excess of AED 25 million supporting a number of important national causes.

ADNOC is keen to interact with and bring together the members of our society at every suitable opportunity.

In 2011, and to commemorate the four decades of ADNOC's operation and the unity of our nation, the annual ADNOC Heritage Village that is set up to celebrate the UAE's International Day was erected under the special theme of "Hosn Al Itihad", meaning "Fort of the Union". The village included various pavilions representing cultural and traditional aspects of the UAE's heritage, with folkloric performances by members of several Arab and non-Arab communities living in the UAE. The event witnessed a higher and more diverse attendance in light of the special occasion.

In our bid to raise the profile of the Western Region of Abu Dhabi, ADNOC and our Group Companies proudly sponsor several high profile annual events that include the Camel Race Festival, Liwa Dates Festival and the Al Dhafra Festival. The festivals attract nationals, expatriates and tourists with the aim of

celebrating the UAE's longstanding bedouin culture, reviving the role of poetry and its influence on UAE culture, introducing and preserving the authentic camel breeds of Asayil and Majaheem, situate the Western Region as an international tourist destination and ultimately activate the region's economic growth.

### Academic Institutions and Programmes

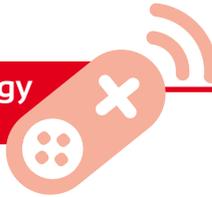
Recognising that the future of any successful company relies on the development of its people, ADNOC and its

Group Companies established and support a number of educational institutions which contribute to the advancement of young UAE nationals and members of our community.

ADNOC's family of learning institutions includes the Petroleum Institute (PI), ADNOC Technical Institute (ATI), the Glenelg School of Abu Dhabi (GSAD), the Achiever Oasis Programme (AOP) and the ADNOC Scholarship programme.

## Examples of Causes Sponsored by ADNOC Group Companies in 2011

### Science, Technology and Education



- Young Future Energy Leaders Programme
- Education Without Borders
- International Arab Children Congress
- Abu Dhabi Higher College of Technology
- Petroleum Institute Internship Programme
- Accountants and Auditors Association
- Society of Petroleum Engineers

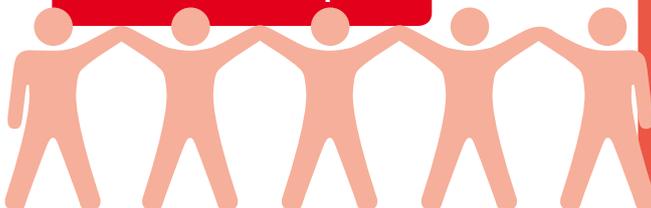
- International Zayed Marathon
- Camel Race Association
- National Day Bowling Tournament
- Abu Dhabi Grand Prix Formula One
- UAE Wrestling, Judo & Jiu-Jitsu Federation
- UAE National Football Association
- UAE National Swimming Association
- Abu Dhabi Chess Club



### Sports

- General Women Union
- Shamsa Bint Suhail Award for Creative Women
- Liwa Dates Festival
- ADNOC Heritage Village (40th UAE National Day)
- Abu Dhabi Municipality Group Wedding
- Western Region National Day
- General Women Union National Day
- Directorate of Rehabilitation and Employment
- Al Dhafra Festival
- Emirates Nursing Association
- Family Development Foundation

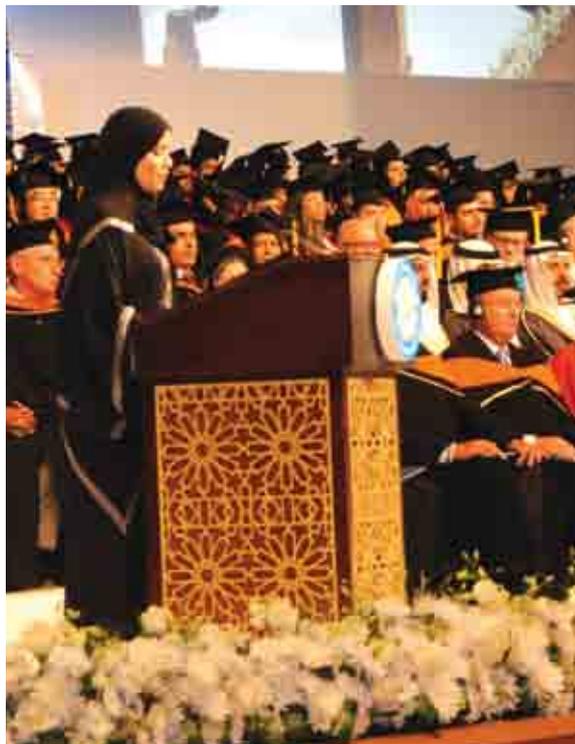
### Social and Development



### 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 world-class institution in engineering, education and research areas of significance to the oil, gas and 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.

**In 2011, the PI celebrated the graduation of 186 male and female engineers, with over 67% representation from UAE nationals. The ceremony was especially dear as it marked the graduation of PI's first cohort of female students.**



### ADNOC Technical Institute (ATI)

The ADNOC Technical Institute (ATI) was established in 1978 as the first vocational training institute in Abu Dhabi to offer programmes that meet the needs of ADNOC and 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 UAE male nationals. The institute has a current capacity of 750 students. Since its establishment, the ATI has trained more than 3,500 technical staff in a range of disciplines. The Group Companies assist the ATI by providing job instructional training (JIT) opportunities for trainees in relevant areas within each company's operational sites.

