



نحافظ على تراثنا الطبيعي . ضماناً لمستقبلنا
preserving our heritage · protecting our future



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ANNUAL REPORT 2017



AGENCY PROFILE

Our Work

We are responsible for the environmental quality of the Emirate of Abu Dhabi, and it is our duty to uphold and enforce environmental regulations. Since our inception, we have gained a deep knowledge of our fisheries, helped bring the Arabian Oryx back from the brink of extinction, helped preserve the world's densest Dugong population, and have measurably increased public awareness of environmental issues. The breadth and depth of environmental work that we have carried out over recent years positions us as a powerful force for environmental protection.

Our People

EAD was born from a deep respect and profound sense of responsibility towards our natural environment, as well as unwavering optimism and hope for the future. Today, we continue to carry out our mission, supported by the strong, dedicated commitment of our leadership to environmental protection, conservation and regulation.

Our Roots

As of the end of 2017, there are 974 people from 32 nationalities employed at EAD. Emirati nationals make up 76.8 % of our total workforce, with 33.3 % of leadership roles occupied by Emirati women.

Our highly-skilled and diverse team is based in offices across Abu Dhabi Emirate, including our headquarters in Abu Dhabi, our Al Ain and Al Dhafra Region offices, and 10 customer service centres. Our greatest asset is our employees' combined knowledge, commitment and passion for the natural environment.



H.H. Sheikh Mohamed bin Zayed Al Nahyan
Crown Prince of Abu Dhabi Emirate
Deputy Supreme Commander
of the UAE Armed Forces
Honorary Chairman,
Environment Agency - Abu Dhabi



H.H. Sheikh Khalifa bin Zayed Al Nahyan
President of the UAE



H.H. Sheikh Hamdan bin Zayed Al Nahyan
Ruler's Representative in Al Dhafra Region,
Chairman,
Environment Agency - Abu Dhabi



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ABOUT EAD

Established in 1996, the Environment Agency – Abu Dhabi (EAD) is committed to protecting and enhancing air quality, groundwater and the biodiversity of our desert and marine ecosystems. By partnering with other government entities, the private sector, NGOs and global environmental agencies, we embrace international best practice, innovation and hard work to institute effective policy measures. We seek to raise environmental awareness, facilitate sustainable development and ensure environmental sustainability remains one of the top priorities of our national agenda.

CONTENTS

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- INTRODUCTION FROM OUR CHAIRMAN	3
- MESSAGE FROM OUR MANAGING DIRECTOR	5
- STATEMENT FROM OUR SECRETARY GENERAL	7
- GROUNDWATER	9
- AIR QUALITY	17
- CLIMATE CHANGE	23
- MARINEWATER QUALITY	25
- LAND AND SOIL	31
- WASTE MANAGEMENT	37
- TERRESTRIAL BIODIVERSITY	43
- MARINE BIODIVERSITY	55
- OUR SHEIKH ZAYED PROTECTED AREAS NETWORK	65
- ENVIRONMENTAL POLICY AND REGULATION	71
- ENVIRONMENTAL INFORMATION AND COMMUNITY ENGAGEMENT	83
- DEVELOPING EXCELLENCE AND LEADERSHIP	93
- MORE ACHIEVEMENTS	99
- REGIONAL AND INTERNATIONAL COLLABORATION	108



INTRODUCTION FROM OUR CHAIRMAN

At EAD, we are indebted to H.H. Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and H.H. Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of UAE Armed Forces and Honorary Chairman of the Environment Agency – Abu Dhabi (EAD). Their commitment and foresight in creating a more sustainable future for Abu Dhabi is the engine that enables EAD to propel forward with ambitions, programmes, strategies and successes.

As we work towards the targets set out in the Abu Dhabi Environment Policy Agenda, the emirate is charting a course to becoming both a regional and global leader in sustainability and improved environmental performance. We continue our efforts to reduce global warming by evaluating and controlling our greenhouse gas (GHG) emissions and strengthening the impact of climate change-related legislation. This year, we have committed to a number of key international partnerships to further protect our environment and focus on a greener future such as UNEP – Convention on Migratory Species, IUCN, Government of Chad, Jane Goodall Institute etc.

Our representatives travelled to Bonn, Germany, as part of a high-level delegation from the UAE, to take part in the 23rd session of the Conference of the Parties (COP23) to the United Nations Framework Convention on Climate Change. The session focused on the next steps in implementing the Paris Agreement, with the UAE delegation highlighting the country's efforts to achieve the agreement's targets.

At a national level, we worked closely with the executive teams formed for the implementation of UAE Vision 2021. As a regulatory body which informs, guides and sets environmental policy in Abu Dhabi Emirate, we have been proud to share our knowledge on water management, ecological footprint and air quality as we work together to take this important step towards the future of the UAE.

This year, we progressed with the Environmental Courts with the support of H.H. Sheikh Mansour bin Zayed Al Nahyan, Deputy Prime Minister and Minister of Presidential Affairs and Head of the Judiciary Department. Dedicated to environmental matters in the emirate and equipped with specialist judges and legal experts, these courts have helped to strengthen our role as a regulatory body and have enabled us to significantly improve our enforcement practices.

Lastly, this year saw the publication of our flagship title, the Abu Dhabi State of Environment Report 2017 (SoER-2017). This report offers vital insight into the key issues impacting the emirate's environment today – from air quality to biodiversity and waste – and enables us to develop an integrated, effective and sustainable response which protects and enhances our environment while facilitating optimal economic growth.

HAMDAN BIN ZAYED AL NAHYAN

Ruler's Representative in Al Dhafra Region,
Chairman of Environment Agency - Abu Dhabi



MESSAGE FROM OUR MANAGING DIRECTOR

This was a milestone year for the Environment Agency – Abu Dhabi, as we celebrated the 20-year anniversary since the Agency was first established as the Environmental Research and Wildlife Development Agency (ERWDVA) in 1996. As we look back over the last two decades, it has been a wonderful opportunity to step back and reflect on everything we have achieved – from protecting our emirate's natural resources and biodiversity, to achieving ambitious environmental targets in order to safeguard the future for the next generation.

In 2017, the Abu Dhabi Executive Council issued a decree for 17 new terrestrial and marine protected areas – not only was this the world's largest number of protected areas declared at one time, but it brought the total number of designated protected areas in Abu Dhabi to 19. These areas play a crucial role in protecting the emirate's habitats under law, and preserving our rich biodiversity, on land and at sea. Many of them have also received international recognition, such as the Marawah Marine Biosphere Reserve, recognised by UNESCO, and Al Wathba Wetland Reserve and Bul Syayef Marine Protected Area, designated as Ramsar sites.

Over the last year, we have seen continued success in two of our acclaimed species reintroduction programmes. Here in Abu Dhabi, our aerial survey of the Arabian Oryx Protected Area recorded 835 individual Arabian Oryx – a marked increase from the 160 animals introduced at the start of the Sheikh Mohamed Bin Zayed Arabian Oryx Reintroduction Programme in 2007. After two further translocations through our Scimitar-horned Oryx Reintroduction Programme, there are now 89 adult Scimitar-horned Oryx and 18 calves living in the wild in Chad – a testament to what can be achieved through commitment, dedication and cross-border cooperation to protect some of the world's most vulnerable species.

Conserving Abu Dhabi's precious natural resources remains one of our key areas of focus. In 2017, we completed the first emirate-wide Groundwater Well Inventory Project. By surveying over 120,000 wells across Abu Dhabi, we can now take the necessary steps to improve efficiency levels and set policy to maintain our water security.

With over 700 kms of Abu Dhabi coastline, maintaining our marine waters is essential for conserving biodiversity, protecting public health and preserving our emirate's maritime cultural heritage. In order to achieve this while enabling development and economic growth in the coastal zone, in 2017 we worked closely with the Department of Urban Planning and Municipalities and other stakeholders to produce the Plan Maritime (2030), a comprehensive roadmap for sustainable marine water quality management.

Looking back over 2017, it turned out to be a most successful year, a fitting testament to the preceding two decades of hard work and achievement by the Agency that I was privileged to be involved with, and which I am immensely proud of those involved.

As we look forward to the coming year, I would like to congratulate the Agency on a job well done and encourage everyone, to look forward with a positive mind, building on our successes and eager to continue the good work into the future.

MOHAMMED AHMED AL BOWARDI

Minister of State for Defence Affairs,
Managing Director of Environment Agency - Abu Dhabi



STATEMENT FROM OUR SECRETARY GENERAL

Throughout 2017, we have continued to carry out our essential work in protecting and conserving the environment and championing sustainable development within Abu Dhabi Emirate and beyond. More than ever, our focus has been on 'quality' – not only meeting international standards and best practice in research, environmental management, sustainable strategy and policy-making, but raising the bar so we can play a leadership role from a position of strength.

Our approach has been to develop strategic partnership to optimise our effectiveness in tackling the big issues. In collaboration with the Department of Economic Development, we co-hosted the region's first Clean Air Forum, an event that brought together government officials and stakeholders from a wide range of industries to share knowledge and research and identify technological solutions. In 2017, we updated the air emissions inventory to pinpoint the sources of air emissions and developed standards for Abu Dhabi Emirate on emissions from the concrete and hot-mix asphalt industries.

For groundwater, we continued our work in protecting this finite resource. In 2017, we completed the fieldwork for a comprehensive well inventory project, which provides vital information on the status of groundwater and the location of all the groundwater wells in Abu Dhabi. This lays the foundation for us to implement the Law No 5 of 2016 concerning the Regulation of Groundwater in the Emirate of Abu Dhabi. We successfully completed the infrastructure and injection of the Liwa Strategic Water Reserve, a joint project between EAD, the Abu Dhabi Water and Electricity Authority and its subsidiary Transco, increasing our water security by diversifying our sources of potable water within Abu Dhabi.

Another key achievement this year was the completion of a comprehensive fisheries resources assessment that generated vital data on the state of Abu Dhabi's fisheries. The results provide a strong basis for the development of the Fisheries Recovery Plan, which we will start to deliver in 2018.

In order to safeguard our environment in the long term we need young people – our future workers, parents and leaders – to understand, to engage with and to be inspired by the environment and nature. Now in its 10th year, our Sustainable Schools Initiative (SSI) goes from strength to strength, not only locally but also globally. In 2017, the programme was used as a case study by the Global Environmental Education Partnership to demonstrate the correlation between solid environmental education and successful government sustainability policies.

Within EAD, our focus on quality and excellence is also having a positive impact. This year, six of our talented staff were shortlisted for the Abu Dhabi Award for Excellence in Government Performance, while our Industrial Facilities Permitting Service was shortlisted in the 'Joint Service' category. We are also particularly proud to have launched the Women in Science and Environment (WISE) Trailblazers Programme to maintain a supportive environment for our female workforce that enables career satisfaction and fulfilment.

At EAD, we are lucky to work alongside intelligent, inspiring employees across every level of the organisation and we plan to continue to nurture a positive, healthy and happy workforce so that we can collectively reach our full potential and to deliver the best for Abu Dhabi and the environment.

RAZAN KHALIFA AL MUBARAK

Secretary General,
Environment Agency - Abu Dhabi



GROUNDWATER



BOOSTING FUTURE
WATER SECURITY
THROUGH AN
INTEGRATED
MONITORING AND
CONSERVATION POLICY
AND STRATEGIC
FRESHWATER RESERVES.

Abu Dhabi Emirate's potable groundwater is a non-renewable resource, and preserving this precious supply remains a key concern. Stored in naturally-occurring aquifers, these reserves have been severely depleted over the last few decades, due to rapid development, forestry and agricultural practices, and the increasing demand for fresh water from a growing population.

Groundwater quality is also at risk from other factors, including the excessive use of fertilisers, brine discharge from desalination activities, and rising levels of brackish and saline groundwater from saline aquifer systems. As an additional challenge, the effects of climate change will likely impact groundwater quality and quantity over the coming years.

AN INTEGRATED, COMPREHENSIVE PLAN FOR STRATEGIC FRESHWATER RESERVES

This year, we worked with our partners to complete a strategic freshwater reserve for use in emergency conditions, which is now fully operational. This has been achieved through three projects:



Liwa Strategic Water Reserve

Considered the largest project of its kind in the world, the Liwa Strategic Water Reserve is a joint project between EAD, the Abu Dhabi Water and Electricity Authority and its subsidiary Transco. The project recharges the Liwa aquifer with desalinated water to refresh the groundwater quality and increase the freshwater reserve. The total injected desalinated water (stored water) is about 25.5 million cubic metres, equivalent to providing around 180 L/day for the population of Abu Dhabi for 90 days, in case of an emergency.



| Completion of the Liwa Water Reserve.

The system has allowed us to inject 31,822 cubic metres of desalinated water per day into Liwa's groundwater aquifers over a two-year period.

Earlier in the year, a very successful five-day recovery was carried out to test the efficiency of the project. The recovered water was found to be in full compliance with Abu Dhabi Emirate's potable water standards. By December 2017, the completion of all the infrastructure and full injection was completed.

Using this new system of recharge basins, recovery wells, pipelines, surface tanks and pumping stations, it has allowed us to inject 31,822 cubic metres of desalinated water per day into Liwa's groundwater aquifers over a two-year period.

Al Shuaib Strategic Water Reserve

In December 2017, we completed a comprehensive feasibility study to use aquifer storage and recovery in Al Shuaib. This would potentially serve the needs of Al Ain and its environs, and also the Northern Emirates. The study is now with the General Secretariat of the Abu Dhabi Executive Council for approval, along with alternative suggestions and cost estimates.

Rehabilitating, Maintaining and Monitoring Unused Groundwater Wellfields

In late 2015, we began rehabilitating, maintaining and monitoring seven unused groundwater wellfields in Al Ain Region and Al Dhafrah Region. This helped us assess the status of these wellfields and the possibility of recharging them with desalinated water to improve and refresh the groundwater quality for use during emergency conditions. About 30 % of the selected suitable wells were tested by carrying out pumping tests. These were subsequently maintained, with well heads and electromechanical works completed. Additional wells for groundwater monitoring were also drilled.



| An aquifer storage and recovery project in Al Shuaib area.

Alongside our partners, we started a comprehensive project to conduct the emirate's first groundwater wells inventory.



| An old well, requiring rehabilitation.



| An unused groundwater well sample.



| A farm well is inventoried by EAD.



| A groundwater monitoring well.

GROUNDWATER RESOURCES ASSESSMENT

Groundwater Wells Inventory and Mapping

Alongside our partners, we started a comprehensive project to conduct the emirate's first groundwater wells inventory in 2015. The project consists of three main phases:

- (1) Three-month assessment phase, completed by December 2015.
- (2) Twenty-four-month field data collection.
- (3) Nine-month data analysis and the production of the emirate's first Groundwater Atlas, expected to be completed by the end of 2018. This will include a soil salinity survey of agricultural farms and monitoring changes in soil salinity.

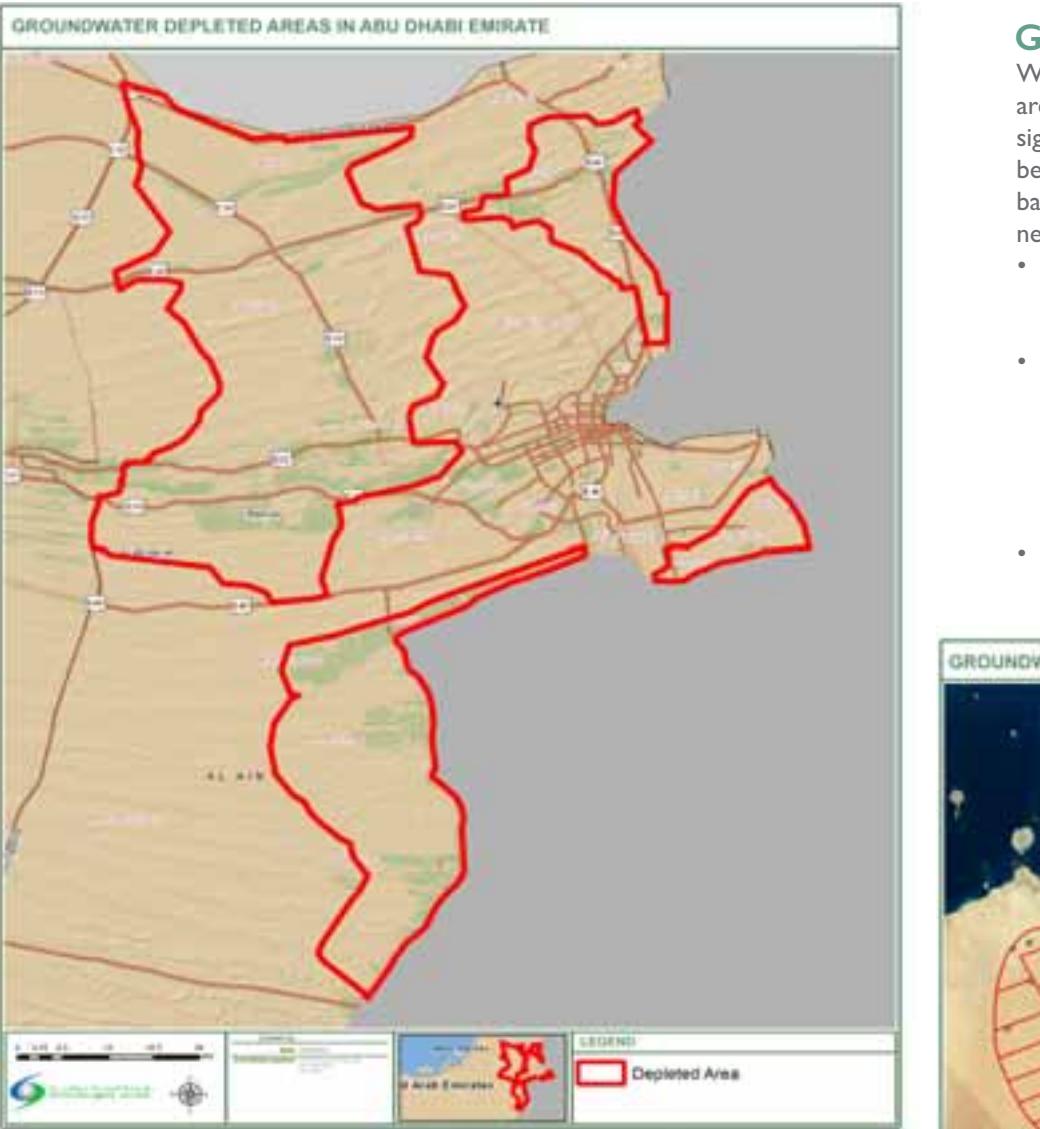
By December 2017, we had achieved the following:

- 118,000 wells inventoried
- Water levels measured and recorded in 40,000 wells
- Abstractions measured in 20,000 wells
- Electrical conductivity (EC) measured in 40,000 wells
- Data was recorded from 1,150 small scale desalination plants for agricultural use

Groundwater Monitoring

In continuation of the previous Groundwater Monitoring Network Review Project, in the fourth quarter of 2017 we initiated a new project to build the Groundwater Quality Baseline. Covering the useable groundwater bodies in the Emirate of Abu Dhabi, the project will enable us to better understand the current state of groundwater quality in the emirate. It will also help us to assess any possible contamination, specifying its source. The project will include the development of the first Groundwater Quality Index Map, which benefits from the existing EAD Technical Report, "Recommendations for Groundwater Use Quality Guidelines".

In response to the newly-released Groundwater Management Law No. 5 of 2016, we generated a new map detailing depleted areas in the emirate, and submitted it for approval as part of the consequent by-law. The new groundwater depletion map considers recent groundwater monitoring results, alongside contributions from EAD's Assessment and Permitting and Compliance and Enforcement teams, and direct feedback from our stakeholders, represented by Abu Dhabi Farmers Service Center (ADFSC) and Abu Dhabi Food Control Authority.



In September 2017, we began a comprehensive one-year programme to develop a groundwater quality base map.

Groundwater Quality Base Map

We aim to assess Abu Dhabi Emirate's groundwater quality, particularly within areas with directly useable groundwater zones, expanding to other areas with a significant distribution of activities relying on groundwater. In September 2017, we began a comprehensive one-year programme to develop a groundwater quality base map. Our primary goals in implementing the groundwater quality monitoring network in Abu Dhabi Emirate are to:

- Develop a groundwater quality baseline and study the status of groundwater quality within useable groundwater areas of water-producing aquifers, with useable groundwater areas defined by EAD.
- Assess the occurrence of anthropogenic compounds in groundwater within higher-intensity developed land-use areas. The basis for determining the quality of groundwater are measured concentrations of naturally-occurring or anthropogenic compounds relative to regulatory standards. 'Useable groundwater area' is defined as those areas of the emirate with groundwater salinity equal to or less than 15,000 mg/L TDS.
- Assess the occurrence and age of natural recharge in Abu Dhabi Emirate's aquifers, if relevant works highlighted as optimum are approved.



EAD staff measuring one of the Crop Calculator parameters.



A smart water flow meter is installed on a farm in Abu Dhabi.



Groundwater Smart Metering
Recent figures indicate that groundwater resources contribute to approximately 63 % of the total water use in Abu Dhabi Emirate. However, due to over-abstraction, groundwater quality has deteriorated over the last 20 years. The present rate of groundwater abstraction is estimated at around 1,980 million cubic metres from more than 120,000 abstraction wells in Abu Dhabi Emirate, compared with 2,700 million cubic metres in 2005. Until now, there were no water flow meters to measure the real abstraction rates from groundwater wells.

In October 2017, we began our pilot project to assess different models and types of smart water flow meters. Three models were installed on 200 wells in Al Salamat, Al Ain Region, to assess whether data can be received directly at EAD HQ, without need to visit the sites. The supply and installation phase was completed by December 2017, and the one-year monitoring and assessment programme will end in December 2018.

Innovation Through Solar-Powered Desalination

Since 2014, we have worked with Masdar to assess new desalination technology powered by renewable energy, mainly solar. This research and development programme aimed to create energy-efficient, cost-competitive and advanced desalination technologies that can be powered by renewable energy.

Our long-term goal is to encourage renewable energy-powered desalination plants across the UAE and wider MENA region, and to have a commercial-scale facility in operation by 2020. Five pilot units have been constructed to test a range of innovative approaches in boosting operational efficiency.

The programme consists of two stages:

- Pilot phase (2013 to 2017) in Ghantoot, Abu Dhabi.
- Implementation and development (2018 onwards). A scaling-up of technologies that meet pre-defined criteria as commercially viable, large-scale seawater desalination plants.

HARNESSING INNOVATIVE SOLUTIONS FOR EFFICIENT WATER USE

Innovative and advanced solutions are needed to address the increasing challenges facing non-renewable groundwater resources.

The Crop Calculator

Part of our wider groundwater management and regulation programme, we introduced a Crop Calculator which estimates the optimal water use by specific crops. It will be used as a regulatory support tool to estimate the optimal groundwater abstraction at farms. The trial programme began in August 2017, as a partnership with Abu Dhabi Food Control Authority (ADFCA), and includes the study of five outdoor field crops. The Crop Calculator was developed by The Plant and Food Research Institute of New Zealand Ltd (PFR), for irrigation allocations based on a daily water balance model for tree and vegetable crops. In 2014, PFR adapted the technology for EAD to use in the UAE. The Crop Calculator utilises local knowledge on the range of crops and management options available to the farmers. It is a stand-alone software tool that expresses sustainable irrigation requirements in terms of weekly, monthly or annual values, at any prescribed probability of exceedance and system efficiency.



