هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

ANNUAL REPORT 2018

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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 second largest 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 2018, there are 913 people from 30 nationalities employed at EAD. Emiratis make up 77% of our total workforce, with 33.3% of leadership roles occupied by 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 5 customer happiness centres. Our greatest asset is our employees' combined knowledge, commitment and passion for the natural environment.

عـــام زايـــد

YEAR OF
ZAYED

"We stress that conservation of the environment is not, and must not be seen as, a matter only for Government or officials. It is something that concerns us all.

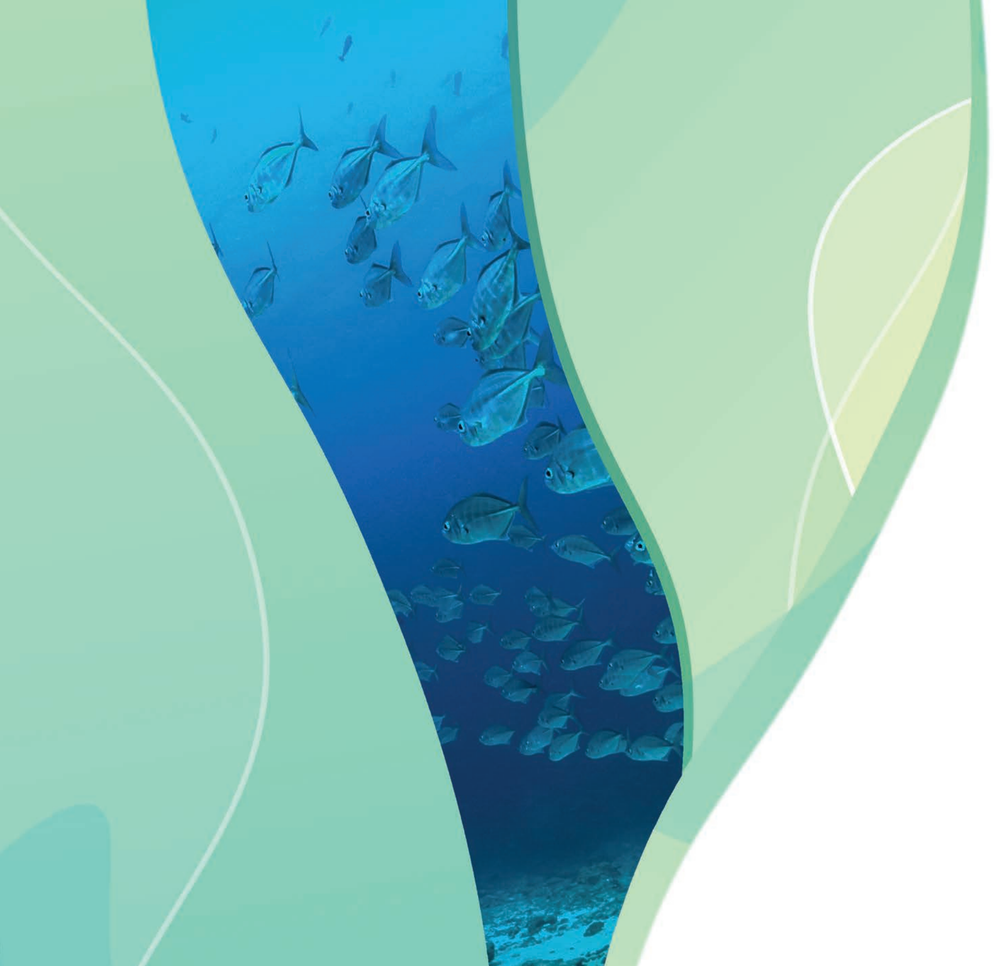
This is a responsibility for all, every member of our society, both nationals and other residents."

Sheikh Zayed bin Sultan Al Nahyan

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

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



Governing **Board**

H.H. Sheikh Hamdan bin Zayed Al Nahyan
Chairman

H.E. Mohammed Ahmed Al Bowardi
Vice Chairman

H.E. Dr Thani Ahmed Al Zeyoudi
Board member

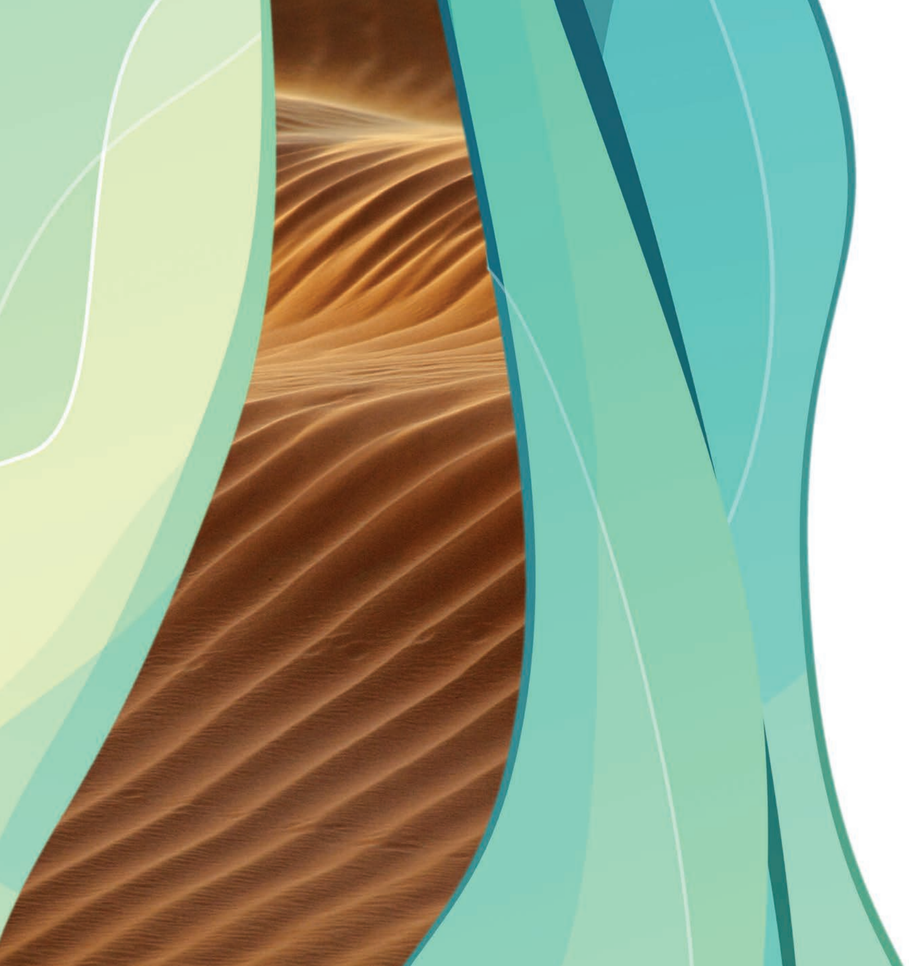
H.E. Dr Mugheer Khamis Al Khaili
Board member

H.E. Falah Mohammed Al Ahbabi
Board member

H.E. Major General Pilot Faris Khalaf Al Mazrouei
Board member

H.E. Razan Khalifa Al Mubarak
Managing Director

H.E. Ahmad Saqer Al Suwaidi
Board member



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.

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Introduction from our **Chairman**

H.H. SHEIKH HAMDAN BIN ZAYED AL NAHYAN
Ruler's Representative in Al Dhafra Region,
Chairman of Environment Agency - Abu Dhabi

During 2018, the Environment Agency – Abu Dhabi (EAD) saw many accomplishments in a year that paid tribute to UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan. The year featured a host of initiatives continuing Sheikh Zayed's historic legacy and drawing inspiration from his unique vision for the benefit of this generation and the ones to come.

Our international leadership would not have been possible without the wise directives and guidance of the UAE President His Highness Sheikh Khalifa bin Zayed Al Nahyan, and His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces and Honorary Chairman of the EAD. Their forward-looking leadership seeks to balance economic, social and environmental aspects as advocated by the late Sheikh Zayed.

Reinforcing the nation's environmental stewardship under Sheikh Zayed, our team of environmental experts and specialists worked resiliently throughout the year to strengthen EAD's efforts to improve air quality, preserve the quality of our seawaters, protect our precious underground resources, as well as understand and alleviate the potential impacts of development and climate change. Our work in this domain ran parallel to enhancing our partnerships with other government entities to develop environmental policies, laws and regulations, taking effective decisions in environmental management, and meeting international standards for environmental protection.

We are particularly proud of our achievements in the conservation of species that crossed the UAE's borders to reach Central Africa. Our efforts helped resettle the Scimitar-horned Oryx following its disappearance from the wild. As the largest, most ambitious mammal resettlement programme of its kind, the project was the first to resettle the Oryx species in its natural habitat in Chad since it went extinct in the 1980s. In 2018, we re-discovered species considered extinct in the UAE, such as the Crested Porcupine and Rüppell's Fox, last seen some 13 years ago.

Also in 2018, EAD hosted the *Regional Biodiversity Forum* to strengthen the UAE's leadership on the regional and international environmental map. The forum re-emphasised Abu Dhabi Government's pioneering role in leading environmental work in the region and in implementing the Green List of Protected and Conserved Areas in the Arab region. As demonstrated by Al Wathba Wetland Reserve's listing on the IUCN Green List in 2018, the first in the region. For EAD, the achievement acknowledged our work in developing and managing the reserve as part of the Sheikh Zayed Protected Areas Network, which includes 19 terrestrial and marine protected areas. These areas host among the best land and marine habitats in the emirate.

As part of our endeavour to enhance the sustainability of the nation's fisheries, we completed the *Fishery Resources Assessment Survey* in 2018, one of the most comprehensive surveys ever undertaken to assess the status of fish stocks in the UAE's territorial waters. The assessment is part of EAD's collaborative programme working with stakeholders towards the protection of fish resources and species that witness an increasing demand in the UAE.

During 2018, we announced the results of the *Abu Dhabi Air Emissions Inventory* comprising more than 50 detailed maps. Defining, for the first time in Abu Dhabi, the locations or sources of emissions for each sector with high precision, the maps aid in identifying and implementing effective measures that mitigate and manage harmful radiations.

As we look to the future, we are committed to drawing inspiration from Sheikh Zayed's legacy and to achieving the vision of the Abu Dhabi Government. We will continue our efforts to improve air quality, protect our natural resources, and enhance our biodiversity. We will also focus on stepping up environmental awareness in society to make a difference through adopting a more sustainable lifestyle. In doing so, we are confident that we will shape a better environment not just for our generation, but also for the generations that come after us.

Message from our **Managing Director**

H.E. RAZAN KHALIFA AL MUBARAK
Managing Director of
Environment Agency - Abu Dhabi

With each passing year, EAD comes closer to realising our forefathers' vision for Abu Dhabi and the UAE. Over the past year, we have witnessed great milestones in environmental protection and conservation, whether it be through policy development, valuable partnerships or ground-breaking initiatives – all of which contribute to our masterplan to create a sustainable future for Abu Dhabi.

Since its establishment, EAD has strived to drive conversations around favourable policies for protecting the environment. In 2018, we took these efforts a step further by partnering with the Economist Group and the Department of Economic Development to host the *Green Business Summit*. Gathering more than 400 thinkers, strategists, policymakers and academics, the event, held in Abu Dhabi, highlighted the numerous opportunities to enable economically viable sustainability. From the adoption of climate finance to environmental impact investing, this platform examined real-world solutions for both government and the private sector working collectively towards green policies.

In line with the goals of the Abu Dhabi Industrial Strategy, to reduce the pressure on natural resources, we entered into a long-term agreement with the Department of Economic Development to launch the Technology Innovation Pioneers (TIP) EnviroTech Awards. This recognition will encourage innovators globally to tackle environmental challenges, through support in the form of patenting, proof of concept development and other provisions to establish new solutions to safeguard our natural resources.

During the year, we launched the *Future of the Environment Initiative*, as a next step to the *State of the Environment Report of 2017*. By working with key stakeholders, we have defined a new vision for Abu Dhabi as a leader in sustainable development. To achieve this objective, we also outlined key projects for implementation by various government entities during the period 2019 to 2025.

With up to 1,800 industrial facilities under the purview of EAD's compliance function, we continue to face the challenge of efficient resource allocation for inspections. However, through a refocused process based on risk prioritisation, I am happy to note that in 2018, we conducted 1,366 inspections.

In terms of partnerships, our most notable achievement was the creation of the *Green Business Network Initiative* - a platform for like-minded businesses committed to environmental causes, to share knowledge and experiences, to help each other become more environmentally sustainable. As part of this initiative, the member-partners will take forward the critical tenets of the *Climate and Sustainability Action Guideline for Businesses and Government*, aimed at managing and reducing carbon emissions.

Additionally, we reinforced our decade-long partnership with BP through a four-year agreement to build on enduring efforts such as the *Sustainable School Initiative* (*Al Madaris Al Mustadama*).

Through the third phase of our collaboration, we aim to consolidate this award-winning environmental education programme in the form of a comprehensive online course.

Our focus on the younger generation remained steadfast in 2018, with the launch of a new strategy to revitalise youth participation in environmental causes through the Green Youth Majlis. We plan to establish a committee and train our new joiners to become ambassadors for sustainable campuses and a greener community.

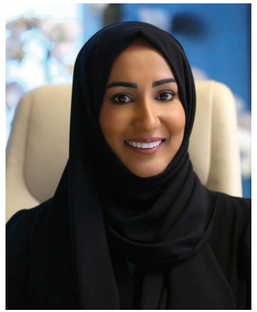
We also launched the Climate Force Challenge in 2018, reaching up to 1,000 students to encourage positive environmental behaviour. The initiative serves the global goal laid out by Sir Robert Swan, to reduce carbon emissions by 326 million tonnes by 2025.

Celebrating the Year of Zayed, we channelled the sentiment of goodwill and the greater good as exemplified by our founding father. From organising the #ZayedRetreat to ideate on projects to commemorate the late His Highness Sheikh Zayed's great environmental legacy to launching the Sheikh Zayed Protected Areas Network covering 19 terrestrial and marine sites, and sending Team Zayed to join the Climate Force International Antarctic Expedition, the activities gave our team wide-ranging opportunities to grow and develop our capabilities.

Keeping with Sheikh Zayed's vision of becoming a global voice in the environmental discourse, EAD continued to find synergies with leading international entities through 2018. During the year, we renewed strategic partnerships with the International Center for Biosaline Agriculture (ICBA), Emirates Nature-WWF (formerly EWS-WWF), the International Fund for Houbara Conservation (IFHC), the United Nations Environment Programme/Convention on Migratory Species (UNEP/CMS) and the International Union for Conservation of Nature (IUCN). We additionally strengthened our collaborations with the Government of Chad and the Sahara Conservation Fund (SCF) for the Scimitar-horned Oryx reintroduction programme, while also supporting the Jane Goodall Institute - Roots & Shoots Programme that encourages young people to identify environmental challenges in their community.

As we look to chart even more success stories for the Agency in 2019, I would also like to recognise and appreciate the diverse talent and commitment of our people that continues to help position us as a leader in environmental action. Looking ahead, I am confident that we will forge new ground as a change-maker realising a more sustainable tomorrow.

Statement from our **Acting Secretary General**



H.E. DR SHAIKHA SALEM AL DHAHERI
Acting Secretary General of
Environment Agency - Abu Dhabi

In 2018, we achieved many milestones, driven by our collective passion for leaving this country better than we found it. Looking at each aspect of our ecosystem, we were able to bring to the fore actionable solutions, paving the way for a more environmentally sound future.

With a global water crisis looming, our biggest focus this year was to protect Abu Dhabi's groundwater resources. Up to 63% of the Emirate's total water use comes from groundwater. In the last couple of decades, however, the quality of this valuable resource has deteriorated to levels that cannot be ignored. In response, we partnered with the relevant government authorities to develop regulations, for procurement of permits, for fixing water meters on wells, as well as for the management of brine resulting from desalination, decommissioning and drilling activities – all of which will be enforced under the Executive Order for Law No.5 in 2016, pending approval from the General Secretariat of the Executive Council, Abu Dhabi (GSEC).

During the year, we completed Abu Dhabi's first groundwater wells inventory, a project initiated in 2015. Thanks to this strenuous effort, today we have a comprehensive record of over 100 measurement parameters covering more than 118,000 wells across Abu Dhabi, detailed within a first-of-its-kind *Groundwater Atlas for the Emirate of Abu Dhabi*. The atlas also surveys levels of soil salinity of agricultural farms, which is essential for ensuring sustainable farming in Abu Dhabi.

Together with the Abu Dhabi Water and Electricity Authority, we also opened the Liwa Strategic Water Reserve in the Al Dhafra Region – the largest artificial reservoir project in the world. By recharging the Liwa aquifer with desalinated water, we have contingencies in place to provide 180 litres per day for the entire population of Abu Dhabi for up to 90 days.

In a bid to understand our soil quality, we launched a soil contamination monitoring programme for 170 residential, agricultural and industrial sites, and help us address the challenges posed by harmful pollutants. A technical guidance document was additionally developed to establish a risk-based framework for managing soil contamination at sites across Abu Dhabi.

In 2018, we undertook serious measures to improve the air quality in Abu Dhabi. Our main achievement in this regard was the launch of the *Abu Dhabi Air Emissions Inventory*, which offers scientific data to guide our air quality management programme. Continuing in this vein, we set emission standards for three of 10 industries – namely concrete, hot-mix asphalt and iron and steel - that we identified as significant contributors to increasing air pollutants in the atmosphere. Notably, we highlighted these successes at the first *Global Conference on Air Pollution and Health*, held last November at the World Health Organisation Headquarters in Geneva.

The Marine Water Quality Monitoring Programme (MWQMP) carried on unhindered through 2018, adding 22 sites, including ecological hubs in Abu Dhabi, to the list of monitored areas for the protection of marine habitats. It is heartening to see that the overall marine quality in Abu Dhabi is good. To complement this initiative, we also concluded a first-of-its-kind study to measure the re-use potential of treated sewage effluent (TSE) in the industrial and developmental sectors, sharing the results of which with our partners.

Waste management remains a top concern, which we aim to address through an *Integrated Waste Management Master Plan for Abu Dhabi*, developed in partnership with Tadweer. The framework targets sustainable waste management over a period of 25 years. During the year, we also drafted regulation for integrated waste management as well as developed a Code of Practice for the handling of all types of consumed batteries.