### 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. Its mission is to offer a world-class primary and secondary education to national and expatriate students, preparing them to join prestigious universities worldwide. In 2011, GSAD inaugurated their new campus in the Western Region, which can accommodate 681 students.

### Achiever Oasis Programme (AOP)

ADNOC has an innovative summer training programme known as the Achiever's Oasis Programme (AOP) which

was established in 2002. The programme aims to motivate 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 awards 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.

## OUR INITIATIVES

- **ADCO** ADCO performs regular clean-up campaigns (every other Friday) across all of its operational areas, including the coastlines of Al Dabbiya (North East Bab) and Jebel Dhanna Terminal. ADCO also participates in the Western Region Development Committee meetings as a way to involve the public and identify opportunities for improvement regarding their activities in the area. ADCO's initiatives include arranging visits for the public and school children; providing emergency response training, medical services and employment priority for the Western Region residents.
- **Borouge** created a Social Responsibility Committee for each of their operating regions (Middle East - Africa, Greater China and Asia South); launched their fourth scholarship programme for polymer science and engineering students in China; rolled out their "Borouge Star - Building Tomorrow" awareness programme in Abu Dhabi schools to stimulate their interest in science and enhance their knowledge of global

environmental challenges; conducted a "Sounds of Austria" musical concert in Abu Dhabi; and undertook several large projects within their flagship Water for the World programme in 2011, including supporting groundwater sustainability research in the UAE, supporting projects in Kenya to bring drinking water and sanitation solutions to land-locked communities, and providing upgrades to waste water systems in the Haarbach community in Germany.

- **TAKREER** undertook a voluntary beach clean-up campaign on the east and west side of the marine jetty at their Ruwais Refinery, in their bid to preserve the local coastal habitats from the waste that washed up on the shoreline. The campaign was launched in 2010, and in an attempt to enhance its success in 2011, colour-codes bags were used to segregate recyclables (plastics, metals and wood) and non-recyclables, which were further separated into bio-degradable and non bio-degradable bags. Approximately 1,000 bags were collected.

### IV

## Product Responsibility

Across ADNOC's operations, there are four Group Companies that have the most significant obligation towards product responsibility, as they manufacture and deliver products directly to consumers. These are TAKREER, Borouge, FERTIL and ADNOC DISTRIBUTION.

To maintain our reputation for product quality and performance, ADNOC ensures that these companies adhere to the best industry standards and international specifications throughout their product supply chain. Their operations and products are also endorsed by the relevant international authorities and certification bodies.

### Health and Safety Impacts of Products and Services

ADNOC guides the quality of its products and services through the implementation of comprehensive Quality Assurance and Quality Control testing to ensure customer specifications are strictly met.

Furthermore, our products are subjected to stringent health and safety impact assessments prior to market

entry. All our manufacturing companies consider the use and end-of-life impacts of their products in their health and safety lifecycle assessments.

Product related risks are most significant during the manufacturing and production stage. These risks are managed internally through appropriate procedures.

**To maintain our reputation for product quality and performance, ADNOC ensures that our outward facing Group Companies adhere to the best industry standards and international specifications throughout their product supply chain. Their operations and products are also endorsed by the relevant international authorities and certification bodies.**

Where applicable, the safety information concerning product use is effectively communicated to consumers through Material Safety Data Sheets and labels.

No incidents of non-compliance with health and safety, labelling requirements and use of our products and services were reported to ADNOC in 2011.

### Product Innovation

Our Group Companies strive to introduce innovative products into the market place that deliver enhanced performance throughout their life cycle.

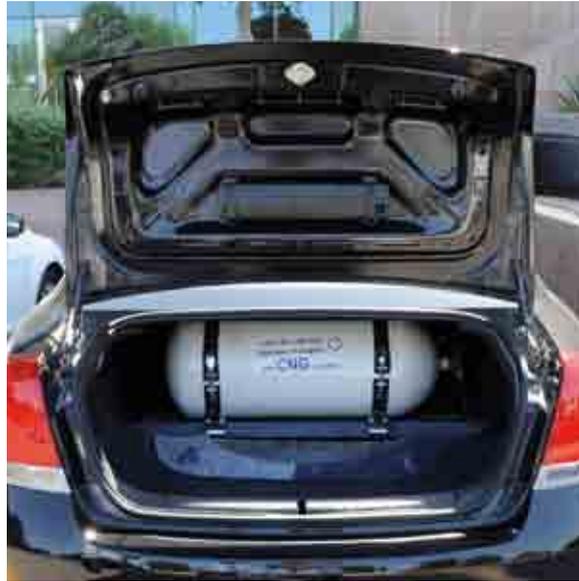
Borouge, together with its joint-venture partner Borealis, developed a range of innovative plastic solutions for the automotive industry in 2011. The key innovations for under-the-bonnet, interior and exterior automobile parts are aimed at reducing vehicle weight by 15 – 30%. For their manufacturing client base, this delivers multiple benefits such as lower production costs through improved handling, reduction in overall energy consumption, and may eliminate manufacturing steps.

Borouge is currently in the process of constructing an Innovation Centre in Abu Dhabi, to better serve their customers across the UAE and Middle East region. The Innovation Centre, expected to be operational in 2012, will be equipped with state of the art tools for plastic processing and analysis. The centre will work together with the European innovation centres of Borealis, as well as local and international educational institutions such as the Petroleum Institute of Abu Dhabi, to further develop the competence of polymer science in the UAE. More than 50 international researchers and engineers will focus on innovations for compounding as well as innovative plastics solutions for the infrastructure, automotive and advanced packaging industries in close cooperation and partnership with Borouge's customers throughout the value chain.