Our long-term goal is to encourage renewable energy-powered desalination plants across the UAE and wider MENA region, and to have a commercial-scale facility in operation by 2020. Five pilot units have been constructed to test a range of innovative approaches in boosting operational efficiency.

The Impact of Saline Groundwater Irrigation on Date Palm Production

While saline groundwater is unsuitable for many purposes including, of course, human consumption, we are intent on finding ways in which its use can be appropriate. As part of a partnership agreement with the New Zealand Government, this year we have experimented by using saline groundwater to irrigate a number of different date palm species. The pilot project was completed in December 2017 and the findings will be used to calculate irrigation schedules for different types of date palms, trees and farms in Abu Dhabi.

MITIGATION MEASURES FOR RISING GROUNDWATER AREAS

Mitigation Measures for Groundwater and Waterlogging Problems

In certain locations around the emirate, instances of high groundwater levels can cause waterlogging and the wastage of this finite resource. We have established that the main factor in this phenomenon is downward seepage of excess irrigation water from farms and forests on higher ground. In order to counteract this, we now know that permanent subsurface drainage systems can provide an effective solution, with the extracted run-off reused for irrigation.



We initiated this task in 2015, concentrating first on waterlogged areas in Al Samha and Al Shahama. With the required drainage network in place, local farms are now able to use as much as 15,000 cubic metres of reclaimed water per day for irrigation. Now fully operational, this system has been handed over to the Abu Dhabi Municipality for ongoing maintenance.

STRENGTHENING GROUNDWATER REGULATIONS AND ENFORCEMENT

In November 2016, a new groundwater law was issued to regulate groundwater use in Abu Dhabi Emirate. The new law regulates five main activities: new well drilling, abundant wells replacement, groundwater abstraction, groundwater transfer and small scale desalination used for farming. The new law came into effect in mid-2017, following a six-month grace period to allow those affected to make arrangements for compliance. The law makes a number of important stipulations which has strengthened our ability to apply and enforce regulations:

- Groundwater is a natural resource owned wholly by the government. Therefore, its extraction and use must adhere strictly to rules and regulations laid down by EAD.
- New well drilling, abundant wells replacement, groundwater abstraction, groundwater transfer and small scale desalination used for farming are prohibited without the relevant government permits.
- Owners of groundwater wells are legally bound to register them and install water meters. These meters and associated equipment, such as pumps, must be regularly checked and maintained. Groundwater well owners must not exceed their prescribed abstraction levels.
- Well owners are not allowed to sell groundwater and must comply in all other respects with existing regulations.
- Well drilling contractors must be fully aware of new guidelines regarding their activities and must abide by them.
- Any discoveries of groundwater must be reported to EAD.
- Contaminating and polluting groundwater is an offence punishable by law.
- Violators may face imprisonment and fines of up to AED 300,000, which can be doubled for repeat offences.

The executive order of the new law was prepared and submitted to General Secretariat of the Abu Dhabi Executive Council for review and approval.



16

AIR QUALITY

PROTECTING AND
ENHANCING
ABU DHABI EMIRATE'S
AIR QUALITY THROUGH
CONTINUOUS
MONITORING AND
INDUSTRY-FOCUSED
POLICY.

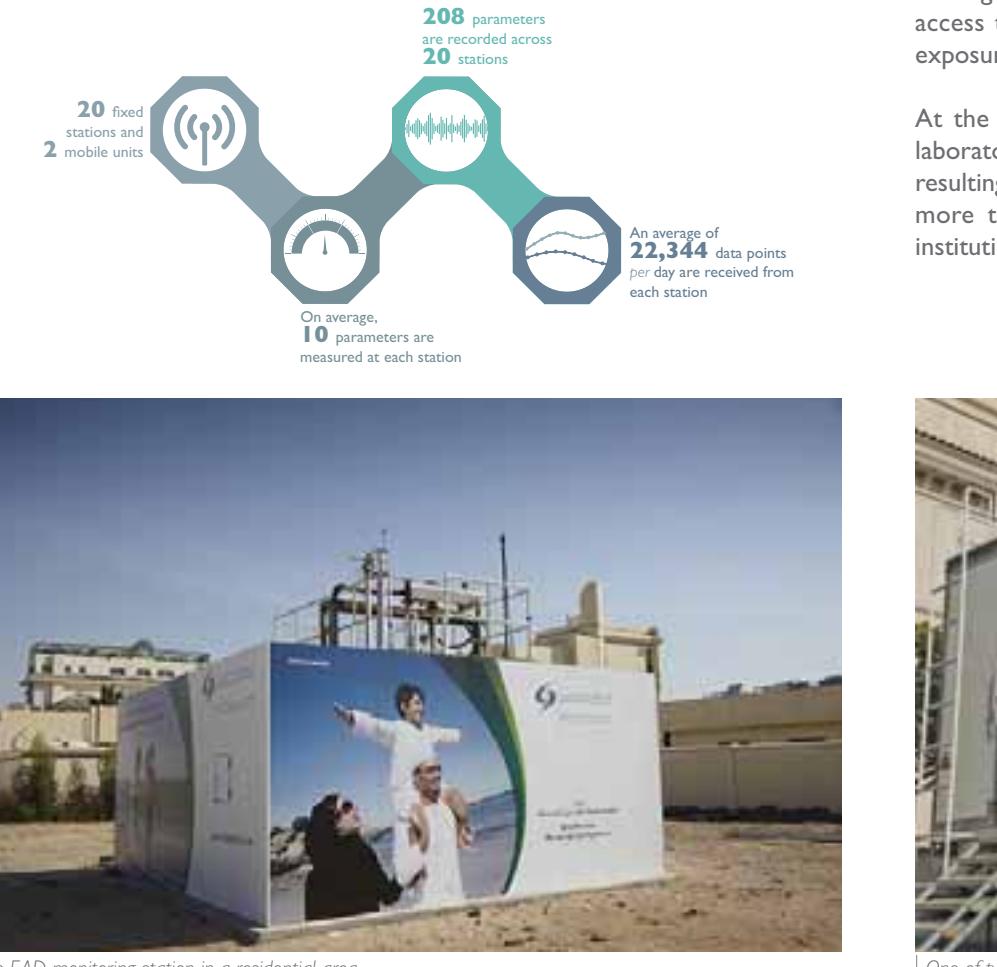
As the population of Abu Dhabi Emirate continues to grow, so does the generation of emissions created by water and energy production, construction, industry, transport and an increasing demand for resources. In order to measure and manage these pollutants, we are continuing our efforts to generate the most accurate information on air quality across the emirate, enabling us to develop both direct solutions and longer-term strategies to improve the air we breathe.

Air Quality Monitoring Network – Generating Data That Counts

Over the years, we have provided Abu Dhabi Emirate with one of the most comprehensive air quality monitoring networks in the GCC region. This capability provides a broad and accurate picture of air quality, as well as the capacity to compare its data and information to international standards and parameters. Since 2007, we have operated and maintained a network of 20 fixed air quality monitoring stations and two

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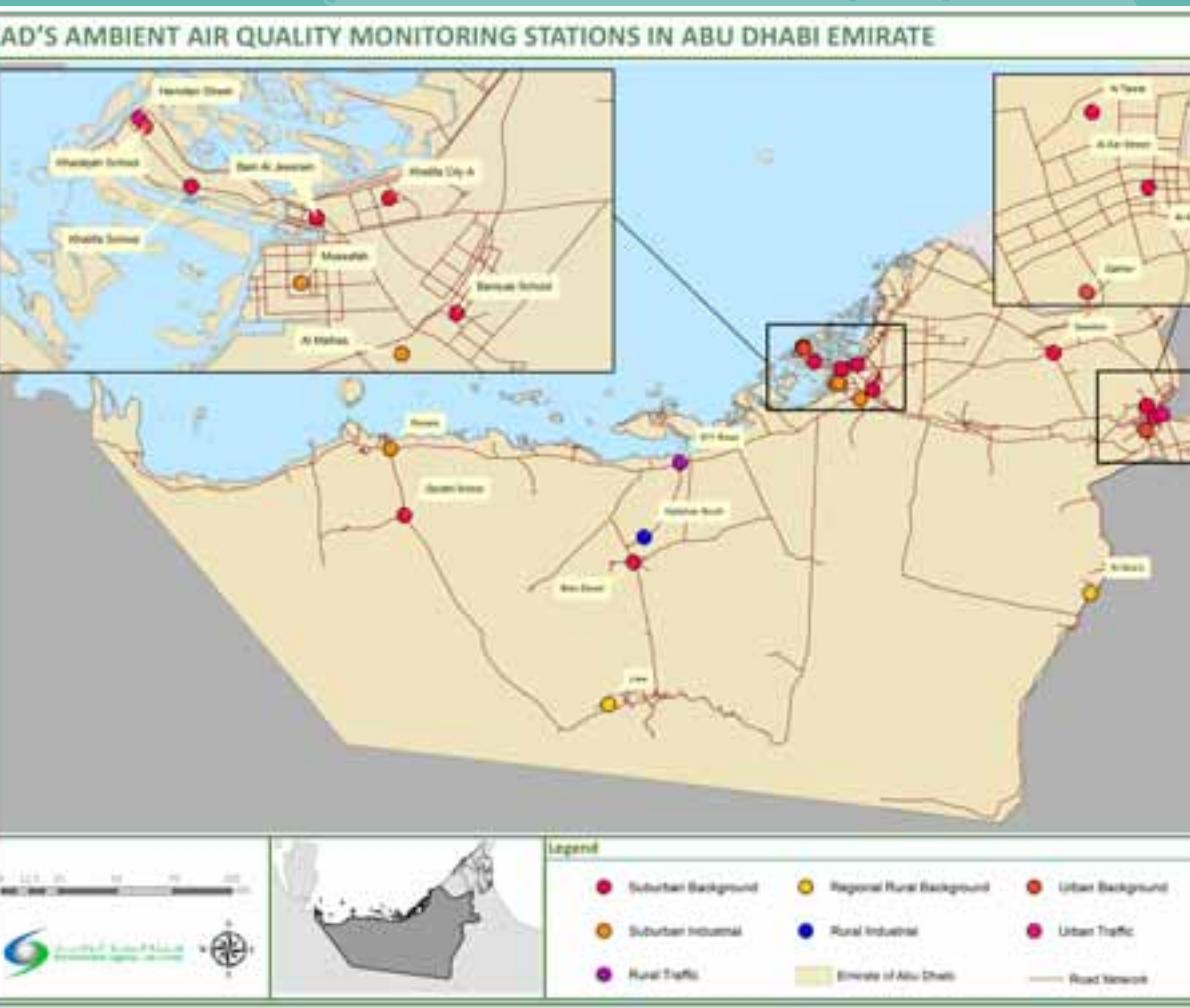
Air Quality Monitoring Station Facts



In 2017, we developed ambient air quality standards to help safeguard air quality in the emirate and protect the population's health and wellbeing.

mobile stations. Using this network, we collect data on a minute-by-minute basis, sharing our findings with the public at www.adairquality.ae. By providing public access to this information, they are able to make an informed decision about exposure to different levels of air quality and take better control of their health.

At the heart of this network stands an internationally-accredited calibration laboratory, which underpins quality assurance, control measures and procedures, resulting in high data quality standards. In 2017 alone, we provided data supporting more than 50 activities by local and federal government entities, academic institutions and environmental consultants.



Revised Ambient Air Quality Standards

This year, we developed ambient air quality standards for those pollutants not covered by current federal standards. These standards will help safeguard air quality in the emirate and protect the population's health and wellbeing. The first proposed standard is for hydrogen sulphide (H_2S), a colourless, flammable gas with a characteristic odour similar to rotten eggs. At high levels, H_2S poses a risk to human health and, at low levels, presents a pervasive odour nuisance. This pollutant comes from both natural as well as man-made sources, including stagnant bodies of water, marshes, oil and gas activities and sewage treatment plants.

Developing Industry-Specific Regulations

To ensure continuous improvement in our regulatory activities, we led a technical team that successfully set standards for Abu Dhabi Emirate on emissions from the concrete and hot-mix asphalt industries. These were subsequently approved by the Abu Dhabi Quality and Conformity Council (QCC). Currently, we are drafting regulations to explain the implementation of the new standards.

Updating the Air Emissions Inventory

In 2017, we updated the air emissions inventory from point, line and area sources, covering all sectors in Abu Dhabi Emirate. The inventory will be the scientific basis for developing appropriate and cost-effective solutions for improving air quality. It will provide a foundation for programmes and strategic plans on reducing emissions and mitigating the effects on human health and the environment. The data will also provide key support to other government strategic projects, such as transportation infrastructure and planning, industrial development and zoning, and public health planning.

Monitoring Ozone Precursors

Ground-level or 'bad' ozone is a secondary pollutant formed when primary pollutants (nitrogen oxides and volatile organic compounds (VOCs)) react chemically in the presence of sunlight. The main sources of these primary pollutants are emissions from industrial facilities, vehicles, chemical solvents, petrol and gas vapours. In Abu Dhabi Emirate's bright, hot and dry desert climate, this chemical phenomenon is highly optimised. The resulting ground-level ozone pollution continues to be a major public health and environmental concern.



Monitoring ozone levels on Bu Tinah Island.



|



Panellists attending the Clean Air Forum.



The Clean Air Forum brought together stakeholders from across the environmental management value chain, including the Ministry of Climate Change and Environment, federal and local government officials, and international and regional experts from the energy sector, oil and gas production, automotive, construction industries, mining, quarrying, metal and plastics manufacturing.



CLIMATE CHANGE

DEEPENING OUR KNOWLEDGE TO MITIGATE
THE EFFECTS OF CLIMATE CHANGE.



Coastal zones, water resources and dry land ecosystems in Abu Dhabi Emirate are highly vulnerable to the effects of climate change. This is due to the emirate's extreme arid climate and low-lying coastal areas, which are home to the majority of the population, economic activity and infrastructure.

The rapid growth in demographic, social and economic development, combined with an ever-increasing demand for water and energy, are the main drivers for the increasing pressure exerted by greenhouse gas (GHG) emissions. While Abu Dhabi Emirate's contribution to global GHG emissions is relatively small (<0.3 % in 2012) in comparison to other developing communities, our per capita CO₂ emissions are among the highest in the region. Lowering our GHG emissions, which have been identified as a main contributor to climate change, is therefore a key challenge.

In 2017, we continued to respond to the pressures of climate change in the following ways.

A Third Cycle Update of the Greenhouse Gas Inventory

We are in the process of updating the Greenhouse Gas Inventory for the years 2014 and 2016 and projection of emissions for 2030 using the best available data. This is in line with Abu Dhabi Vision 2030 and the Emirate's Plan for Sustainable Environment and Optimal Use of Resources, and consistent with our priority to mitigate climate change and adapt to its impacts. This update will help us to improve understanding of the emission trends associated with rapid economic development, and enable the development of sound policies and actions to reduce the impact of climate change. It also supports the federal government in preparing the national communication reports for the United Nations Framework Convention on Climate Change (UNFCCC), and strengthens the capacity of partners to measure and report emissions of their sectors based on international standards.

In line with IPCC guidelines for national GHG inventories, the project targets

direct emissions (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆) and indirect emissions (CO, NOx, SO₂, NMVOCs) from economic activities in the energy sector, industrial processes, agriculture and waste, as well as land-use change and forestry. Carbon sequestration and storage by Abu Dhabi sinks (forestlands, perennial croplands, mangroves and seagrass) will also be assessed.

Over the last year, we have collected significant data from our partners that will enable us to calculate GHG emissions. In addition, we organised several capacity-building seminars for our local and federal partners and private companies, to help them develop a corporate GHG emissions inventory as part of their sustainability reporting requirements.

Strengthening Climate Change-Related Legislation

Abu Dhabi Emirate has continued to strengthen legislation to mitigate the effects of climate change and adapt to its impact. In 2017, this included the Integrated Coastal Zone Management (ICZM) Policy, which was developed in partnership with the Department of Urban Planning and Municipality to implement the Plan Maritime 2030.

The framework includes climate change initiatives. The committee formed by the ICZM policy will oversee the climate change initiatives outlined in the Plan Maritime (2030) Framework and Implementation Plans. It will monitor these during the timeframe of the Plan, ensuring that all cross-sector emirate-wide initiatives are developed and implemented. This includes the development of minimum setback areas in undeveloped coastal areas.

Phase 1 of the Self-monitoring and Reporting Regulation (discharges to marine) was drafted in 2017 and is now in its final stage of the approval process. The team is currently working on Phase 2 (pollutants and GHG inventory) which is expected to be finalised next year. By implementing this regulation, it will be mandatory for all facilities to report to EAD on their marine, air and waste discharges using the same reporting format.



MARINE WATER QUALITY



**SAFEGUARDING THE
HEALTH OF ABU DHABI
EMIRATE'S MARINE WATERS
WITH IMPROVED
MONITORING SYSTEMS,
A REVISED REGULATORY
FRAMEWORK AND
COLLABORATION WITH
KEY STAKEHOLDERS.**

The coastline of Abu Dhabi Emirate accounts for over 75 % of the UAE's entire coastal territory, and the emirate's waters are a complex ecosystem which is home to a diverse array of flora and fauna. As such, any deterioration in the quality of Abu Dhabi Emirate's marine water may have a detrimental effect on a number of different levels. This includes the economic wellbeing of the emirate, the health of the population and an impact on marine biodiversity.

In order to protect and maintain a good level of marine water quality, we continue to take a holistic approach, gathering consistently high quality data to inform decision-making and regulatory controls.

Measuring Marine Water Quality through Long-Term Monitoring

Through our Marine Water Quality Monitoring Programme (MWQMP), we monitor ambient water quality conditions in the waters of Abu Dhabi Emirate to detect the effects of human activities on habitat degradation and water-dependent resources. This long-term programme complies with the requirements of Federal Law No. 24 of 1999 for the Development and Protection of Marine Environment. In 2017, we covered 22 sites under the MWQMP.

Abu Dhabi Emirate's marine water quality index scores for 2017, calculated based on data generated by the MWQMP, showed that confined areas, such as certain dredged channels and waters in industrial areas, were more affected by anthropogenic activities than coastal and open waters. Stratified salinity, low dissolved oxygen values in bottom waters, high nutrient (nitrate and phosphate) levels, and elevated concentrations of metals (copper, zinc and nickel) in sediments were recorded in confined areas. However, indicators of pathogenic microbial contamination (*Enterococci*) were low in recreational waters, yielding a perfect microbial index score of 100 at almost all MWQMP sites.

The quality of the emirate's waters exhibited spatial variations in 2017. For example, while water quality was reasonably good in open waters, confined areas subject to anthropogenic impacts exhibited relatively lower quality. It is noteworthy, however, that observed and recorded harmful algal bloom (HAB) incidents in Abu Dhabi waters decreased 25 %, from 24 in 2016 to 18 in 2017.





| Sampling fish eggs and larvae.

Investigating the Impact of Dust Storms

Dust storms occur very frequently in the region, with the dust quantity ranging between 12 to 28 % of global windblown dust. The frequency of dust storms is increasing, which has been attributed to climate change, enhanced temperatures and direct anthropogenic activities. Since very little is known about the impact of dust and sand storms on the marine environment, particularly Abu Dhabi Emirate's marine water quality, we have initiated an investigation to study this issue alongside cross-cutting issues such as marine productivity, coastal marine resources and marine biodiversity. During 2017, we identified various stakeholders to solicit inputs into the design of the investigation.

Understanding the Effect of Marine Water Quality on Fish Eggs and Larvae

Launched in 2007, this ongoing study examined the impact of marine water quality on the distribution of fish eggs and larvae in Abu Dhabi Emirate's waters, focusing on key spawning and nursery grounds. This year, the survey covered 10 important



| A Carangidae fish larva.

fishing areas, finding that fish eggs and larvae distribution varied spatially and temporally. The maximum number of eggs was recorded near Bu Tinah Island, followed by Al Yasat and Sir Bu Nair Islands. Larvae of the family Atherinidae were the dominant group, with the maximum number of larvae recorded off Sir Bu Nair Island, followed by Al Yasat and Bu Tinah Islands. The data revealed that the peak spawning period for fish stocks in Abu Dhabi's waters is pre-summer (March, April and May), with the key controlling factor being water temperature rather than other environmental parameters.

New Environmental Specifications for Marine Water Quality

Working closely with all local stakeholders and the Abu Dhabi Quality & Conformity Council, we have developed specifications for liquid discharges from land-based activities into the marine environment. Taking into consideration all of the data we have available, these are based on international best practice for the long-term protection of marine life and human health. Their scope covers all discharges, except for reject brine from desalination and power plants which is handled at a federal level.

This year we have also developed ambient marine water and sediments quality specifications. These feature a 'Protected Area' designated use which aims to protect the pristine waters of the emirate's marine protected areas, as well as a 'General Use' designation to maintain water quality conditions that support current uses of waters outside of these protected areas.

Developing New Marine Water Quality Regulations

In 2017, we developed marine water quality regulations that include an anti-degradation policy and science-based quality specifications for ambient marine water. They also focus on regulating liquid discharges to marine waters from specific land-based activities. The incorporated specifications establish quality standards for marine waters and sediment so to ensure the protection of the marine environment, including its wildlife and biodiversity along the emirate's coastline and offshore areas. To coincide with the development of the regulations, we also conducted a comprehensive Regulatory Impact Assessment (RIA), a first for the Agency. This evaluated any potential social, economic and environmental impacts and determined whether the regulations achieve our objective to improve marine water quality.

The Re-Use Potential of Treated Sewage Effluent

This year, we initiated a study to investigate the re-use potential of treated sewage effluent (TSE) in the industrial and developmental sectors in the emirate. This initiative followed on from directions by the Higher Committee for Enhancing Marine Water Quality, with regards to the fact that a considerable proportion of treated wastewater is currently discharged into the marine environment. Data from the study is expected to shed light on the feasibility of using TSE in targeted sectors. Its findings and any subsequent proposed regulatory instruments will be discussed with the relevant stakeholders in Abu Dhabi Emirate.

Guidelines for Treated Wastewater Re-Use and Disposal to Land

In order to manage available water resources in a more sustainable manner and to reduce discharges into the marine environment, we have developed science-based treated wastewater quality guidelines for re-use and discharge to land. The new guidelines take into consideration current and future uses of water resources, while the scope of re-use is restricted to non-food and non-livestock feed irrigation. These guidelines will enable us to develop the necessary regulatory tools to protect the environment from wastewater re-use and discharges to land that could have a negative impact on human health and safety under UAE and Emirate Laws.

An Integrated System for Marine Water Quality Monitoring

We are working with Abu Dhabi Systems and Information Centre (ADSiC) to develop an integrated system for marine water quality monitoring in the Emirate of Abu Dhabi. The project leverages an agreement between the Government of Abu Dhabi and Environmental Systems Research Institute (ESRI) to develop a unified database for marine water quality and create an integrated geospatial system for marine water quality monitoring in the emirate. This would provide updated data and ultra-fine spatial data visualisation for use by decision-makers. To facilitate data acquisition, an intra-agency working group was brought together to coordinate between stakeholders in the emirate and ensure that all project deliverables meet the requirements of the relevant authorities. The initiative's additional objectives include mapping services within the consolidated database, and provision of experts in the field of marine water quality through the agreement with ESRI. The agreement also supports the review of best practices in areas with marine conditions similar to those of Abu Dhabi Emirate.





LAND AND SOIL



DEVELOPING AN INTEGRATED SOIL STRATEGY, BENCHMARKED TO INTERNATIONAL STANDARDS.