Looking back, the various interventions that we have brought to fruition, lead us to believe that we have had an eventful, gratifying year. However, at EAD, we rest on the promise of greater, more meaningful wins ahead, and are grateful for the opportunities to build a world-class team and work with leading entities towards our shared goals of protecting our environment.

GROUNDWATER

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

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.

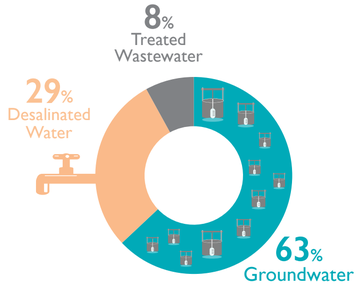
Groundwater resources contribute to about 63% out of the total water use in Abu Dhabi Emirate. However, due to over abstraction, groundwater quality has deteriorated during the last 20 years. The estimated present abstraction of the groundwater is about 2,070 million cubic metres compared with 2,700 million cubic metres in 2005. The present groundwater potentiality is about 64,2000 million cubic metres (EAD, SOE 2017).

To better understand, regulate and manage groundwater, we implemented an integrated plan that consists of, but is not limited to, developing regulations and operating a comprehensive monitoring network.

STRENGTHENING GROUNDWATER REGULATIONS

This year, we developed a series of regulations for the management of groundwater resources in Abu Dhabi Emirate, in partnership with the Department of Energy, Department of Urban Planning and Municipalities, Abu Dhabi Food Control Authority and Abu Dhabi Farmers Services Centre. The regulation specifies EAD's requirements and procedures for obtaining different environmental permits including well drilling, groundwater extraction, and operation of desalination units. The regulation also states requirements for fixing water meters on wells based on technical criteria. Moreover, the regulation addresses the management of brine resulting from desalination of groundwater, well decommissioning requirements, and environmental conditions of the well drilling process. As of end of 2018, the *Technical Guidance Documents* (TGD) and the *Standard Operating Procedures* (SoP) were approved by EAD's management. Executive Order for Law No. 5 of 2016 was internally developed, approved and communicated with the stakeholders, pending approval from the General Secretariat of the Executive Council, Abu Dhabi.

Percentage of water resources in Abu Dhabi Emirate



GROUNDWATER MONITORING

In 2018, further improvements such as using digital platforms to collect groundwater monitoring data, new locations not covered in the monitoring plan were identified and included in our groundwater monitoring network.

One of our groundwater monitoring wells in Al Dhafra region.

As a result of the Groundwater Quality Baseline Survey, we developed Groundwater Quality Index Maps that are providing vital input into land use planning. It also helped us review our overall groundwater quality monitoring plan over the next decade.

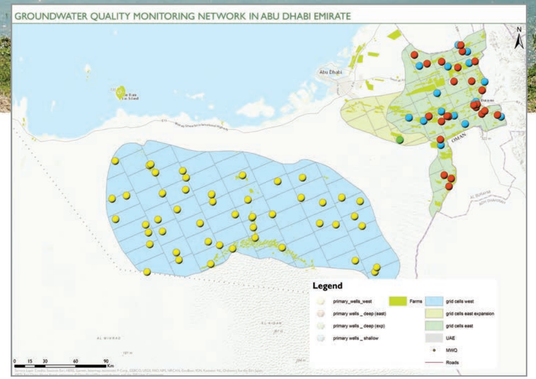
Groundwater Quality Monitoring

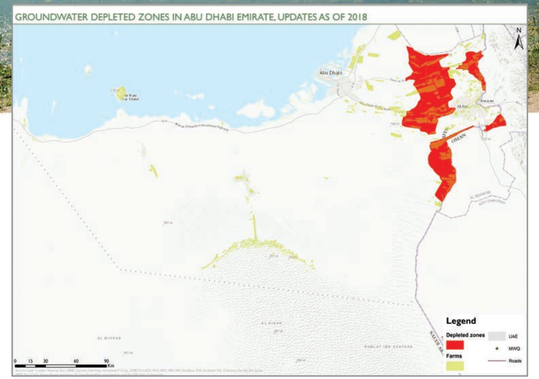
In order to measure any impact from ground activities such as farming, industrial operations and other man-made activities that can impact groundwater quality, we launched the Groundwater Quality Baseline Survey, where we collected and analysed 145 groundwater samples from different sites.

The survey provided us with a groundwater quality baseline and further assessed the occurrence of anthropogenic compounds in groundwater. It also assessed the occurrence and age of natural recharge in the different aquifers across the Emirate. Furthermore, as a result of the survey, we developed Groundwater Quality Index Maps that are providing vital input into land use planning. Finally, the survey helped us review our overall groundwater quality monitoring plan over the next decade.

Depleted Areas Map Updated

Our optimised groundwater monitoring network comprises of 665 wells, and data from these wells was used to update the depleted zones map. This map is a key element that supports the management of groundwater in the Emirate of Abu Dhabi, according to Law No. 5 of 2016.





GROUNDWATER RESOURCES ASSESSMENT AND DEVELOPMENT

Groundwater Well Inventory

This year, we completed the Emirate's first groundwater well inventory, which is a project that began in 2015. This means we now have even more detailed and accurate information on groundwater abstractions and their geographical distribution across the Emirate. To share the inventory's findings with decision-makers, we developed *The Groundwater Atlas of Abu Dhabi Emirate* that also includes a soil salinity survey of agricultural farms.

We developed The Groundwater Atlas of Abu Dhabi Emirate that also includes a soil salinity survey of agricultural farms.

The Groundwater Wells Inventory project included:

117,859 wells
inventoried (around 80% of them existed in agricultural farms)

Water levels measured and recorded in
46,120 wells

Electrical conductivity measured in
28,902 wells

Abstractions measured in
18,288 wells

Data recorded from
1,156 small scale desalination plants for agricultural use

Groundwater Management for Emergencies

In 2018, we continued to contribute to providing strategic reserves of groundwater.

a) Rehabilitation of Unused Wellfields in Al Ain and Al Dhafra Regions

We rehabilitated 200 unused water wells in the Kashona Wellfield (Al Ain Region) and Bu Hasa Wellfield (Al Dhafra Region) so that they can be used to supply potable water during emergencies in Abu Dhabi Emirate.

b) Evaluating Feasibility Study Results and the Pilot Aquifer Recharge Project

The results of our feasibility studies explored the option for an aquifer Storage and Recovery (ASR) Scheme in Al Shweib Area. The existing plans were reviewed, the hydrogeological properties were verified and the conceptual design and operational performance were enhanced. The results of the assessment also helped in:

- Assessing the emergency water storage alternatives for Abu Dhabi Emirate
- Evaluating the optimal scenarios to connect the strategic water storage projects in Al Dhafra region (Liwa project), unused well field project and Al Ain Region (Al Shweib project)
- Defining and evaluating the role of Abu Dhabi Emirate in the UAE Water Security Strategy
- Evaluating the scenarios to connect the strategic water storage project in the Al Ain region (Al-Shweib) with the proposed projects in the Northern Emirates/UAE level.

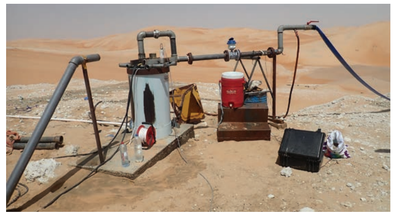
c) Liwa Strategic Water Reserve

Considered one of the largest in the world, the Liwa Strategic Water Reserve in the Al Dhafra Region, a joint project between EAD, the Abu Dhabi Water and Electricity Authority and its subsidiary Transco, is the largest manmade freshwater storage project. 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 Emirate for 90 days, in case of an emergency.

The project was completed in January 2018 and officially opened by H.H. Sheikh Hazza bin Zayed Al Nahyan, Head of State for National Security Advisor and Deputy Chairman of Abu Dhabi Executive Council. It has been a major achievement towards achieving sustainable water security, social welfare and economic well-being for the entire country.

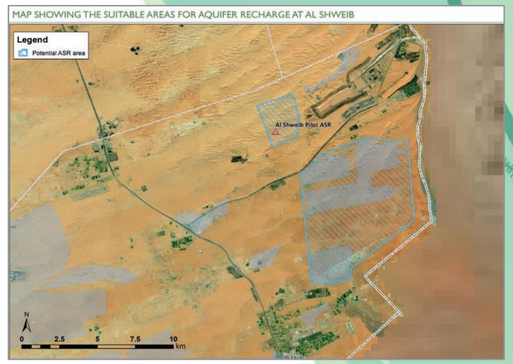
The project was conducted using environmentally friendly materials according to the highest engineering specifications, which are appropriate to the region in all stages of construction and implementation of the project.

H.H. Sheikh Hazza bin Zayed Al Nahyan, Head of State for National Security Advisor at the site of the Liwa Strategic Water Reserve.



Carrying out pumping test for unused well.

Measuring groundwater levels, as part of the Groundwater Well Inventory project.



Groundwater Modelling Capability Building

This year, we continued to build our staff's capacity in groundwater hydrogeology and digital modelling, with support from UAE University. Efforts began in October 2017 and will continue until September 2019. The staff are also gaining experience by developing a groundwater model of the Al Ain Region Aquifer.

HARNESSING INNOVATIVE SOLUTIONS FOR EFFICIENT WATER USE

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

Minimising Groundwater Irrigation of Arid Forests - the Impact of Replacing Groundwater with Treated Sewage Effluent

Over the past four years, we have been conducting research to minimise the use of groundwater for irrigation and to assess the value of replacing groundwater with treated wastewater. The species we focused on are Al Ghaf (*Prosopis cineraria*), Al Sidr (*Ziziphus spina-christi*), Samr (*Acacia tortilis*) and Arak (*Salvadora persica*), as they make up the majority of Abu Dhabi's forests. We have found that savings of 40-75% are possible with groundwater irrigation being better matched to the trees' requirements. Treated sewage effluent was also found to be highly effective for irrigation, since it is much less saline than groundwater.

Determining the Minimum Irrigation Requirements for Date Palms

We have also been researching the irrigation requirements of date palms over the past 4 years. Experiments were carried out at the International Center for Biosaline Agriculture in Dubai on three cultivars of dates of varying salt tolerance; Lulu, Khalas and Shahlah - in decreasing order of salt tolerance. Results show that irrigation savings of 25-50% are possible if irrigation supply is better matched to the water demand of the date palms. The studies were carried out in partnership with the New Zealand partners of Plant and Food Research and Maven International.

Groundwater modelling capacity building.

Irrigating native trees in Abu Dhabi's forests using Treated Sewage Effluent (TSE).

Recording the daily water consumption use of date palms.

Crop Calculator: Determination of an equitable water allocation for field-grown vegetable crops

We also carried out research to quantify the water use of a range of vegetable crops and to assess their irrigation needs. The work was carried out at the Abu Dhabi Food Control Authority (ADFCA) Research Centre and five crops were studied (cucumber, capsicum, cabbage, eggplant and tomato). All crops were harvested at the end of the season to determine the total crop production and to provide an assessment of the water use efficiency, as defined by the ratio of the crop fresh weight per unit volume of irrigation water. These results are being used to parameterise the Crop Calculator software that we developed to determine an equitable water allocation for farmers across the Emirate of Abu Dhabi.

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 us 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.

Installing specialised probes to record the velocity of sap flow.

Installation of equipment to measure the crop water use (crop calculator).

AIR QUALITY

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

AIR QUALITY

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

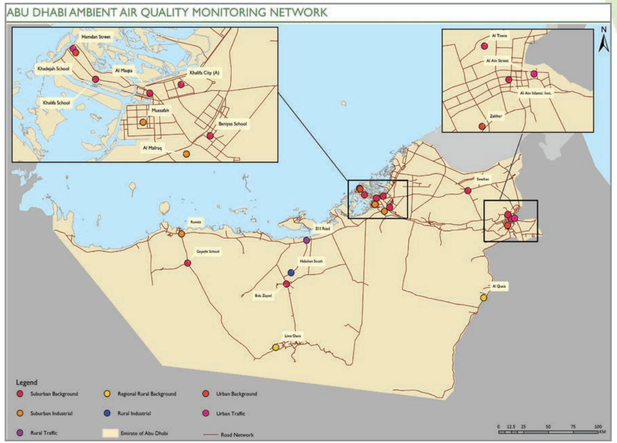
As the population of Abu Dhabi Emirate continues to grow, so does the generation of emissions created by water and energy production, construction, industry, transport and an increasing demand for resources. In order to measure and manage these pollutants, we continue to generate the most accurate information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

CONTINUED TO GENERATE DATA THAT COUNTS: OUR AIR QUALITY MONITORING NETWORK

Over the years, we have provided Abu Dhabi Emirate with one of the most comprehensive air quality monitoring networks in the 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 mobile stations. Through this network, we collect data on a minute-by-minute basis, sharing our findings with the public at www.adairquality.ae. By providing the public with 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. This year, we made live air quality data available to the public through a free application called *Plume Air Report*. The app, developed by Plume Labs, helps residents learn more about the Emirate's air quality, in order to better plan for their outdoor activities.

At the heart of our network stands an internationally accredited calibration laboratory, which underpins quality assurance, control measures and procedures, resulting in high data quality standards. Over the last two years, we provided data supporting more than 33 activities by local and federal government entities, academic institutions and environmental consultants.

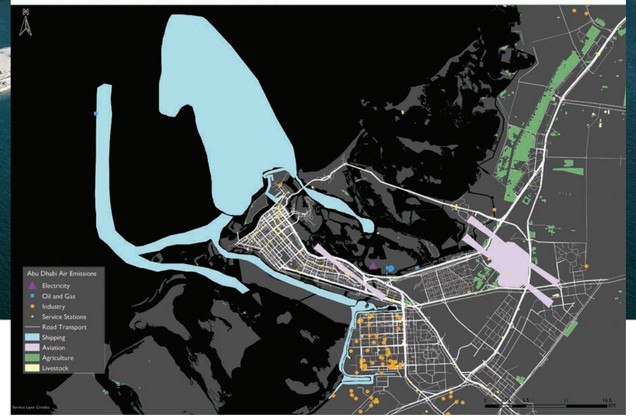
EAD Air Quality Station at Hamdan Street.



Air Quality experts analysing data in one of our Air Quality Mobile Stations.

In 2018, we set standards for emissions from the concrete industry, hot-mix asphalt industry and the iron and steel industry.

AIR EMISSION SOURCES BY SECTOR IN ABU DHABI EMIRATE



COMPLETED THE ABU DHABI AIR EMISSIONS INVENTORY

In 2018, we completed and launched the Abu Dhabi Air Emissions Inventory, which is a key component of our air quality management programme. It provides essential information for designing effective measures to reduce emissions with science-based information that will support several entities including the Ministry of Climate Change and Environment, the General Secretariat of the Executive Council, the Department of Urban Planning and Municipalities, the Department of Transport, the Department of Energy, the Department of Economic Development, the Department of Health, Abu Dhabi National Oil Company (ADNOC), and Abu Dhabi Ports. A full report comprising the methodology used and the first comprehensive emissions maps to be published in the UAE is downloadable at www.ead.ae.

DEVELOPED INDUSTRY-SPECIFIC STANDARDS AND REGULATIONS

In order to meet the local and the national targets for ambient air quality, in 2018 we started reviewing the emission standards from stationary sources and ways to control those emissions by benchmarking with global best practices and available technologies. Based on our comprehensive study for major industries responsible for increasing air pollutants in the atmosphere, we identified 10 industries including electricity generation, iron and steel industry, hot mix asphalt industry, concrete industry and galvanized industry that requires stringent regulations to control their emissions.

In 2018, we set standards for emissions from the concrete industry, hot-mix asphalt industry and the iron and steel industry. The relevant regulations were drafted and proposed, including for the maximum allowable emissions from the power plants industry.

Built Capacity and Shared Abu Dhabi's Experience Internationally

In November 2018, we actively participated as part of the UAE delegation in the first *Global Conference on Air Pollution and Health*, held at the World Health Organisation Headquarters, in Geneva.

We also shared Abu Dhabi's Air Quality Management approach at the Better Air Quality Conference held in Malaysia. The conference allowed us to engage with our regional counterparts and share our challenges in dealing with our unique environmental conditions and the appropriate management and mitigation solutions.

CLIMATE CHANGE

DEEPENING OUR KNOWLEDGE TO MITIGATE THE EFFECTS OF CLIMATE CHANGE.

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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* CO_2 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 2018, we continued to respond to the pressures of climate change in the following ways.

UPDATING THE GHG INVENTORY FOR ABU DHABI EMIRATE

In 2018, in collaboration with our partners, we collected and validated all data requirements in order to update Abu Dhabi's Greenhouse Gas Inventory and emission projections. In addition, we completed calculations of emissions and an analysis of the inventory results for five target sectors. Three inventory iterations were conducted and crossed checked according to Intergovernmental Panel on Climate Change (IPCC) guidelines for the GHG inventories, and three emission projection scenarios were analysed in order to assess the mitigation measures and their potential of emission reductions in Abu Dhabi Emirate.

In addition, we also conducted various activities in 2018 related to Climate Change;

- Capacity building seminars were organised through the Abu Dhabi Sustainable Group Forum and Cleveland Clinic Abu Dhabi for private companies to help them conduct their own corporate GHG emissions inventories, as part of their sustainability reporting requirements
- We shared Abu Dhabi's experience with its GHG Inventory at the Finding Common Ground on Climate Change Mitigation and Adaptation Conference in USA; and Abu Dhabi's experience in incorporating the IPCC coastal wetlands supplement in its GHG inventory at the Incorporating Coastal Wetlands into Inventories event in Brisbane, Australia.

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

The EAD team at the *Incorporating Coastal Wetlands into Inventories* event in Brisbane, Australia.

2018, this included the Integrated Coastal Zone Management (ICZM) Policy, which was developed by EAD in partnership with the Department of Urban Planning and Municipalities to implement the Plan Maritime 2030.

In 2018, we drafted the Self-monitoring and Reporting Regulation that includes three annexes (discharges to marine, emissions and waste generation), currently under stakeholder review. The regulation requires that all activities that have discharges to the environment must report on their discharges along with the activity data in order to build any mitigation plans. By implementing this regulation, we will build a further understanding of the current sources of pollution in the Emirate of Abu Dhabi.

ASSESSING THE POTENTIAL FOR ELECTRIC VEHICLE UPTAKE

The transport sector is currently responsible for 16.8% of the total energy of the GHG emissions in the Emirate of Abu Dhabi. In order to reduce these emissions, we collaborated with Emirates Nature – WWF and other stakeholders to assess the potential for electric vehicle (EV) uptake in the Emirate of Abu Dhabi and to develop a roadmap for implementation. This project will include an economic, social and environmental assessment, and set the future scenario for electric vehicles uptake up to 2050 with interim targets.