Borouge also has an Application Centre at their manufacturing plant in Shanghai, focusing on innovative solutions for the fast growing automotive and appliances markets.

ADNOC DISTRIBUTION, in partnership with GASCO, commenced their mission in 2010 to introduce a new fuel, Natural Gas for Vehicles (NGV), into the local market. NGV is widely considered to be an inherently safe fuel, due to its narrower flammability range, and one which delivers significant reductions in emissions when compared to petrol-fuelled vehicles (20-25% for CO<sub>2</sub>, 50-80% for CO and 25-60% for NO<sub>x</sub>).

In 2011, ADNOC DISTRIBUTION completed the first phase of their NGV Project, which entails the construction of 9 compressed natural gas (CNG)



**Around 2,360 vehicles have been converted to run on CNG since the project began in May 2010.**

vehicle conversion centres and 16 CNG filling stations across the country (10 in Abu Dhabi, 2 in Al Ain and 4 in Sharjah). The project is aligned with the Abu Dhabi Executive Council decision to run 25% of the Emirate's government vehicles on CNG by 2012.

TAKREER's Green Diesel Project (GDP) that is currently underway at their Ruwais Refinery aims to produce 84,000 barrels per day of ultra-low sulphur gas oil (maximum of 10 ppm sulphur), by means of a Shell Claus Off-gas Treatment Plant. The plant, capable of recovering 99.9% of sulphur levels, is the first installation of its kind in the UAE, making TAKREER a pioneer in introducing lower environmental impact products to the UAE and regional market.

TAKREER is also overseeing the Group III Base Oil Production Facilities Project to produce 500,000 tonnes per year of high viscosity index (Group III) base oils and 100,000 tonnes of Group II base oils. Scheduled to reach production by end of 2013, the Group III base oils have superior performance characteristics such as viscosity index (VI), pour point, volatility and oxidation stability, and have smaller environmental impacts compared to conventional mineral oils.

The newly-built TAKREER Research Centre (TRC), located within the Petroleum Institute campus, will help drive research and development in the field of petroleum

**Customer satisfaction is critical to our outward-facing Group Companies as our success at home and abroad is determined to a large extent by the reputation of our products.**

engineering and help ensure that TAKREER's operations and products deliver on ADNOC's vision for optimal performance.

**Customer Outreach and Satisfaction**

Customer satisfaction is critical to our outward-facing Group Companies as our success at home and abroad is determined to a large extent by the reputation of our products.

ADNOC DISTRIBUTION's Procurement and Contracting Division runs a self-administered annual customer satisfaction survey that is distributed across their customer base. In 2011, 250 surveys were collected and the recommendations therein will help inform and improve the company's future practices. ADNOC DISTRIBUTION also have a telephone hot line specifically established for customer feedback and complaints.

Borouge have been utilizing an independent third party consultant to conduct an annual customer satisfaction survey since 2003. The customers surveyed correspond to a representative sample of Borouge's customer base, and were distributed across the Indian Subcontinent, North East Asia, South East Asia, the Middle East and Africa regions. In 2011, Borouge's performance against industry peers was again strong. On the polypropylene segment, which was included in the survey for the second time in 2011, Borouge were rated the top company overall.

FERTIL engages with its customers regularly to understand their perceptions of the company, its products and

operations. In 2011, FERTIL identified a need to boost the supply of urea to their regular customers. This will be achieved through the Urea Debottlenecking Project (UDP) that is currently underway at their facility in Ruwais.

TAKREER markets their products through ADNOC DISTRIBUTION, and therefore takes a proactive approach to ensuring customer specifications are met prior to their transfer from TAKREER's refineries. After undergoing stringent laboratory screening and analysis, products either proceed or, where specifications are not met, are sent back to the refinery for recycling.

Our Group Companies' approach towards customer satisfaction is complemented with other methods such as performing regular customer visits, product trials and technical follow-ups where possible. No substantiated product-related concerns, incidents of loss of customer data, or breaches of customer privacy were reported by to ADNOC in 2011.

Furthermore, there have been no unplanned disruptions to the supply of ADNOC's products and services to the market in 2011.

**Marketing Communications**

The Group Companies' individual marketing departments strictly adhere to the strict provisions of signed customer agreements and to applicable laws and standards related to advertising, promotion and sponsorship. No incidents of non-compliance were reported to ADNOC with regard to advertising, promotion and sponsorship in 2011.





# ECONOMIC PERFORMANCE

ADNOC has a first class balance sheet. Our financial metrics typically equal or exceed the 'super major' oil and gas companies. Our economic performance impacts the fiscal health and reputation of the Emirate of Abu Dhabi and the UAE 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. ADNOC reports directly to the Supreme Petroleum Council 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 key government owned entities. Details of ADNOC's financial performance are regarded as highly confidential under both ADNOC and Abu Dhabi protocols.

ADNOC receives little direct support from the government. Its operations, new capital investments 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 does not provide any financial or in kind contributions to political parties.

In 2011, the Group Company total gross manpower costs equated approximately AED 10 billion. ADNOC's entry-level compensation package is highly competitive. Standard ADNOC benefits for employees include life insurance, health care, disability coverage and leave policies (e.g. annual leave, maternity leave, sick leave, Hajj travel), educational assistance and retirement provisions. Our minimum wage is highly competitive with market rates in the oil and gas sector. 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 equate to one month of salary for every year worked, increasing to 1.5 months of salary for every year worked after three years of service.