As a non-renewable resource, soil provides crucial sustenance for a large section of terrestrial life, delivering a wide range of vital ecosystem services. Soil degradation reduces soil's ability to provide these services, and can be caused by both natural and anthropogenic sources. Currently, 85 % of soil in Abu Dhabi Emirate is classified as 'naturally degraded' due to the emirate's harsh environmental conditions. This situation is exacerbated by man-made factors, including urbanisation, inappropriate agricultural practices and over-grazing.

At EAD, we have prioritised land and soil to ensure that we follow a sustainable and integrated approach to their protection. This includes creating and implementing guidelines, on-going monitoring programmes and awareness initiatives.

Developing the Soil Contamination Guidelines

The creation of *Soil Contamination Guidelines* for Abu Dhabi Emirate has been essential for achieving our strategic objectives to protect land and soil. Replacing the international guidelines which were previously in use, they were developed after a benchmarking process with 16 international publications, as well as a local study of soil contaminant background concentrations. This year, the guidelines were integrated into our processes to enable a greater level of enforcement and implementation, paving the way for us to develop further regulatory tools and policies.

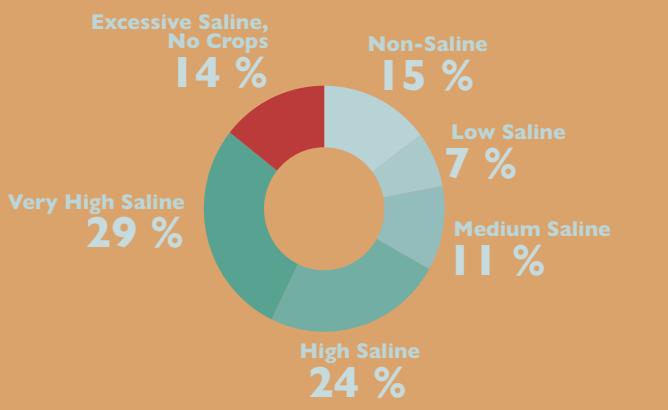


Assessing and evaluating contamination levels in soil.

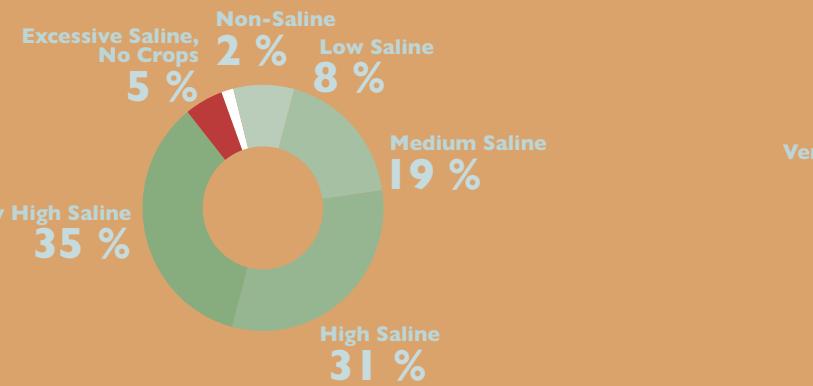


Engaging our partners during the development of the Abu Dhabi Soil Contamination Guidelines.

SOIL SALINITY CLASSES - ABU DHABI AREA



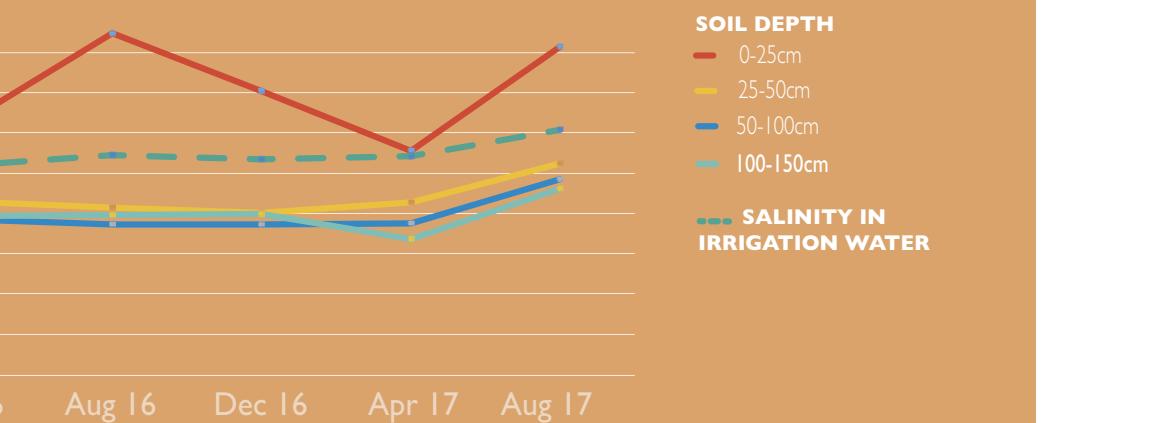
SOIL SALINITY CLASSES - AL DHAFRA AREA



SOIL SALINITY CLASSES - AL AIN AREA



AVERAGE SOIL SALINITY IN AGRICULTURAL LAND



Abu Dhabi's Soil Contamination Specifications

Developed through consultation and cooperation with the Abu Dhabi Quality and Conformity Council (QCC) and local stakeholders, the soil quality specifications ensure that sites affected by contaminants are appropriately identified, assessed and, if necessary, the contaminants contained or remediated to make the site safe for human use. The specifications consider a number of land uses, including residential/open spaces, industrial/commercial, and agricultural uses.

Soil Regulatory Gap Analyses

This year, we reviewed the Emirate's existing regulatory instruments related to soil protection, including incident clean-up, agriculture and food safety, materials management, and land use and development. By comparing these to international best practices, we were able to identify gaps in the current regulations. Based on this analysis, we established a work plan to develop the necessary regulations in the short and medium term.

Soil Salinity Project

Soil salinity is one of the greatest challenges facing agricultural land in the emirate, and negatively affects crop productivity. In order to gain a deeper understanding of soil quality, in 2015 we began a programme to survey soil salinity on agricultural land, scheduled to run until the end of 2018.

By mapping salinity levels and monitoring seasonal changes, it enables us to create a comprehensive working plan to alleviate the effects of salinity.

Covering 4,000 farms across the emirate, the monitoring aspect of the programme involves 100 farms. To date, six monitoring campaigns have been completed.

A key finding from 2017 was the baseline level of salinity in agricultural lands, which ranges between 8,000 and 16,000 microS/cm. Based on FAO guidelines, these levels fall within the 'Strongly Saline Soil class'.

The Proficiency Testing Programme

Protecting water, air and land is a core component of the 2016-2020 EAD Strategic Plan. In order for us to carry out our aims, we must be able to efficiently monitor changes to the environment. Monitoring programmes depend highly on the accuracy of the necessary laboratory testing which affects the process of decision-making. This year, we collaborated with QCC to test the proficiency of laboratories in conducting environmental testing in relation to our requirements for enforcement and regulations. Another important outcome from this exercise was the development of a tool to assess the proficiency of the participating labs for each of the tests conducted.



Sharing the results of the proficiency testing programme with 18 UAE laboratories.

Upgrading the EAD Soil Archiving Facility

In 2017, we upgraded the EAD Soil Archiving Facility to an electronic archiving system in order to facilitate information management and connect samples to the EAD Soil Database. Located in Al Faya, the facility can accommodate more than 20,000 samples, with over 2,810 currently in stock. It provides vital information about changes in soil quality over time, and offers time and cost-efficient soil sampling through the use of archived samples.

Capacity-Building our Inspection Team on Soil Sample Collection

We conducted a training workshop for the inspection team on soil sample collection, to ensure more accurate and representative methods are used. The workshop also reviewed the principles that need to be followed when collecting samples for assessing soil contaminants in industrial land.



| This year, the EAD Soil Archiving Facility was upgraded to an electronic system.

Developing the Abu Dhabi Soil Quality Monitoring and Assessment Programme

Regular monitoring efforts are essential for understanding and identifying changes in soil quality, so this year we developed the Abu Dhabi Soil Monitoring and Assessment Programme. The programme benchmarks against over 50 global monitoring programmes.



| The inspection teams were introduced to soil sampling for the first time.

This year we developed the Abu Dhabi Soil Monitoring and Assessment Programme, which benchmarks against over 50 global monitoring programmes.

Assessing and Evaluating Contamination Levels in Mussafah-M35 Area

This year, we conducted a site contamination assessment study in an area within Mussafah Industrial City, home to some of the emirate's major industrial and investment facilities. The study aimed to determine if a change from industrial use to residential use is possible, and to assess soil contaminant levels to provide a risk assessment to human health and environment. We undertook detailed sampling to characterise contamination across the site.



| A soil sample from Mussafah Industrial City

In 2017, we conducted a site contamination assessment study in an area within Mussafah Industrial City, home to some of the emirate's major industrial and investment facilities.

Abu Dhabi Police Soil Display Case Study

This year, we collaborated with Abu Dhabi Police to create a display which represented the different types of soil found in Abu Dhabi Emirate. The site selection was based on the soil survey we conducted in 2010, and we also assisted with sampling procedures and sample collection. The final result was an impressive showcase for the emirate's soils.



| Abu Dhabi Police soil display showcasing the different types of soils available in the emirate.



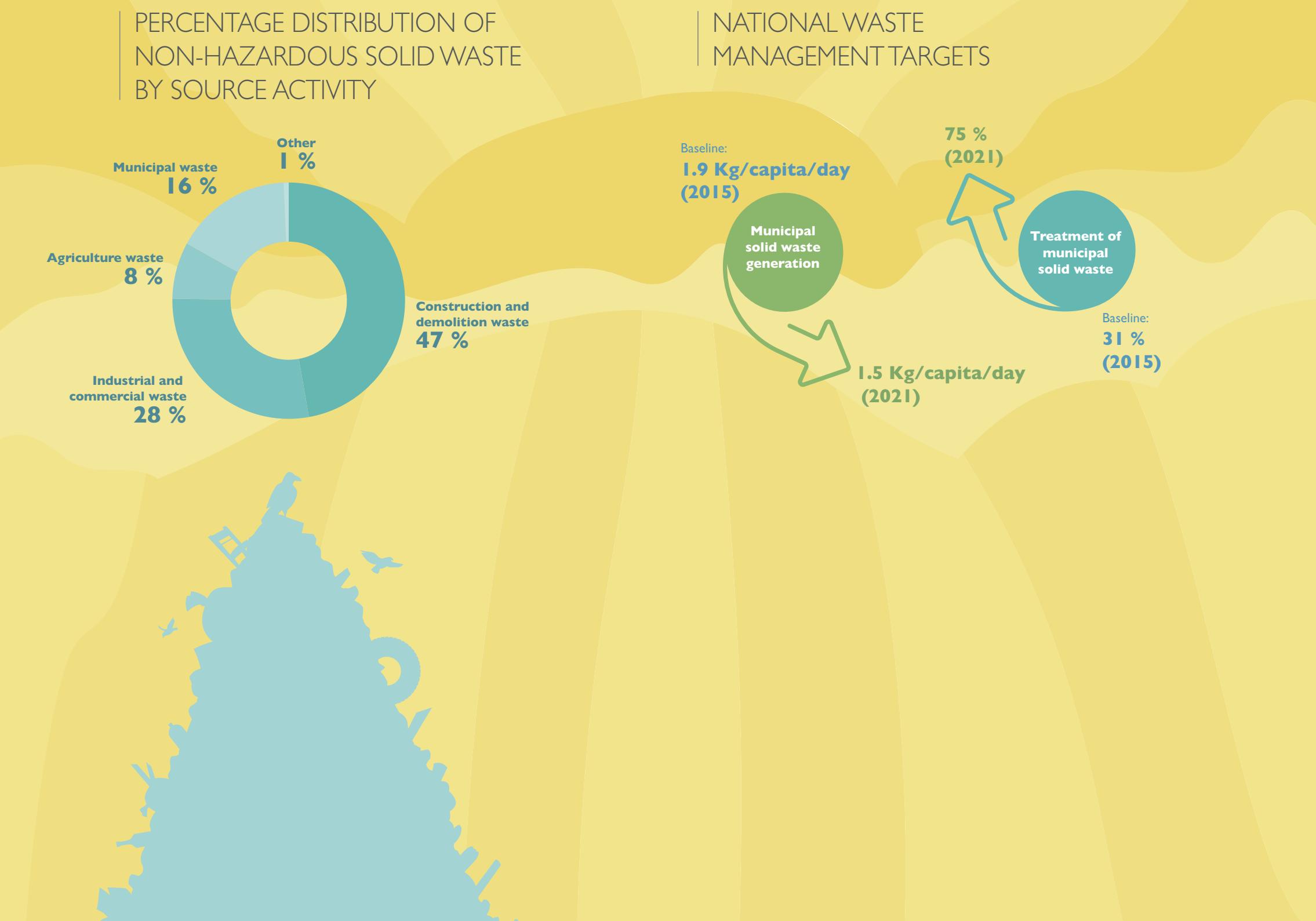
WASTE MANAGEMENT



DEVELOPING A SUSTAINABLE, EFFICIENT AND INTEGRATED APPROACH TO WASTE MANAGEMENT.

As the Emirate of Abu Dhabi aims to be recognised as a world leader in waste management, one of our key priorities is the development of a sustainable, integrated strategy. When we set out strategic outcomes and initiatives to meet both local and national targets, we must consider any existing gaps in the infrastructure, legislative framework and operations, not to mention the growing volume of waste generated in the emirate, which has increased rapidly over the last few years due to population growth and economic development.

Figures from 2016 show that the total amount of solid waste generated in Abu Dhabi Emirate was 9.68 million tonnes, with a daily production rate of approximately 26,300 tonnes. Around 47 % of the total non-hazardous solid waste was from construction and demolition (C&D) sources, 28 % industrial and commercial waste, 16 % municipal, 8 % agricultural waste, and 1 % from other sources. In addition, 29.7 % of this was recycled, 2.4 % was composted and 65.9 % was sent to dumpsites and 1.9 % sent to the landfill.



Meeting National and Emirate-Wide Targets

The UAE has set two national targets to establish a sustainable waste management system that diverts waste from landfill disposal and maximises resource recovery, both of which should be achieved by 2021. The first aims to reduce municipal solid waste generation to 1.5 kg per capita per day, and the second aims to increase the amount of treated municipal waste to 75 %.

Locally, the Abu Dhabi Plan stipulated that 60 % of generated solid waste must be treated by 2020. Figures from 2016 show that the emirate currently produces 1.47 kg of municipal solid waste per day, and 27 % of generated municipal solid waste and 32.2 % of generated non-hazardous solid waste is treated and diverted from landfill.



A workshop session for the Ajealunah Initiative.



Measuring and analysing wastewater from an illegal wastewater pond in Abu Dhabi.

Through the 'Ajealunah Initiative', three schools were selected from each emirate and asked to work on different ideas and projects related to waste management issues within their school campus. At the end of the year, the school with the most innovative idea will be recognised and awarded a prize.



| Launching the Guide to Sustainable Construction and Demolition Waste Management in Abu Dhabi at EAD's headquarters.



| As part of a drive to minimise waste, recycled crushed aggregates are used in a construction project.

Introducing New Regulatory Instruments

Based on the five waste management policies developed last year, we have drafted a set of waste management regulations, a code of practice and guidelines. These new regulatory instruments include: permitting; waste classification; integrated waste management; used battery procedures; new and existing landfills; and uncontrolled dumpsites. These new regulations will be implemented for all waste generators in the government and private sectors (which includes commercial and industrial waste from healthcare facilities, schools, shopping malls, hotels, restaurants and labour camps, as well as agriculture and livestock).



Identifying Illegal Wastewater Ponds

In partnership with the Abu Dhabi Quality and Conformity Council (QCC), this year we conducted a study that assessed water characteristics in illegal wastewater ponds across the emirate. Based on information and data obtained from 'Bayyanat', we identified the location of wastewater ponds to be sampled in Abu Dhabi, Al Ain and Al Dhafrah. The results indicated that, for most locations, the water was not polluted but had relatively high salinity levels, indicating that the water was of sub-surface origin.

Addressing Sustainable Construction and Demolition Waste Management Practices

In collaboration with Tadweer (The Center of Waste Management - Abu Dhabi) we published a *Guide to Sustainable Construction and Demolition Waste Management in Abu Dhabi*. Aiming to protect the environment and reduce the costs associated with waste disposal and treatment, it outlines the steps construction companies can take to manage waste generated on-site and assess this waste for reuse and recycling. It also addresses how companies can take responsibility for the collection, segregation, transfer and disposal of their waste.

Alongside the new guide, we organised a panel discussion targeting the construction and demolition industries. The panel of waste management experts discussed the benefits of an integrated and efficient waste management system and measures to reduce waste in this sector.

Studying Waste Generation in Abu Dhabi Emirate

This year, we published a report on *Waste and Environment in Abu Dhabi Emirate*. The report presents the state of waste generation in the emirate in comparison to figures from the other emirates, the GCC and the rest of the world. The in-depth study examined the relationship between waste generation and Abu Dhabi Emirate's economic and population growth over the last five years. It analysed the main initiatives undertaken by EAD and other relevant organisations to reduce, reuse and recycle waste. To download a copy of the report, visit www.ead.ae.

The report on *Waste and Environment in Abu Dhabi Emirate* presents the state of waste generation in the emirate in comparison to figures from the other emirates, the GCC and the rest of the world.



| The Waste and Environment Annual Report.

42



43

TERRESTRIAL BIODIVERSITY

PROTECTING THE REGION'S
KEY SPECIES AND HABITATS
THROUGH COMPREHENSIVE
MONITORING, WIDE-REACHING
CONSERVATION PROGRAMMES
AND EFFECTIVE POLICY-MAKING.

Over the last year, we have undertaken a range of studies and initiatives to protect Abu Dhabi's terrestrial biodiversity. This includes ongoing assessment and monitoring, protecting threatened species through in-situ and ex-situ conservation programmes, and the formulation of policies and policy instruments.

MONITORING THE EMIRATE'S BIODIVERSITY

Monitoring Important and Threatened Plants

First discovered on Jebal Hafit in 2016, this year we continued to monitor the Eastern Marsh Helleborine Orchid (*Epipactis veratrifolia*). As a new addition to the flora of Abu Dhabi Emirate, the occurrence of this regionally-threatened species on Jebal Hafit underlines the importance of biodiversity to the region and the Arabian Peninsula. The discovery of the species has also significantly increased the value of wadis as hotspots for biodiversity.

By the end of 2017, the EAD Herbarium had 3,860 specimens of 682 native and naturalised species. The only collection of its kind in the emirate, this resource is listed under the Index Herbariorum, a global directory of public herbaria. The Herbarium is used extensively by university students in Abu Dhabi for research and reference purposes.

Recording New Invertebrates for the UAE

This year, we continued our programme of monitoring and cataloguing invertebrates within protected areas, with the total number of invertebrates now listed at 2,313 species. Examples of each species identified in protected areas are catalogued and maintained in our Invertebrate Collection.

In 2015, we recorded six new invertebrate species for the first time in the UAE. Captured using Malaise traps, this included three varieties of Cuckoo Wasp (*Hedychridium cyaneum*, *Adelopyga huberi* and *Chrysis asahinai*), Jumping Lice (*Caillardia springatei*) and two Scelionid Wasps (*Trissolcus levicaudus* and *Trissolcus nycteridanae*).



Eastern Marsh Helleborine Orchid on Jebal Hafit.



The EAD Herbarium.

By the end of 2017, the EAD Herbarium had 3,860 specimens of 682 native and naturalised species. The only collection of its kind in the emirate, this resource is listed under the Index Herbariorum, a global directory of public herbaria.

Our genetic studies on brine shrimp at Al Wathba Wetland Reserve confirmed the species as *Artemia franciscana*. Conducted in collaboration with the Institute of Evolution and Marine Biodiversity, Ocean University of China, this research has helped further understand the species' distribution, life cycle and genetics.

Assessing Breeding Birds and Tracking their Migration

The 2017 breeding season saw a record number of 448 Greater Flamingo (*Phoenicopterus roseus*) chicks successfully fledged at Al Wathba Wetland Reserve. The eighth successive breeding at Al Wathba since 2011, it remains the only site in the UAE (possibly in the Arabian Gulf), where Greater Flamingo regularly breed.

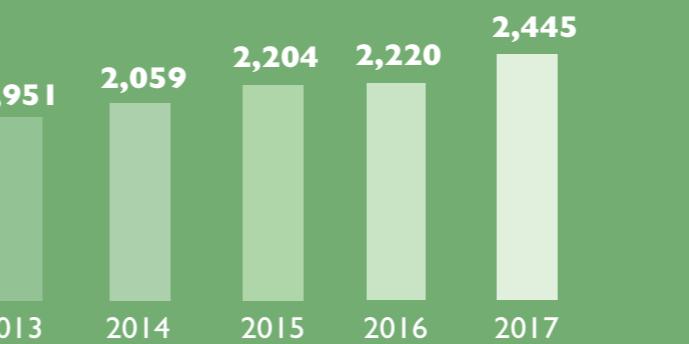
On off-shore islands, numbers of breeding Socotra Cormorants (*Phalacrocorax nigrogularis*) have increased to more than 50,000 pairs, the highest population recorded in the last two decades.

During 2017, we continued to track two juvenile Ospreys (*Pandion haliaetus*), two Egyptian Vultures (*Neophron percnopterus*) and two Greater Spotted Eagles



An example of a Malaise trap used to capture flying invertebrate species for monitoring purposes.

THE INCREASE IN INVERTEBRATE SPECIES RECORDED IN ABU DHABI EMIRATE SINCE 2013



Collected from Houbara Protected Area, the adult Antlion is the latest addition to EAD's invertebrate collection.