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.

MARINE WATER QUALITY

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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 public health 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 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 2018, we covered 22 sites under the MWQMP that include ecologically-important areas in and near Abu Dhabi City, as well as in the Al Dhafra Region of Abu Dhabi Emirate. This systematic programme covers 39 parameters to assess the status and quality of Abu Dhabi waters and sediment. Automated data buoys support the MWQMP and enhance the monitoring of critical marine habitats and sensitive areas. These buoys measure seven key marine water quality parameters on a real-time basis and the data are transferred to our central database. This allows the MWQP to detect changes in marine water quality and acts as an early warning system for harmful algal blooms (HAB) and marine water quality changes.. Along with these activities of the regular monitoring, the team responds to emergency incidents including 5 fishkills and 23 HAB incidents in 2018.

Investigating a fishkill near the Armed Forces Officers Club.

Collecting sediment from the Abu Dhabi Eastern Corniche.

In general, the result of the monitoring of marine water quality reveals that the marine water quality in Abu Dhabi is generally good. The recreational waters of Abu Dhabi emirate meet public health criteria for swimming and other recreational activities. It is noteworthy that observed and recorded harmful algal bloom (HAB) incidents are on an increasing trend. Due to the increase in anthropogenic activities the water quality has been affected in confined areas and the level of different chemical parameters are augmented.

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Monitoring the marine water quality near Abu Dhabi's mangroves.

STUDYING HARMFUL ALGAE DISTRIBUTION NEAR DESALINATION PLANTS

In 2018, we updated our earlier study conducted in 2001-2005 on the distribution of harmful algae in Abu Dhabi waters in order to assess the occurrence of invasive species or species newly introduced through heightened anthropogenic impacts associated with increasing economic development and commercial activity on the emirate's coast such as ballast water discharge. There were eight ecologically important locations chosen as sampling sites including industrial areas, oil exploration areas, domestic waste receiving areas, and marine protected areas. Along with the harmful algae enumeration, the hydrographic parameters and nutrient distributions were concurrently monitored.

It was found that the harmful algae present now in Abu Dhabi waters are capable of producing Domoic acid, Saxitoxin, Okadaic acid, Brevetoxins, and other toxins. The highest number of harmful species were observed at Sir Bani Yas and Arzanah possibly due to ballast water inflow.

This year, we investigated 23 harmful algal bloom incidences. Additionally, we recorded a new toxin-producing diatom *(Pseudo-nitzschia pseudodeletisima*) in Abu Dhabi waters.

UNDERSTANDING THE EFFECT OF MARINE WATER QUALITY ON FISH EGGS AND LARVAE

Launched in 2007, this ongoing study examines 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. In 2018, we surveyed five important areas (Sir Bu Nuer, Taweelah, Um Al Nar, Mirfah, and Jabal Dhanna) including a major desalination plant, finding that the fish eggs and larvae varied spatially and evidenced a negative impact of the desalination plants on the larvae distribution. The maximum number of eggs and larvae was recorded at Sir Bu Nuer followed by Jabal Dhanna, Taweelah, Mirfah and Umm al Nar. The data of 2018 follows the previous trends revealing that the peak spawning period for fish stocks in Abu Dhabi waters is pre-summer (March, April and May). The temperature continues to be the key ecological factor controlling the spawning of fishes in Abu Dhabi waters.

In addition, six more fish larvae were identified during this year from the above locations. Analysis and interpretation of data collected from the territorial waters were conducted in collaboration with the University of Maryland, USA to identify the key parameters influencing the distribution of fish eggs and larvae in Abu Dhabi waters.

SAND MICROBIAL RECONTAMINATION STUDY

A pilot study to measure fecal indicator bacteria in sand at recreational beaches in Abu Dhabi was completed by the end of 2018. The purpose of this study was to determine whether the beach sand is a potential source of contamination for recreational waters at the beaches. The objective was to investigate the present and potential sources and ensure whether additional preventive measures should be implemented to prevent contamination. A total of 42 beach sand samples and 28 water samples were collected from Corniche Beach, Saadiyat Public Beach, Fairmont Hotel Beach and Al Bateen Beach to analyse microbial parameters. Results from this study indicated that there is no issue with microbial contamination in the sand at the beaches sampled and that the recreational beaches are safe for public health.

Harmful Algal Bloom (*Cyanobacteria*) recorded on Saadiyat Beach.

Harmful Algal Bloom observed at the Mussafah South Channel.

Collecting Fish Eggs and Larvae.

THE RE-USE POTENTIAL OF TREATED SEWAGE EFFLUENT FOR INDUSTRIAL SECTOR

This year, we completed a study, the first in the emirate, to investigate the re-use potential of treated sewage effluent (TSE) in the industrial and developmental sectors. This initiative followed on from directions by the Higher Committee of Marine Water Quality, and in close cooperation with relevant stakeholders in the emirate, with regards to the fact that a considerable proportion of treated wastewater is currently discharged into the marine environment.

The primary objectives of the study were to:

- assess current data and forecast the quantity and quality of TSE
- map TSE generation locations
- assess non-drinking water needs for large water consumers in terms of quantities and water source
- benchmark with best international practices and
- suggest regulatory instruments to advocate the concept of TSE reuse in relevant fields.

This year, we shared the major findings of the study with our partners.

GUIDELINES FOR ENVIRONMENTAL USES OF LIQUID DISCHARGES IN ABU DHABI EMIRATE

In order to better manage available water resources in a sustainable manner and to reduce discharges to the marine environment, we have developed science-based guidelines for the environmental uses of liquid discharges in the Emirate that take into consideration current and future uses of water resources. These guidelines will be applicable to all facilities and activities that dispose of liquid discharges in Abu Dhabi Emirate. Environmental uses include maintaining of wetlands, and supplementing environmental and ecological flows, as well as groundwater recharge. 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.

LAND AND SOIL

DEVELOPING AN INTEGRATED SOIL STRATEGY, BENCHMARKED TO INTERNATIONAL STANDARDS.

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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 the 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 adopt a holistic and integrated approach to soil protection. This includes creating and implementing guidelines, on-going monitoring programmes and awareness initiatives.

DEVELOPED GUIDANCE FOR ASSESSING SOIL-CONTAMINATED SITES

This year, we developed a technical guidance document that will help us establish a risk-based framework and process to identify and document the presence or absence, nature, and extent of soil contamination at sites within Abu Dhabi Emirate.

MONITORING SOIL CONTAMINATION

Caring for the Planet Starts from the Ground.

In 2018, we launched a soil contamination monitoring programme to help us keep up with changes in soil contaminant levels and to intervene whenever these changes become concerning. We monitor 170 sites including residential, agricultural and industrial sites. Soil samples collected from these sites are assessed against the potential contaminants of that specific land use. The tests include heavy metals, pesticides and insecticides, total petroleum hydrocarbons (TPH), and other parameters. The parameters are then contrasted against our *Abu Dhabi Soil Contamination Guidelines* and the soil quality index calculated. The results of this monitoring programme will be the basis for future management plans, protection policies and soil related regulations.

MONITORED SOIL SALINITY

Inadequate rainfall, high salt content of irrigation water and saline groundwater are causing one of the greatest challenges in agricultural land in the Emirate: More than 80% of irrigated land in Abu Dhabi Emirate is affected by salinity and are negatively affecting the productivity of crops.

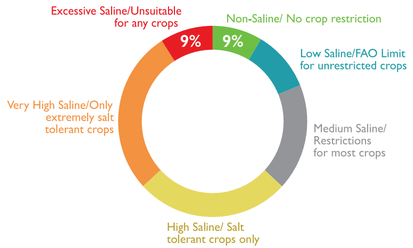
Soil Contamination through ingestion, inhalation and skin contact can impact human health.

We conducted a soil salinity survey to ensure a comprehensive understanding, share knowledge, raise awareness about soil quality; and to develop a management plan to reduce the effects of soil salinity on crop production. From 2015 until the end of 2018, the project surveyed 4,000 farms in Abu Dhabi Emirate for soil and irrigation water quality. More than 3,900 soil samples were analysed for soil salinity in order to map the levels of salinity and to monitor the seasonal changes in the areas of Abu Dhabi, Al Ain and Al Dhafra. The survey helped us determine the soil salinity classes, develop soil salinity maps, and assess soil salinity management in the agricultural areas of Abu Dhabi Emirate. The assessment shows over 33.3%, 25.63% and 15.3% of the farm area in the Abu Dhabi region, Al Ain region, and Al Dhafra region respectively have poorly managed salinity and, if left unchecked, can cause significant decrease in crop yield. Therefore, we are developing soil salinity management plans to handle salinity issues to avoid further abandonment of agricultural farms.

In 2018, we launched a soil contamination monitoring programme to help us keep up with changes in soil contaminant levels and to intervene whenever these changes become concerning.

Soil Salinity is one of the greatest challenges in agricultural land in the Emirate.

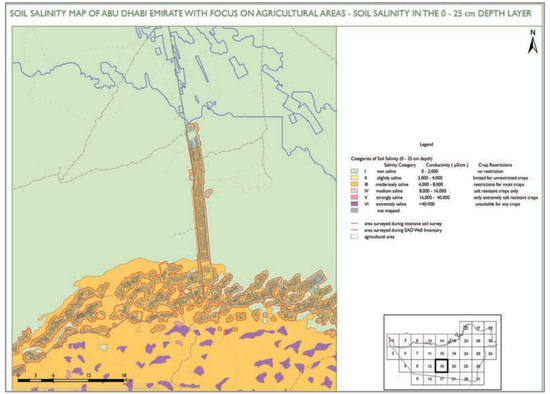
Soil Salinity Classes of Agricultural Areas in Abu Dhabi Emirate

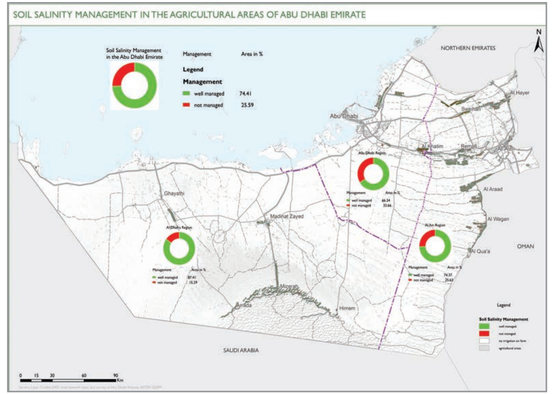


9% of the farm areas can be classified as non-saline soil

9% of the farm areas is completely unsuitable for crop production

9% of farm areas in the Emirate can be classified as non-saline soil, while another 9% of farm areas are considered completely unsuitable for crop production. If we exclude farm areas with very high to excessive salinity, a high portion is suitable for salt tolerant crops.





CONTINUED TO MANAGE OUR SOIL ARCHIVING FACILITY

Our soil archiving facility protects the scientific value of soil samples until the future arrives with its new techniques and analysis. The facility has the potential to provide answers to agricultural and environmental problems that may yet arise.

The number of stored samples comes from all over the Emirate, exceeds 4,900 samples and spans more than 8 years. All samples are managed through a geospatial database and linked to our soil database.

The facility benchmarks with some of the largest and oldest soil archiving facilities worldwide.

Archiving of stored soil samples is on-going to maintain important historic and contemporary soil specimens from around Abu Dhabi for future analysis.

WASTE MANAGEMENT

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

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The key challenge facing Abu Dhabi Emirate over the last few decades has been the amount of waste generated, a figure which has increased rapidly as a result of a growing population, high-consuming society and economic development. As per 2017 statistics, the estimated amount of total solid waste generated in the Abu Dhabi Emirate was 9.66 million tonnes.

We are in charge of regulating the waste sector in the Emirate of Abu Dhabi. This means we are responsible for the development of policies, regulations and guidelines for waste aimed at protecting the environment. On the other hand, Tadweer (Abu Dhabi Waste Management Center) is responsible for managing waste in Abu Dhabi, including developing the necessary infrastructure and implementing waste management projects.

In 2018, an *Integrated Waste Management Master Plan for Abu Dhabi Emirate* was developed by Tadweer to achieve sustainable waste management over a period of 25 years.

INTRODUCED NEW REGULATORY INSTRUMENTS

In 2018, we drafted a regulation that sets the requirements for integrated management of waste and aims to maximise the utilisation of waste recycling, resource recovery, waste treatment and finally safe disposal.

In addition, we drafted a Code of Practice (CoP) for used batteries that aims at identifying the requirements for the management and handling of all types of consumed batteries in the Emirate of Abu Dhabi based on best available practices. The CoP determines the roles and responsibilities of generators, environmental service providers and the concerned entities.

MEETING NATIONAL AND EMIRATE-WIDE TARGETS

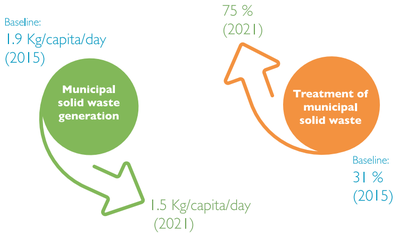
The UAE has set two national targets to establish a sustainable waste management system to be achieved by 2021. The first target aims at reducing municipal solid waste generation to 1.5 kg/capita/day, and the second target aims at increasing the amount of treated municipal solid waste to 75%. Locally, the Abu Dhabi Plan stipulates that 60% of generated waste must be treated by 2020. 2017 statistics show that the emirate currently generates 1.29 kg/capita/day of municipal solid waste, 30% of generated municipal solid waste and 30.7% of generated non-hazardous solid waste is diverted from landfill and subjected to either recycling or composting.

Construction and demolition waste being recycled at Al Dhafra Recycling Plant.

Teachers participating in a *Waste Audit Workshop*, as a part of our Ajealunah Initiative.

In 2018, we drafted a regulation that sets the requirements for integrated management of waste and aims to maximise the utilisation of waste recycling, resource recovery, waste treatment and finally safe disposal.

National Waste Management Targets

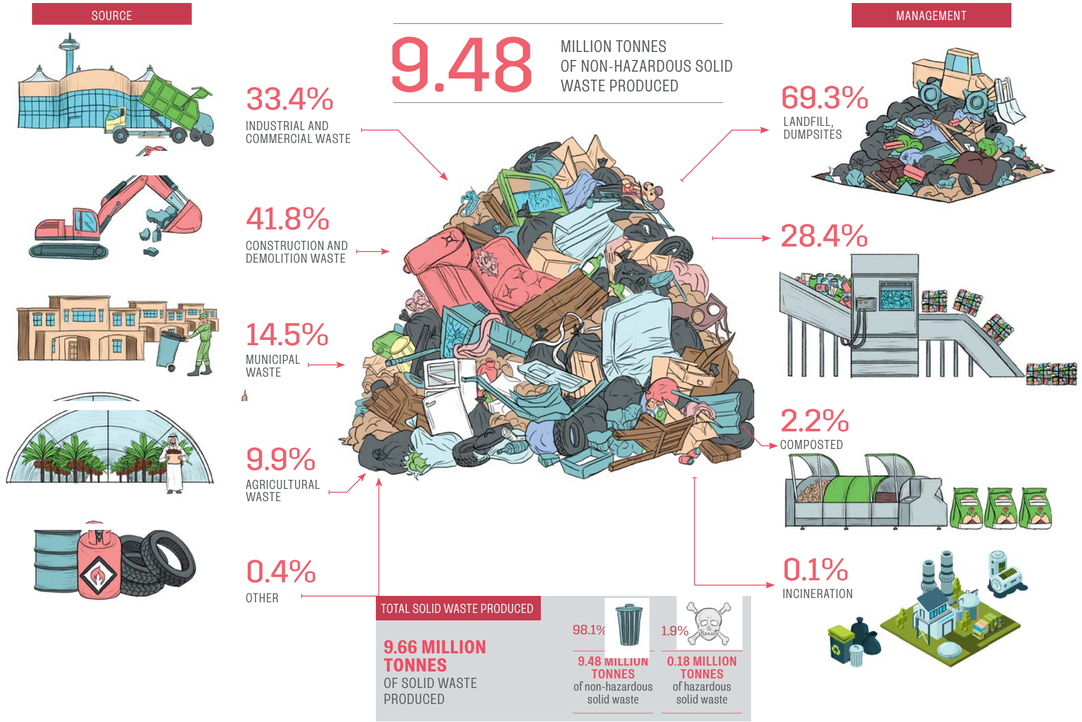


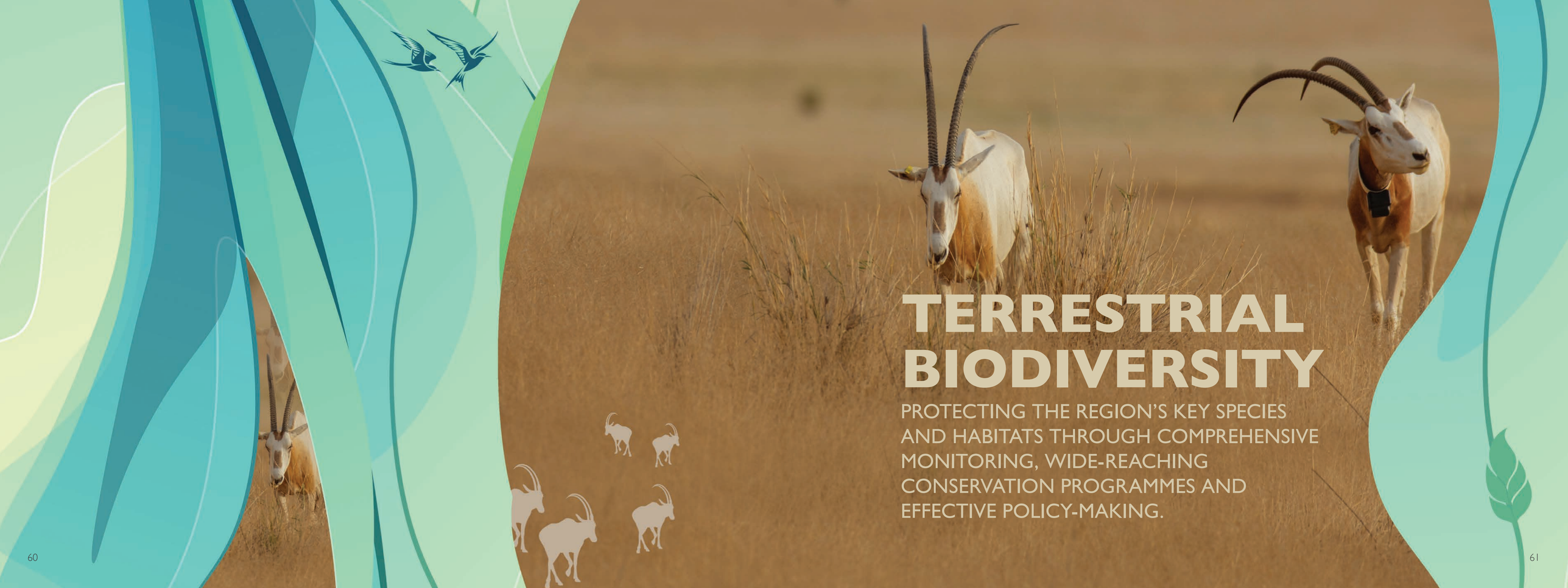
To achieve these targets, in 2018, we conducted a series of awareness workshops, in partnership with Tadweer, on waste management and minimisation targeting the government and private sector.