I

## Market Presence

During the four decades of our successful operation, ADNOC has developed strategic agreements with many of the largest international oil and gas companies and with governments around the world.

To maintain our privileged position in the oil and gas business, ADNOC is executing a number of high profile, long-term and wide-ranging projects through our Group Companies, as discussed throughout this report.

**Over the next few years, we look to strengthen our market presence through a strategic move towards increasing production from our extensive gas reserves, and expanding our network of distribution pipelines, processing facilities, service stations and shipping fleet to ensure stable supply to domestic and international markets.**

In recent years, ADNOC has increasingly concentrated efforts on the production of natural gas from our reserves. Our emphasis on natural gas production forms an integral part of our endeavour to diversify the UAE's energy supply, and comes amidst rising global concerns surrounding oil dependency and climate change.

II

## Locally-based Suppliers

ADNOC has 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.

Most of our ADNOC Group Companies have launched a paperless procurement process through the implementation of an on-line registration and qualification system for vendors and suppliers.

Generally, the selection of suppliers is based on the greatest value offered on a balance of quality, timeliness and price. Suppliers are also required to adhere to ADNOC standards with regard to accommodation, recreation, medical facilities, fixed minimum salaries, air tickets, and end-of-service benefits.

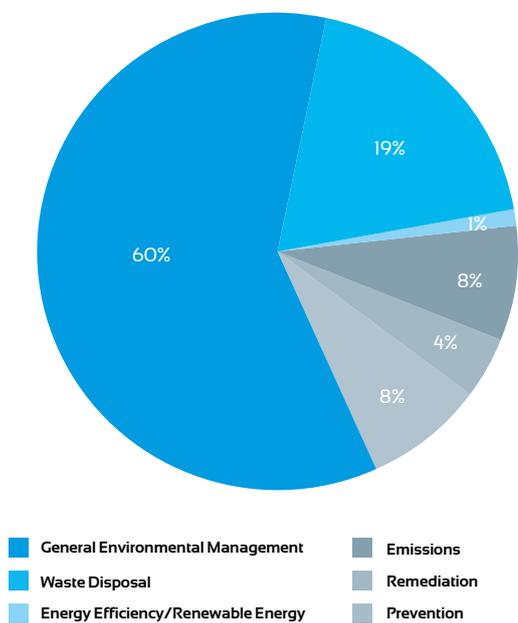
ADNOC often requires that foreign suppliers of goods and services operate with a local sponsor. The sponsorship arrangement often requires the supplier to share a percentage of the contract with their sponsor, ensuring that at least some percentage of the value of any contract leaving the country is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

### III Environmental Expenditure

While no study of the financial implications of climate change on ADNOC operations has been conducted, we are investing heavily in a wide-range of technologies and environmental practices in an effort to minimise and mitigate the adverse environmental impacts of our operations. In 2011, ADNOC Companies spent more than AED 602 million for this purpose. The following diagram illustrates our environmental expenditure in 2011.

Environmental Expenditure by Category in 2011



**In 2011, over 77% of the procurement budget across the Group Companies was spent on local suppliers. This amounts to approximately AED 13 billion.**

### IV Indirect Economic Impacts

ADNOC creates talent for the oil and gas industry and beyond through its flagship educational institutions; the ADNOC Technical Institute, the Petroleum Institute, the Glenelg School of Abu Dhabi and the Achievers Oasis Programme 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 organizations such as Zayed University, Higher Colleges of Technology, and Abu Dhabi Educational Zone as well as cultural and sports clubs.

ADNOC and our 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 wide-ranging scale and diversity. ADNOC also provides humanitarian aid and relief assistance towards international causes around the world.

ADNOC and our Group Companies are also playing an active role in the development of the Western Region. In addition, resources, vacancies and training opportunities are generously made available for UAE nationals, and the region's companies are given priority to provide contracting and supply services and to execute projects within their fields of specialization.

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



**GASCO**  
 The Shah and Habshan Rail (SHR)  
 Granulated Sulphur Transportation  
 and Management Project

**Background:** The Shah and Habshan Rail (SHR) Granulated Sulphur Transportation & Management Project is an ambitious two-part venture that was commissioned by GASCO through Union Railway in January 2011, in order to support GASCO's expanding operations and expose one of its key products, sulphur, to the international market.

**Approach:** The first part of the project involves the construction of a sulphur granule plant in Habshan, approximately 16 km south south-east of the existing Habshan gas complex. With a completion schedule of 31 months and at a cost of approximately AED 1.75 billion, this new green field plant will have a capacity of receiving, processing and granulating 11,000 tonnes per day of liquid sulphur produced by the Habshan gas plant.

The second part of the project involves the construction of a second sulphur handling terminal (SHT-2) in the Ruwais industrial area, approximately 4.5 km south-east of the existing sulphur handling terminal (SHT). With a completion schedule of 36 months and at a cost of approximately AED 2.25 billion, the SHT-2 green field facility will be able to receive 22,000 tonnes per day of granulated sulphur from both the Shah and Habshan sulphur granule plants. Transportation of granulated sulphur to SHT-2 will take place via a 250 km single track rail line composed of 100 to 110 railcars, with a capacity of transporting 11,000 tonnes per day of sulphur.

The rail network will replace the current method of transporting liquid sulphur to Ruwais via tankers, hence improving road safety and helping to eliminate sulphur fume emissions. The granulated sulphur will then be unloaded and exported by ship to the international market.