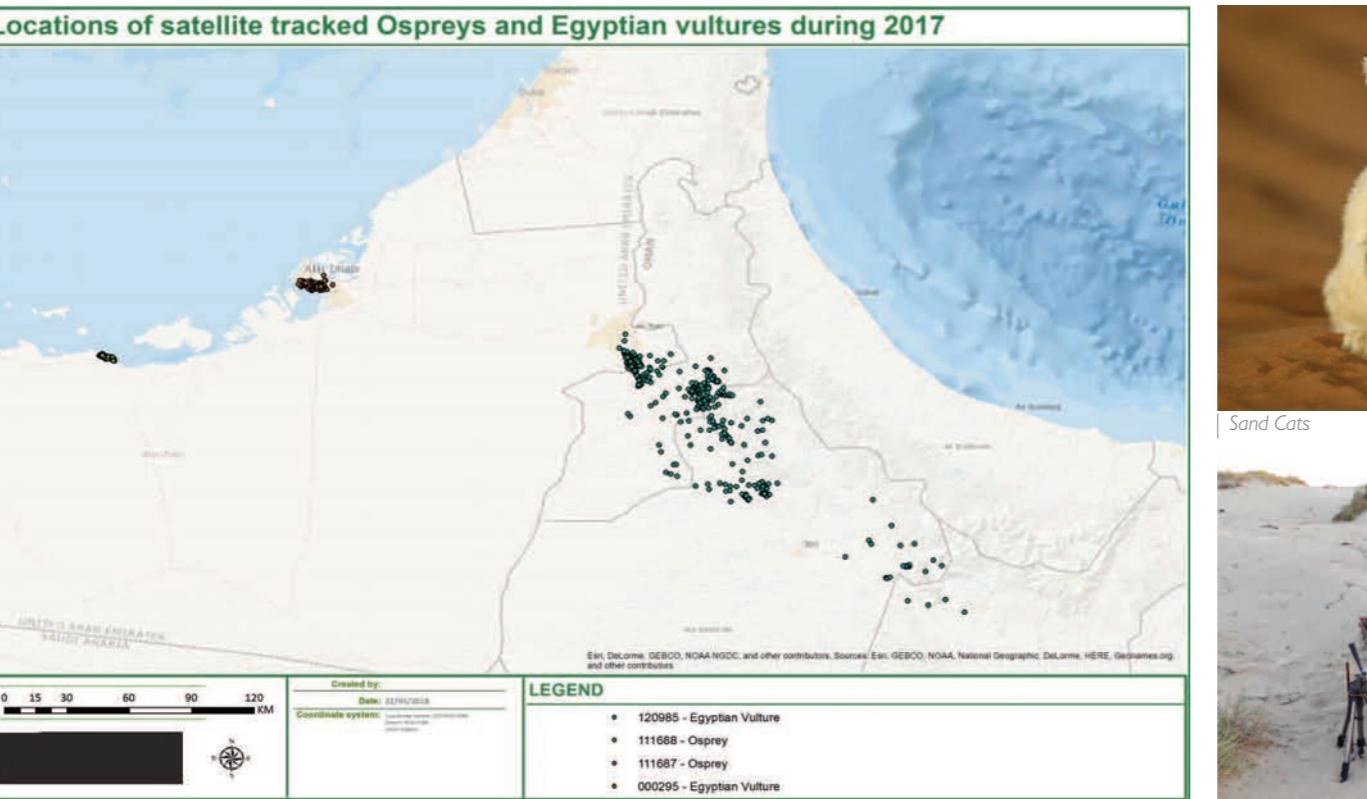


A record number of Greater Flamingo chicks were born at Al Wathba Wetland Reserve this year.



Socotra Cormorant chicks in the breeding colony at Rufayq island, Abu Dhabi.

The 2017 breeding season saw a record number of 448 Greater Flamingo (*Phoenicopterus roseus*) chicks successfully fledged at Al Wathba Wetland Reserve. The eighth successive breeding at Al Wathba since 2011, it remains the only site in the UAE (possibly in the Arabian Gulf), where Greater Flamingo regularly breed.



(*Clanga clanga*). The two Ospreys remained in Abu Dhabi Emirate and did not disperse further. One of the Egyptian Vultures remained on Jebal Hafit while the second remained in Oman, both confined to the areas where they moved after tagging. In Spring, one of the juvenile Greater Spotted Eagles, tagged at Al Wathba Wetland Reserve in December 2015 and tracked throughout 2016, migrated to potential summering areas in northern Kazakhstan and southern Russia, before returning to Al Wathba, covering a total distance of 21,000 km. One of five Spotted Eagles tracked from the UAE, it is the first to be monitored using GSM technology, highlighting the potential for its use, even in areas with a limited cellular network.

Monitoring Important Mammals

Following an increased number of Arabian Sand Cat recordings using trail camera traps in our Houbara Protected Area, we started collaborating closely with Al Ain Zoo to conduct phylogenetic and radio-collaring to further study the species.

In an effort to confirm the status of carnivorous species believed to be extinct in the wild, including Ruppell's fox (*Vulpes rueppellii*) and Blanford's fox (*Vulpes cana*), we have positioned several camera traps in Abu Dhabi's Al Ain and Al Dhafra Regions to collect evidence of their presence.



Installation of a camera trap.



Using camera traps on Jebal Hafit, sightings of the extremely endangered Arabian Tahr (*Arabitragus jayakari*) increased at a number of locations. Newborn Arabian Tahr recorded by the camera traps indicated a healthy and breeding population of this wild goat species on the mountain.

We have also initiated studies on bats in Abu Dhabi Emirate so as to increase our knowledge of the various bat species and better understand their role in the spread of infectious diseases.



On off-shore islands, numbers of breeding Socotra Cormorants (*Phalacrocorax nigrogularis*) have increased to more than 50,000 pairs, the highest population recorded in the last two decades.

Documenting the Status of the Arabian Oryx

In Spring 2017, a team of our biodiversity experts conducted a four-day aerial survey to assess the status of the Arabian Oryx population in the Arabian Oryx Protected Area. The study of the 6,000 km² area recorded 835 individual animals, indicating the continued success of the Sheikh Mohamed Bin Zayed Arabian Oryx Reintroduction Programme, which launched in 2007 with just 160 individuals. In the long term, data from the survey will inform management practices of the iconic Arabian Oryx and other species within the protected area.



RESTORING THREATENED SPECIES AND HABITATS THROUGH EX-SITU PROGRAMMES

Returning the Scimitar-horned Oryx to its Native Chadian Homeland

This year, we have marked a number of major milestones in our programme to reintroduce the critically-endangered Scimitar-horned Oryx to the Ouadi Rimé-Ouadi Achim Game Reserve in Chad. A collaboration between EAD, the Sahara Conservation Fund (SCF) and the Government of Chad, the Scimitar-horned Oryx Reintroduction Programme aims to create a self-sustaining herd of over 500 animals in the 77,950 km² reserve, nearly three decades after the species was declared 'extinct in the wild' by the IUCN Red List. Launched in 2014, with the first shipment of animals released in 2016, it is considered the world's most ambitious mammalian species reintroduction initiative.

In 2017, a further two shipments of Scimitar-horned Oryx were translocated from Abu Dhabi to Chad - by the end of the year, there were 89 oryx and 18 calves living in the wild at the reserve, the first generation of Scimitar-horned Oryx born in Chad in over 30 years. We continue to intensively monitor the animals' progress, remotely via satellite telemetry and on the ground by our local monitoring team.



The EAD team tracks newly-released Scimitar-horned Oryx in the Ouadi Rimé-Ouadi Achim Game Reserve in Chad.

A collaboration between EAD, the Sahara Conservation Fund (SCF) and the Government of Chad, the Scimitar-horned Oryx Reintroduction Programme aims to create a self-sustaining herd of over 500 animals in the 77,950 km² reserve in Chad, nearly three decades after the species was declared 'extinct in the wild'.

From the moment of their release, the oryx have adapted extremely well to the environment and conditions, and appear to be thriving. The animals are moving naturally throughout the reserve and are inhabiting an area over 7,000 km².

Conserving Endangered Antelope and Gazelle

Through our ongoing efforts to conserve and enrich biodiversity, we have continued to expand our 'world herd' of Scimitar-horned Oryx and have embarked on new breeding programmes for two other critically-endangered antelope species: the Dama Gazelle (*Nanger dama*) and the Addax (*Addax nasomaculatus*).

Breeding programmes for these species are taking place at Deleika Wildlife Conservation Centre, our state-of-the-art facility in Abu Dhabi Emirate. We continue to develop the services at this master-planned conservation, research and education centre.

Our programme has also focused on maintaining a healthy and genetically-diverse population of three endemic priority conservation species: the Arabian Oryx, Sand Gazelle and Mountain Gazelle. In November, we released 14 Arabian Oryx in the Qasr Al Sarab Protected Area, near Liwa. This release took place in the presence of H.E. Dr. Thani Al Zeyoudi, Minister of Climate Change and Environment, H.E. Noura Al Kaabi, Minister of Culture and Knowledge Development, and H.E. Razan Khalifa Al Mubarak, Secretary General of EAD.



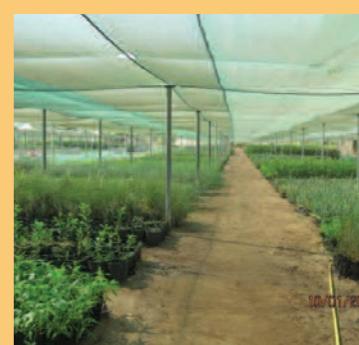
Arabian Oryx released in the Qasr Al Sarab Protected Area.



H.E. Dr. Thani Al Zeyoudi, UAE Minister of Climate Change and Environment, H.E. Noura Al Kaabi, UAE Minister of Culture and Knowledge Development, and H.E. Razan Khalifa Al Mubarak, EAD Secretary General, release Arabian Oryx into the Qasr Al Sarab Protected Area.



Fewer than 300 critically-endangered Dama Gazelle remain in the wild.



EAD's Native Plant Nursery.



Rehabilitating the White Saxaul (*Haloxylon persicum*) with minimal irrigation.



DEVELOPING POLICY INSTRUMENTS AND CONSERVATION ACTION PLANNING

Assessing the Impact of Grazing on Biodiversity through Community Engagement and Scientific Collaboration

This year, for the first time in Abu Dhabi Emirate, we launched an ecological study to assess the impact of grazing on our native flora and fauna. A collaboration with researchers at Zayed University, the team surveyed sites across the Al Dhafra Region, sampling areas both inside and outside our designated nature reserves to gather evidence on the productivity of natural desert habitats when grazing pressure is removed through protection.

We also launched a community engagement and traditional knowledge-gathering initiative to complement the ecological study. Engaging with people lies at the heart of nature conservation and, as such, understanding the perception of local communities towards the state of our environment, and obtaining their buy-in for proposed solutions, are key to developing successful conservations strategies.



| Ecological study on the impact of grazing.



| An Arta (Calligonum comosum) blossoms in Abu Dhabi Emirate's Houbara Protected Area, where camel grazing is prohibited.



| Gathering traditional knowledge from local communities.

This year, for the first time in Abu Dhabi Emirate, we launched an ecological study to assess the impact of grazing on our native flora and fauna.

Working closely with the Ministry of Presidential Affairs' National Archives Department, the project team interviewed community elders across Al Ain, Al Dhafra and Abu Dhabi.

Capacity Building on Arabian Oryx Disease Survey and Record Keeping

In 2017, we completed the third regional Arabian Oryx Disease Survey, which is the only study of its kind in the region. Coordinated by the General Secretariat for the Conservation of the Arabian Oryx (GSCAO), the survey covered 43 collections, holding 14,424 Arabian Oryx across the species' range states - 70 % of which were from collections within the UAE. With a response rate of 88 %, this initiative continues to provide valuable information on the most common diseases within these collections and makes recommendations on the best screening and treatment protocols to ensure the ongoing welfare and conservation of this iconic species.

At EAD, we hosted a ZIMS (Zoological Information Management System) training workshop on the management of Arabian Oryx records in the species' range states for over 40 wildlife experts.



At EAD, we hosted a ZIMS (Zoological Information Management System) training workshop on the management of Arabian Oryx records in the species' range states, with the aim of building regional capacity for the management of wildlife collections.



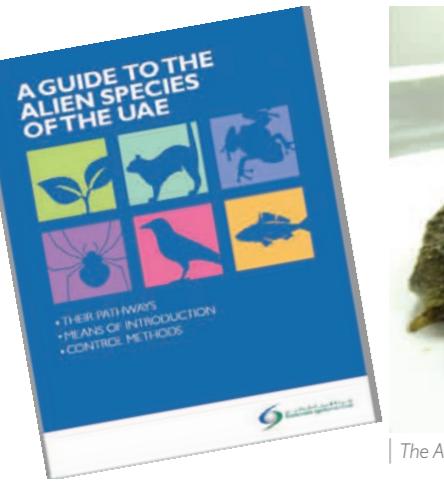
Over 40 wildlife experts and researchers attended the ZIMS workshop to discuss challenges and identify gaps in Arabian Oryx record keeping in the region.

Meeting Habitat Conservation Targets

The Abu Dhabi Plan set an ambitious and globally-benchmarked target to conserve at least 80 % of all our natural habitat types. Working towards this goal, we developed the *Abu Dhabi Emirate Habitat Classification and Protection Guideline*, which is available on our website in both Arabic and English. Throughout 2017, we engaged with our stakeholders to disseminate the guideline's sustainable development principles, highlighting the importance of our 12 critical marine and terrestrial habitats and eight environmentally-sensitive habitats, and outlining the best approaches to sustain them.



| As hotspots for biodiversity, mountains and wadis are considered critical habitats in Abu Dhabi Emirate.



| The Asian Common Toad, an invasive species.

Documenting and Managing Alien Species

This year, we produced a bi-lingual guide on alien species of the UAE. It describes the pathways, means of introduction and control methods for invasive species.

We are currently conducting a detailed study on the Asian Common Toad, which has been recorded at Al Wathba Wetland Reserve. We are looking at the ecology and genetics of this species to understand its pathways and means of dispersal to develop appropriate control strategies.

In 2017, the weed species Mexican Clover (*Richardia scabra*) was added to the invasive species list. For the first time, the species was recorded in a disturbed habitat in Abu Dhabi's urban areas. Belonging to the coffee family (Rubiaceae), the weed is native to North America and South America.

Conservation Action Planning for the Wonder Gecko and the Dwarf Palm

In December, we held a Conservation Planning Workshop for the Wonder Gecko to find ways of protecting this species at an emirate-wide level. Earlier in the year, we conducted several night surveys of the species in different areas, including Dubai in coordination with Dubai Municipality. Population estimates from the surveys indicated fewer than 100 individuals, highlighting the vulnerability of the species' small and localised population to developmental pressures.

We have also developed an action plan to conserve the incredibly rare Dwarf Palm (*Nannorrhops ritchiana*) and are implementing the actions and objectives defined.

Implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

As the designated Scientific Authority for CITES in the UAE, over the last year we conducted several scientific inspections of UAE establishments that host and breed CITES-listed species. These inspections aim to ensure that facilities adhere to the laws of the CITES, to which the UAE is a signatory.



| A close-up of the Mexican Clover, recently discovered in Abu Dhabi Emirate.



| Collecting a Wonder Gecko genetic sample, using an app to record data.



In 2017, the weed species Mexican Clover (*Richardia scabra*) was added to the invasive species list. For the first time, the species was recorded in a disturbed habitat in Abu Dhabi's urban areas. Belonging to the coffee family (Rubiaceae), the weed is native to North America and South America.



MARINE BIODIVERSITY

ADDRESSING THE
MYRIAD CHALLENGES
FACED BY THE EMIRATE'S
MARINE WILDLIFE AND
HEAVILY EXPLOITED
FISHERIES.

The UAE's waters are home to a rich and diverse marine ecosystem, however marine biodiversity and fisheries stocks are facing growing pressure from both naturally-occurring and anthropogenic sources. This includes climate change, rising water temperatures, marine pollutants, population growth and increasing coastal development. With the aim of creating a marine environment where biodiversity thrives and dwindling fish stocks are able to recover, we have focused on a holistic approach which utilises meticulous long-term monitoring, assessments and research to inform targeted conservation programmes, strategic policy and regulations.

Monitoring of Endangered Marine Species

Over the last year, field monitoring of dugongs in and around their foraging habitats reported numerous sightings, including large herds (with over 100 animals) on six occasions, 12 sightings of groups of around 25 dugongs, and several sightings of smaller groups (with less than 10 dugongs), as well as solitary individuals. Most of the sightings were reported by our rangers during their regular monitoring trips.

Through the Dolphin Survey, we documented a record number of 37 rare Finless Porpoise, 92 Indian Ocean Humpback Dolphins and 268 Indo-Pacific Bottlenose Dolphins. EAD received international exposure through the publication of a scientific paper in the *Journal of the Marine Biological Association of the United Kingdom*, which announced that the emirate's waters are home to the largest Indian Ocean Humpback Dolphin population in the world.

Investigating Marine Wildlife Incidents

In total, 17 dugong mortality incidents were reported and investigated by EAD during 2017. Two mortalities were reported from the Al Ain Region, six from the central region, and the remaining nine from Al Dhafra Region. Nine incidents



Abu Dhabi Emirate is home to the largest population of Indian Ocean Humpback Dolphins in the world.

During the winter season, 72 yearlings, juveniles and adult sea turtles were rescued along the coastline and waters in the UAE. These consisted of 65 critically-endangered Hawksbill Turtles, five endangered Green Turtles and two Loggerhead Turtles.



Hawksbill Turtle

(53 %) were due to drowning from nets, while the cause of death could not be ascertained for the remainder. There were no dugong mortalities resulting from vessel strikes in 2017.

In order to minimise dugong mortality during winter, we intensified the monitoring of critical areas within and outside the MPAs. Follow-up meetings with stakeholders (including fishermen and officials from Critical Infrastructure and Coastal Protection Authority) were conducted on a number of occasions.

During the winter season (January to March, November to December), 72 yearlings, juveniles and adult sea turtles were rescued along the coastline and waters of the UAE. These consisted of 65 critically-endangered Hawksbill Turtles, five endangered Green Turtles and two Loggerhead Turtles.

Progressing with the UAE Sustainable Fisheries Programme

Our key response to the state of the fishery is the UAE Sustainable Fisheries Programme. Launched in 2015, this four-year, nine-project collaboration between EAD and MOCCAE aims to achieve a sustainable fishery by 2030. This response has included the development of two national UAE framework policies for fisheries and aquaculture, which are soon to be released.



At the launch of the UAE Sustainable Fisheries Programme.



The Fisheries Resource Assessment Survey.

Assessing Fish Stock in the UAE

One of this year's major achievements was the completion of a fisheries-independent vessel-based survey of the UAE's demersal fish stocks in the Arabian Gulf, the most comprehensive ever completed in the UAE. Over two seasonal surveys, we spent more than five months at sea, catching over 200 species of fish, sharks and rays, and measuring and weighing over 20,000 fish across 2,500 survey stations.

The survey's preliminary findings corroborated the stock assessment work EAD has completed at landing sites over the past 15 years. The UAE's demersal fisheries resources are severely over-exploited, with the adult stock sizes of indicator species Hamour (*Epinephelus coioides*), Shaari (*Lethrinus nebulosus*), and Farsh (*Diagramma pictum*) at less than 10 % of un-exploited levels.

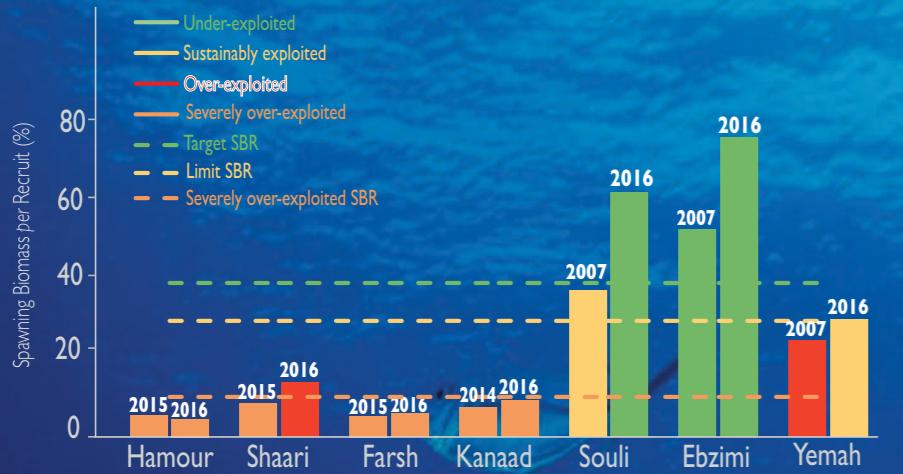
The full results of the survey are currently being analysed to inform a comprehensive Fisheries Recovery Plan for the UAE, which will be unveiled in 2018.

Monitoring and Investigating Fisheries

As per ongoing monitoring of the emirate's fish resources, the status of seven commercially exploited species was re-evaluated in 2016 and reported in March 2017. Approximately a decade has passed since the status of Souli, Ebzimi and Yemah was evaluated. The stock status of Kanaad, Hamour, Shaari and Farsh is evaluated on an annual basis due to their special status as key species of

The UAE's demersal fisheries resources are severely over-exploited, with the adult stock sizes of Hamour, Shaari and Farsh, at less than 10 % of un-exploited levels.

A COMPARISON OF THE CURRENT RELATIVE SPAWNING BIOMASS PER RECRUIT IN 2016 AND PREVIOUS STUDIES



The value of 40 % is the target level of sustainable exploitation, 30 % is the limit level of sustainable exploitation, and 10 % is the threshold below which the stock is considered to be severely over-exploited.

commercial importance. When compared to the last evaluation, we found that there is slow recovery in the relative spawning biomass of all species but Hamour. For three species (Shaari, Souli and Yemah) their status actually improved significantly towards becoming sustainably exploited.

Fisheries Statistics

In 2017, we began a project to upgrade the current fisheries statistics system (NFIS) with a more advanced fisheries information system (UAE-NFIS), which will feature innovative statistical routines supporting fisheries management decision-making. The UAE-NFIS is better equipped to function as the standard information system for the UAE because it uses far fewer resources to achieve fisheries statistics of a better quality. The upgraded fisheries information system is expected to become fully functional and online in Abu Dhabi Emirate from the third quarter of 2018, with the system being rolled out to cover the entire country.

Coral Reef Monitoring and Assessment

Valued for their diversity and many ecosystem services, coral reefs face multiple threats and are the first ecosystems to show the impacts of global climate change. In previous years, up to 98 % of Abu Dhabi Emirate's corals have been affected by prolonged positive seawater temperature anomalies. The health of coral reefs has also deteriorated due to anthropogenic activities such as dredging, land reclamation, wastewater discharge, pollution, anchor damage and discarded or lost fishing gear.

In collaboration with New York University - Abu Dhabi Institute (NYUAD), we conducted an annual monitoring and assessment programme to understand the health status of coral communities in the emirate's coastal waters. Live coral cover in Abu Dhabi Emirate increased from an average of 21.0 % to 29.7 % between 2013 and 2016, with the coral reefs appearing to be recovering from previous bleaching-related mass mortalities. However, an extremely strong El Niño event in 2016 and 2017 caused a protracted period of elevated seawater temperatures, resulting in extensive bleaching to coral reefs. Consequently, coral mortality was very high and all the progress in recovery during previous years was lost. On average, across all of our monitored sites, the amount of coral mortality associated with the 2017 bleaching event was approximately two thirds (63.3 %) representing a catastrophic loss to this critical marine habitat.

Red List Assessment for Sharks, Rays and Chimaeras of the Arabian Seas Region

In collaboration with the IUCN Shark Specialist Group (SSG), we held a regional Red List Assessment Workshop in Abu Dhabi Emirate in February 2017. Comprising leading international and regional experts, the workshop prepared 154 species assessments, which were submitted to the IUCN Red List of Threatened Species. The resulting report highlighted that 78 species (50.9 %) are considered threatened. This means that the populations of sharks, rays and chimaeras in the Arabian Seas Region are some of the most threatened in the world, due to very high pressures from fisheries and particularly bycatch.



Extensive coral bleaching and associated coral mortality took place during 2017 due to extended periods of elevated seawater temperatures.



Experts at the IUCN Red List Workshop for Sharks, Rays and Chimaeras.



A Black Tip Reef Shark (*Carcarhinus melanopterus*).

The populations of sharks, rays and chimaeras in the Arabian Seas Region are some of the most threatened in the world, due to very high pressures from fisheries and particularly bycatch.

Assessing the Abundance and Distribution of Sharks and Rays

Between May 2015 and December 2016, baited remote underwater video stations (BRUVS) surveys were used to assess the abundance of elasmobranchs (sharks and rays) in a wide range of marine habitats and depths across UAE waters. Nineteen species of sharks and rays were recorded, highlighting the diversity of species in these waters. However, the catch per unit effort obtained from the survey was amongst the lowest in the world, highlighting the need for critical management measures in these waters.