PROGRESSED WITH OUR AJEALUNAH INITIATIVE (OUR FUTURE GENERATION)

Launched in 2017, this initiative was also set up to contribute to achieving the waste national targets. We organised two workshops for 18 schools and 40 educators on how to conduct a waste audit. It provided them with a structure of how to measure the total amount of waste generated in their school, and ways to reduce and manage waste through proper segregation at source, recycling and reuse.

Total Waste
in Abu Dhabi Emirate in 2017





TERRESTRIAL BIODIVERSITY

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

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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.

DISCOVERED NEW SPECIES

During our terrestrial surveys in the protected areas and key biodiversity sites, we recorded the Indian Crested Porcupine (*Hystrix indica*) in the Al Dhafra Region, which was previously known only from old Bedouin records from the 20th century. The Rüppell's Fox (*Vulpes rueppellii*), last recorded by our scientists nearly 13 years ago, was again recorded via camera traps that were deployed in a historic location in the extreme western part of Abu Dhabi emirate and after 9 long months images of these species were recorded. We also recorded the Arabian Sand Cat (*Felis margarita*) in more than 17 locations within the Al Dhafra region.

Another discovery of a species new to science was the Spider Hunting Wasp (*Ferreola alraeesii*) found at our Al Wathba Wetland Reserve. This is the fifth new species to science discovered at the Reserve since 2016. In addition, a total of 15 new distribution records for invertebrate species were recorded in Abu Dhabi's Al Dhafra Region.

SURVEYED ABU DHABI'S TERRESTRIAL PROTECTED AREAS

Biodiversity surveys of our 13 terrestrial protected areas, carried out throughout 2018, have recorded 193 species. Our surveys have recorded over 108 invertebrate species, 11 reptile species, 25 bird species, 14 mammal species and 35 plant species. Our survey has shown that Burqa Saqoor Protected Area in the Al Dhafra Region has a high biodiversity value in terms of species richness, when compared to other protected areas. We have recorded many rare species such as Huntsman Spider (*Cebrennus sp.),* Dipcadi Lily plant (*Dipcadi erythraeum*), Eagle Owls (*Bubo ascalaphus*) and Arabian Sand Cats (*Felis margarita*).

Indian Crested Porcupine recorded in the Al Dhafra region of Abu Dhabi.

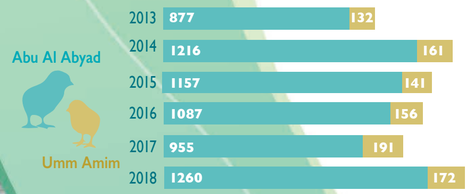
Spider Hunting Wasp, a species new to Science, discovered at Al Wathba Wetland Reserve.

Huntsman Spider, a rare species, was recorded from Burqa Saqoor Protected Area in the Al Dhafra Region.

Number of species recorded in our terrestrial protected areas in 2018

Reptiles	11
Mammals	14
Birds	25
Plants	35
Invertebrates	108

Crab Plover breeding pairs recorded in Abu Dhabi from 2013 to 2018.



CONTINUED MONITORING OF BIRDS

We continued to monitor breeding birds throughout the year mostly on offshore islands of the emirate. Socotra Cormorant (*Phalacrocorax nigrogularis*) recorded the highest number of more than 55,000 breeding pairs during the current year. Breeding was recorded from five breeding colonies in the emirate. Similarly, the highest numbers of 1,432 breeding pairs (active nests) were recorded for Crab Plovers (*Dromas ardeola*) in summer 2018 from two breeding colonies of Abu Al Abyad Island and Umm Amim respectively.

Wild bird monitoring continued in the protected areas of the emirate and other previously designated sites that include coastal wetlands, inland wetlands, wadis and mountains and farmland including plantations. Al Wathba Wetland Reserve (AWWR) and Bul Syayeef Marine Protected Area had the bulk of wintering waterbird species and numbers. Egyptian Vultures (*Neophron percnopterus*) were routinely monitored at Jabal Hafit and their numbers were stable with 10-15 adults as well as sub-adult birds seen, suggesting breeding either in the protected area or in its vicinity.

Greater Flamingo (*Phoenicopterus roseus*) continued to breed successfully at the Al Wathba Wetland Reserve, for the eighth consecutive year. The 601 chicks fledged during summer 2018 is the highest breeding record at Al Wathba over the past eight years. It seems flamingos have shifted their nesting, earlier in the year to escape the harsh summer heat. There has been a shift of nearly four weeks in the initiation of nesting since breeding began in 2011. Better management of the site and efficient predator control in addition to a complete stop in disturbance has benefitted the breeding.

CONTINUED MONITORING IMPORTANT AND THREATENED PLANTS

By the end of 2018, the EAD Herbarium had 3,860 specimens of 435 native and naturalised species. The only collection of its kind in the emirate, this resource is listed under the Index Herbarium, a global directory of public herbaria. The Herbarium is used extensively by university students in Abu Dhabi for research and reference purposes.

Al Wathba Wetland Reserve (AWWR) and Bul Syayeef Marine Protected Area had the bulk of wintering waterbird species and numbers.

Greater Flamingo on nest at Al Wathba Wetland Reserve in 2018.

Bul Syayeef Marine Protected Area.

CONTINUED MANAGING THE SHEIKH ZAYED PROTECTED AREAS NETWORK

As the authority managing the Sheikh Zayed Protected Areas Network, we have played a key role in addressing many of the related issues, which have arisen at both 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.

TRANSFORMING AL WATHBA WETLAND RESERVE

This year, we progressed with our Al Wathba Wetland Reserve Habitat Rehabilitation Programme, which included the planting of a natural barrier of 2,500 native trees. The programme aims to enrich the reserve's biodiversity, enhance its habitats, improve vegetation cover and reduce noise from the surrounding areas – efforts that would help maintain this internationally-recognised site as a national and regional hotspot for environmental education and responsible ecotourism. Ethel (*Tamarix aphylla*) also known as Tarfa, is the main native tree species that was planted as part of this programme. This fast-growing species, considered one of the most important native trees in the UAE, can tolerate extreme heat, drought and salinity. Other species include the Ghada (*Haloxylon persicum*), Arak (*Salvadora persica*), and Ghaf (*Prosopis cineraria*). All these species need very little water and minimum care for survival. The programme was generously funded by TOTAL and Dolphin Energy. The programme will continue in 2019.

EARNED MORE GLOBAL RECOGNITION FOR AL WATHBA WETLAND RESERVE

The International Union for Conservation of Nature (IUCN) has placed Al Wathba Wetland Reserve in Abu Dhabi on its Green List of Protected and Conserved Areas. The global recognition underscores our efforts in developing the reserve since its designation as a protected area in 1998, and is a realisation of the vision of the UAE's founding father, the late Sheikh Zayed Bin Sultan Al Nahyan to provide a safe environment for migratory birds and breeding area for the Greater Flamingo. The announcement was made during the 14th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 14) in Sharm El-Sheikh, Egypt.

H.E. Razan Khalifa Al Mubarark, EAD's Managing Director, H.E. Dr Shaikha Al Dhaheri, Acting Secretary General of EAD with Adel Ahmed Albuainain, Chief Executive Officer, Dolphin Energy Limited, planting the seedlings at Al Wathba Wetland Reserve.

H.E. Dr Shaikha Al Dhaheri, EAD's Acting Secretary General, with her team after receiving the IUCN Green List Certificate.

One of the forum's discussion sessions.

BRINGING REGIONAL EXPERTS TOGETHER ON BIODIVERSITY

Under the patronage of H.H. Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in Al Dhafra Region and Chairman of EAD, we organised the *First Regional Biodiversity Forum* in Abu Dhabi in May with the attendance of more than 100 biodiversity experts and specialists from the UAE, Saudi Arabia, Jordan, Bahrain, Kuwait, Oman, Yemen, Iraq, Egypt, Lebanon and Palestine.

The forum was organised in cooperation with the International Union for Conservation of Nature (IUCN) - Regional Office for West Asia (ROWA). Participants discussed progress towards the implementation of the National Strategies of NBSAPs (National Biodiversity Strategy & Action Plans) related to the Convention on Biological Diversity (CBD); presented initiatives on biodiversity conservation in the UAE and the Arab region; exchanged expertise and enforced cooperation in the biodiversity field.

On the final day of the forum, training for IUCN EAGL experts for the Green List Standard for Protected and Conserved Areas was conducted. The EAGL network consists of 13 regional experts specialised in biodiversity and protected areas.

ABU DHABI SABKHA ON THE UNESCO WORLD HERITAGE TENTATIVE LIST

In June 2018, in cooperation with the Ministry of Culture and Knowledge Development (MCKD) we managed to include the Abu Dhabi Sabkha in the tentative list of World Heritage Sites within the framework of the World Heritage Convention. This step comes within the EAD and the Ministry's joint plan to initiate the process for the preparation of a nomination file for the site as a major step in the process of inscribing the site within the World Heritage List.

Sabkha in Abu Dhabi

The next generation of Scimitar-horned Oryx in the wild.

Tracking and observing wild Oryx.

Scimitar-horned Oryx with GPS tracking collar

RETURNING THE SCIMITAR-HORNED ORYX

At the premiere of the Scimitar-horned Oryx documentary at Emirates Palace.

TO ITS NATIVE CHADIAN HOMELAND

This year, our Scimitar-horned Oryx Reintroduction Programme, considered the world's most ambitious mammalian species reintroduction initiative, progressed as a further three shipments of oryx were translocated from Abu Dhabi to Chad. By the end of the year, there were 146 oryx including 45 calves born this year, in the wild, in the reserve. These wild-born calves represent 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 through our local monitoring team.

From the moment of their release, the oryx 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 12,000 km^2.

We premiered our ground-breaking 30-minute documentary *Back to the Wild* depicting the Scimitar-horned Oryx Reintroduction Programme, at the Emirates Palace to an audience of VIPs, government officials, ambassadors and ministers in honour of Earth Day. The documentary follows the journey of Nya, a Scimitar-horned Oryx and the rest of her herd from Abu Dhabi to Chad. Following the screening, a panel discussion was held with H.E. Siddick Abdelkerim Haggar, the Minister of Environment and Fisheries of Chad; John Newby, the Chief Executive Officer of Sahara Conservation Fund, H.E. Dr Shaikha Salem Al Dhaheri, EAD's Acting Secretary General and Justin Chuven, Unit Head, Ex-Situ Terrestrial Conservation Programmes at EAD.

H.H. Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in Al Dhafra Region and EAD's Chairman receiving a copy of the *Back to the Wild* book from H.E. Razan Khalifa Al Mubarak, EAD's Managing Director during ADIHEX.

The documentary has since aired to the public on factual entertainment channel, Quest Arabiya. It is also being screened at several UAE embassies across the globe, including Chad, Italy, the United Kingdom, and the United States of America. It will also be featured at the Green Film Festival in Sustainable City, Dubai and Masdar City, Abu Dhabi in the UAE, as well as the Imagine Science Film Festival in New York and Festival Film du Vert in Berlin. Starting January 2019, guests travelling with Emirates Airlines will be able to learn more about what is hailed as the most ambitious mammalian species reintroduction project in the world. *Back to the Wild* will also continue to be part of the Etihad Airways' inflight entertainment menu.

We also launched a coffee table book *Back to the Wild* during the Abu Dhabi International Hunting Exhibition, which shares the extraordinary journey of the Scimitar-horned Oryx from extinction to reintroduction.

CONSERVING ENDANGERED ANTELOPE AND GAZELLE AT DELEIKA WILDLIFE CONSERVATION CENTRE

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*). 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.

Breeding programmes for these species are taking place at the Deleika Wildlife Conservation Centre, our state-of-the-art facility in Abu Dhabi Emirate. We have now completed Phase I of the construction of this conservation, research and education centre. Completing Phase I of the construction has greatly enhanced our ability to efficiently manage and selectively breed the endangered species.

It has also given us the ability to breed targeted groups of animals and maximise the genetic diversity of these endangered species. The purpose built system of pens, alleyways and handling equipment greatly improves the efficiency with which we can prepare the animals slated for reintroduction and decreases the transit time as the animals take the long journey back to their native habitat.

PROPAGATING NATIVE PLANT SPECIES TO RESTORE DEGRADED HABITATS

We manage and operate a specialised native plant nursery within the Houbara Protected Area in the Al Dhafra Region. Currently, it hosts seeds from 69 different native plant species within its collection and propagates 58 different plant species, with an annual production capacity of 250,000 plants.

We have also successfully propagated a number of highly-threatened and endangered flora in the nursery, including the Dwarf Palm (*Nannorrhops ritchiana*) of which just one individual plant exists in the wild, and the Caralluma (*Caralluma arabica*), of which fewer than 10 individuals exist. Over the last year, we propagated 70 Dwarf Palms and over 700 Carallumas in the nursery.

Aerial view of Deleika Wildlife Conservation Centre.

Addax in the new specially designed animal management facilities.

EAD's Native Plants Nursery.

CONDUCTED SUCCESSFUL REHABILITATION TRIALS

The initial results from our rehabilitation trials for White Saxaul (*Haloxylon persicum*) in Al Marzoum Protected Area have been very promising. The plants are growing with the minimal water requirements of five gallons every two weeks at the beginning of the planting and went down to zero irrigation for more than four months, and have a survival rate of over 85%. Another rehabilitation trial is planned at Jabal Hafit National Park where some key species will be planted, mainly of the little Dwarf Palm (*Nanorrhops ritchiana*) Moringa (*Moringa peregrina*) and Caralluma (*Caralluma arabica*) along with other native species.

White Saxaul (*Haloxylon persicum*) rehabilitation.

Little Dwarf Palm (*Nanorrhops ritchieana*) in its natural habitat.

Threatened flora currently propagated within EAD's Native Plants Nursery.

PRESERVING THE IDENTITY OF OUR DESERT AND ADDRESSING OVERGRAZING

One of the principal pressures observed locally, regionally and globally on terrestrial habitats is the excessive grazing of wild plant species, leading to desertification and loss of ecosystem services. This year, we completed the investigation of the impact of camel grazing on Abu Dhabi's terrestrial biodiversity, with findings indicating that there is an urgent need to address and limit this pressure. We immediately collaborated with the local communities and our partners to develop a roadmap for protecting the natural and cultural heritage of Abu Dhabi's desert habitats. We also revised Abu Dhabi Grazing Law No. 13 of 2005 and its executive regulations and proposed key conditions and guidelines with the aim of achieving sustainable rangeland management. This necessary response to one of the Emirate's main environmental challenges will continue in 2019, with the aim to implement balanced solutions that take into consideration political, economic, social, and environmental aspects.

'Arta' seeds (*Calligonum comosum*) in the Houbara Protected Area in Abu Dhabi, an area protected from camel grazing.

Sampling flora during a grazing study survey.

A member of the community describing how the diversity and abundance of desert plants have changed between past and present in Sweihan.

Interviewing a community elder in Madinat Zayed.

Collaborating with partners on a roadmap for addressing overgrazing in the Emirate.

LAUNCHING THE FIRST ARABIAN ORYX HOUSING AND HUSBANDRY GUIDELINES

In 2018, the General Secretariat for the Conservation of the Arabian Oryx (GSCAO), a regional initiative we have hosted since its establishment in 2001, published the first *Housing and Husbandry Guidelines for the Arabian Oryx*. The guidelines address best practices in Arabian Oryx nutrition, housing, veterinary care, transportation and conservation breeding.

The development of best practice guidelines for housing and husbandry will help protect the iconic Arabian Oryx.

We Monitor Our Terrestrial Biodiversity

Monitoring

Vehicles
- Cars
- Helicopters

Devices
- Underwater cameras
- Radio tracking devices
- Drones
- Geographic Information System/Satellite tracking

Equipment
- Laboratories
- Computers/tablets
- Binoculars

Facilities
- Outposts
- Ranger stations
- Remote offices

Manpower
- Rangers
- Veterinarians
- Scientists
- Managers

Through the work of the biodiversity monitoring programme, we are able to assess the health of our environment and use this knowledge to plan, implement and evaluate environmental policies and regulations, to preserve species that inhabit our lands.

Major threats

Habitat loss and fragmentation
Infrastructure projects, buildings, roads, livestock grazing

Climate change
Increasing temperatures, decreased precipitation

Pollution
Sewage discharge, heavy metals, nitrates, over-irrigation

Invasive species

Some of the key species we protect

Species

Mammals

Arabian Tahr

Arabian Oryx

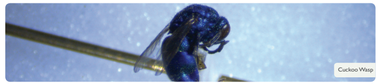
Sand Cat

Plants

Dwarf Palm

White Saxaul

Invertebrates


Cuckoo Wasp

Amphibians and Reptiles

Wonder Gecko

Birds

Egyptian Vulture

Greater Flamingo

Sooty Falcon

Socotra Cormorant

We Preserve and Sustain Our Native Plants

Native plants provide essential habitats for wildlife and are vital to sustain ecosystems

Research

By conducting research on the natural flora within Abu Dhabi, we are able to document where these species are and estimate their population. Through this we can understand current threats and identify key species to monitor.

18 Plant species classified as threatened and near threatened

4 Marine plant species

432 Terrestrial plant species

436 Types of plants in Abu Dhabi

Monitoring and Assessment

Through monitoring key indicator species in the field, we can assess the health of an area and its habitats.