Throughout project design and implementation, strong emphasis will be placed on HSE aspects in accordance with the ADNOC Codes of Practice in order to minimise and mitigate adverse impacts on the environment and surrounding communities.

**Outcome / Future:** The AED 4 billion project is a strategic investment that will improve the efficiency of GASCO's expanding operations, reduce the environmental and safety impacts associated with the existing method of transporting sulphur, and commercialise the use of GASCO's sulphur product.

At the peak of construction activities, the project will also create up to 5,000 job opportunities, of which about 3,000 persons will be deployed in Habshan and 2,000 in Ruwais.

Throughout the project, GASCO will direct its contractors to maximise the local content in terms of materials, equipment and services. The project will also provide excellent opportunities for training to UAE nationals, where they will be able to learn new and emerging technologies in sulphur management.



# ANNUAL HSE AWARDS

ADNOC has an annual internal awards programme known as the ADNOC HSE Awards. The purpose of the programme is to recognize outstanding accomplishments, enable knowledge sharing pertaining to best practice, and foster an atmosphere of friendly competition amongst the ADNOC Group Companies and our Independent Operators in their quest for sustainable development.

The ADNOC HSE Awards programme was created in 1997 and has since evolved remarkably. Submissions were accepted then under one category, HSE Performance, only. Today the system has expanded to include four main award categories: Specialist Projects (where awards are distributed across five sub-categories: Innovation, Safety, Occupational Health, Environment, and Sustainability), Leadership and Performance (where awards are distributed across two sub-categories:

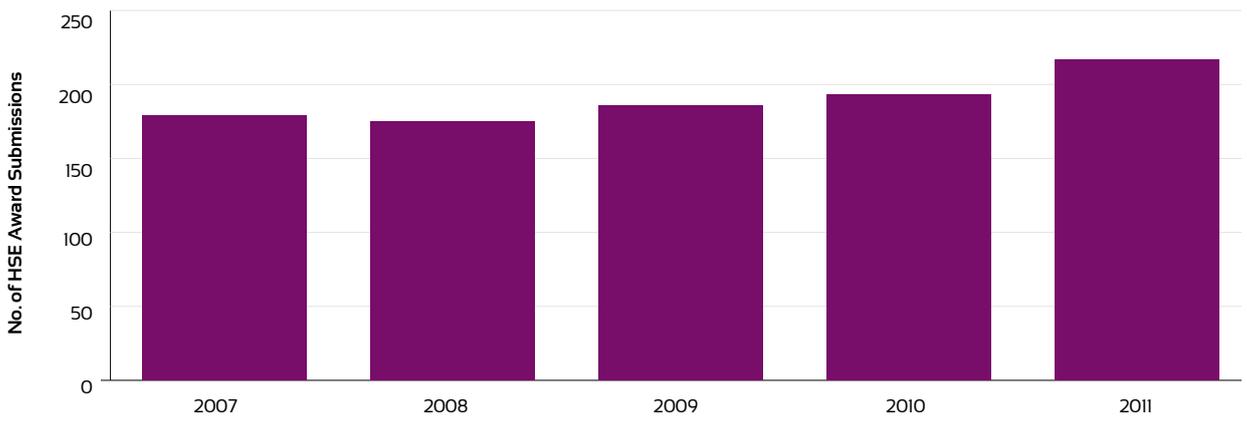
HSE Performance and HSE Champion), Special Recognition and Partnership awards.

The success of our programme over the years has helped drive an increase in the number of award submissions and hence an increase in sustainable practices across our participants.

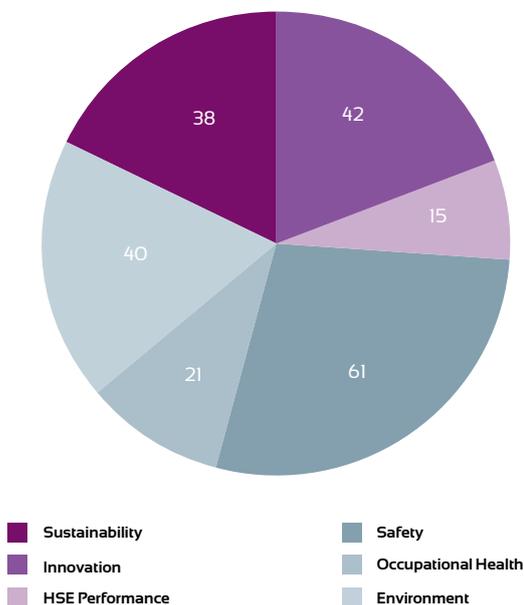
Submissions are evaluated by an independent judging panel and then by the ADNOC Director General and governing board. Awards are then distributed in an annual ceremony to commemorate the participants' efforts and achievements.

In 2011, a total of 217 submissions were received under the ADNOC HSE Awards programme. The breakdown of submissions by category is provided below.

ADNOC HSE Award Submissions (5-Year Trend)



Breakdown of 2011 ADNOC HSE Award Submissions



The purpose of the annual HSE rewards programme is to recognize outstanding accomplishments, enable knowledge sharing pertaining to best practice, and foster an atmosphere of friendly competition amongst the ADNOC Group Companies and our Independent Operators in their quest for sustainable development.

## Innovation



Winner: Al Hosn Gas

### 1<sup>st</sup> Place

Al Hosn Gas with entry 'Al Hosn Gas Company Standard on Hazard Identification of Escape, Evacuation and Rescue (HAZEER)'. HAZEER is applied early in the Hazard and Effects Management Process, providing a systematic analysis of each step of the Escape, Evacuation and Rescue (EER) process. HAZEER studies examine emergency procedures for major accident hazards, and, using bespoke guidewords, identify barriers to their effective implementation. HAZEER studies result in an auditable trail for decision-making on EER investment. Al Hosn Gas plan to continue to apply the HAZEER process throughout the life of the Shah facilities.