Cataloguing Fish Diversity in the UAE

We are currently cataloguing fish diversity in UAE waters, and have established a fish voucher specimen collection. With over 700 specimens from 163 species already preserved, this collection is an important aspect of our scientific research that will ensure a good understanding of the diversity of species living in our waters. Furthermore, genetic samples taken from these specimens are currently being analysed using DNA barcoding to finalise species identification.



A Leopard Whipray (*Himantura leoparda*).



Specimens are stored at the EAD Fish Laboratory.



In 2017, the number of Hawksbill Turtle nests was the lowest on record in 10 years.

Nineteen species of sharks and rays were recorded, highlighting the diversity of species in these waters. However, the catch per unit effort obtained from the survey was amongst the lowest in the world, highlighting the need for critical management measures in these waters.

Monitoring Nesting of Critically Endangered Hawksbill Turtles

This year, Hawksbill nesting began on March 20th, 2017 and continued until June 12th, 2017. One hundred and sixty nests were recorded from 11 off-shore islands, with the largest amount of 80 nests reported from Zirku Island, followed by 39 on Jarnain Island and 21 on Deyinah Island. This year's total number of nests was the lowest recorded in the last decade. Data on nesting ecology was collected to assess the status of nesting beaches and health of nesting female Hawksbill Turtles. This included the size and shape of nesting hawksbills, inter-nesting period, clutch-size, incubation and nesting success.

Studying Hadhra Fishery

To gain a better understanding of the species interacting with the Hadhra (stake nets) fishery in Abu Dhabi Emirate, we initiated a year-long study in April 2017. Data collected has included species composition, size and catch weight from four Hadhra: Halat Al Bahrani, Al Sader, Mirfa, and Al Sila. During this work, specimens of Naisser (*Lutjanus ehrenbergii*) are also collected to support stock assessment work, as well as other fish species to increase the stock represented in the EAD fish voucher collection. The results of this study will be available by mid-2018.

Developing the Dugong and Seagrass Research Toolkit

We developed the Dugong and Seagrass Research Toolkit in collaboration with TOTAL, Total Abu Al Bukhoosh and the Conservation of Migratory Species, Dugong MoU. Available free of charge at <http://www.conservation.tools/about-the-toolkit>, the toolkit helps users identify research questions on Dugong and seagrass and make informed decisions about the most appropriate research tools and techniques.

We also organised a two-day Seagrass and Dugong Technical Workshop, following the Third Meeting of Signatories (MoS3) to the Convention on Migratory Species (CMS) Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range (Dugong MoU). Attended by researchers, conservation practitioners and marine resource managers, the workshop provided training and capacity-building on when and how to apply the new Dugong and Seagrass Research Toolkit. In addition, it encouraged the collection of standardised and scientifically robust data on dugong populations, seagrass ecosystems and related coastal communities.

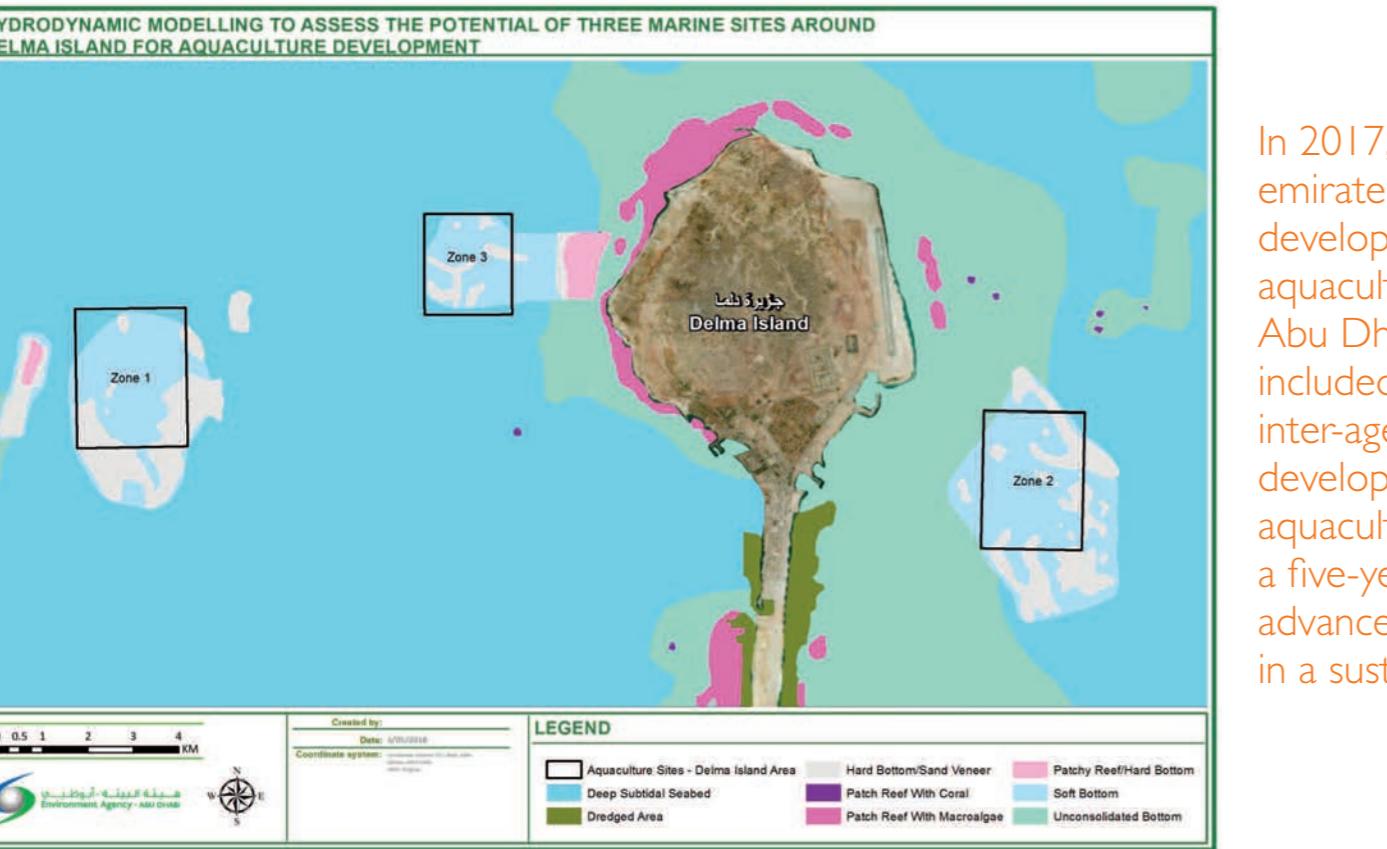


The Dugong and Seagrass Research Toolkit is a free online resource that can be used by researchers and conservation practitioners.



Aquaculture

In 2017, EAD led an emirate-wide initiative to develop a sustainable aquaculture sector in Abu Dhabi Emirate. This included establishing an inter-agency taskforce to develop a policy, along with a five-year strategic plan. The plan will set ambitious but achievable UAE production targets for aquaculture over the next five years, more than a 300 % increase in current production, and specifies the species and types of aquaculture systems suited to the UAE's waters. The plan will also streamline the current permitting process based on global best practice. At the



same time, we began developing marketing and communications materials to facilitate investment in the sector.

This year, we also started developing a hydrodynamic model to determine the environmental carrying capacity of three aquaculture sites off the coast of Delma Island, which had been identified as suitable sites for aquaculture development. We will also deliver an Environmental Impact Assessment (EIA) approach to assess the potential impacts of sea cage operations in each of the three proposed sites.

In 2017, EAD led an emirate-wide initiative to develop a sustainable aquaculture sector in Abu Dhabi Emirate that included establishing an inter-agency taskforce to develop a sustainable aquaculture policy, along with a five-year strategic plan to advance the aquaculture sector, in a sustainable manner.



Carrying out field inspections at Al Mina Fish Market, Abu Dhabi Emirate.

EAD carried out field inspections at Hadhra sites. Twenty one Hadhra were found being used illegally after the end of the season, and infringements were issued against users.



Raising awareness of Hadhra fishermen.



Field inspection at Hadhra sites.

Managing Our Fisheries

In 2017, we issued several decrees in coordination with the Ministry of Climate Change and Environment and the relevant stakeholders. These included a decree concerning the ban, catching and trading of Badah fishes in Abu Dhabi during the spawning season of April 1st to June 1st as well as a decree that regulate the use of Hadhra fixed nets. We also implemented a decree concerning a ban on catching and trading of Shari and Safi fish during the spawning season of March to April. Throughout the year, we raised awareness of the fishing community and carried out field inspections at landing sites, Hadhra sites and fish markets across the Emirate. Twenty one Hadhra were found being used illegally after the end of the season, and infringements were issued against users. Moreover, we implemented a decree concerning the catch and trade of sharks, in coordination with the Critical Infrastructure and Coastal Protection Authority (CICPA), and analysed fisheries infringement reports received from CICPA. Finally, we conducted a comparison study regarding the minimum size of commercial key fish species by considering scientific research and the traditional knowledge of local fishermen.



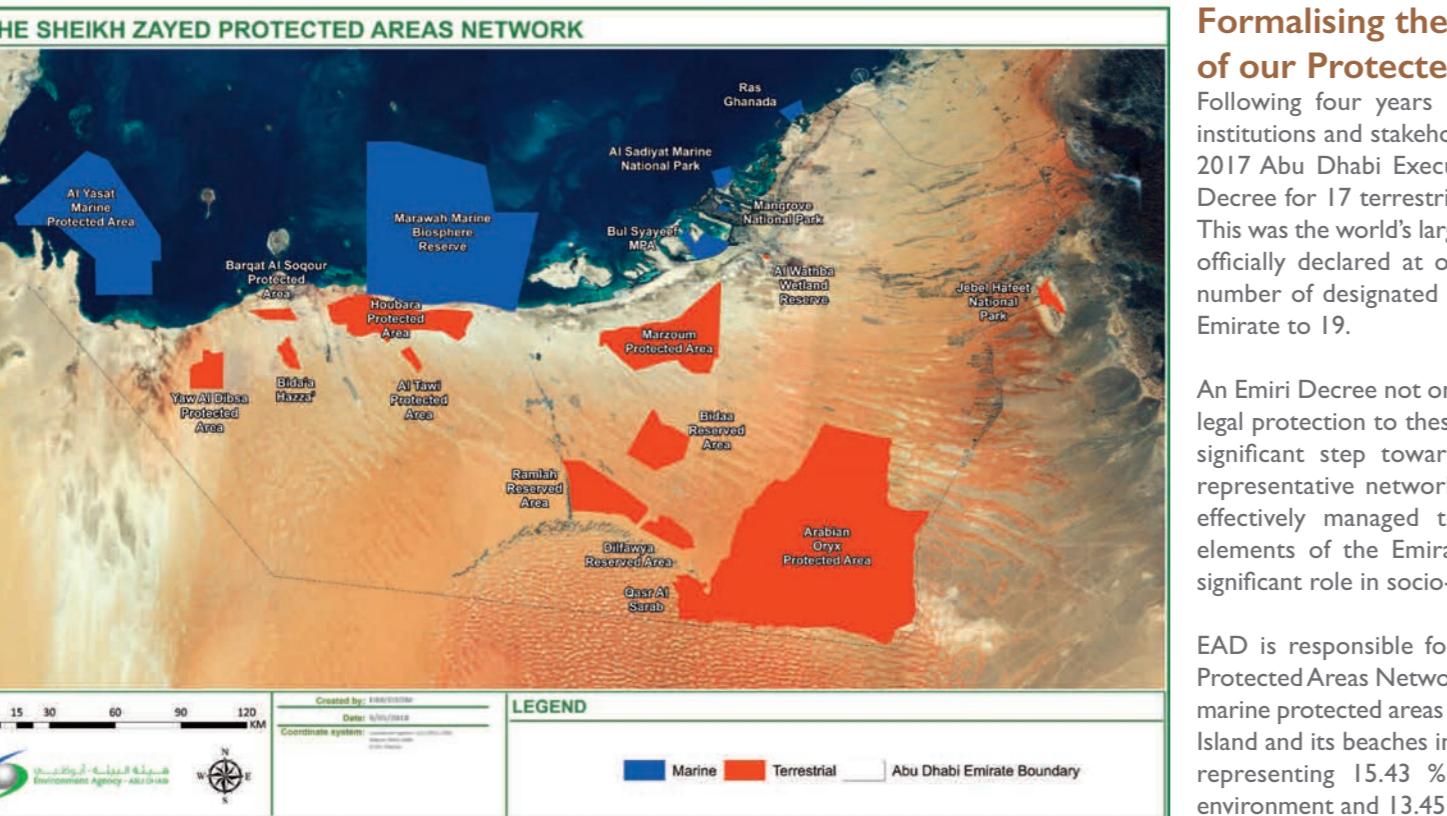
OUR SHEIKH ZAYED PROTECTED AREAS NETWORK

CONSERVING ABU DHABI'S
UNIQUE HABITATS AND RICH
BIODIVERSITY ON LAND AND
AT SEA THROUGH A FORMAL
NETWORK OF PROTECTED AREAS.

The Emirate of Abu Dhabi has a rich natural heritage and unique biodiversity, from the iconic Arabian Oryx and Houbara Bustard to Greater Flamingo, Dugongs, Dolphins and rare sea turtles species. In order to preserve the emirate's native flora and fauna, as well as the key habitats where these species make their home, a network of important conservation sites, known as Marine Protected Areas (MPAs) and Terrestrial Protected Areas (TPAs) has been established and is now known as the Sheikh Zayed Protected Areas Network.

One of our key aims has been to integrate the Sheikh Zayed Protected Areas Network into the Abu Dhabi Plan. Supported by our extensive research, surveys and field studies, the network sets a benchmark for sustainable practices in Abu Dhabi Emirate's terrestrial, coastal and marine areas. We have used an integrated approach to plan and manage MPAs and TPAs, balancing their compatible uses and activities, while minimising or avoiding conflicts of use and degradation to the environment.





As the authority managing the network, we have played a key role in addressing many of the related issues which have arisen at both a national and international level. The network has greatly contributed to policy-making and the preparation of a legal framework for the conservation of environment, fisheries, wildlife hunting and integrated coastal zone management. It has also contributed to the formulation, development and implementation of a National Biodiversity Strategic Action Plan (NBSAP) for the UAE, in order to meet Aichi Biodiversity Targets which were set as part of the Convention on Biological Diversity. The MPAs achieved first place in the environmental performance indicator (EPI) for the UAE in both 2014 and 2016. The IUCN's management effectiveness framework was applied to seven protected areas, indicating that they increased from 63 % in 2014, to 84 % in 2015, and to 87 % in 2016.

The Sheikh Zayed Protected Areas Network has greatly contributed to policy-making and the preparation of a legal framework for the conservation of environment, fisheries, wildlife hunting and integrated coastal zone management.

Formalising the Establishment of our Protected Areas

Following four years of engagement with relevant institutions and stakeholders in Abu Dhabi Emirate, in 2017 Abu Dhabi Executive Council issued an Emiri Decree for 17 terrestrial and marine protected areas. This was the world's largest number of protected areas officially declared at one time, and brings the total number of designated protected areas in Abu Dhabi Emirate to 19.

An Emiri Decree not only provides the highest level of legal protection to these protected areas but is also a significant step towards achieving the vision of a representative network of protected areas that are effectively managed to conserve key biodiversity elements of the Emirate of Abu Dhabi, and play a significant role in socio-economic development.

EAD is responsible for managing the Sheikh Zayed Protected Areas Network, a network of terrestrial and marine protected areas which extends from Abu Dhabi Island and its beaches in Al Dhafra to the Liwa Desert, representing 15.43 % of the emirate's terrestrial environment and 13.45 % of the marine environment.



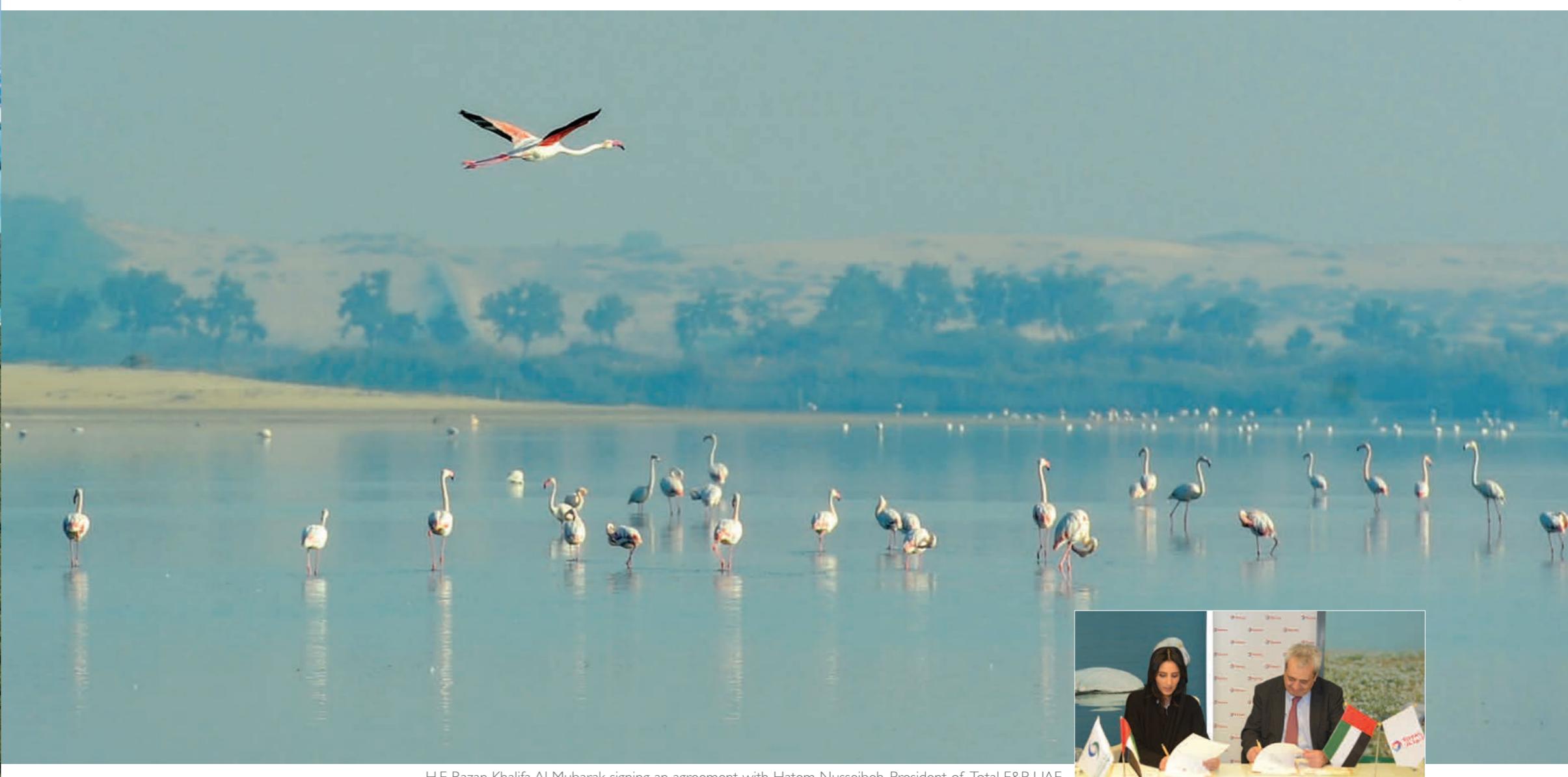
Visitors exploring the Eastern Mangrove National Park, one of EAD's protected areas.



We have prepared a framework for ecotourism inside MPAs and TPAs, with the aim of promoting awareness within the community, as well as the benefits of the ecosystem services provided by the conserved biodiversity.



As part of our ecotourism drive, we welcomed a number of VIPs to our protected areas. This includes a visit from H.R.H. Prince Charles, the Prince of Wales, who visited Bu Tinah Island, and experienced cultured pearls and bird-watching.



H.E Razan Khalifa Al Mubarak signing an agreement with Hatem Nusseibeh, President of Total E&P UAE, to transform Al Wathba Wetland Reserve into an educational and ecotourism destination.



We have prepared a framework for ecotourism inside MPAs and TPAs, with the aim of promoting awareness within the community, as well as the benefits of the ecosystem services provided by the conserved biodiversity. We have already identified and studied a number of potential ecotourism sites, and have presented them to interested partners.

Transforming Al Wathba Wetland Reserve
This year, we signed an agreement with TOTAL E&P UAE to further develop the internationally-recognised Al Wathba Wetland Reserve into a national and regional destination for education and ecotourism.



ENVIRONMENTAL POLICY AND REGULATION

OUR ENVIRONMENTAL POLICIES ARE BASED ON RIGOROUS SCIENTIFIC RESEARCH, INTERNATIONAL BEST PRACTICE AND THE HIGHEST QUALITY DATA.

In our role as the environmental regulator for Abu Dhabi Emirate, we work alongside Abu Dhabi Government to inform and shape the emirate's environmental policy. Enshrined in law, our mandate is to protect and preserve our environmental heritage, paving the way for a more sustainable future - locally, regionally and globally. From aligning environmental strategy with the national agenda, to ensuring that permits and inspections are both effective and efficient, all of our work is anchored in international best practice, innovation and the most rigorous scientific research.

POLICIES AND STRATEGY

As we celebrate 20 years of achievement in environmental protection in the Emirate of Abu Dhabi, perhaps one of our biggest accomplishments has been the growth of our collective knowledge on the state of our environment and on how it is affected by human activity. We strive to make better use of this knowledge for cohesive action on developing and enforcing stronger policies for the benefit of our natural environment and our community.



Testament to this effort is the Abu Dhabi State of Environment Report (AD-SoER), which we launched in October in the presence of a large number of dignitaries from the government, private sectors, NGOs, academia and students. Offering comprehensive insight into the current state of the environment of Abu Dhabi Emirate, it focuses on five major environmental themes (air quality, soil, water resources, marine water quality and biodiversity) and four important environmental issues (climate change, fisheries, forestry and waste). The report's lead authors were all Emirati staff in cooperation with a team of EAD experts and scientists.



Abu Dhabi State of Environment Report focuses on five major environmental themes (air quality, soil, water resources, marine water quality and biodiversity) and four important environmental issues (climate change, fisheries, forestry and waste). The report's lead authors were all Emirati staff in cooperation with a team of EAD experts and scientists.

Updating the Abu Dhabi Environment Policy Agenda

Following the delivery of the AD-SoER, we worked on responses to the key findings by developing the Abu Dhabi Environment Policy Agenda. Our objective is to set policy direction for the Emirate of Abu Dhabi to preserve and enhance its natural heritage, use resources efficiently and contribute to sustainable development.

Launching the Green Products and Services Initiative

Our aim is to enable economic development with the minimum impact on the environment. More importantly, we want to protect the environment by fostering economic investment. With this vision, we worked closely with the Department of Economic Development to launch the Green Products and Services Initiative. The initiative hopes to promote innovation and technological development among local businesses to produce green products and services that will contribute to environmental protection.

Embedding Environmental Considerations in Strategy

Achieving the Environment Vision is not possible unless environmental considerations are embedded into EAD's strategy, as well as into the plans of other local and national entities.

For Abu Dhabi Emirate, we have proposed projects to be implemented by all concerned entities within the context of the development of the Abu Dhabi Plan. These projects covered topics such as ambient and indoor air quality and its impact on public health, as well as climate change mitigation and adaptation.