Key indicator species:

Oriental Cherry

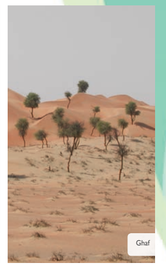
Caralluma

Orched Marsh Helleborine

White Saxaul

Mangrove

Dwarf Palm


Ghaf

Rehabilitation and Preservation

To preserve our native flora, a combination of conservation measures are required to protect our habitats for the future.

- Seed collection
- Planting of seeds in EAD's native plant nursery
- Reintroduction
- Rehabilitation
- Plant Genetic Resources Centre

A Wonder Gecko (*Teratoscincus keyserlingii*).

MEASURING THE CHANGES IN OUR NATURAL HABITATS

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* in 2017, collaborating with government partners to implement the principles and measures for protecting the natural environment and its associated biodiversity. In 2018, an assessment of the changes in natural habitats was completed and identified that overall, there was less than a 1% decline in the area of terrestrial and coastal habitats in the Emirate. This encouraging result indicates that the Emirate has remained within its set conservation target, thanks to the implementation of the development permitting process as well as improved coordination with key government entities such as the Department of Urban Planning and Municipalities, to better integrate environmental priorities into land-use planning.

TAKING ACTION ON ALIEN SPECIES: MONITORING, PREVENTION AND CONTROL

This year we published an informative public guide to the *Alien Invasive Species of the UAE*, providing details on the principle types of invasive plants, birds, mammals, reptiles and invertebrates that have been introduced through various pathways to the country, becoming unwelcome visitors that compete with native species and negatively impact the UAE's natural environment.

To complement the guide, a policy brief addressing terrestrial and freshwater alien species in Abu Dhabi was also developed, presenting information on the identified impacts of alien invasive species locally and globally, the local context and putting forward key policy recommendations for preventing and controlling these species in the emirate.

TAKING ACTION TO CONSERVE THE WONDER GECKO

We have been monitoring populations of the critically endangered Wonder Gecko (*Teratoscincus keyserlingii*), a species with a very restricted distribution along the coastal sands of the UAE stretching from Abu Dhabi, Dubai, Sharjah to Ras Al Khaimah. This is a much localised species and with small and fragmented populations. A workshop was conducted in late 2017 in which both local UAE and international experts participated and the outcome was the development of a national action plan in 2018.

Attendees at the Wonder Gecko Conservation Action Plan Workshop.

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 such as zoos and captive-breeding centres 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. Most facilities were in line with the requirements of the CITES and corrective measures were suggested for some.

MARINE BIODIVERSITY

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

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, like oceans globally, our fisheries stocks and marine biodiversity are facing growing pressure from the likes of climate change, rising water temperatures, marine pollutants, population growth and increasing coastal development.

COMPLETED THE UAE SUSTAINABLE FISHERIES PROGRAMME

This year, we completed the UAE Sustainable Fisheries Programme. Launched in 2015, this collaboration with the Ministry of Climate Change and Environment aimed to set the foundation to achieve a sustainable fishery by 2030. The programme has enhanced our understanding of the severely overexploited UAE fishery and identified that the fishery is in need of the implementation of management measures to support with the target of fisheries recovery by 2030. Key overall programme outcomes included the completion of the Fisheries Resources Assessment Survey; completion of socioeconomic and traditional knowledge surveys; development of fisheries laws and policies; development of a national fisheries research and monitoring plan; improved fisheries enforcement on land and sea; and improved fisheries information management across Abu Dhabi Emirate.

Launching the UAE Sustainable Fisheries Programme in 2015.

Interviewing fishers across the UAE, as part of the UAE Sustainable Fisheries Programme.

UAE Sustainable Fisheries Programme has enhanced our understanding of the severely overexploited UAE fishery and identified that the fishery is in need of the implementation of management measures to support with the target of fisheries recovery by 2030.

UAE Sustainable Fisheries Programme (2015 - 2018)

Outcome I

Completed the most comprehensive Fisheries Resources Assessment Survey of the UAE's Arabian Gulf Waters

- Forms a baseline to which future surveys can be compared
- Indicates that management measures are needed to allow demersal fishery to recover
- 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
- Fishery which was severely overexploited in 2002, remains severely overexploited
- Survey findings corroborate the stock assessment work we completed before, with the adult stock sizes of indicator species Hamour (*Epinephelus coioides*), Shaari (*Lethrinus nebulosus*), and Farsh (*Diagramma Pictum*) at 12%, 13% and 7% of the unexploited adult stock size.

Completing a fish stock assessment, as part of the UAE Sustainable Fisheries Programme.

Outcome II

Continued to monitor fisheries through our statistics programme

- An estimated 4,739 tonnes of fish was landed in the Emirate of Abu Dhabi during 2017, with a total wholesale value of 121 million dirhams
- Hamour (*Epinephelus coioides*) and Kanaad (*Scomberomorus commerson*) accounted for 15% and 32% respectively of the total landed catch and 42% and 27% respectively of the total wholesale value in the Emirate of Abu Dhabi in 2017. Due to their enduring popularity, these two species are severely over-exploited and at a high risk of stock collapse
- Stricter management options are under preparation to sustainably manage further exploitation.

Outcome III

Completed a comprehensive Communication Plan

- This stakeholder engagement strategy ensured that all key stakeholders would be engaged on fisheries management issues.

Interview with a traditional fisherman in Al Mirfa.

Outcome IV

Completed the most comprehensive Socioeconomic and Traditional Knowledge Survey of Fishermen in the UAE

- Over 300 boat owners and crew members were interviewed across the UAE including 60 of the most experienced fishermen in the UAE
- 80% agreed that there had been a significant decline in the fish stock with motivation amongst fishermen for change
- Youth were also perceived to be disconnected from the profession.

Outcome V

Developed new Fisheries Laws and Policy

- Several fisheries laws, decrees and regulations were reviewed
- In comparison to best practice fisheries management, a gap analysis was carried out with priority short-term legal gaps identified and actioned
- The Executive by-law of Federal Law No. 23 of 1999 was updated
- Specific legislations for spawning season bans for Shaari and Safi; minimum legal length legislation based on scientific characteristics of fish species; fishing boat licensing; and decrees for dhagwa and hadhra were issued
- The development of a national framework policy for fisheries and a national guideline for Aquaculture setting the future policy direction.

Outcome VI

Developed a National Fisheries Integrated Research and Monitoring Plan

In addition to the scientific FRAS survey, we

- Developed an integrated UAE-wide research programme to support future stock assessment and monitoring to measure the effectiveness of fisheries management measures. The scientific studies completed as part of this plan will support fisheries managers with additional understanding of the fishery and ecosystem and to assist in developing informed fisheries policy.

Outcome VII

Continued to Improve Fisheries Enforcement on Land and Sea

- Strengthened Monitoring, Control and Surveillance by identifying land and sea based enforcement needs as mapped against fisheries legislation, and the development of training material to assisst in implementation

Inspecting a hadhra.

Outcome VIII

Fisheries Management Planning

- Developed benchmarked management measures commensurate with the state of the fishery for the commercial, recreational and spearfishing communities.

Outcome IX

Improved Fisheries Information Management across Abu Dhabi Emirate

- Developed an updated fisheries landings data and effort data collection programme and built capacity in designing and managing fishery data collection programmes and in analysing fisheries data.

Hamour filmed inside Gargoor as part of the Fisheries Resources Assessment Survey.

CONTINUED MONITORING OUR ENDANGERED MARINE SPECIES – DUGONG, DOLPHINS AND TURTLES

We continued to monitor our marine wildlife through our aerial survey programme, which has been running since 2002. The population of dugong was estimated to be 2,762 which indicates a stable population of dugongs within the protected areas of Abu Dhabi, a consistent finding since 2004.

Through our Dolphin Survey, we documented a record number of 37 rare Finless Porpoise, 92 Indian Ocean Humpback Dolphins and 268 Indo-Pacific Bottlenose Dolphins. We also shared our announcement that the emirate's waters are home to the largest Indian Ocean Humpback Dolphin population in the world through the international Journal of the Marine Biological Association of the United Kingdom.

Nesting of critically endangered Hawksbill Turtles began at the end of March and continued until early June. At least 128 nests were recorded from four offshore islands. The maximum number of nests was reported from Qarnin Island (46) followed by Dayinah Island (40) and Zirku Island (31). The location of nests has a direct influence on hatching success and can also reflect the status of the nesting process of the species. Upon analysis of data from four islands, 70.3% of nests were found to be in the upper zone (vegetation line), 21.1% of nests in the middle zone and 8.6% in the lower zone close to the high tide line. Data on nesting ecology including the size and shape of nesting hawksbills, clutch-size, incubation and nesting success was collected to assess the status of nesting beaches and health of nesting females of hawksbills. Results demonstrate that there was a relative drop in hatching success of nests compared to last year, probably due to an increase in nest temperature at the end of the season. This aspect of nesting ecology will be validated in the coming years.

CONTINUED TO INVESTIGATE MARINE WILDLIFE INCIDENTS – DUGONGS AND TURTLES

This year, we reported and investigated a total of 23 incidences of dugong mortality in Abu Dhabi Emirate, in what may have been the biggest single die-off of one of Abu Dhabi's most vulnerable species. Of the 23 mortalities, 18 was due to drowning with 4 unknown and there was one due to vessel strike in 2018. The results of the investigation and necropsy of the mortalities indicated that the most probable cause of death was drowning in an illegal fishing net, locally known as Hiyali.

Abu Dhabi is home to the world's second largest and densest population of dugongs, with around 3,000 found mostly in the waters around Bu Tinah Island, part of the Marawah Marine Biosphere Reserve. Dugongs, their foraging habitats and their migratory routes in the UAE have been protected under Federal Law No. 23 and No. 24 since 1999. The UAE is also a signatory to the UN Convention on the Conservation of Migratory Species making it an international commitment to protect dugongs. Ongoing efforts are being implemented to encourage behavioural change of fishers towards compliance with federal law.

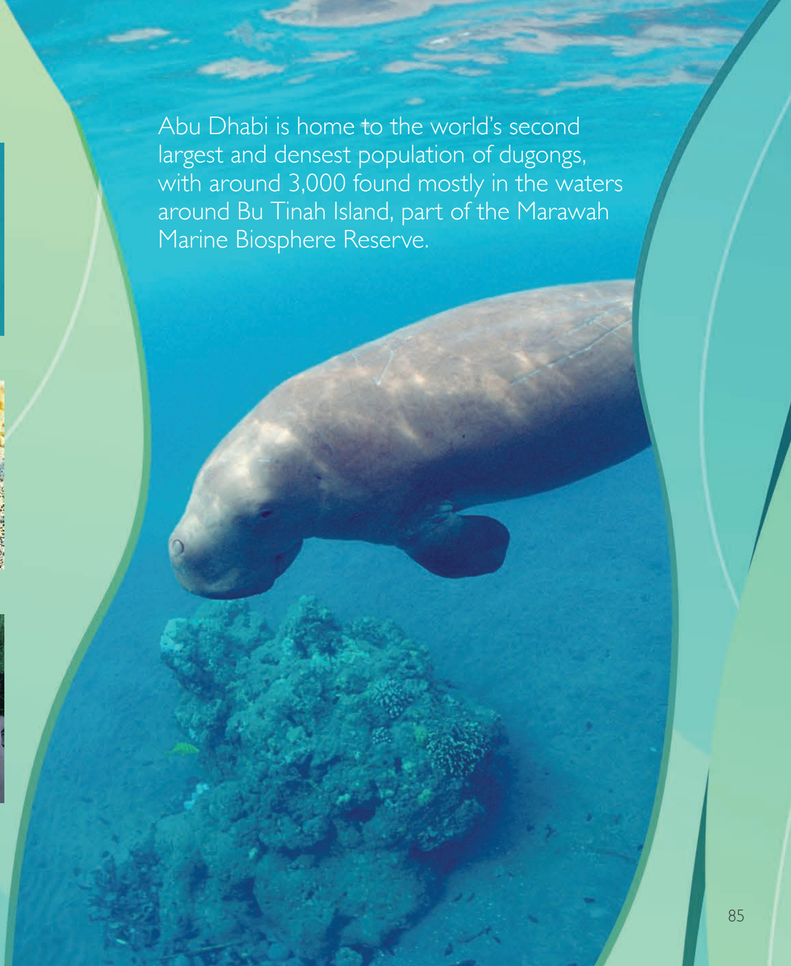
During 2018, 52 yearlings, juveniles and adult sea turtles were rescued along the coastline and waters of the UAE. These consisted of 31 critically endangered Hawksbill Turtles (mostly yearlings and juveniles) and 21 endangered Green Turtles (mostly adults and sub-adults). This is a lower number than previous years, a number that fluctuates with colder sea water temperatures during winter.

Indo Pacific Bottlenose Dolphins encountered during our monitoring programme.

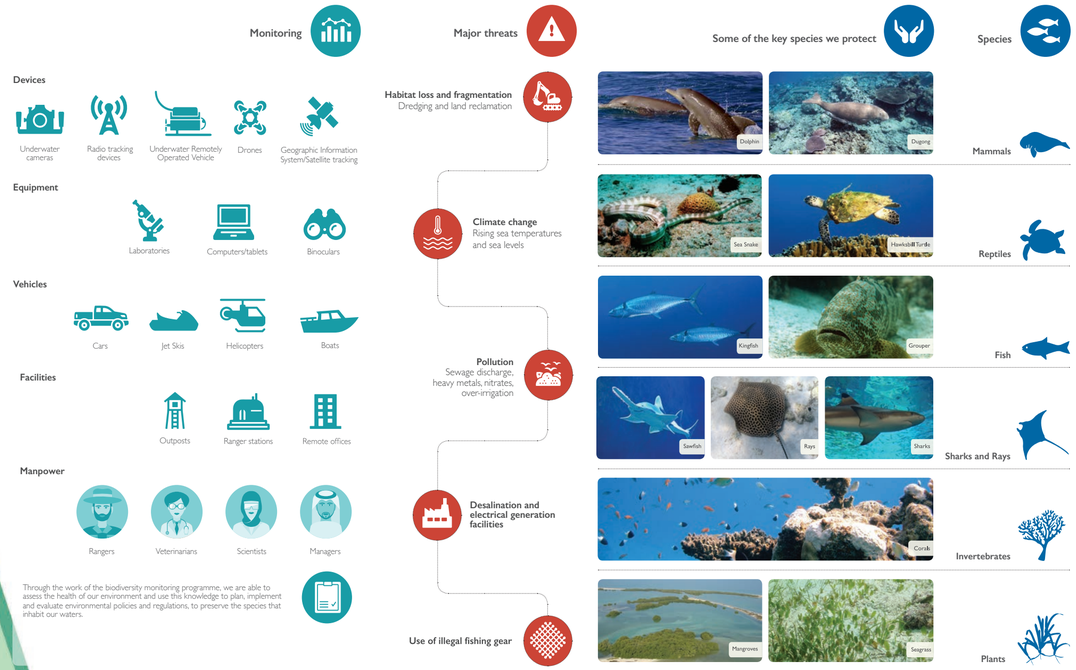
A critically endangered Hawksbill Turtle hatchling encountered on an offshore nesting beach.

A Dugong caught in an illegally abandoned net.

Abu Dhabi is home to the world's second largest and densest population of dugongs, with around 3,000 found mostly in the waters around Bu Tinah Island, part of the Marawah Marine Biosphere Reserve.



We Monitor Our Marine Biodiversity



ADDITIONAL MONITORING FOLLOWING MAJOR BLEACHING EVENT

During the summer of 2017, we observed coral bleaching throughout the Arabian Gulf ranging in severity from mild paling/discoloration to mass coral mortality at various locations. As a result, around two thirds of all live coral was bleached. Since the 2017 event, we completed additional monitoring of these sites which are showing some recovery. The ongoing monitoring of coral within the Gulf will continue to be a key indicator of ecosystem resilience to climate change, with Ras Ghanada, one of Abu Dhabi's biggest and diverse reefs, and one which suffered a rapid decline in cover, one of the key marine indicator sites.

COMPLETED A HYDRODYNAMIC MODEL FOR SEA-CAGE AQUACULTURE

In 2018, we developed a hydrodynamic model to determine the environmental carrying capacity of three aquaculture sites off the coast of Delma Island. The project included a state-of-the-art Environmental Impact Assessment (EIA) approach to assess the potential impacts of sea cage operations in each of the three proposed sites under different production scenarios, and to determine how long it will take for the environment to recover once the sea cages are fallowed.

3RD INTERNATIONAL GULF 3 CONFERENCE

We sponsored and participated in the 3rd International Gulf 3 Conference on *"Managing the Health of the Gulf Ecosystem"* organised by UAE University in collaboration with the Aquatic Ecosystem Health and Management Society (AEHMS), held in November at UAE University in Al Ain. The Conference discussed UAE's efforts to tackle major environmental problems causing stress to Gulf ecosystems.

EAD presented seven scientific papers and posters focusing on the ongoing efforts to monitor and protect Abu Dhabi's marine water quality, the marine biodiversity and its habitat. Presentations included: Impacts of Climate Change on Coral Reefs; Dolphin Survey results (specifically Indian Humpback Dolphin); Sharks and Rays Survey results (Abu Dhabi waters); Marine Toxins Monitoring results (particularly harmful algae); Eutrophication in Abu Dhabi waters (sources, impacts and management); and the Development of Marine Water Quality Index and Ambient Marine Standards.

Coral bleached during the 2017 bleaching event.

EAD experts and speakers at the Gulf3 Conference.

ENVIRONMENTAL POLICY AND REGULATION

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

ENVIRONMENTAL POLICY AND REGULATION

DEVELOPING POLICIES 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 our partners in Abu Dhabi Government to inform and shape the emirate's environmental policy. From aligning environmental strategy with the national agenda, to ensuring that permits and inspections are both effective and efficient, we try our best to ensure our work is anchored in international best practice, innovation and the most rigorous scientific research.

POLICIES AND STRATEGY

Reviewed whole-of-government environment strategy implementation

In line with the Abu Dhabi Plan, being led by the Abu Dhabi Executive Council, we had developed six whole-of-government strategies aligned with our organisational priorities which are air, water, waste, biodiversity, marine water quality and climate change. The overarching goal of these strategies are to preserve and conserve the environment while enhancing Abu Dhabi's economic and social activities. These strategies set the policy direction and identify initiatives for the period of 2015-2020, that contribute towards achieving Environment Vision 2030 outcomes and targets for ambient air quality, indoor air quality, noise and ozone depleting substances.