### Runner-up

ADNATCO & NGSCO with entry 'Citadel Formation on Board Ships'. In a proactive response to the growing risk of piracy, ADNATCO & NGSCO have implemented the "Citadel" arrangement on all of their deep sea fleet vessels sailing through the Piracy Attack High Risk Area. This Citadel serves as a secure area to keep crew safe in the event of a piracy attack. ADNATCO & NGSCO's citadel arrangements are now taken as an example by the shipping industry.

## Occupational Health



Winner: GASCO

### 1<sup>st</sup> Place

GASCO with entry 'Innovative Ergonomic Scheme for Computer Users'. GASCO implemented an innovative and sustainable risk reduction scheme for 900 employees. Third Generation E-Solution installed an innovative e-toolkit on all computers. This includes; Fatigue Alert System, Ergonomics Training, Postural Assessment to measure and minimize risk of RSI, Exercises, real-time audio/visual coaching on stretching techniques, Ergo Dashboard and shows user's performance for managing risk of Repetitive Risk Injury (RSI). Target Screening by: Foot Scan, Spine Check, Postural Assessment and Eyesight Testing.

### Runner-up

ESNAAD with entry 'Workshop Ergonomics'. Work related musculoskeletal disorders (MSDs) is one of the most common problem among large group of workers in the Oil and Gas Industry. The application of ergonomic practices across the organization to prevent these diseases is therefore crucial. ESNAAD launched the Workshop Ergonomics programme as a proactive measure considering that workshops are critical areas for ergonomic hazards, where work involves different locations, tools and machines, and employees are exposed to various postures and movements.

## Safety



Winner: GASCO

### 1<sup>st</sup> Place

GASCO with entry 'H<sub>2</sub>S Zone Classification, the Provision of Permanent Refuge Operator Shelters and a New Specification for Temporary Safe Refuge'. To protect personnel from exposure to H<sub>2</sub>S, high H<sub>2</sub>S areas were classified by performing dispersion modeling and physically demarcated as red, yellow and green zones by installing dismountable barriers. The personnel entering high H<sub>2</sub>S zones were trained for H<sub>2</sub>S competency and 15 minutes duration EEBD has become mandatory to enter into these zones. Since the outdoor assembly points are not ideal in the event of large H<sub>2</sub>S release, it has been decided to install PROS and to identify & convert some existing buildings as TSR.

### Runner-up

NDC with entry 'Proactive Asset Integrity Report (PAIR): Protecting the Workforce, Environment and Assets'. Major integrity incidents cause financial, reputation, business, environmental disasters, and human losses. Yet, most HSE programmes remain focused on occupational safety rather than asset integrity. Defects in assets cause reliability and safety margins to reduce and eventually major incidents occur. It is therefore vital to report defects early. NDC Proactive Asset Integrity Reporting (PAIR) involves site staff reporting defects. These are assessed by integrity professionals for consequence and corrective action. PAIR reporting has dramatically improved site safety and reliability.

## Environment



Winner: TOTAL ABK

### 1<sup>st</sup> Place

TOTAL ABK with entry 'TABK Flaring Road Map; Going Beyond our Own Best Practices'. Flaring has been a key contributor to overall emissions and a long standing issue for Total ABK but committed to continuous improvement, a stringent flaring policy and a clear flaring road map was established. Tangible gains were obtained and flaring was significantly reduced compared to previous years. To be able to innovate and to achieve flaring reduction in a 35 year old facility was a challenge and a result that TOTAL ABK is proud of.

### Runner-up

Borouge with entry 'Borouge Water Footprint Programme'. Borouge has implemented, with the assistance of Environmental Resources Management (ERM), a comprehensive Water Footprint Programme. This programme assessed the current situation regarding water risks and management along the Borouge value chain, and identified gaps and areas for improvement. Efficiency opportunities were formulated with regard to introducing a dedicated expert on water management in the organization, improving metering and reporting, reducing water usage, re-using treated effluent, and increasing operational efficiency of equipment using process water.

## Sustainability



Winner: Borouge

### 1<sup>st</sup> Place

Borouge with entry 'Water for the World'. Borouge, together with Borealis, created Water for the World™, a global programme that fosters knowledge and partnerships to provide sustainable solutions for the availability of safe water and sanitation. Reaching over 260,000 people, they have contributed to enhancing the delivery of water to the earthquake affected regions of Sichuan, China and the flooded regions of Pakistan, and are supporting two major research projects into groundwater in the UAE through the Emirates Foundation.

For more information on the programme, visit [www.waterfortheworld.net](http://www.waterfortheworld.net)

### Runner-up

ADNATCO & NGSCO with entry 'Cadetship Programme'. ADNATCO & NGSCO, in keeping with their commitments to the Emiratization process, have implemented a scholarship Programme. This is a platform for UAE National High School Graduates to go through a structured cadetship training to become thriving seafarers. Over 300 have been sponsored so far. Some of our great achievements include the first UAE Nationals to sail as Captains on Oil and Gas Tankers, and the first UAE National to be qualified Chief Engineer.