Nationally, we have been working within the executive teams formed for the implementation of UAE Vision 2021, influencing the national agendas on water management, ecological footprint and air quality. We are proud that our water budget concept for Abu Dhabi Emirate was adopted at a national level, with plans to develop a national water budget approved by H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the United Arab Emirates. In addition, we have also agreed to develop a national air quality strategy, similar to the strategy we developed for Abu Dhabi Emirate.

RESPONDING EFFECTIVELY TO EMERGENCIES AND CRISES

Managing Emergencies, Safety and Business Continuity

We aim to be prepared for potential emergencies and times of crisis, to ensure the continuity of vital activities and tasks. We achieve this by:

- Training, rehabilitating and educating representatives, project and programme managers from across the Agency.
- Planning and developing preparedness and prevention plans, in cooperation with strategic partners and based on the criteria and requirements of the Abu Dhabi Executive Council. We also implement the alarm process, readiness and response plans, and conduct the recovery and follow-up processes for those emergencies which pose a hazardous risk to the emirate's environment.
- Developing occupational health and safety systems and business continuation plans, based on the Abu Dhabi Executive Council's criteria and requirements.



Responding to environmental emergencies and crises.

Environmental Emergencies and Crises

We aim to actively respond to emergencies and crises in Abu Dhabi Emirate in a timely and professional manner. In 2017, we achieved this target in 100 % of emergency cases. 139 cases occurred in Abu Dhabi Emirate: 33 were critical (such as oil and chemical spills, natural incidents and animal epidemic diseases), 22 were considered average cases, and 84 were complaints.

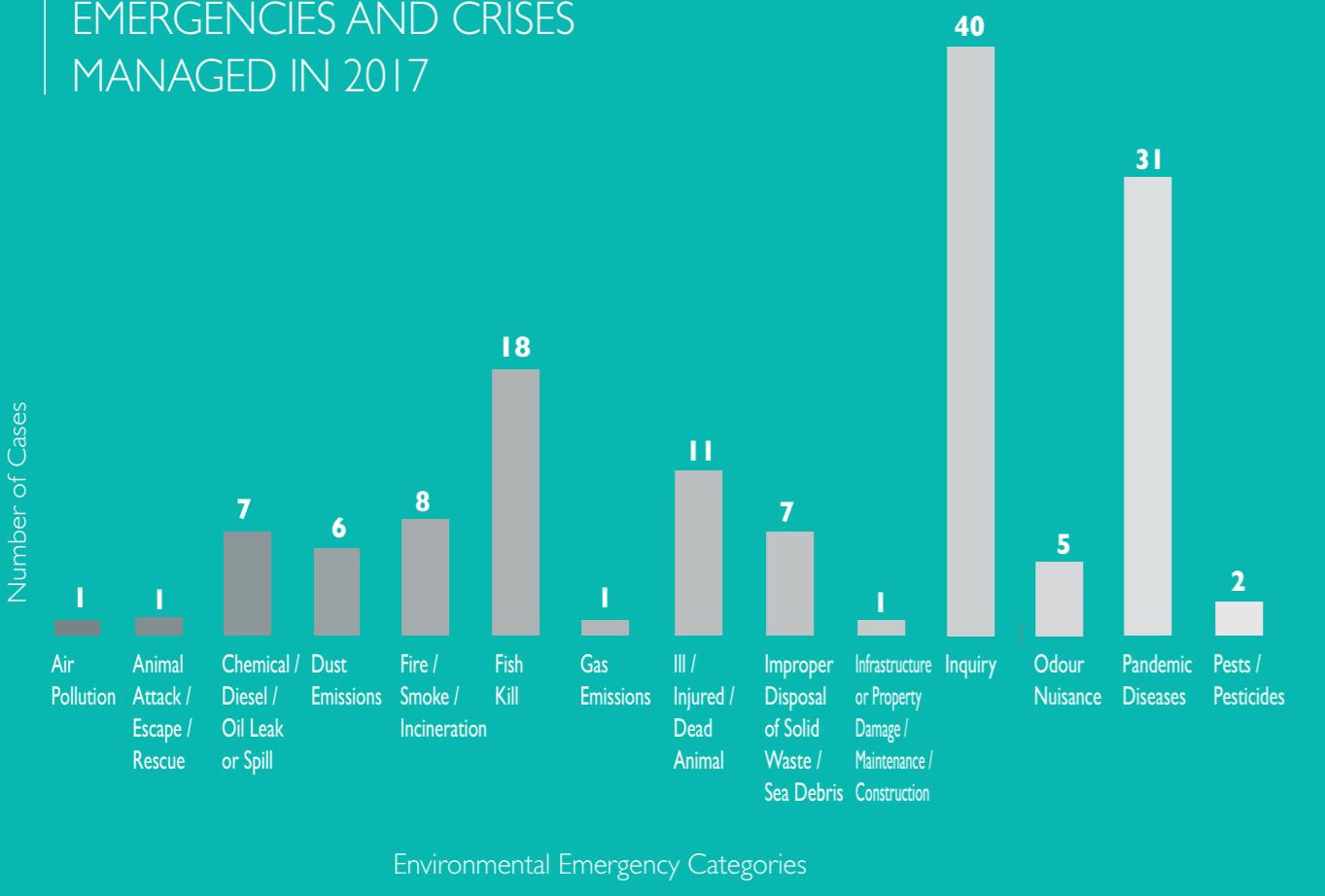
We have developed and implemented 11 emergency and crises plans for EAD and our local and international strategic partners.

2017 was a busy year as we rolled out awareness initiatives, programmes and training plans, helping us meet our targets. We conducted around 33 specialised workshops, drills, scenario-based exercises and training courses to improve awareness on the concepts and criteria of environmental emergencies and crises. In total, 113 EAD employees and strategic partners attended these activities, which further built capacity among our staff.



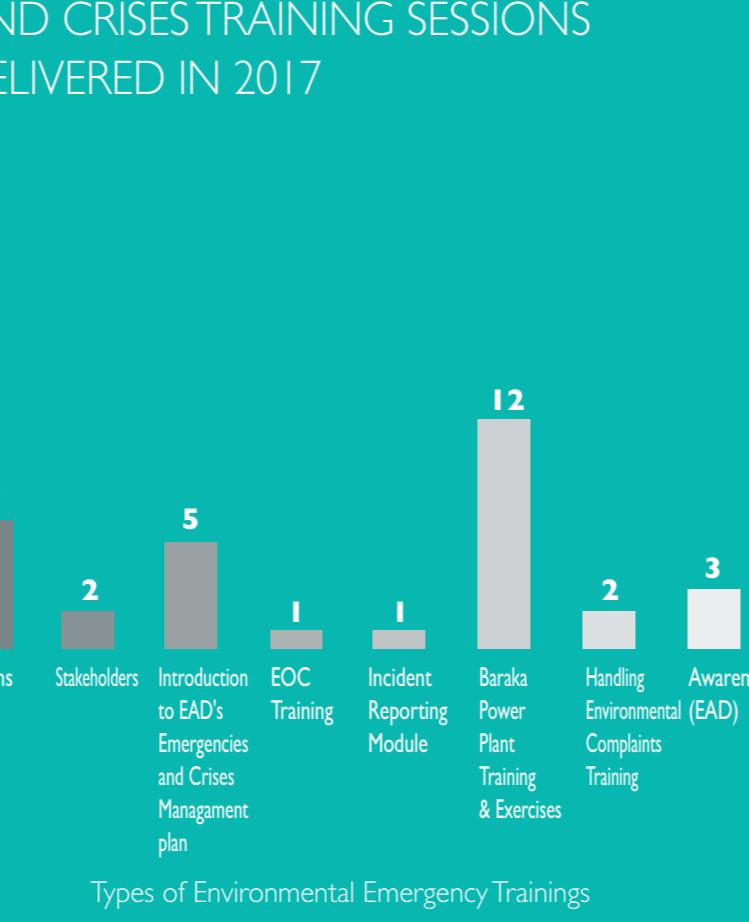
Engaging our partners on emergencies and crises.

ENVIRONMENTAL EMERGENCIES AND CRISES MANAGED IN 2017



Over the last year, we conducted 42 OHS workshops attended by 369 EAD employees. These workshops tackled many topics, such as the roles and responsibilities of occupational health and safety coordinators, accident reporting mechanisms and extinguishing fires, as well as running employees' health workshops.

ENVIRONMENTAL EMERGENCIES AND CRISES TRAINING SESSIONS DELIVERED IN 2017



Occupational Health and Safety (OHS)

Our OHS policy provides a safe and healthy work environment for employees in Abu Dhabi Emirate. We are implementing a comprehensive plan in line with 2017 occupational health and safety criteria and requirements, including training and awareness programmes. Over the last year, we conducted 42 workshops attended by 369 EAD employees. These workshops tackled many topics, such as the roles and responsibilities of occupational health and safety coordinators, accident reporting mechanisms and extinguishing fires, as well as running employees' health workshops. We also organised four campaigns, including a medical check-up week where employees were vaccinated against flu, and conducted a number of inspection visits to EAD sites and facilities to ensure that OHS criteria are implemented.

Business Continuity

We are developing and reviewing the internal policy for managing business continuity within EAD through the implementation of a business impact assessment process, which reflects on critical activities, services and systems in the Agency during emergencies and crises. We also conduct periodic reviews to internal and external call-tree communication plans, and review and update the business continuity communication plan. In 2017, we ran 14 training sessions at EAD's headquarters and offices in Al Ain and Al Dhafra to increase internal staff awareness through business continuity programmes, as well as conducting a awareness workshop aimed at the general public and stakeholders.

Our training sessions have been attended by approximately 90 EAD employees and university students over the last year.



Vaccinating against seasonal flu, in collaboration with Abu Dhabi Health Services Company (SEHA)



Celebrating Occupational Health and Safety Day 2017 with the Abu Dhabi Occupational Safety and Health Center (OSHAD).



An awareness session on Integrated Emergency, Crisis, Disaster and Business Continuity with the General Secretariat of the Executive Council (GSEC).

In 2017, we ran 14 training sessions at EAD headquarters and offices in Al Ain and Al Dhafra to increase internal staff awareness through business continuity programmes.

ENHANCING OUR REGULATORY ROLE

Over the last year we have drafted and prepared the following by-laws to enhance our regulatory role in protecting the environment:

- Environmental Permits, and Review of Environmental Impact Assessment (EIA) studies.
- Power Generation Sector Emissions
- Groundwater Management Regulation in Abu Dhabi
- Waste Classification Regulation
- Integrated Waste Management Regulation
- Self-Reporting of Environmental Data Regulation
- Maximum Limits for Emissions from Iron Industry Sources and Facilities
- Marine Water Quality Regulation

INSPECTIONS AND PERMITTING

This year, we have continued to upgrade our electronic environmental inspection system. To ensure the quality and accuracy of environmental inspections, we have



We continued to conduct compliance inspections and the assessment and characterisation of risks so as to develop a better understanding of environmental risks in the emirate.

added new questions derived from environmental requirements, as well as the best technical and administrative practices. In this latest update, questions covering more than 50 industrial sectors were incorporated, while violations were linked to the relevant legal citations to better assess environmental compliance.

We have also continued to conduct compliance inspections and the assessment and characterisation of risks so as to develop a better understanding of environmental risks in the emirate. This year, we launched a risk-based inspection programme, which uses a 'smart' approach to focus on facilities associated with higher risk.

Inspection and Evaluation Targets

It is our mission to inspect all industrial and commercial establishments, hazardous materials (HazMat) stores, and development and infrastructure projects to evaluate the compliance of these facilities and projects with the relevant environmental laws and regulations. We achieve this through our electronic environmental inspection system, and review the efficiency of the corrective measures adopted by facilities to mitigate the environmental impact of any violations.

In 2017, our inspectors conducted 1,294 compliance inspections to industrial, commercial facilities and development projects. This is an unprecedented figure compared to previous statistics, and greatly exceeds our 2017 target of 1,000 inspection visits.

Evaluating Hazards

Our inspectors continue to use the Risk Characterisation and Hazards Evaluation System (RiCHES) to evaluate the risks of industrial facilities. This addresses four risk dimensions: First Responder, Process Hazard, Ecological, and Public Health. In 2017, we undertook 498 hazard evaluations, meeting the year's target.

Holistic Compliance and Enforcement Programme (HCEP)

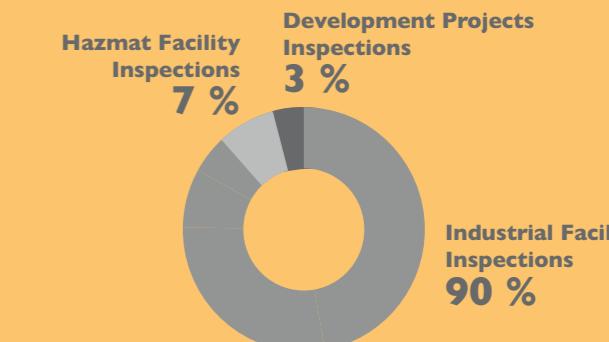
As we aim to follow best international practices to support the efficiency and competency of our environmental compliance programme, we have adopted a Holistic Compliance Environmental Programme (HCEP). The objectives of HCEP are:

- To educate the regulated community about requirements
- To monitor compliance through inspections

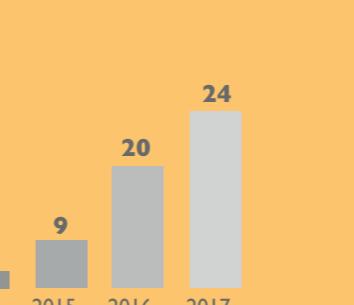
COMPLIANCE RATES COMPARED WITH TOTAL INSPECTION VISITS 2013-2017



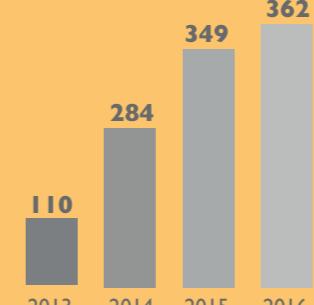
TYPES OF INSPECTIONS CARRIED OUT IN 2017



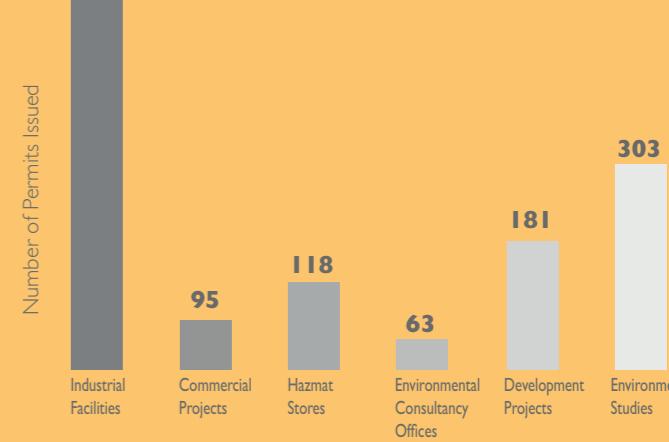
NUMBER OF ENVIRONMENTAL CASES ESCALATED TO COURT 2013-2017



NUMBER OF HAZARD EVALUATIONS 2013-2017



NUMBER AND TYPE OF PERMITS ISSUED IN 2017



- To take increasingly stronger actions to ensure a timely and appropriate response
- To prevent future non-compliance through strong enforcement measures

HCEP facilitates better collaboration with the judicial department through a consistent escalation process for environmental violations. It allows our inspectors to improve enforcement action practices and, at the same time, strengthens our regulatory role in Abu Dhabi Emirate. In 2017, 24 environmental cases were escalated to the courts. EAD referred these cases to the Abu Dhabi judiciary, which imposed financial penalties on entities that had committed violations due to their failure to comply with environmental requirements. The facilities subsequently paid the fine to correct the outstanding violations. This enforcement process brings non-compliant entities into compliance with granted permits and applicable laws, regulations, and standards in a timely manner.

Permitting and Assessment

Over the past year, we held a series of technical training courses to build capacity within the team, which included carrying out corrective action plans, drafting environmental conditions for inclusion in environmental permits, and an air pollutant modelling course. We hosted a workshop for EAD staff on the 'polluter pays principle', considering the possibility of applying the concept in the emirate based on international best practice. Additionally, we trained staff and employees from partner entities on how to respond to nuclear and radiological emergencies in the outer parameter of Barakah Nuclear Power Plant, during an environmental sampling activity. These sampling activities included air, soil, marine water or marine sediment.

We completed the third phase of the Environmental Theatre, an electronic system that summarises comprehensive environmental information on a map of Abu Dhabi Emirate. Development of the system began in 2015 and it is expected to be launched by the end of 2018. It will help decision-makers assess the potential impacts of industrial and development projects.

We have completed the third phase of the Environmental Theatre, an electronic system that summarises comprehensive environmental information on a map of Abu Dhabi Emirate.



| Training staff to respond effectively in emergencies.

Applications for no objection certificates (NOCs) were received through the No Objection Certificate Programme for Abu Dhabi facilities and infrastructure. In 2017, 1,485 transactions were reviewed and completed. Applications for oil and infrastructure projects were carefully evaluated and permitted in the Marawah Marine Biosphere Reserve and Arabian Oryx Protected Area, with a focus on the application of the best international environmental practices. An environmental impact assessment for the Al Mirfa residential project was evaluated and approved, which includes 400 homes across an area of 2 km². The Sweihan Solar Project and Jahizya City for Safety, Security and Disaster Management for manufacturing projects were also approved, as well as updates and modifications to the Emirates Aluminium project and Al Taweelah Alumina Refinery, which include substantial changes to the existing infrastructure.



In 2017, we worked alongside Tadweer to permit waste treatment plants. We also coordinated with Emirates Nuclear Energy Corporation (ENEC) to permit the Baraka Nuclear Plant. Featuring four nuclear reactors, the first is expected to be operational in 2018. Permit conditions include an environmental compensation plan and thermal modelling.

Areas which submitted Terms of Reference (TOR), attained approvals and are in the process of submitting the relevant studies (such as EIA and SEA) in 2017 include: Hudayriat Island, Rehabilitation of Mussafah Industrial Area, Zayed Port, Motor World (Shamkha), Al Ghadeer (Phase 2), Abu Dhabi Island Resort, Ghantoot Resort, Qasr Al Jirf and Bab Al Dhafra 400 KV overhead line.

A number of agreements were finalised during 2017:

- EAD became a signatory to the Unified Government Building Permitting Agreement in April 2017. The Assessment and Permitting Department follows up the applications received through the system.
- The Khalifa Industrial Zone Abu Dhabi (KIZAD) Agreement was signed in November 2017. The agreement will enhance cooperation between EAD and KIZAD to simplify the environmental permit process and improve environmental performance in the Emirate by providing a clear, effective, and efficient framework for the environmental permitting of industrial, commercial and light industrial projects in KIZAD.
- The Department of Transport's Abu Dhabi Comprehensive Transport Plan was approved in 2017, covering future road and public transport projects.



We coordinated with Emirates Nuclear Energy Corporation (ENEC) to permit the Baraka Nuclear Plant. Featuring four nuclear reactors, the first is expected to be operational in 2018. Permit conditions include an environmental compensation plan and thermal modelling.

OUR ENVIRONMENTAL CAMPAIGNS

Eltezam

This year, the Eltezam campaign targeted the metal surface coating sector, due to its potentially dangerous impact on the environment. It follows the success of the first Eltezam campaign, targeting the ready-made concrete sector, and the second which focused on fibre-reinforced plastics.

The scope of 2017's campaign was to ensure that permitted facilities were compliant with environmental permitting conditions that aim to reduce potential environmental risks and maintain public health. A workshop, attended by 200 facility representatives, included a presentation on the role and functions of EAD and the mechanism of environmental inspection, as well as the best technical and administrative practices to reduce or minimise the harmful environmental impacts of this industrial sector. During the workshop, a bilingual technical brochure was distributed, detailing the relevant environmental laws and regulations that the surface coating sector must follow to obtain the necessary environmental permits and licenses.



Launching the 2017 Eltezam Campaign, focusing on the metal surface coating industry.



EAD inspectors collect soil samples.

Sandblasting Inspection Campaign

This year, our inspectors conducted a field survey on sandblasting workshops and factories. This enabled us to provide them with the environmental requirements for the sector, as well as the best technical and administrative practices to improve their environmental performance and reduce the pollution resulting from their processes. Out of the 65 facilities that we inspected, 30 facilities were found to be non-compliant with our requirements. We suspended the environmental permits of nine facilities due to their failure to correct violations, taking further legal actions against them.

Risk Characterisation of HAZMAT facilities

In 2017, our inspectors took a leading role during a joint task with other government entities across Abu Dhabi Emirate to evaluate the risks of HAZMAT facilities in Musaffah Industrial Area. Harnessing their knowledge and technical expertise, EAD inspectors were tasked with training and mentoring inspectors from other entities on how to use RiCHES to execute this project. HAZMAT facilities were divided into low, medium and high-risk categories, with the results from the task presented to the Executive Council. EAD inspectors are currently helping Abu Dhabi Ports to evaluate the risk of HAZMAT stores on their premises.

Benchmarking

Our benchmarking project began in 2015, with the aim of allowing EAD to benefit from the experiences of other countries and to improve overall operations. The scope of the benchmarking project is twofold: to evaluate various aspects of benchmarked countries' processes in relation to best practices within the environmental sector; and to find examples of superior performance and understand the processes and practices that make that possible.

Based on the major outcomes of the benchmarking project, in 2017 a number of improvement ideas covering the following topics were either implemented or are currently in progress:

- Implementation of a multi-media permit
- Implementing a risk-based programme to enhance environmental permitting
- Improving the EAD De-minims tool
- Applying the Polluter Pays Principle (PPP)
- Implementing a public participation programme
- Including compliance data, permit data and legal citations into the inspection report



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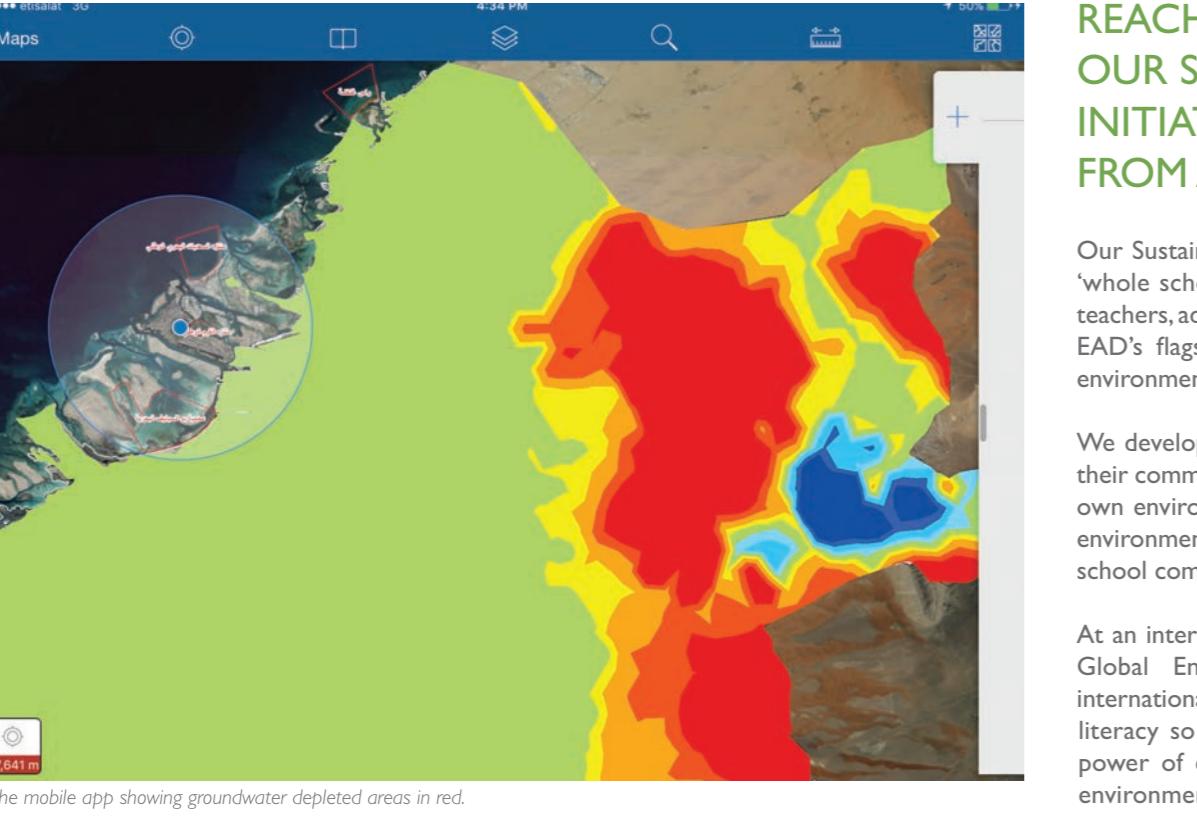
ENVIRONMENTAL INFORMATION AND COMMUNITY ENGAGEMENT



CARRYING OUT AN
ONGOING DIALOGUE WITH
THE COMMUNITY AND
GENERATING GRASSROOTS
SUPPORT FOR SUSTAINABILITY
IS AN ESSENTIAL TOOL FOR
EFFECTIVE ENVIRONMENTAL
PROTECTION.