During 2018, we reviewed the initiatives under these strategies, with all concerned entities, to monitor their performance and their impact on the environmental targets. The assessment showed that 329 out of 450 initiatives planned under these strategies are under implementation.

Hosted the Green Business Summit

There is a rising call for a change in mindset, advancing the notion that the economy and the environment go hand in hand. At the same time, we want to ensure that we enable economic development with the least impact on the environment. In partnership with the Economist Group and the Department of Economic Development, we organised the Green Business Summit in Abu Dhabi where more than 400 business leaders, policymakers, scientists, academics, and investors convened to discuss concrete strategies and ideas to help them to prepare for the future, and scale up their efforts towards ensuring sustainability. It was an opportunity to share strategies and ideas on how business can become more sustainable; review international policies and how they can be implemented within the region; discuss the role of the finance industry in encouraging the adoption of climate finance and of environmental impact investing; and discuss how existing green technologies can be implemented at scale.

Signed a long-term partnership with the Department of Economic Development to launch the TIP EnviroTech Awards

We want to ensure that we enable economic development with the least impact on the environment. We also want to ensure that we grow and diversify the economy with reduced demands on natural resources as proposed by the Abu Dhabi Industrial Strategy. With this vision in mind, we signed a long-term agreement with the Department of Economic Development to launch the Technology Innovation Pioneers (TIP) EnviroTech Awards. The Technology Innovation Pioneer (TIP) Programme was initiated by the Ministry of Economy and the Department of Economic Development to accelerate the development of technology and innovation in Abu Dhabi and the wider UAE. The TIP EnviroTech Awards will attract and support innovators and entrepreneurs from all over the world to tackle environmental challenges. Support to innovators will be provided in the patent, proof of concept or start up phases of technological innovation aiming at creating new enterprises that provide environmental goods and services offering solutions to prevent, reduce or eliminate pollution or use natural resources more efficiently safeguarding them against depletion.

Launched the Future of the Environment Initiative

Following a review of the last five years of government performance against the environmental strategies we developed and after the development of the *Abu Dhabi Environment Policy Agenda*, as a response to the *State of the Environment Report of 2017*, we launched the *Future of the Environment Initiative*. We have worked with different partners to define the new vision for the Emirate where playing a leadership role in environmental management and leading the future of sustainable development is the focus. We also embarked on defining the key projects by different entities needed for the period 2019 – 2025 to achieve the policy aspirations and set objectives.

H.E. Razan Khalifa Al Mubarak, EAD's Managing Director, participating in a panel discussion at the Green Business Summit.

H.E. Razan Khalifa Al Mubarak, EAD's Managing Director, signing an MoU with H.E. Khalifa Bin Salem Al Mansouri, Undersecretary of the Department of Economic Development, Abu Dhabi.

At the *Future of the Environment Initiative* Workshop.

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 employees from across the Agency to ensure business continuity.
- Planning and developing protection and prevention plans, in cooperation with the strategic partners, based on the criteria and requirements of Abu Dhabi Executive Council. We also implement the alarming process, readiness and response plan and conduct the recovery and follow up processes for emergencies that lead to hazardous risks on 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 work environment internal emergencies; conducting inspection and implements occupational safety, in addition to closing the non - conformity reports through implementing correction and preventive safety procedures, in addition to ensuring employees' health all over the agency to match the local and international criteria.

Continued to Actively Respond to Environmental Emergencies and Crises

We successfully managed to close 100% of the emergency cases in 2018. We also provided the database of these cases, which included 110 cases in Abu Dhabi, 49 of them are critical: 41 epidemic diseases, as well as 2 oil and chemical spills, 5 fish mortality and one algal bloom (Red Tide). There were also one medium emergency case, in addition to 49 cases classified as complaints.

We developed and implemented 14 emergency and crisis plans within EAD and with its strategic partners, locally and internationally.

In 2018, we carried out many awareness initiatives and programmes, as well as training plans, which helped in achieving many successes. We organised and conducted around 28 awareness initiatives, including specialised and drill workshops and training courses to enhance awareness on the concepts and criteria of environmental emergency and crises. 129 employees and strategic partners attended these activities, which aimed at building the capabilities of our employees.

Continued to Ensure Implementation of Occupational Health and Safety System Criteria

We conducted 30 basic, specific and general trainings attended by 253 employees as well as 6 awareness campaigns to raise the level of health awareness to 493 employees. Moreover, comprehensive inspection operations were conducted at sites and facilities affiliated to EAD. We also participated in the Abu Dhabi Walking Challenge Competition 2018 and achieved the first place amongst 37 entities in Abu Dhabi Emirate.

Business Continuity

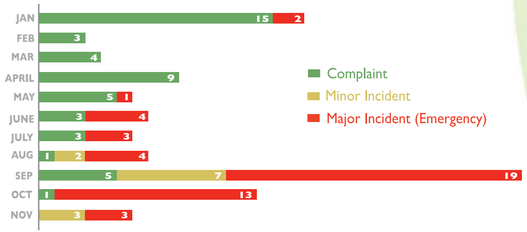
A business continuity system was implemented at EAD in 2015 based on the national criteria AE/HSC/NCEMA 7000:2012 and the international criteria ISO 22301 under the supervision of business continuity office affiliated to the General Secretariat of the Executive Council.

We conducted a periodic review of our business continuity plan to ensure its effectiveness. In addition, we organised 28 training courses to enhance employee awareness and competencies and we also organised a workshop on business continuity to train 76 employees and trainers from universities.

We have benchmarked against the Abu Dhabi Sewage Services Company to enhance our business continuity practices.

Training staff to increase the maturity level of business continuity.

Number of Environmental Emergency Cases in 2018



Vaccination Against Seasonal Flu Campaign.

Dr Abdullah Zamzam, Assisstant Secretary General - Operations, EAD participating at the Vaccination Against Seasonal Flu Campaign.

Enhancing Emergency Preparedness: Red Tide Emergency Response Plan Workshop.

Enhancing Emergency Preparedness: Avian Influenza Emergency Response Plan Workshop.

ASSESSMENT, PERMITTING AND INSPECTIONS

As the independent regulator of environmental affairs in the Emirate of Abu Dhabi, one of our top priorities is to assess, permit and inspect all industrial and commercial establishments, hazardous materials (HazMat) stores, and development and infrastructure projects. In addition, to evaluate the compliance of these facilities and projects, which may embrace a negative impact to the emirate's environment or biodiversity with respect to issued environmental laws and regulations.

We continued the development of innovative electronic systems and tools for environmental permitting, assessment, inspection and hazard evaluation. A comprehensive assessment for various projects and facilities has been conducted in order to take proper decisions to protect the public and the environment.

EAD hosted several workshops this year internally and externally in order to enhance our team's capacity on the Environmental Theatre Electronic Data Deliverables (EDDs) and a similar workshop was conducted for environmental consultants. In addition, two awareness workshops with Ajman Municipality and Abu Dhabi General Services Company – Musanada were conducted to exchange knowledge on Assessment, Permitting and Inspection processes, as well as roles and responsibilities of both entities. Moreover, we successfully collaborated with other entities such as Tadweer (Abu Dhabi Waste Management Center) and Emirates Nuclear Energy Corporation (ENEC) to ensure successful development of unique projects. One of these projects is the medical and hazardous waste incinerator in Al Dhafra, (first of its kind in Abu Dhabi), which is able to treat approximately 7,500 tonnes *per annum* of bio-medical and hazardous wastes with rotary kiln incinerator technology and two combustion chambers. Another project is the Baraka Nuclear Power Plant (BNPP), which is comprised of four nuclear units (reactors) of which the first unit is expected to commence operation early next year.

Compliance and Enforcement Inspection Visits

We face numerous challenges associated with monitoring and managing potential risks to the public and the environment from industrial activities. Currently, over 1,800 industrial facilities across more than 50 industrial sectors operate in the Emirate, and we are responsible for more than one hundred commercial establishments, infrastructure, development projects, and hazardous materials management facilities. Our key challenge is how to focus our resources to best address environmental performance at regulated sites.

We conducted 1,366 inspections from January through December 2018.

The 2018 inspection schedule was based on risk prioritisation scheme, and the frequency for conducting inspection visits based on the risk tier (*i.e.* more frequent inspections to high-risk facilities). Implementing the risk-based inspection frequencies allow our inspection programme to reduce the number of inspections required by 43%. Our inspectors conducted 294 hazard evaluation visits using the RiCHES Data collection Tool.

Holistic Compliance Environmental Programme (HCEP)

The HCEP programme recognises the need to educate the regulated community about our requirements, monitor compliance through inspections, take strong actions gradually to ensure timely and appropriate response and prevention of future non-compliance through strong enforcement measures - an integrated, comprehensive approach to monitor and assure compliance. The

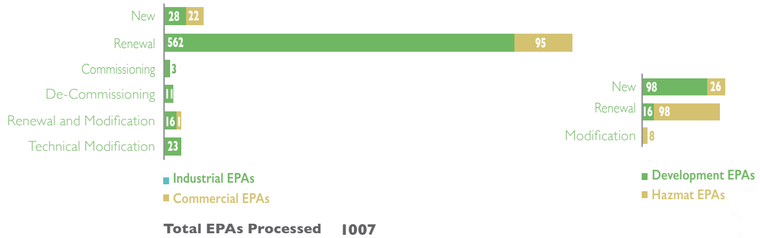
EAD inspectors in the field.

Number of Environmental Studies Reviewed (ES) in 2018

Conducting inspection using the Inspection Compliance Tool (ICT).

We conducted 1366 inspections from January through December 2018

Number of Environmental Permit Applications (EPA) in 2018



HCEP allows our inspectors to improve the enforcement action practices and at the same time provide an organised way to strengthen the regulatory role in the Abu Dhabi Emirate. In 2018, we escalated 32 cases to the courts; and continued upgrading the HCEP to reflect the updated laws and regulations.

Targeted the Asphalt Industry Through our Eltezam Campaign

In 2018, we extended our Eltezam campaign to target the damaging effects of asphalt production in the Emirate of Abu Dhabi. Eltezam (meaning *compliance* in English) aims to prevent or reduce the negative impact of urbanisation on the environment, by ensuring compliance to local environmental laws, international standards and best practice. The asphalt industry represents the fourth phase of the campaign, with earlier focus on the Ready-Mix, Fibreglass and Metal Coating sectors.

Inspecting an industrial facility in Mussafah.

Efforts to improve and enhance environmental compliance

Waste Management facilities, Al Mafraq Industrial Area, and Al Dhafra Region Enforcement Campaigns.

We are taking active steps to work with facilities and improve the environmental performance in the different sectors and industrial areas. We conducted different enforcement campaigns that intend to encourage facilities to be proactive in being compliant to avoid penalties and bad publicity, and giving a greater leverage and more tools for compelling entities to comply and pay attention to their environmental responsibilities.

Our inspectors conducted inspection visits on 60 waste management facilities in Abu Dhabi Emirate. Moreover, 24 inspections in Al Mafraq Industrial Area, and 69 inspections in Al Dhafra Region were conducted in order to provide them with the environmental requirements and the best technical and administrative practices that help to improve the environmental performance of these establishments and reduce the pollution resulting from their processes. The below figure clearly shows the number of inspections associated with each inspection campaign conducted during 2018, the number of non-compliant facilities, as well as the number of cases escalated to the court.

Continued to Regulate Groundwater Activities

In 2018, we submitted for approval the final draft of the Executive Order of Law No. 5 (2016) concerning the *Regulation of Groundwater in the Emirate of Abu Dhabi*. This was the final step towards the full implementation of the new groundwater law regulating all groundwater activities.

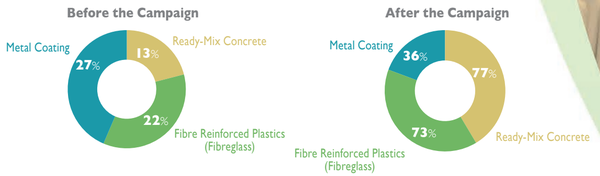
Law No. 5 of 2016 prohibits drilling new wells in the Al Ain Region, which has been identified as a depleted area, characterised by dry or low yielding groundwater wells.

Also in 2018, we automated our inspection process. This has helped to reduce the time spent on inspection by 50% giving our inspectors the chance to inspect more sites during their daily patrolling and collect more data.

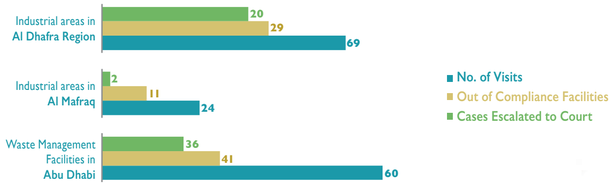
Since the beginning of 2018, we issued a number of groundwater-related permits.

Training staff on inspections and enforcement operations.

The compliance rate outcomes after targeting different industrial sectors with our Eltezam campaign



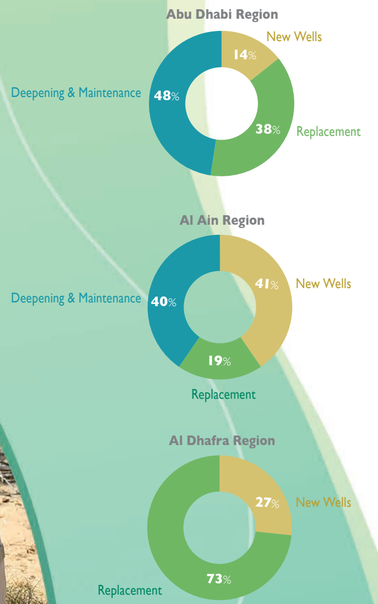
Number of inspections conducted in Abu Dhabi Emirate during 2018



Evaluating hazards in an industrial facility.

In 2018, we issued 10 violations for drilling without a permit and 2 violations for selling and transporting groundwater.

The Percentage of Well Permits Issued in Abu Dhabi in 2018



In 2018, we issued 10 violations for drilling without a permit and 2 violations for selling and transporting groundwater.

Celebrated a Decade of Strategic Partnership

We celebrated 10 years of our strategic partnership with RTI International, which has enhanced internal capabilities in developing environmental management programmes tailored to Abu Dhabi's unique social, and economic context.

We worked together across five main pillars - Permitting and Assessments, Compliance and Inspection, Policy and Regulations, Environmental Monitoring and Data Analysis, and Professional Development. Together we built a solid and enduring organisational and regulatory framework that will promote sustainable development policies and practices in Abu Dhabi. As a result, we gained the status of the best environmental programme in the GCC and strengthened our capacity to protect the emirate's natural environment.

H.E. Razan Al Mubarak, EAD's Managing Director, Eng. Sheikha Al Hosani, Executive Director, Environment Quality, recognising Robert Zerbonia, Vice President, International Environmental Programmes, RTI International.

Inspecting an illegal water well drilling area in Al Dhafra Region.

Routinely inspecting farms.

ENVIRONMENTAL INFORMATION AND COMMUNITY ENGAGEMENT

ENGAGING WITH THE COMMUNITY TO PROMOTE SUSTAINABLE PRACTISES.

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Promoting sustainable communities that adopt concrete actions towards achieving environmental sustainability is our goal. We work with business and government stakeholders to raise their awareness of environmental protection and regulations, and help civil society to understand the richness of our natural heritage as well as their responsibility in helping to preserve it. We do this through public awareness campaigns, and environmental education programmes in schools and universities. We also empower our staff to be environmental ambassadors within the community. Finally, we deliver scientifically credible environmental information and knowledge to support decision-makers in incorporating environmental considerations into policy-making by communicating the environmental challenges facing Abu Dhabi, and their causes.

SUPPORTING SUSTAINABLE BUSINESS AND GOVERNMENT

Green Business Network Initiative (GBN)

This year we launched the Green Business Network, a platform for like-minded businesses committed to environmental causes, to share knowledge and experience, to help each other become more environmentally sustainable. A crucial part of GBN is the Climate and Sustainability Action Guideline for Businesses and Government that assists businesses with assessing, monitoring and reducing their carbon emissions. In addition, EAD's website continues to offer a wealth of resources, case studies, and initiatives concerning best environmental sustainability practises.

Challenges and Solutions to Minimise Waste

In 2018, we highlighted waste minimisation challenges and solutions, focusing primarily on minimising use and the impact of single-use plastics on the environment; as well as shifting towards a circular economy.

Representatives from organisations participating in the Waste Minimisation Workshop.

Reaching out to the community through the *Rethink Plastic* campaign at Yas Mall.

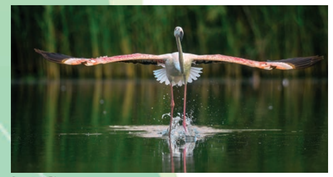
We conducted waste minimisation workshops for 80 representatives from government and private entities and for 40 restaurants, to identify different challenges faced in managing their waste and proposed solutions.

For our *Rethink Plastic* campaign, we collaborated with Yas Mall and Emirates Nature-WWF, offering Yas Mall visitors the opportunity to exchange plastic bags with recyclable bags and make a visible commitment to reducing plastic use by signing a pledge wall. The campaign highlighted the devastating impact of plastics on the environment and encouraged visitors to contribute and take action to minimise plastic waste. Over four days, we collected and sent for recycling more than 20,000 plastic bags.

Al Wathba Photography Competition
Second Place

Al Wathba Photography Competition

First Place.



Second Place.

Third Place..

Third Place..

LEVERAGING ENVIRONMENTAL OCCASIONS TO RAISE AWARENESS

In addition to the larger campaigns, we also capitalised on the various environmental occasions throughout the year, for instance:

National Environment Day

In celebration of National Environment Day, under the theme *Sustainable Production and Consumption*, we gave our staff an opportunity to reuse and reduce through a "Sell Your Treasure" event.

Earth Hour

We celebrated Earth Hour by organising a "Nature Walk" at Al Wathba Wetland Reserve for people to learn about Abu Dhabi's natural heritage.

On this occasion, we also conducted environmental awareness activities for 1,000 people at Sheikh Zayed Grand Mosque.

SUPPORTING OUR BIODIVERSITY CONSERVATION INITIATIVES

Celebrating the Natural Beauty of Al Wathba Wetland Reserve through Photography

This year, we celebrated the natural beauty and rich biodiversity of Al Wathba Wetland Reserve through the Al Wathba Photo Exhibition at Mina Zayed. On display were 70 photos selected from over 500 photographs submitted to the Al Wathba Photography Competition since its launch in 2014.