## HSE Performance



Mr. Jasem Ali Al Sayegh, TAKREER CEO

The HSE Performance Award was received by TAKREER to commemorate their efforts in adhering to and upholding ADNOC standards and international best practice. The HSE Champion Award was received by Mr. Jasem Ali Al Sayegh, Chief Executive Officer of TAKREER, for his visible efforts and active commitment towards HSE affairs in 2011.

## Special Recognition Awards

- **ADCO:** Today's Actions for Prosperous Future
- **ADGAS:** From Flaring to Caring: ADGAS Flaring at its lowest
- **ADMA OPCO:** Simplify to Comply - Visual HSE
- **ADOC:** Regeneration and Cultivation of Mubarratz Marine Ecosystem
- **BUNDUQ:** Hand in Hand to Lower Exhausts Emissions
- **ADNOC Medical Services Division:** Giant Leap in NDC Field Medical Services Division
- **ZADCO:** Multiple Casualties Disaster Management

## Partnership Awards

Partnership Awards were presented to the following Companies:

- **Lease Plan** through National Drilling Company: Real Time Vehicle Monitoring Sharply Improves Driver Safety.
- **Tyco Fire & Security UAE** through Petroleum Institute: Enhancing the Reliability of Building Fire Detection and Protection Systems through Planned Maintenance.



2011 ADNOC HSE Awards Winners

# REPORT CONTRIBUTORS

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

## Exploration and Production Directorate

ADCO	- Abu Dhabi Company for Onshore Oil Operation
Al Hosn Gas	- Abu Dhabi Gas Development Company Ltd
ADGAS	- Abu Dhabi Gas Liquefaction Company Ltd
ADMA-OPCO	- Abu Dhabi Marine Operating Company
GASCO	- Abu Dhabi Gas Industries Ltd
ELIXIER	- ADNOC Linde Industrial Gases Company Ltd
NDC	- National Drilling Company
ZADCO	- Zakum Development Company

## Marketing and Refining Directorate

ADNOC DISTRIBUTION	
TAKREER	- Abu Dhabi Oil Refining Company
ADNATCO & NGSCO	- Abu Dhabi National Tanker Company & National Gas Shipping Company

## Petrochemicals Directorate

Borouge	- Abu Dhabi Polymers Company Ltd
FERTIL	- Ruwais Fertilizer Industry

## Shared Services Directorate

ESNAAD	
IRSHAD	- Abu Dhabi Petroleum Ports Operating Company

## Independent Operators

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

## Academic Institutions

PI	- The Petroleum Institute
ATI	- ADNOC Technical Institute
GSAD	- Glenelg School of Abu Dhabi

## Other

CPD	- Civil Projects Division
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# ACRONYMS AND ABBREVIATIONS

A&AD	Audit and Assurance Division	HVAC	Heating, Ventilation and Air Conditioning
ADAA	Abu Dhabi Accountability Authority	IADC	International Association of Drilling Contractors
ADIA	Abu Dhabi Investment Authority	IGD	Integrated Gas Development
ADIC	Abu Dhabi Investment Council	IPCC	Intergovernmental Panel for Climate Change
ADNOC	Abu Dhabi National Oil Company	ISO	International Standards Organisation
ADSG	Abu Dhabi Sustainability Group	IUCN	International Union for Conservation of Nature
ADWEA	Abu Dhabi Water and Electricity Authority	KPI	Key Performance Indicator
AED	Arab Emirates Dirham	kWh	Kilowatt hour
AGHSESC	ADNOC Group HSE Steering Committee	LDAR	Leak Detection and Repair
AICE	American Institute of Chemical Engineers	LNG	Liquefied Natural Gas
ALARP	As Low as Reasonably Practicable	LTIF	Lost Time Incident
AQI	Air Quality Index	LTIF	Lost Time Incident Frequency Rate
AQMS	Air Quality Management System	MARPOL	International Convention for the Prevention of Pollution from Ships
BAP	Biodiversity Action Plan	MASDAR	Abu Dhabi Future Energy Company
BAT	Best Available Technology	MARPOL	International Convention for the Prevention of Pollution from Ships
BPD	Barrels Per Day	CPD	Civil Projects Division
CAMS	Competence Assurance Management System	MMSCFD	Million standard cubic feet per Day
CCS	Carbon Capture and Storage	MRC	Maximum Reservoir Contact
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
CNG	Compressed Natural Gas	NO <sub>x</sub>	Oxides of Nitrogen
CNIA	Critical National Infrastructure Authority	NRC	National Recruitment Committee
CO <sub>2</sub>	Carbon Dioxide	OGP	Oil and Gas Producers (Association)
CoP	Codes of Practice	OHSAS	Occupational Health and Safety Accreditation System
CPD	Civil Projects Division	QRA	Quantitative Risk Assessment
CPD	Continuing Professional Development	PCB	Poly Chlorinated Biphenyls
CSR	Corporate Social Responsibility	PPM	Parts Per Million
E&P	Exploration and Production	RAMS	Remote Area Medical Services
EH&S	Environment, Health and Safety	RHC	Ruwais Housing Complex
EOR	Enhanced Oil Recovery	RWDC	Restricted Work Day Case
FAR	Fatal Accident Rate	SAS	Sahil, Asab and Shah Fields
GHG	Green House Gas	SO <sub>2</sub>	Sulphur Dioxide
GNRD	Group Nationals Recruitment Department	SO <sub>x</sub>	Oxides of Sulphur
GRI	Global Reporting Initiative	SPC	Supreme Petroleum Council
G <sub>3</sub>	3 <sup>rd</sup> Generation of GRI indicators	TRIR	Total Recordable Incident Rate
HAAD	Health Authority of Abu Dhabi	UAE	United Arab Emirates
HAZOP	A Hazard and Operability study	UK	United Kingdom
HCFC	Hydrochlorofluorocarbon	USA	United States of America
HSE	Health, Safety and Environment	VMD	Vehicle Monitoring Devices
HSEIA	Health, Safety and Environment Impact Assessment	VOC	Volatile Organic Compound
HSEMS	Health, Safety and Environment Management System	WSUP	Water and Sanitation for the Urban Poor