OPTIMISING THE EFFICIENCY OF OUR GROUNDWATER WELL INSPECTIONS

This year, we optimised the efficiency of our groundwater well inspection process through the introduction of a digital data collection and reporting mechanism. The application comprises a mobile data collection system for the field inspection of wells, as well as a reporting system for keeping track of inspections, violations and necessary actions to manage these. The system offers quick and accurate support to our field inspectors to detect illegal practices and to track and issue violations if needed. Inspection data derived from the system enables decision-makers to follow field cases remotely, allowing them to take adequate measures to ensure environmental compliance.



Our Sustainable Schools Initiative is a 'whole school' initiative which reaches out to students, parents, teachers, administrative staff and the school community.

REACHING NEW HEIGHTS WITH OUR SUSTAINABLE SCHOOLS INITIATIVE: FROM AWARENESS TO ACTION

Our Sustainable Schools Initiative (Al Madaris Al Mustadama) is a 'whole school' initiative which reaches out to students, parents, teachers, administrative staff and the school community. It is one of EAD's flagship initiatives in our quest to create a sustainable environment and a better future for all.

We developed the initiative to build capacity within schools and their communities so that they are able to assess and address their own environmental impacts. It also involves rolling out sustained environmental education programmes and activities for the whole school community.

At an international level, SSI is used as a global case study by the Global Environmental Education Partnership (GEEP). This international partnership is committed to advancing environmental literacy so as to create a more sustainable future through the power of education. SSI demonstrates how the links between environmental education initiatives and broader national sustainability policies can foster programme successes and partnerships, as well as why environmental education initiatives must demonstrate clear benefits for diverse stakeholders to ensure their long-term sustainability.

At a national level, SSI featured as part of the Executive Team of Waste Management Targets. The aim is to achieve national waste targets by developing and implementing creative initiatives.

The Third Annual SSI campaign raised awareness about climate change, and the damage caused by daily practices leading to global warming. 60 students and over 70 representatives from government



SSI featured as an international case study



A student collects waste as part of a clean-up campaign at Al Wathba Wetland Reserve.



An SSI student plants Ghaf saplings at Al Salamat Forest in Al Ain.

and private organisations in Abu Dhabi Emirate participated in the campaign. Together, they planted 50 Ghaf trees at Al Salamat Forest in Al Ain, which will sequester an estimated 850 kg of CO₂ in one year.

The Fourth Eco Club Summit gathered national and international educational and environmental experts alongside environmental youth leaders and eco-club representatives from Abu Dhabi's leading schools, three hundred and forty students

participated this year under the theme of 'The Power of Sustainable Giving'. As part of the initiative, we conducted a number of workshops involving 120 participating schools to encourage innovative solutions for sustainability.

We developed and published *Towards a Sustainable World* for secondary school teachers to provide them with information, practical methods and activities for teaching sustainability.



Dr. Abdulla Zamzam, EAD's Assistant Secretary General of Operations, and Salem Bin Ashour, Chief Representative and General Manager of BP – UAE, at the opening of the Eco Club Summit Exhibition.



Awarding young environmental talent at the Fourth Eco Club Summit.



A resource book developed to build educators' capacity in enhancing sustainability.

SUSTAINABLE SCHOOLS INITIATIVE - ACHIEVEMENTS IN 2017



135 schools registered



3,436 students participated in Eco Clubs, implementing 348 environmental projects



Daily water consumption *per capita* in schools decreased from **32.7 litres in 2015 to 25.88 litres in 2017**



Schools' daily waste generation decrease from **99g per capita in 2015 to 55g per capita in 2017**



Use of renewable energy, energy-efficient equipment, native plants for greening and re-use of grey water has significantly increased in SSI schools



Students travelling using shared transport in SSI schools increased from **70 % in 2015 to 73 % in 2017**



Daily energy consumption *per capita* decreased from **57 MJ in 2015 to 47 MJ in 2017**



Green areas in schools increased from **7 % in 2015 to 9 % in 2017**



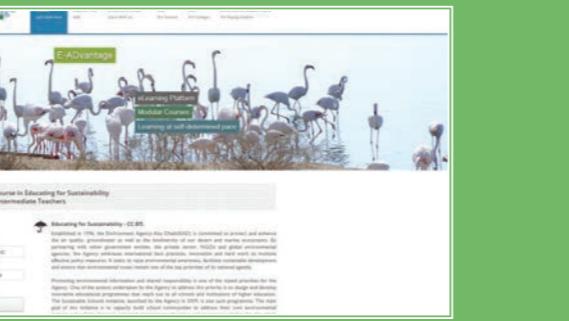
7,201 students participated in the Green School Audit to assess their school's environmental performance



41,252 students experienced outdoor environmental education through 544 field trips



A teachers' guide to promote environmental learning through field trips.



The online training portal for teachers unable to attend EAD's face-to-face programmes.



Sustainability Stars at the SSI Awards Ceremony 2017.



Results from the 'I See a Tree' Challenge, which aimed to improve awareness about the UAE's native plants.



Students identifying plants as part of the 'I See a Tree' Challenge.

We also published the *Outdoor Education Hand Book*, which provides ideas for and advice to teachers on field trips that are not restricted to the natural environment. It focuses on the importance of children learning about our man-made surroundings and their impact on the natural environment, both beneficial and harmful. We launched 'I See a Tree', a citizen science challenge. Using the Collector App, it aims to increase people's awareness about the UAE's native plants. We also developed and published six e-resources to guide schools on assessing their own environmental impact and finding ways to mitigate and reduce their ecological footprint. These are accessible at www.ead.ae.

This year, we trained 80 intermediate teachers on linking environmental issues to the curricula through the SSI Online Certification Course in Educating for Sustainability. We also hosted six workshops for 230 teachers on assessing their school's environmental impact, and establishing and running successful school eco clubs. In these workshops, we shared new teaching and learning tools to help develop essential competencies in environment and sustainability education.

Our SSI Awards Ceremony is a platform for recognising schools that have attained excellence through the initiative. Awards are given to schools, which have undertaken and implemented part of or all the four components of the initiative in the best way. This year, there were five main awards: Lead School, Best Green Audit, Best Community Outreach, Best Environmental Educators and Best Outdoor Education. Out of 277 entries, there were 23 winners, judged by evaluators from 19 different entities.

Aligning with the Year of Giving, announced by H.H. Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, we distributed over 700 environmental education books in schools participating in SSI. These resources aim to support teachers in environmental education in the classroom.



Students sharing their environmental knowledge with farmers.



Students recording their monthly electricity readings, as part of the SSI Energy Audit.



Students recording their monthly water consumption from metres, as part of an SSI Water Audit.



Students studying soil, flora and fauna during a desert field trip.

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STRENGTHENING THE SUSTAINABLE CAMPUS INITIATIVE: YOUTH AS AGENTS OF CHANGE

We launched the Sustainable Campus Initiative in 2014, focusing on the UAE's university students, staff and facilities management teams. The initiative recognises that engaging with and empowering the nation's youth as 'agents for change' is an essential step in making the dream of a sustainable, environmentally-friendly future become a reality.

We aim to strengthen students' leadership abilities and build knowledge and capacity among this dynamic section of the community. We also hope to encourage students to take responsibility for their environmental footprint, and give them the means to take ownership of the country's environmental future as champions of sustainability and positive change.

This year, the Ministry of Education circulated the Sustainability Framework for Universities in the UAE to all higher education institutions. This acts as a policy guideline for promoting sustainability, so as to embed it in the campus, curriculum, community and culture of the university through good leadership and management. The policy raises sustainability awareness and promotes sound environmentally and ethically responsible behaviours across all academic levels. In addition, the policy monitors and manages universities' environmental resources and sets targets for continuous improvements in their use.

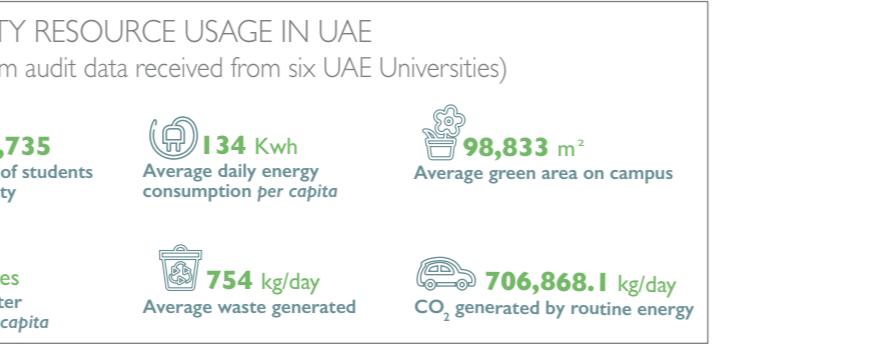
The SCI initiative recognises that engaging with and empowering the nation's youth as 'agents for change' is an essential step in making the dream of a sustainable, environmentally-friendly future become a reality.



The opening plenary session of the Mentor Conference: Mainstreaming Sustainable Development Goals and the Paris Treaty Concerns in Universities of the UAE.



Students exhibiting their achievements during the Sustainable Campus Initiative Awards Exhibition at Borouge.



In 2017, we hosted the Mentor Conference: Mainstreaming Sustainable Development Goals and the Paris Treaty Concerns in Universities of the United Arab Emirates. It highlighted the important role of universities and colleges in promoting the Abu Dhabi Environment Vision 2030, aligned with the Emirate of Abu Dhabi 2030 Plan. It also looked at expanding the field of sustainability research to achieve the Sustainable Development Goals (SDGs). One hundred alumni from 20 universities participated in the conference this year. With seven expert panelists, the discussion focused on the role of higher education in realising national and global sustainable goals.

The Sustainable Campus Initiative Awards Ceremony celebrated the initiative's fourth successful year. Recognising exemplary Green Campus Audits and Sustainable Action Projects by participating institutions, this year 14 colleges and universities from Abu Dhabi, Dubai, Sharjah and Ras Al Khaimah took part.

MOBILISING THE NEXT GENERATION THROUGH THE GREEN YOUTH MAJLIS

Considered the most important component of SCI, the Green Youth Majlis (GYM), is open to youth aged between 18 and 25 who are part of universities, campuses or registered youth associations in the UAE. As an inter-collegiate, youth-lead platform, it is designed to address the most pressing current environmental challenges on a local and global scale.

In 2017, GYM discussed a number of key environmental challenges and issues currently facing the UAE, potential solutions, and the projects and events that have taken place with its members:

- Held in January, the 17th Green Youth Majlis took place during the International Water Summit (IWS), and was delivered by the International Renewable Energy Agency (IRENA). IRENA conducted a special awareness session for GYM members about the IRENA Internship Programme.
- To celebrate EAD's 20th anniversary, GYM students volunteered at children's workshops organized by Abu Dhabi Music and Arts Foundation (ADMAF) at Umm Al Emarat Park. Taking place over two days, the workshops aimed to
- GYM members also took part in Earth Hour on March 25th, 2017 by posting on Social Media using the hashtags #ChangeClimateChange and #EarthHourUAE to raise awareness.



GYM members at the IRENA Internship Programme awareness session at the International Water Summit 2017.



GYM members volunteering at children's workshops at the International Water Summit 2017.



GYM members refurbish an old family house in the Al Zafarana area in Abu Dhabi, part of their A Caring Hand Ramadan campaign.

introduce children to the concept of ecosystems. GYM members assisted the children and helped them to design spaceships, ensuring that they understood how all components of an ecosystem are interlinked.

• Gym members convened to plan 2017's Ramadan campaign, a Caring Hand, which followed the principles of The Year of Giving. GYM members renewed and refurbished an old property in Abu Dhabi, focusing on the use of sustainable renewable materials, including painting walls, repairing any defects and furnishing the house. The campaign also included simple maintenance, such as replacing light bulbs and isolating exposed electrical wires, which was all carried out by GYM members. At the end of the project, the team bought and delivered Eid Al Fitr gifts for the young children living in the house, which included new clothes, stationery, toys and kitchen appliances. This campaign demonstrated the possibilities of sustainable renovation for an old property; and provided Gym members with an opportunity to demonstrate their skills and perform simple maintenance activities, promoting teamwork and learning new techniques.

• GYM members also took part in Earth Hour on March 25th, 2017 by posting on Social Media using the hashtags #ChangeClimateChange and #EarthHourUAE to raise awareness.

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Conducting an Earth Hour activity for children by SCI University students at Masdar.



The EAD's stand at IWS 2017, highlighting the progress of our Groundwater Well Inventory Project.

At IWS 2017, we showcased our efforts to find innovative solutions to protect and conserve the emirate's strategic water resources, including the Abu Dhabi Groundwater Well Inventory Project, the new Groundwater law and the Liwa Strategic Water Reserve.

SUPPORTING OUR GROUNDWATER AND BIODIVERSITY CONSERVATION INITIATIVES

This year, we highlighted our efforts to conserve water resources at the International Water Summit (IWS) 2017, a global exhibition dedicated to developing solutions for water sustainability in arid regions. More than 10,200 visitors from 111 countries attended this year's summit, which welcomed government leaders, policy makers, entrepreneurs and thought leaders. During the exhibition, we showcased our efforts to find innovative solutions to protect and conserve the emirate's strategic water resources, including the Abu Dhabi Groundwater Well Inventory Project, the new Groundwater law and the Liwa Strategic Water Reserve.

We also took part in the Annual Liwa Date Festival 2017 in the Al Dhafra Region. We raised awareness about our Groundwater Well Inventory Project and detailed the technical team's efforts over the first year.



Farm owners at EAD's stand at the Annual Liwa Date Festival 2017.



A visitor learning more about falcons at EAD's stand.



H.H. Sheikh Nahyan bin Mubarak Al Nahyan, Minister of Tolerance, visiting EAD's stand at ADIHEX 2017.

We raised awareness about Abu Dhabi Emirate's biodiversity on land, in water and in the air; as well as a number of our key environmental initiatives, at the Abu Dhabi International Hunting and Equestrian Exhibition (ADIHEX) 2017. The stand offered immersive experiences in three very different habitats: marine, deserts and mountains. Visitors were taken on a journey to explore in these unique ecosystems and the many species that call them home. Visitors also learned more about our Abu Dhabi Falcon Hospital.



An EAD employee giving a tour of the EAD stand to members of Abu Dhabi Police.



DEVELOPING EXCELLENCE AND LEADERSHIP

CREATING AND MAINTAINING A CULTURE OF EXCELLENCE THROUGH EMPLOYEE DEVELOPMENT AND CAPACITY-BUILDING.

With nearly 1,000 staff employed across EAD, we rely on the dedication, hard work and expertise of our workforce to achieve our goals. We strive to recruit the very best local and international talent to the organisation, and equip our team members with the means to achieve their full potential at every stage of their career. We are dedicated to providing opportunities to exceptional Emirati scientists and environmentalists, both male and female, recognising excellence and nurturing their leadership abilities as they build the foundations of a more sustainable future.

EAD employees shortlisted for the Abu Dhabi Award for Excellence in Government Performance (ADAEP)


Abdul Rab Al Hamiri
Dedicated Long-serving Employee


Sultan Al Ali
Field Work


Mariam Al Zarkani
New Joiner


Suzan Al Ghanem
Administrative Support


Khalfan Al Romaithi
Innovative Employee


Mansoor Al Tamimi
Technical/technological

EAD employees shortlisted for the Abu Dhabi Award for Excellence in Government Performance (ADAEP).



Abdul Rab Al Hamiri won in the 'Dedicated Long-serving Employee' category in Abu Dhabi Award for Excellence in Government Performance (ADAEP)

Operational Excellence

This year, six EAD employees were shortlisted in the fifth cycle of the Abu Dhabi Award for Excellence in Government Performance (ADAEP), while the Industrial Facilities Permitting Service was shortlisted in the 'Joint Service' category. Abdul Rab Al Hamiri won in the 'Dedicated Long-serving Employee' category.

This year, we successfully upgraded to the most recent certification for ISO 9001:2015, concerning Quality Management Systems, and ISO 14001:2015, for Environmental Management Systems.

We also successfully renewed our certification for ISO 20000-1 on IT Service Management, and OHSAS 18001 on Occupational Health and Safety for the next three years, and passed a surveillance audit for ISO 22301 on Business Continuity Management.



We launched the Women in Science and Environment (WISE) Trailblazers programme to empower female staff to drive transformative change within the workplace. The programme offers support for women to fulfil their role as key partners in building the future of this organisation and our nation.

Attracting the Best Talent

In 2017, we continued participating in career fairs both locally and abroad, promoting the Agency as an employer of choice. Forty-five Emiratis and two expatriates joined the organisation in 2017. We also offer a robust internship programme, and encourage both Emirati and expatriate students to join us. In 2017, we hosted 25 interns.

Empowering Our Female Workforce

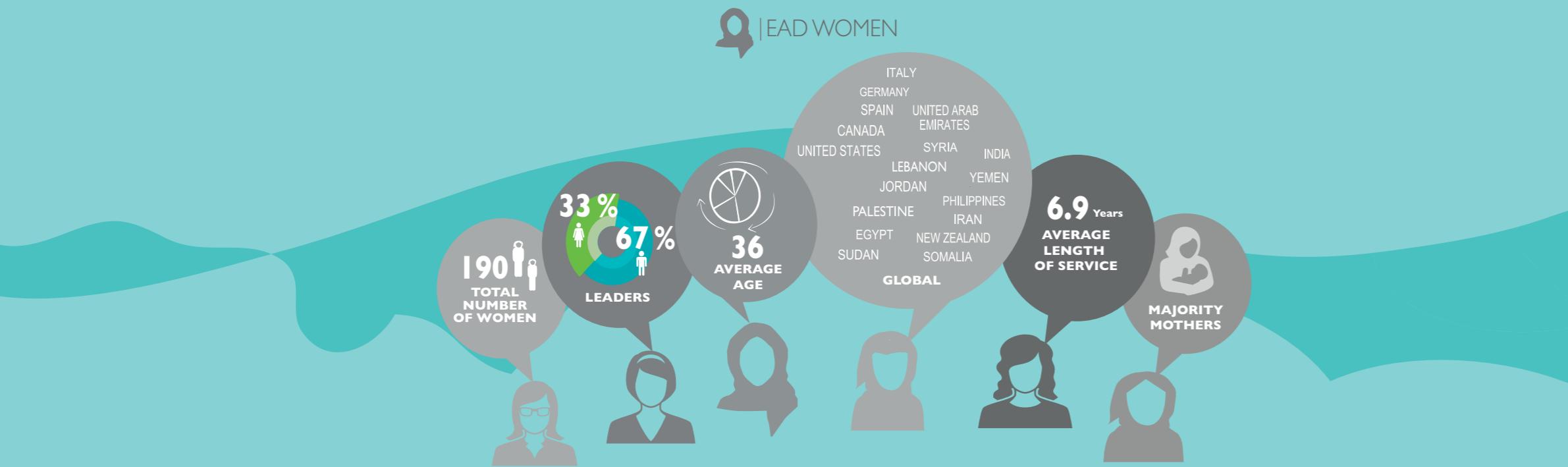
At every level of our organisation, there are highly-educated, ambitious women in science investigating air quality, studying endangered species, discovering new falcon diseases and experimenting with the latest technologies. We also have inspirational women in our support services, influencing policy-making, retaining and developing talent as well as innovating in environmental protection. While they make up only 20% of EAD, they are an efficient, hard-working and dedicated force, which helps drive our environmental vision forward.

In November, we launched the Women in Science and Environment (WISE) Trailblazers programme to empower female staff to drive transformative change within the workplace. The programme offers support for women to fulfil their role as key partners in building the future of this organisation and our nation.

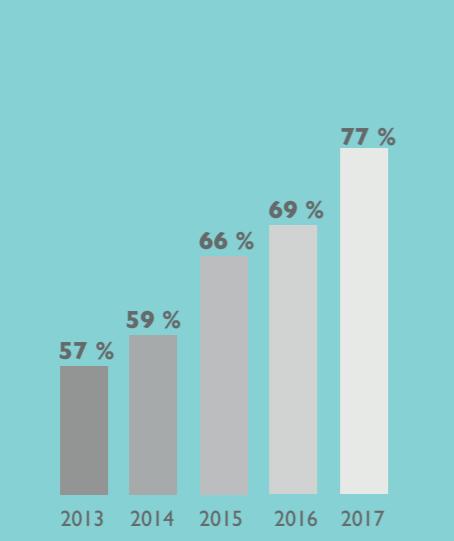
Developing and Recognising Employees

In 2017, as part of our drive to build capacity among Emirati staff, 60 high-potential employees completed the Leadership Development Programme.

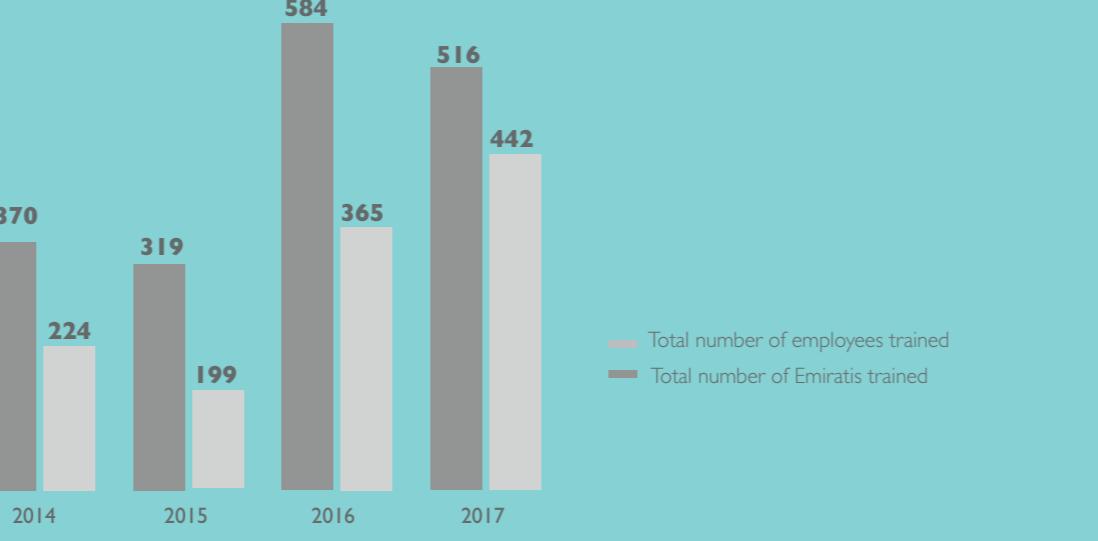
All of our employees have formal development plans in line with the competencies required for their role, enabling them to deliver their responsibilities at an optimum level. We offer internal and external



EMIRATISATION LEVELS WITHIN EAD 2013-2017



EMPLOYEE TRAINING FIGURES AT EAD 2014-2017



training to enable staff to develop further. This year, training included 46 EAD rangers to help improve their efficiency in implementing local and federal laws and preventing violations.