Showcasing the late Sheikh Zayed's contributions to environmental conservation, and the support from EAD's partners for the reserve, the exhibition hosted interactive learning sessions by H.H. Sheikha Shamma bint Sultan bin Khalifa Al Nahyan, Founder of Beacon of Hope UAE, as well as a series of photography workshops.

Abu Dhabi International Hunting and Equestrian Exhibition (ADIHEX)

Inspired by the theme "Year of Zayed" we participated in ADIHEX; focusing on the environmental legacy of the late Sheikh Zayed bin Sultan Al Nahyan, and providing visitors with an opportunity to learn about his efforts to protect ecosystems and conserve species.

Earth Hour environmental activities at the Sheikh Zayed Grand Mosque.

Women experiencing the Nature Walk at Al Wathba Wetland Reserve.

Students participating in the interactive learning sessions at the Al Wathba Photo Exhibition..

Students learning more about the Sheikh Zayed Protected Areas Network at ADIHEX.

Jewels of Abu Dhabi

In celebration of Mother's Day, H.H. Sheikh Hamdan bin Zayed Al Nahyan, the Ruler's Representative in the Al Dhafra Region and Chairman of EAD; gifted five life-sized bronze sculptures of Abu Dhabi's iconic wildlife species to H.H. Sheikha Fatima bint Mubarak, Chairwoman of the General Women's Union, Supreme Chairwoman of the Family Development Foundation, and President of the Supreme Council for Motherhood and Childhood, and the Mother of the Nation.

The sculptures commissioned by EAD and created by British artist Gill Parker, represent some of Abu Dhabi's key threatened and endangered species, collectively known as the "Jewels of Abu Dhabi". The five sculptures are: Dugong, Arabian Oryx, Greater Flamingo, Hawksbill Turtle, and Saker Falcon.

Umm Al Emarat Park, a cultural centre and unique family park in Abu Dhabi, will host the sculptures permanently to raise awareness of Abu Dhabi's beautiful, yet fragile natural world. Accompanying each sculpture is information regarding the species as well as how the late Sheikh Zayed bin Sultan Al Nahyan inspired governmental efforts to protect them.

H.E. Razan Khalifa Al Mubarak, EAD's Managing Director, unveiling the Dugong sculpture at Umm Al Emarat Park.

SUPPORTING GROUNDWATER AND SOIL INITIATIVES

To highlight our efforts and achievements in water resource management we participated in the International Water Summit (IWS); successfully launching the Abu Dhabi Water Strategic Reserve at our exhibition stand. During the event, we signed a Memorandum of Understanding with the Department of Energy and TRANSCO to reinforce our partnership.

We also developed and communicated a series of resources including infographics, leaflets and reports to keep decision-makers informed. We further reinforced the messaging by partnering with Abu Dhabi Food Control Authority and the Abu Dhabi Farmers' Services Centre.

WORKING WITH SCHOOLS AND COLLEGES: TURNING AWARENESS INTO ACTION

I-ENVIROSPELLATHON ONLINE APP

Sponsored by Shell and in cooperation with the Department of Education and Knowledge (ADEK), we launched i-EnviroSpellathon; replacing the printed version and reducing CO_2 emissions in the process. The application instils sound environmental education principles and strengthens students' bond with nature in an innovative and accessible manner.

The app is in English and Arabic for download on the international App Store (iOS) and Play Store (Android) as well as desktop versions for Windows and Mac.

SUSTAINABLE SCHOOLS INITIATIVE (SSI) – A WHOLE SCHOOL INITIATIVE

Our flagship Sustainable Schools Initiative (*Al Madaris Al Mustadama*), sponsored by BP, reaches out to students, parents, teachers, administrative staff and the school community. It adopts an interactive and participatory approach to promoting environmental knowledge, helping to build capacity within schools and their communities so that they are able to assess and address their environmental impacts.

Recognised internationally as an example of best practise, the Sustainable Schools Initiative (SSI) is used as a global case-study by the Global Environmental Education Partnership (GEEP), an international partnership committed to advancing environmental literacy.

Visitors experiencing an animated interactive story telling of how the environment is interconnected through mountain, land, sea and air at IWS 2018.

Green Schools Manual.

Strengthening our Partnership with BP for the Next Sustainable Schools Challenge

Building upon our 10-year partnership, in 2018 we signed a four-year agreement with BP to continue working towards promoting environmental knowledge and empowering government and private school communities across the UAE.

H.E. Razan Khalifa Al Mubarak, EAD's Managing Director and Salem Bin Ashoor, General Manager and Chief Representative for BP UAE signing the agreement.

i-Envirospellathon Online App.

Green Schools Audit (GCA)

The Abu Dhabi Quality and Conformity Council (ADQCC) published the GCA Manual on their website as a certified guide for all Abu Dhabi schools.

SSI Online Map

The SSI online map (https://sustainableschools.ead.ae/SSI/) helping schools to monitor their environmental impact through five key elements (Water, Air, Land, Energy and Waste) went live in 2018.

SSI 2017 Report

In 2018, we developed a new resource booklet for SSI schools and its stakeholders highlighting the SSI achievements since its launch in 2009 until 2017, available in Arabic and English.

Awards

We were proud to have our SSI schools winning awards at the national level by highlighting projects such as:

- Um Al Arab School (Abu Dhabi) won the "Sustainability Champion" programme, managed by Expo 2020 Dubai, in collaboration with the Ministry of Education and the Ministry of Climate Change and Environment. The school received prize money for their commitment towards sustainability.
- Al Taleea School (Al Ain) won the Hamdan Award for "Best Implemented Project" for their project titled "Environment Education Centre". The aim of this centre is to contribute to the environmental education of the community by spreading awareness and strengthening community bonds by tackling environmental issues collectively.

Training the Trainer Workshops

We conducted two workshops for 89 teachers on assessing their school's environmental impact, and establishing successful eco-clubs.

We also organised a workshop on herbarium techniques for 67 teachers from 53 different schools across Abu Dhabi Emirate. The aim of which is to encourage students to document UAE's rich biodiversity thereby reinforcing links between local communities and the environment by collecting plant specimens for the EAD Herbarium, which to-date has over 3,500 plant species.

Mounting, presenting, and labelling the specimen for herbarium.

Final results of the herbarium presented by students.

Using the Collector App to specify the exact location of the collected specimen.

In addition, we launched the Botanical Adventure Competition to encourage students to connect with nature by learning more about UAE's environment and natural heritage by building a UAE flora database using the Arc GIS Collector Application. It is vital that specimens are recorded correctly so we conducted three workshops for 71 educators to ensure the teachers know how to properly use the application.

Field Trips

As part of outdoor education field trips, over a thousand students participated in educational field trips to Al Wathba Wetland Reserve.

Students visiting Al Wathba Wetland Reserve, as part of their outdoor field trip.

STRENGTHENING THE SUSTAINABLE CAMPUS INITIATIVE: YOUTH AS AGENTS OF CHANGE

We launched the Sustainable Campus Initiative in 2014. Sponsored by Borouge, the initiative focuses 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.

This year we organised three Roadshows to establish our mission and values with existing members as well as bring on board new members. The Roadshows took place at Zayed University, Manipal

During one of our roadshows at Zayed University.

Academy of Higher Education in Dubai, United Arab Emirates University in Al Ain and Paris Sorbonne – Abu Dhabi. Over 456 students and faculty participated.

Mobilising the next generation through the Green Youth Majlis (GYM)

In 2018, we increased the number of campuses participating in SCI to 16 through the addition of Amity University and ADNOC Technical Academy to SCI. We also established a Green Youth Majlis (GYM) Committee, and provided training for new members on how to make their campuses sustainable and reach out to the community.

In 2018, we formed a GYM Committee with 42 GYM members.

A turtle made out of plastic bottle caps displayed at Manarat Al Saadiyat as part of the Art of Recycling Campaign.

As part of awareness campaign, recycled materials were displayed for the public at Abu Dhabi Corniche.

GYM members preparing for meal distribution.

This year we organised four GYM meetings to engage youth in building new ideas and implementing initiatives around different environmental sustainability topics. The main outcomes from those GYM meetings are:

- *Art of Recycling Project* spreading awareness on the impact of plastic on marine species.
- *This is Zayed's Path* Ramadan campaign with 50 volunteers distributing more than 100 meals in both Abu Dhabi and Dubai.

Sustainability Action Project (SAP) and Green Campus Audit (GCA)

This year we received seven SAP and GCA reports that were evaluated and then showcased at our Annual Ceremony and Exhibition sponsored by Borouge. The submitting campuses were Higher Colleges of Technology - Abu Dhabi Women Campus, New York University - Abu Dhabi, Manipal Academy of Higher Education - Dubai, American University of Ras Al Khaimah, American University of Sharjah, Abu Dhabi University, Zayed University and United Arab Emirates University.

We also conducted the annual SAP and GCA workshops to provide training on completing and submitting SAP and GCA reports; attended by 144 students and faculty from nine SCI campuses.

SCI Report

We developed a new resource highlighting SCI's achievements since its launch in 2014 until 2017 that highlights some of the environmentally sustainable case studies.

Continuation of our partnership with Borouge for the next phase of SCI

In 2018, we signed a four-year agreement with Borouge to strengthen and build leadership capacity amongst UAE's Youth, helping them to be "agents of change" addressing issues of environmental sustainability and shaping sustainable communities. This agreement includes the second phase of the internationally recognised and award-winning environmental education programme with specific Key Performance Indicator's (KPIs) for Academic Years (2018 – 2020).

During one of the SAP and GCA training workshops

EAD and Borouge strengthen their partnership to empower UAE youth to champion sustainable development.

CLIMATE FORCE CHALLENGE

We launched the challenge to encourage Roots & Shoots Programme Schools in UAE to take positive environmental behaviour and help Sir Robert Swan, the first person to walk to both Poles, achieve his target of reducing carbon emissions by 326 million tonnes by 2025!

The UAE Sustainable Development Goals.

ROOTS AND SHOOTS PROGRAMME

We have been collaborating with The Jane Goodall Institute to implement the Jane Goodall's Roots and Shoots Programme in the UAE. The programme is designed to provide a generation of inspired youth with the knowledge and skills to create meaningful change and live sustainably.

We hosted the annual Roots & Shoots Awards with a participation of 13 different schools were they were recognised for their contribution to the Roots & Shoots UAE cause and took part in activities to learn about turtle conservation.

During her visit in 2018, Dr Jane Goodall also met with a number of our young aspiring scientists and learnt more about EAD's species conservation efforts.

Climate Force Challenge

We launched the challenge to encourage Roots & Shoots Programme Schools in the UAE to take positive environmental behaviour and help Sir Robert Swan, the first person to walk to both Poles, achieve his target of reducing carbon emissions by 326 million tonnes by 2025!

Dr Jane Goodall engaging with the students.

We developed five resource packs in support of the challenge, providing schools with ideas on how to reduce their carbon emissions. In addition, we visited 10 schools to give lectures about the challenge to over 1,000 students.

UAE Ambassador Programme

The Ambassador Programme provides students with a unique opportunity to meet inspirational environmental influencers, not only from UAE, but also from all over the world. This year, we invited over 192 students and educators to attend the event and learn how to make sustainable decisions in their daily lives to save the environment.

Dr Majid Sultan Al Qassimi, Acting Assistant Under-Secretary for the Food Diversity Sector, and Director of the Animal Development and Health Department at the Ministry of Climate Change and Environment delivered a presentation at the UAE Ambassador programme.

IN SUPPORT OF SUSTAINABLE DEVELOPMENT GOALS (SDGS)

In 2018, the official portal of the SDGs in the UAE highlighted both Sustainable School Initiative and its sister programme the Sustainable Campus Initiative (SCI) by listing these initiatives on their portal as projects supporting the UAE's progress toward achieving SDG Goal 4 - Quality Education (http://uaesdgs.ae/en).

UAE'S MARINE SPECIES AND UAE'S MARINE HABITAT ARABIC BOOKS

Inspired by "Year of Zayed" we issued two books in Arabic - the *UAE's Marine Species* and the *UAE's Marine Habitat*. The books, for students aged 8 -12 years, help to infuse the importance of protecting these beautiful sea creatures, a satisfying and enjoyable reading for students of higher ages as well. Two hundred and sixty-six schools received copies of the books.

Know About UAE's Marine Habitat Book.

Know About UAE's Marine Species Book.

DUGONG TEACHER TRAINING

Supported by the agreement between EAD and Total/ Total Abu Al Bukhoosh for the Dugong Conservation Programme, we conducted a workshop for 35 school teachers to raise awareness about marine wildlife, and Dugongs in particular.

Students participating at the Middle East Youth Expo.

MIDDLE EAST YOUTH EXPO (2018)

Participation at the Expo provided a high profile platform for the work with SSI and SCI students; motivating students and providing the necessary tools, so that not only do students become more aware of issues but are also better able to provide inventive solutions and build a better future.

PROVIDING CREDIBLE SCIENTIFIC DATA AND INFORMATION

Environmental Reporting

During 2018, we published 30 environmental reports documenting the achievements of EAD against our strategic priorities.

The reports highlight the state of the environment as well as the various drivers and pressures responsible for the observed state. These reports provide relevant information for our decision-making stakeholders to enable better-informed decisions.

In addition, SAS Visual Analytics provides a data visualisation platform for dynamic digital reporting dashboards for selected environmental themes. During 2018, marine water quality, air quality, and biodiversity dashboards were created and disseminated for internal uses at EAD to support the senior team and decision-makers with updated information.

Photo library

EAD collects increasing amounts of information in digital form such as digital photographs and video. In order to manage our assets, in 2018, we developed and launched the photo and multimedia library application to ensure proper cataloguing and ease of retrieval of our photographic assets along with relevant metadata.

We conducted 15 training sessions for the staff on how to use the library application and update photos and multimedia. It is now available and accessible to all users with privilege, subject to necessary confidentiality and other applicable constraints/conditions.

Our photo library currently contains more than 68,000 photographs, including field photos, EAD events and meetings.

Abu Dhabi Integrated Marine Water Quality, Monitoring and Decision Support System Project

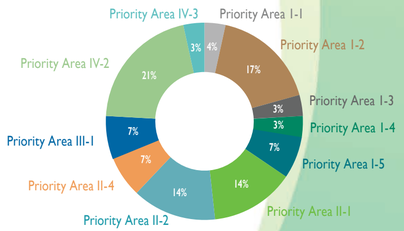
Abu Dhabi has several programmes managed by different entities that monitor marine water quality that the Higher Committee of Water Resources of Abu Dhabi Emirate recommends integrating.

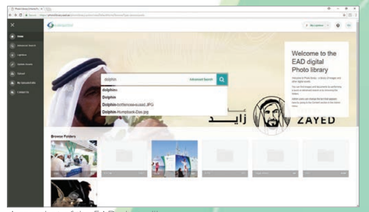
The first phase for this integration project is now complete, and we have a much better understanding of Abu Dhabi Government's requirements and the current status of existing monitoring programmes in different entities.

This phase of the project has resulted in:

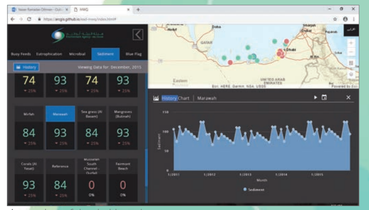
- Creation of a marine water quality workgroup in Abu Dhabi Emirate,
- Integration of marine water quality monitoring programmes, and
- A proof of concept executive dashboard and story map.

Percentage of reports developed as per EAD's Priority Areas





A snapshot of the EAD photo-library.



A snapshot of the dashboard.

DEVELOPING EXCELLENCE AND LEADERSHIP

CREATING AND MAINTAINING
A CULTURE OF EXCELLENCE.

DEVELOPING EXCELLENCE AND LEADERSHIP

CREATING AND MAINTAINING A CULTURE OF EXCELLENCE.

With nearly 1000 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 them 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, recognising excellence and nurturing their leadership abilities as they build the foundations of a more sustainable future.

Al Dana Excellence Awards

In 2018, we launched the 3rd cycle of our Al Dana Excellence Awards to reflect the government's vision for Excellence.

The updated award model includes three categories: Individuals, Teams, and 4th Generation.

The 4th Generation category includes three pillars: Vision Achievement, Innovation and Organisational Enablers.

Al Dana Excellence Award system - 3rd cycle 2018.

The updated model of Al Dana Excellence Awards.

Audit Cycle

This year, we again successfully passed the external audit on the following ISO standards - ISO 9001:2015, concerning Quality Management Systems, ISO 14001:2015, for Environmental Management Systems, for ISO 20000-1 on IT Service Management, OHSAS 18001 on Occupational Health and Safety, and ISO 22301 on Business Continuity Management.

Performance Retreat

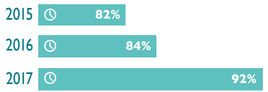
Once a year, we convene to answer the question - is our strategy having an impact on key strategic environmental outcomes? At our last meeting held in March, EAD's performance was reported positively across many areas, and key topics were highlighted that included Groundwater, Air Quality, Waste, Environmental Science and Knowledge, Outreach, and Excellence. To facilitate this performance conversation, training was delivered at the event to improve our capacity to have meaningful performance management conversations.

Moreover, as part of Reyada, we rewarded KPI owners for demonstrating exemplary practices in performance management. Reyada is an award dedicated to increasing the quality of performance management, as part of Abu Dhabi's whole of government aim to be one of the top governments in the world.

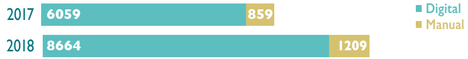
Staff convene to discuss the impact of our strategy on key strategic environmental outcomes.

Winners of the first cycle of Reyada.

Increase in the percentage of completion of projects



EAD digital transformation of services in 2018



EAD has achieved

100% digital
transformation of its applicable services in 2018

88% utilisation
of the digital channel.

EAD has achieved

95% of customer satisfaction
in 2018 on its digital services.

Executing our Business Plan

We successfully executed our Annual Business Plan by following a customised method, template, and process. All our project managers and priority leaders were trained and discussed 'lessons learned'. As a result, the completion percentage of projects increased over the last three years.

Our Journey to Digitalisation

We joined the "Digital Identity" government service that gives customers a unified account to access government services using Emirates ID smart card by launching the SmartPass on its eServices portal and allowing our customers (citizens, residents, and visitors) to access our services through their single government account.