# GRI AND IPECA / API INDEX

The content of this report is guided by the Global Reporting Initiative (GRI) 3<sup>rd</sup> Generation (G3) Sustainability Reporting Guidelines (2006) and the International Petroleum Industry Environmental Conservation Association / American Petroleum Institute (IPECA/API) Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (2010). The table below cross-references the sections of this report with GRI and IPECA/API indicators.

	GRI	IPECA/API	PAGE NO.
STRATEGY AND ANALYSIS	1.1, 1.2		16 - 19
ORGANISATIONAL PROFILE	2.1, 2.10		8 - 9, 12 - 13

REPORT PARAMETER			
Report Profile	3.1 - 3.4		4
Report Scope and Boundary	3.5 - 3.11		4
GRI Content Index	3.12		76 - 77
Assurance	3.13		4

GOVERNANCE, COMMITMENTS AND ENGAGEMENT			
Governance	4.1 - 4.10	SOC-6	8, 9, 65
Commitments to External Initiatives	4.11 - 4.13		20
Stakeholder Engagement	4.14 - 4.17		20 - 21

ENVIRONMENTAL PERFORMANCE INDICATORS			
Emissions, Effluents and Waste	EN16 - EN25	ENV-1, ENV-A1, ENV-2, ENV-A2, ENV-3, ENV-A3, ENV-4, ENV-A4, ENV-A5, ENV-A6	23 - 27, 33 - 34, 36 - 37
Energy	EN3, EN4, EN5, EN6, EN7	ENV-5, ENV-A8	28 - 29
Transport	EN29		30 - 32
Materials	EN1, EN2		31
Water	EN8 - EN10	ENV-A7	36 - 37
Biodiversity	EN11 - EN15	ENV-A9	38 - 39
Products and Services	EN26, EN27		14 - 16, 61 - 63
Compliance	EN28		14 - 15, 10 - 13, 55
Overall	EN30	ENV-6	66

ECONOMIC PERFORMANCE INDICATORS			
Economic Performance	EC1 - EC4	ECO-1, ECO-A1, ECO-2, ECO-A2, ECO-3, ECO-A3	65
Market Presence	EC5 - EC7	SOC-A4	65 - 66
Indirect Economic Impacts	EC8, EC9		66 - 67

SOCIAL PERFORMANCE INDICATORS			
<b>Labour Practices and Decent Work</b>			
Employment	LA1 - LA3	SOC-A3	53
Employee Satisfaction		SOC-A2	55 - 56
Occupational Health and Safety	LA6 - LA8 (LA9- NA)	H&S-1, H&S-2, H&S-3, H&S-4	41 - 51
Training and Education	LA10 - LA12	SOC-5	54 - 56, 59 - 61
Labour/Management Relations	LA5 (LA4 - NA)		55
Diversity and Equal Opportunity	LA13, LA14		53
<b>Society</b>			
Community	SO1	SOC-A4, SOC-A5, SOC-A7, SOC-8	58 - 61
Corruption	SO2 - SO4	SOC-2	56
Public Policy	SO5, SO6	SOC-3, SOC-A1	58
Anti-Competitive Behaviour	SO7		56
Compliance	SO8		58
<b>Human Rights</b>			
Investment and Procurement Practices	HR1 - HR3	SOC-1	56
Non Discrimination	HR4	SOC-4	56
Freedom of Association and Collective Bargaining	HR5	SOC-7	56
Child Labour	HR6		56
Forced and Compulsory Labour	HR7		56
Security Practices	HR8	SOC-9	57
Indigenous Rights	HR9	SOC-A6	Not applicable to ADNOC's operations
<b>Product Responsibility</b>			
Customer Health and Safety	PR1, PR2	H&S-5	61 - 62
Product and Service Labelling	PR3 - PR5		61 - 62
Marketing Communications	PR6, PR7		63
Customer Privacy	PR8		63
Compliance	PR9		61 - 62

# READER'S SURVEY

As an ongoing endeavour to engage stakeholders and to improve performance, we welcome your feedback.

Please fill out the questions below and return to:

Environment, Health and Safety Division  
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P.O. Box 898, Abu Dhabi, UAE  
Office: +971 (0)2 602 4740  
Fax: +971 (0)2 666 8089  
E-mail: hse@adnoc.ae

Please tell us about yourself (optional)

Name: \_\_\_\_\_

Organisation: \_\_\_\_\_

Email address: \_\_\_\_\_

Country of residence: \_\_\_\_\_

1) What are your reasons for reading this report?

I wanted to understand specific sustainability issues of ADNOC

I wanted a more general understanding of ADNOC

I used it for research

Other \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2) Has this report changed your views of ADNOC?

Yes, I view ADNOC more positively now

Yes, I view ADNOC more negatively now

No Change

3) Do you have any suggestions to improve this report?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4) What issues are you most interested in regarding ADNOC's performance?

Environmental impact

Labour relations

Social impact

Economic performance

Other: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5) Did this report adequately address your concerns?

Yes

No

Please explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thank you for completing this survey.