This year, we also recognised the outstanding contribution of 96 employees for their service to EAD over the last 10, 15 and 20 years, and awarded 53 as part of our Employee of the Quarter award scheme.

Meeting Emiratisation Targets

In 2017, our Emiratisation drive has resulted in an upward trend in Emirati staff employed at EAD. At the same time, we continued to attract and retain specialised staff from all over the world, who have enriched our workforce thanks to their diverse array of skills, experience and expertise.

Enhancing Our Customer Service

In 2017, we developed a Customer Happiness Charter that outlines our core values and standards of service. This includes customer centricity, accountability and empowerment, collaboration and teamwork, and continuous improvement. The charter also highlights key expectations for staff and customers. For EAD employees, this focuses on courteousness, knowledge, responsiveness, reliability, accessibility and quality. Likewise, customers should treat staff respectfully, and perform necessary obligations such as completing relevant paperwork, informing the Agency about errors or changes to personal information, and replying to queries from EAD to enable us to provide the best service.

This year, we also published service cards on www.ead.ae to help customers easily access the different categories of our services. The cards provide detailed descriptions of the services we provide, including the steps and relevant fees.

Enhancing Communication with Our Partners

In order to enhance communications between EAD and our partners, we launched the first phase of an interactive voice response (IVR) telephone system. The technology enables customers to interact with the Agency's host system via their keypad, through which they can direct their inquiries by following instructions from a pre-recorded dialogue.

Phase 1 of the Digital Government Documents Integration Completed

This ongoing initiative is part of a Whole-of-Government scheme for data exchange with customers, and aims to improve governmental services and deliver efficiency across all channels. At EAD, we successfully completed integration with digital government documents for the following services:

- Environmental Consultancy Office Registration
- Development and Infrastructure Projects Permits
- Hazardous Materials Trading Permits
- Aquaculture Permits
- Mangrove Planting NOC
- Industrial Facilities Permits

From January 1st, 2018, customers applying for the above services will no longer need to upload their trade licenses, site plans or passport details.



MORE ACHIEVEMENTS

- ABU DHABI FALCON HOSPITAL (ADFH)
- ABU DHABI SUSTAINABILITY GROUP (ADSG)
- ABU DHABI GLOBAL ENVIRONMENTAL DATA INITIATIVE (AGEDI)



The Abu Dhabi Falcon Hospital.

ABU DHABI FALCON HOSPITAL (ADFH)

Established in 1999, Abu Dhabi Falcon Hospital has become the world's leading centre for falcon and avian medicine and research. The award-winning facility is also home to a leading veterinary clinic for domestic and commercial animals, and houses the Abu Dhabi Animal Shelter to care for the emirate's strays.

Winning International Awards

In December 2017, ADFH was awarded the coveted 'World Responsible Tourism Award' for the second time at the annual World Travel Awards, considered the 'Oscars' of the global tourism industry.

This year, our laboratory hit a new record number of samples, with 77,926 tested in total. Among these were 35,681 samples from falcons and other bird species to test for Avian Influenza.

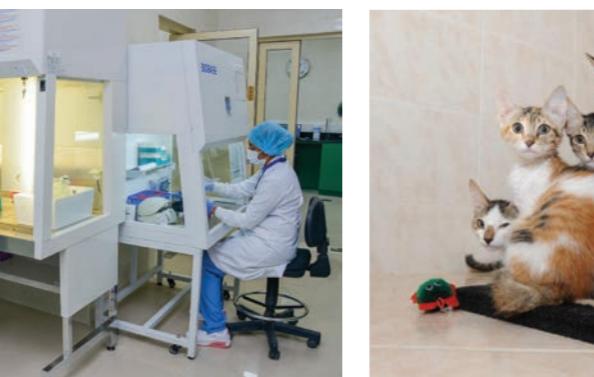
Moreover, the Hospital saw the highest number of pets being adopted from the Abu Dhabi Animal Shelter, with 583 adoptions taking place throughout 2017.

To reduce its electricity consumption, ADFH installed solar lights on adjacent streets, replaced office lights with LEDs and re-landscaped to reduce grassy areas.

For more information, visit www.falconhospital.com



Dr. Margit Muller, Director of ADFH, receiving the World Responsible Tourism Award.



Samples being tested at the laboratory.



The Abu Dhabi Animal Shelter.

ADFH was awarded the coveted 'World Responsible Tourism Award' for the second time at the annual World Travel Awards, considered the 'Oscars' of the global tourism industry.



Attendees at the Sustainability Business Leadership Awards 2017.



Recipients of the Sustainability Business Leadership Awards.

ABU DHABI SUSTAINABILITY GROUP (ADSG)

Formed to champion sustainability practices within the emirate's business community, ADSG has grown from an initial membership of just 14 in 2008, to 51 members in 2017. As well as facilitating collaboration and the exchange of knowledge between its members, ADSG also provides a number of important support services, including capacity-building programmes and Hiwar dialogue sessions to discuss sustainability issues.

Recognising People and Organisations Making an Impact

Launched in 2015, the Sustainable Business Leadership Awards recognise organisations that have made an impact through sustainable practices. They are designed to celebrate best practice and to raise awareness about the benefits of sustainable management in organisations. The scheme underlines ADSG's commitment to knowledge sharing to support sustainability performance.

The awards include five categories: Best Sustainability Initiative, Best Sustainability Report, Sustainability Manager of the Year, Sustainability Leader of the Year, and Best Sustainability Communications Programme. For 2017, ADSG added a new category called The Year of Giving, inspired by the announcement made by H.H. Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE.

ADSG received 36 applications for the Sustainable Business Leadership Awards from the most impactful organisations in the country, an increase of 29 % year-on-year.

In 2017, ADSG received 36 applications for the Sustainable Business Leadership Awards from the most impactful organisations in the country, an increase of 29 % year-on-year. This year's winners were:

- **Best Sustainability Initiative** - Ericsson
- **Best Sustainability Manager** - Ms. Geraldine Seguela, Sustainability Manager, Cleveland Clinic Abu Dhabi
- **Sustainability Leader of the Year** - Mr. Ibrahim Al Zu'bi, Head of Sustainability, Majid Al Futtaim
- **Best Sustainability Report** - Dolphin Energy
- **Year of Giving Award** - Emirates Foundation's Takatof, for their superb volunteering programme and to recognise their support for ADSG over the past three years

In total, 15 further organisations were recognised for publishing their 2016 sustainability report.

The award's gala dinner featured keynote speakers H.H. Sheikh Abdul Aziz bin Ali Al Nuaimi, award-winning Emirati landscape designer Kamelia Zaal, and Tamara Withers, Corporate Sustainability Manager at EWS-VWWF.

Inspiring Others to Implement Sustainable Business Models

Held over two days, the Abu Dhabi Sustainable Business Leadership Forum 2017 brought together over 200 sustainability professionals, experts and practitioners to share their insights and expertise. Discussions inspired attendees to implement sustainable business models for a resilient future, with more than 25 global and local thought leaders participating in plenary sessions on a range of topics related to sustainable best practice across sectors.

This year's forum was sponsored by Dolphin Energy, with support from Etihad Airways as the Official Airline Carrier and Al Roeyā newspaper as the Official Media Partner. It also received international support from organisations including the H.R.H. Prince of Wales Accounting for Sustainability Project (A4S), Natural Capital Coalition and Carbon Disclosure Project (CDP).



The Abu Dhabi Sustainable Business Leadership Forum.

Held over two days, the Abu Dhabi Sustainable Business Leadership Forum 2017 brought together over 200 sustainability professionals, experts and practitioners to share their insights and expertise.

- 97 % of delegates said that overall they were satisfied with the forum
- 100 % of delegates said that they would probably attend a future forum
- 92 % of delegates thought the forum offered a high quality range of speakers and plenary sessions

Hiwar: Energy Efficiency Workshop

This Hiwar workshop was one of a series focused on economic, social and environmental issues and their implications for Abu Dhabi Emirate and the wider region. Speakers outlined key developments and trends in effective energy management.

During the workshop, key energy efficiency concepts were introduced and attendees were given practical guidance for managing energy effectively within their organisations, in order to reduce operational costs and carbon emissions, comply with international standards and meet environmental goals. Experts from different organisations, including the UK's Energy Institute, attended the session.



In partnership with EAD and the UK's Energy Institute, ASDG introduces key energy efficiency concepts during the Hiwar workshop.



ADSG hosting a Hiwar session on Natural Capital.



Gulf Region Financial Officers' Circle of Practice Chair and Board Members.



ADSG's two-day GRI training session enabled members to enhance sustainability management and reporting practices.

Uniting Al Mamoura Tenants in Effective Energy Management Best Practices

In 2017, ASDG launched a programme which aims to unite Al Mamoura Building tenants in effective energy management best practices. The group plans to achieve this through a combination of training, knowledge sharing, events, awareness and implementation of energy efficiency improvements, so as to support a demonstrable reduction of energy consumption and create behavioural change toward energy usage.

Hiwar: Natural Capital as the Road to a Prosperous and Resilient Economy

Hosted by ASDG, this unique Hiwar session examined and analysed the definition of 'natural capital', explored how attendees can support the momentum for change, and introduced the Natural Capital Protocol, which provides updates on international, regional and local progress.

The Chief Financial Officers' Circle of Practice

The Chief Financial Officers' Circle of Practice (CFO CoP), was launched in 2015 in partnership with H.R.H. Prince of Wales Accounting for Sustainability Project (A4S) and the Pearl Initiative. As in previous years, 2017 saw individuals from the financial community coming together in a confidential and informal environment to learn, challenge and support each other in developing more sustainable business practices and exploring how to integrate sustainability into decision-making.

Capacity-Building for ASDG Members

ADSG's multi-fold capacity-building programme was developed by a team of international experts, and includes a handbook, assessment tool, a series of training courses and a support programme.

The programme's objective is to assist ASDG members in developing their in-house, long-term capacity, in order to both manage sustainability issues and report on them, rather than outsource these activities.

Over the past year, the programme has updated the SMAT tool and the guidance handbook to GRI-4. In 2017, nine members provided a sustainability report, and 18 were certified through GRI training, with five further members observing.



The ASDG Sustainability Journal

The ASDG Sustainability Journal provides a platform for members and stakeholders to highlight their achievements, ask important questions and maximise the value of their membership. During 2017, ASDG revamped the journal to include even more relevant topics and insight.

For more information on ASDG, visit www.adsg.ae

ABU DHABI GLOBAL ENVIRONMENTAL DATA INITIATIVE (AGEDI)

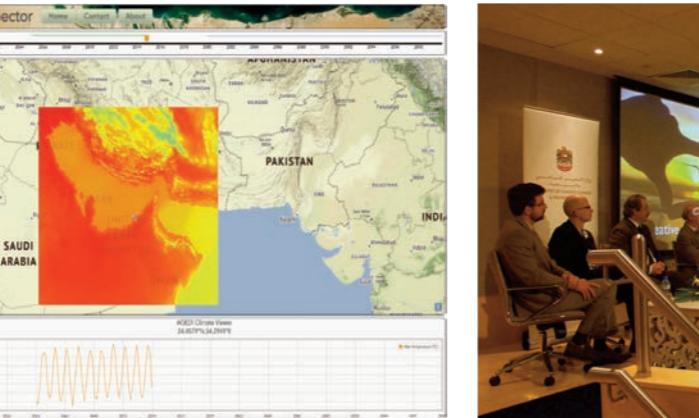
Formed in 2002 under the directive of H.H. Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates, AGEDI aims to drive progress in sustainability by providing decision-makers with access to high quality, timely and accurate data.

Collaborating on the Local, National and Regional Climate Change Programme

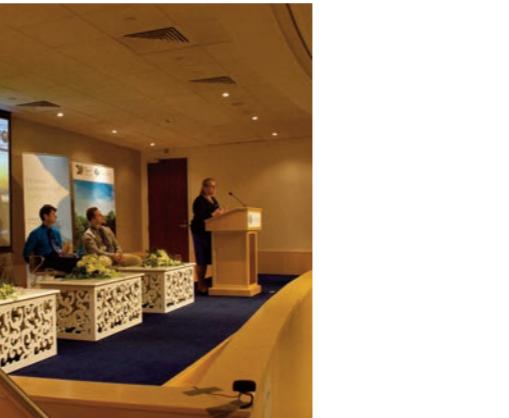
Following extensive collaboration with key partners across the region, AGEDI successfully completed the remaining eight out of 12 studies of the Local, National and Regional Programme (LNRCCP) in 2016. This included: Terrestrial Biodiversity, Marine Biodiversity, Regional Water-Energy Nexus, National Water-Energy Nexus,



Mangroves provide essential ecosystem services in the face of climate change.



The LNRCCP Inspector Online Portal.



Principal investigators from the LNRCCP study.

AGEDI successfully completed the remaining eight out of 12 studies of the Local, National, Regional Programme (LNRCCP) in 2016.

Al Ain Water Resources, Coastal Vulnerability Index, Sea Level Rise and Desalinated Water Supply.

The programme's significant local, national and regional findings were released in early 2017 through the publication of technical reports and executive summaries, as well as the official launch of the AGEDI LNRCCP Inspector Online Portal. The portal is a one-stop shop for users to access all the data, reports, presentations and recordings from the 12 studies. It is also a forum where stakeholders and partners can engage and interact, while various models can be downloaded and used for further research.

The LNRCCP closed in March 2017 with a three-day Regional Climate Change Symposium. This gave more than 70 stakeholders the opportunity to hear and discuss the ground-breaking findings from each study.

Agreeing on the Future Direction of Blue Carbon

AGEDI partnered with the UAE Ministry of Climate Change and Environment (MoCCAE) and the Australian Department of Environment and Energy, to host the International Partnership for Blue Carbon's (IPBC) second annual meeting on July 11th to 13th, 2017.

Announced at COP21 in 2015, the partnership is led by the Governments of Australia and the United Arab Emirates, and is a consortium of governments, non-profits, and inter-governmental agencies. It equips policy-makers with actionable information and knowledge of coastal blue carbon ecosystems (mangrove, tidal marsh and seagrass) for climate change mitigation as well as securing social, economic and environmental outcomes.

Blue Carbon's second annual meeting involved policy and technical discussions from mitigation and adaptation perspectives. It took stock of the international state of play on blue carbon science, policy and on-ground activities, discussed advancements in international policy frameworks relevant to blue carbon, and looked at innovative financing avenues available for implementing activities more effectively. With more than 40 attendees, this included members from Africa, Europe, America and Asia.

Launching the Indicator Reporting Information System at the UN Environment Assembly

A joint project between EAD and UN Environment through AGEDI, the Indicator Reporting Information System (IRIS) has witnessed a dramatic upturn during 2017.

IRIS is an enterprise web application that promises to reduce the institutional burden associated with recurrent reporting obligations. It aims to improve timely exchange of data between tiers of government and establish institutional capacity development through the online exchange of reporting knowledge and process automation resources. During 2017, partners collaborated online towards delivering an excellent IRIS project, as well as its promotion and deployment through the UN Environment offices and channels.

The functionality of IRIS has grown greatly in 2017 and is now a very powerful enterprise-grade web application that will be available for download by institutional IT departments or can be used as an online service hosted by UN Environment.

Version 1 of IRIS was launched during the Science-Policy-Business Forum on December 2nd, 2017. In 2018, AGEDI will deploy IRIS at EAD, initially testing and refining the system internally. In partnership with UN Environment, EAD will then host a regional capacity building workshop in the UAE for entities involved in indicators and indicator-based reporting.



International dignitaries attending the launch of IRIS in Nairobi.



An aerial view of Abu Dhabi's mangroves.

Refocusing Eye on Earth

Eye on Earth (EoE) was established by AGEDI to enable the generation, maintenance, sharing and application of environmental, societal and economic data and information to support informed decision-making for sustainable development. In 2011, AGEDI hosted and facilitated the first EoE Summit in Abu Dhabi Emirate in partnership with EAD and the United Nations Environment Programme (UNEP). Eight initiatives were launched to deliver the EoE mission: Access for All, Environmental Education, Global Network of Networks, Biodiversity, Community Sustainability and Resiliency, Disaster Management, Oceans and Blue Carbon and Water Security. Since then, an alliance between AGEDI, EAD, UNEP, the Group on Earth Observations (GEO), International Union for Conservation of Nature (IUCN) and the World Resources Institute (WRI), has taken the lead to further the mission of the movement.

In 2016, the EoE Alliance replaced the special initiatives with the following focal areas: Access to Information, Data Infrastructure and Capacity Development. This year, the Eye on Earth website has been revamped to better reflect this new focus.

In 2017, AGEDI continued to host a series of highly successful monthly data-for-sustainability-themed webinars. They feature globally-prominent personalities and significant initiatives from the data-for-sustainable-development sector. Through the networking effect, the number of webinar registrants has increased month-on-month. Recent webinars have attracted over 400 registrants from over 90 different nations, including many less-developed countries. The webinars have become an effective recruitment mechanism for the EoE network.

For more information on Eye on Earth, visit www.eye-on-earth.net



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Developing a Virtual Educational Tour of the Eastern Mangrove National Park and Al Wathba Wetland Reserve

This year, AGEDI partnered with Distant Imagery to test the use of 4G technology to create a 360° virtual educational tour of the Mangrove National Park and Al Wathba Wetland Reserve. The tours tell the story of the sites, their significance, and what can be found in these areas. They also raise awareness about the

importance of mangroves in Abu Dhabi Emirate's ecosystem, including the amount of shoreline protection they provide, the value of their ecosystem services, the amount of blue carbon they sequester, and their vulnerability to climate change. The virtual tours showcase this information in an interactive and engaging way, and are designed to be of interest to a wide cross-section of people, from students to decision-makers. The tours are accessible on the AGEDI website.

For more information about AGEDI, visit www.agedi.ae





REGIONAL AND INTERNATIONAL COLLABORATION

IN ORDER TO ACHIEVE OUR VISION OF A SUSTAINABLE FUTURE, WE HAVE MAINTAINED CLOSE PARTNERSHIPS WITH A RANGE OF REGIONAL AND INTERNATIONAL PEERS AND STAKEHOLDERS.

At EAD, our mission to protect natural heritage and champion sustainability transcends geographical borders. While we strive to preserve our local environment and biodiversity in the Emirate of Abu Dhabi, we realise that we must also become an integral part of the global, interconnected effort to address the challenges facing our planet today. Since the Agency was formed, we are proud to have worked alongside some of the world's leading environmental organisations, pioneering new scientific and technological advances, far reaching awareness programmes and ambitious conservation and species reintroduction efforts. Here are some of our key achievements with our international partners over the last year.

THE INTERNATIONAL CENTER FOR BIOSALINE AGRICULTURE (ICBA)

We have collaborated with ICBA since 2007, starting with a project to develop sustainable agricultural systems using saline water to irrigate and grow crops. In 2014, we initiated a three-way research partnership with ICBA and experts from New Zealand under a Government-to-Government MoU. Completed this year, the research aimed to identify the water requirements of date palms when irrigated with water of different salinity, with findings used to calculate irrigation schedules for different types of date palms, trees and farms in Abu Dhabi Emirate.

EMIRATES WILDLIFE SOCIETY IN ASSOCIATION WITH WWF (EWS-WWF)

EWS-WWF has been our partner since 2001. In 2017, we collaborated on a project to satellite tag Green Turtles arriving in UAE waters. The ongoing project will monitor the species as it feeds on the UAE's extensive seagrass beds before the turtles return to their original nesting sites in the Indian Ocean. This year, we also signed an agreement to assess the potential of electric vehicles in the Emirate of Abu Dhabi and develop a roadmap for their implementation.

INTERNATIONAL FUND FOR HOUBARA CONSERVATION (IFHC)

Founded in 2006, IFHC continues the conservation legacy of the late Sheikh Zayed bin Sultan Al Nahyan, Founder of the UAE, in protecting the indigenous Houbara Bustard, which faced extinction due to urbanisation and unregulated hunting. We have actively supported IFHC since 2009 and host its staff at our headquarters in Abu Dhabi.

THE UNITED NATIONS ENVIRONMENT PROGRAMME/CONVENTION ON MIGRATORY SPECIES (UNEP/CMS)

We have supported and sponsored UNEP/CMS since 2008, and this year was no exception. In Abu Dhabi Emirate, UNEP/CMS oversees the implementation of two major agreements: the Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MoU), and the Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitat (Dugong MoU). We actively support the work of UNEP/CMS and host their staff at our Abu Dhabi headquarters.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)

IUCN is the largest and longest established environmental organisation in the world. We are proud to have been associated with IUCN since 2000, providing funds to support its Species Survival Commission and Protected Areas Classification System, as well as the Red List of Endangered Species, which is widely regarded as the primary inventory of the global conservation status of flora and fauna.

GOVERNMENT OF CHAD

Our work with the Government of Chad focuses primarily on a highly ambitious programme to reintroduce the Scimitar-horned Oryx to the species' traditional range in Chad's Ouadi Rimé-Ouadi Achim Game Reserve. While the animals are bred and nurtured in a curated 'world herd' at Deleika Wildlife Conservation and Breeding Facility in Abu Dhabi, the Chadian Ministry of Environment and Fisheries oversees their release into the reserve, and works alongside our team in Chad to ensure their ongoing protection.

SAHARA CONSERVATION FUND (SCF)

SCF is also an active contributor to our Scimitar-horned Oryx Reintroduction Programme and, along with the Government of Chad, their cooperation has been invaluable. SCF contributes to overall strategy and technical guidance on the programme, as well as infrastructure development, day-to-day management of the release site and oryx, and recruitment and training of local staff. SCF also focuses on ensuring close coordination between the project, the Chadian authorities and the local community.

JANE GOODALL INSTITUTE - ROOTS & SHOOTS PROGRAMME

Roots & Shoots is a highly innovative and engaging programme that encourages young people to assess their local community and identify specific environmental challenges in their schools, households and neighbourhoods. Participants prioritise issues, develop solutions and take positive action in activities and projects that benefit animals, the environment and society as a whole. After signing an agreement in 2013 to implement Roots & Shoots in schools across the UAE, our role in piloting the programme was recognised with an international Green Apple award at the UK's House of Commons in 2014.

Since then, we have maintained our enthusiastic support for Roots & Shoots, which is now active in nearly 80 schools, nurseries and universities. This year, the fourth annual Roots & Shoots ceremony took place in Abu Dhabi Emirate and was hosted by Dr Jane Goodall. It recognised 12 schools for their outstanding participation and launched the 'Climate Force Challenge', encouraging schools to take action on the issues of plastics and climate change.