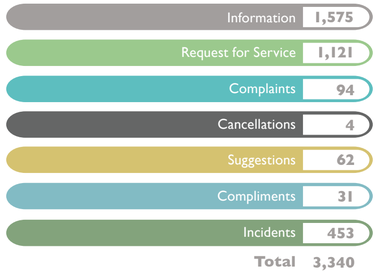
Through this service, our Recreational Fishing Licensing service became instant with the licence issued electronically to our customers in one step without the need to upload any documents.

As part of the Whole of Government Initiative for data exchange that aims to delight its customers by improving government services and delivery; EAD successfully completed the integration with the digital government documents for the following services.

1. Registration of an Environmental Consultancy Office,
2. Environmental License for Development and Infrastructure Projects,
3. Environmental License for Hazardous Materials Stores,
4. Environmental License for Industrial Facilities,
5. Aquaculture License,
6. Permits for Native Trees Plantation, and Translocation - Permit for Mangrove Planting,
7. Recreational Fishing Licenses.

Customers applying for the above-mentioned services no longer need to upload any of the documents such as Trade Licenses, Site Plan, Passport and Residence Visa, Leasing Contract (Tawtheeq) and Power of Attorney.

Number and type of requests received from public.



Through the Customer Happiness Service Desk (launched 2018 - Q2), we received 3,340 requests from the public, out of which 1,429 are from Abu Dhabi Call Centre (800555).

Attracting the Best Talent

20 Emiratis and 5 expatriates joined the organisation in 2018. We also offer a robust internship programme, and encourage both Emirati and expatriate students to join us. In 2018, we hosted 20 interns.

Supporting 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 and 33.3% of leadership positions are filled by women.

We launched the Women in Science and Environment (WISE) Trailblazers programme in November 2017 to establish a supportive environment for EAD women that enables career satisfaction and fulfilment. We began the year by organising focus groups to better understand the work challenges they face. This information was then shared with management for future decision-making. In May, we hosted an interactive Linkedin Masterclass for them to strengthen their LinkedIn presence and connect them with professionals from their field.

Throughout the year, we continued to profile and highlight our female scientists in the local media, including on International Day of Women and Girls in Science and on Emirati Women's Day. We also hosted H.E. Sarah Al Amiri, Minister of State, Advanced Sciences, who inspired staff with her vision and aspirations for the role of Science in the UAE's future.

Challenged Staff to Value 'ME TIME'

This year, we launched the ME TIME Challenge, a 2-month staff wellness initiative that focuses on mental and physical health. 20 employees participated with various pledges ranging from reducing their screen time to increasing their water intake. A wellness coach was hosted to help motivate them to identify and commit to their pledges. By the end of the challenge, many staff reported an increased awareness and appreciation of the value of 'me time', and tangible benefits such as weight lost and increased energy.

Developing and Recognising Employees

In 2018, as part of our drive to build capacity among Emirati staff, 4 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. This year, we also trained 7 of our rangers to help improve their efficiency in implementing local and federal laws and preventing violations.

A mentorship programme for 13 Emiratis has been fully implemented and they are being mentored by senior employees to provide guidance and mentorship to enhance their career.

This year, we also recognised the outstanding contribution of 57 employees for their service to EAD over the last 10, 15 and 20 years, and awarded 27 as part of our Employee of the Quarter award scheme.

EAD Youth Council

In 2018, we established the EAD Youth Council with the aim of highlighting the role of youth in discussing and providing recommendations to EAD Management on issues related to youth throughout EAD.

In 2018, the council participated in various workshops such as "Plastic Bags", "Tolerance", "Planning for the Development of Al Dhafra", and "Future Environment". They also participated in other events, including: "Developing the Youth Futures Platform", "Earth-Hour", "Jewels of Abu Dhabi", "Back to the Wild" documentary film, the "Innovation Dome", and the UAE Experts Programme", "Future of Food Security" and several brainstorming sessions for local institutional and ministerial youth councils to discuss UAE youth challenges and sustain their cooperation.

The members also participated in the UAE-UN Youth Delegate Programme that enables youth to participate actively in international fora.

EAD Youth Council members with H.E. Razan Khalifa Al Mubarak, Managing Director of EAD.

H.E. Dr Shaikha Al Dhaheri, EAD's Acting Secretary General, reading environmental stories to staff children.

Staff children participating in the Arts and Crafts session.

At the EAD Staff General Assembly.

Strengthening our Employees' Pride

In order to increase staff awareness of who we are and what we do at EAD, empower them to act as EAD ambassadors, and increase their pride in being part of EAD, we organised the EAD Annual Staff General Assembly in December in a very innovative and interactive way. Staff were invited to the event by a robot and the theme of the event *"Where information and Motivation Meet"* sent a positive emotional message of harmony and unity. The staff had the opportunity to participate in different interactive and digital team building activities on how we use data and education to empower people and decision-making, how we regulate and enforce through monitoring for compliance and activities on our conservation achievements.

The event was a platform for EAD's newest board members to deliver a motivating message to staff. As well, staff had the opportunity to convey their feelings about being part of EAD.

Had a Memorable Bring Your Child to Work Day

For the first time, Bring Your Child to Work Day has a special meaning at EAD. Hundreds of children accompanied their parent to work gaining a realistic glimpse of the working world. They had the opportunity to learn about Abu Dhabi's environment in a fun and interactive way, in addition to enjoying a multitude of entertainment activities such as a treasure hunt, storytelling, drawing and painting of endangered species and environmental movies.

YEAR OF
ZAYED

THE YEAR OF ZAYED

10 ENGAGING INITIATIVES HONOURING THE LATE FOUNDER

THE YEAR OF ZAYED

10 ENGAGING INITIATIVES HONOURING THE LATE FOUNDER.

Throughout the Year of Zayed, we commemorated and honoured the late Sheikh Zayed bin Sultan Al Nahyan's environmental legacy through initiatives that are consistent with the declared objectives of that year: to raise awareness of his life and achievements; to raise his profile to that of one of the world's greatest leaders and most inspirational figures; to reinforce his status as an eternal source of national pride and a powerful symbol of the UAE around the world, and, finally, to celebrate and honour his legacy through initiatives that are consistent with his vision and values.

#ZayedRetreat

Shortly after the declaration of 2018 as the Year of Zayed, around 100 employees came together to brainstorm effective ways EAD would commemorate the year in 2018. The employees gathered at Al Wathba Wetland Reserve for the #ZayedRetreat, a full-day intense staff collaboration with a specific focus to develop innovative and impactful ideas. Over 80 initiatives were collected, tested and pitched to the organisation's senior management with guidance and approval given on-site. The initiatives were then shortlisted for roll out throughout 2018 by a dedicated Year of Zayed Implementation Team.

EAD staff at #ZayedRetreat at Al Wathba Wetland Reserve.

Year of Zayed Challenge at EAD Staff Breakfast.

The Year of Zayed Challenge

At the first staff breakfast event of the year, we engaged staff through the Year of Zayed Challenge. They were quizzed on facts from the late founder's history, in a bid to raise internal awareness about his legacy. Moreover, on a weekly basis, quotes and facts about the late leader were circulated to staff.

Sheikh Zayed's Environmental Legacy: An Animation

To raise awareness about the late Sheikh Zayed's environmental legacy, we produced a 2-minute animation clip and circulated it through social media. The clip takes viewers through the various directions he gave that have had an impact on the environment today. Many of the programmes highlighted in the clip have become internationally-recognised and are still implemented by EAD today. Throughout the narrative, the viewer is also taken through the different habitats of Abu Dhabi captivating the audience through the visual and storytelling experience.

Team Zayed Goes to Antarctica

In February, three of our employees ventured to Antarctica, as part of the Climate Force International Antarctic Expedition, helping to raise international awareness about the late Sheikh Zayed's environmental legacy. The team, aptly named Team Zayed, joined teams from over 20 countries for two weeks in the renowned Leadership on the Edge Programme, run by polar explorer Sir Robert Swan, who was the first person to walk to both the North and South Pole. While there, the team put on the Zayed Solar Lights Show using 100 solar lights, sending a message of unity, hope and action on Climate Change, in addition to honouring the Founder, UAE leaders, inspirational women and the UAE's military heroes. Team Zayed then gifted the solar lights to their colleagues on the voyage – all of whom pledged their commitment to adopt an environmental or community initiative in their respective countries. Moreover, Team Zayed filmed and produced a documentary entitled Zayed's Antarctic Lights, which premiered at Vox Cinema, Yas Mall later in the year.

Team Zayed in Antarctica.

Team Zayed sending a message in solar lights from Antarctica.

Our Sheikh Zayed Protected Areas Network

In January, three days into the year, we announced the Sheikh Zayed Protected Areas Network, made up of 19 terrestrial and marine sites that now benefit from the highest legal protection. EAD is responsible for managing this network, which extends from Abu Dhabi Island and its beaches in Al Dhafra to the Liwa Desert.

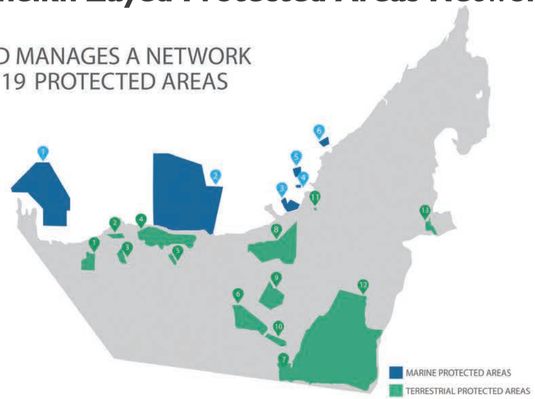
The network currently has 13 terrestrial and 6 marine protected areas covering nearly 29% of the total area.

One of our key aims has been to integrate the 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.

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 Sheikh Zayed Protected Areas Network

EAD MANAGES A NETWORK OF 19 PROTECTED AREAS



4 AL HOUBARA PROTECTED AREA
Hosts one of the biggest Houbara reintroduction programmes in the region.

5 AL TAWI PROTECTED AREA
One of the important breeding areas for Houbara.

9 AL BIDA'A PROTECTED AREAS
One of the largest PAs dominated by sand sheets and dunes with shrub cover.

10 AL DILFAWEYA PROTECTED AREA
Located in the heart of the emirate of Abu Dhabi and dominated by sand sheets and dunes with perennial herbs.

1 AL YASAT MARINE PROTECTED AREA
The islands are surrounded by coral reefs which act as important marine sanctuaries to many species.

2 MARAWAH MARINE BIOSPHERE RESERVE
Home to the second largest community of dugong in the world.

3 BUL SYAYEEF MARINE PROTECTED AREA
A range of suitable habitats for the Greater Flamingo and other resident and migratory bird species.

4 MANGROVE NATIONAL PARK
Home to millions of mangrove trees that help absorb the carbon dioxide emitted from our urban lives.

5 AL SAADIYAT MARINE NATIONAL PARK
Home to an abundance of marine life including the Critically Endangered Hawksbill turtle.

6 RAS GHANADA PROTECTED AREAS
The coral communities in the area have direct, indirect, economic and intrinsic great values.

1 YAW AL DIBSA PROTECTED AREA
The best representation and last refuge of the native flora in the far western part of Abu Dhabi.

2 BARQA AL SOQOUR PROTECTED AREA
Important breeding area for Houbara.

3 AL GHADA PROTECTED AREA
It has a restricted distribution for the Ghada shrub and it represents its Eastern distribution limit in the Arabian Peninsula.

6 AL RAMLAH PROTECTED AREA
Dominated by sand sheets and dunes with dwarf shrub cover.

7 ARABIAN ORYX PROTECTED AREA
Home to the largest population of free-roaming Arabian oryx in the world.

8 QASR AL SARAB PROTECTED AREA
An important free roaming range for the Arabian Oryx.

11 AL WATHBA WETLAND RESERVE
First established Protected Area in Abu Dhabi and home to more than 4,000 flamingos.

12 BEDA HAZZA PROTECTED AREA
More than 75% of its size is forestry area.

13 JABAL HAFIT NATIONAL PARK
The only mountainous Protected Area in Abu Dhabi Emirate and home to the Arabian Tahr.

H.E. Dr Shaikha Al Dhaheri, EAD's Acting Secretary General, congratulating the winning students of the ClimateForce Challenge at the premiere of Zayed's Antarctic Lights.

An Abu Dhabi businesswoman pledges to reduce plastics and packaging.

EAD and Enable team up to encourage respect for all abilities.

ClimateForce Challenge

Before departing and upon their return, Team Zayed engaged small businesses around the UAE to commit to reducing single use plastics and packaging. As a result, a number of businesses signed on to the initiative.

In parallel, EAD, in collaboration with the Jane Goodall Institute, and Sir Robert Swan's organisation ClimateForce 2041, launched the ClimateForce Challenge in schools across the UAE. The challenge encourages students to reduce their carbon footprint and keep a diary for one month documenting their everyday resource use and environmental behavioural change efforts.

Nasamaat Al Khair

In May, we organised *Nasamaat Al Khair*, a workshop that brought together more than 85 EAD employees with young Emirati people of determination. The interactive hands-on workshop was held at EAD Headquarters and was delivered by Enable, an award-winning social enterprise that empowers young Emirati people of determination and trains them to assemble then sell a range of quality home and office plant arrangements using succulents. The employees were each trained on how to arrange the plants, which was then theirs to keep. It was an opportunity to host inspiring people of determination and to share our passion for the environment with them.

Year of Zayed Turtles Release

In May, H.E. Razan Khalifa Al Mubarak, EAD's Managing Director, participated in the capturing, tagging and releasing of two endangered Green turtles off Bu Tinah Island, an internationally recognised sanctuary for turtles in the Indian Ocean. Each of the two turtles was named after the late Sheikh Zayed's values; Wisdom and Respect. In a world-first and a big achievement for conservation for EAD and in the Arabian region, these turtles have since been tracked to nesting beaches in Oman, demonstrating a connection between the foraging grounds of Bu Tinah, and their now known nesting sites. This has enabled us to work with our neighbours to further strengthen the protection of these species.

Together We Make the Difference

Throughout the year, we engaged the community and volunteers through underwater and land clean-ups under the theme 'Together We Make the Difference'. Sites included Abu Dhabi's Mina Port, the Corniche and the boundaries of Al Wathba Wetland Reserve, Al Ain's Jabal Hafit, Al Ruwais, Alnabagh area, Al Mirfa, Mangrove National Park and Al Sila. Throughout the campaign, 19 clean-ups were organised and approximately 12,000 kg of waste were removed.

H.E. Razan Al Mubarak, Managing Director of EAD, tagging and releasing Green Turtles off Bu Tinah Island.

Marine debris collected at Abu Dhabi's Mina Port.

The campaign was supported by the Critical Infrastructure and Coastal Protection Authority, Abu Dhabi Municipality, Abu Dhabi Police, Tadweer (The Center of Waste Management – Abu Dhabi), Abu Dhabi International Marine Sports Club, New Medical Centre Specialty Hospital, Emirates Diving Association, Abu Dhabi Divers Team and Seven Emirates Diving Team.

Abu Dhabi Birdathon

The Abu Dhabi Birdathon, organised by Etihad Airways and EAD honours and commemorates the late Sheikh Zayed's deep connection to sustainability and his passion for protecting endangered species. In November, Greater Flamingos, each one nominated to a leading organisation in Abu Dhabi, were tagged with a satellite transmitter and released from EAD's internationally recognised Al Wathba Wetland Reserve in Abu Dhabi. Eight entities participated in the initiative: Masdar, First Abu Dhabi Bank, Etihad Engineering, Etihad Cargo, Abu Dhabi Police, Abu Dhabi Airports Company, Department of Transportation and ADNOC. The public, as well as employees of the participating entities, are able to define the current position of each flamingo on the world map by visiting www.abudhabibirdathon.ae and determine their stopover and time spent.

H.E. Dr Shaikha Al Dhaheri, EAD's Acting Secretary General and Mr. Tony Douglas, Group Chief Executive Officer, Etihad Aviation Group launching the Abu Dhabi Birdathon.

MORE ACHIEVEMENTS

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

MORE ACHIEVEMENTS

ABU DHABI FALCON HOSPITAL (ADFH)

Established in 1999, Abu Dhabi Falcon Hospital is now the world's leading institution for falcon and avian medicine and research. ADFH provides the highest quality of service and has been approved by Lloyd's Register Quality Assurance Limited for ISO/IEC 27001:2013.

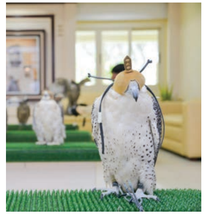
In 2018, our laboratory received a record number of samples, with 75,114 tested in total; among these were 24,584 samples from falcons and other bird species tested for Avian Influenza.

ADFH is also a leading veterinary hospital for pet animals, in addition it manages the Abu Dhabi Animal Shelter, which saw the highest number of pets (651) being adopted in 2018.

In 2018, ADFH was awarded, for the sixth consecutive time, the prestigious Middle East Responsible Tourism Award, to add to the World Responsible Tourism Award that ADFH has also received for the last two years. To date, ADFH has received 46 local and international awards.

From the time, that ADFH opened its tourism programme, several tens of thousands of tourists have experienced the fascinating Falcon World Tour, making ADFH one of the most sought after tourism destinations in the emirate.

For more information, visit www.falconhospital.com



Falcons patiently waiting for their medical checkup.

Staff carrying out a Laboratory test from a falcon sample.

Well cared dogs ready for adoption at the Abu Dhabi Animal Shelter of ADFH.

Kittens waiting to be adopted by a loving family.

Abu Dhabi Falcon Hospital, the largest in the world, with the latest state-of-the-art facilities.

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.

Sharing Best Practices and Facilitating on Blue Carbon and Ecosystem Services in the Region

In October, we chaired the online meeting of the Arabian Peninsula Informal Technical Working Group on Blue Carbon and Ecosystem Services, with members including the UAE Ministry of Climate Change and Environment, Five Oceans, Saudi Aramco, Dubai Municipality, Kind Abdullah University of Science and Technology (KAUST), Regional Organisation for the Protection of the Marine Environment (ROPME), and Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERGSA), amongst others.

Dubai Contingent Valuation on Ecosystem Services

Our Abu Dhabi Contingent Valuation study estimates that the amenity supplied by the coastal and marine resources in Abu Dhabi is worth around USD 141 million to only 15 Abu Dhabi hotels/year equalling a Net Present Value of between USD 1.3 and USD 2.1 billion over 13 years, the average period before major refurbishment is expected. In addition, the coastal and marine resources supplied a value of USD 683 million to beach users/year. The Dubai Contingent Valuation study in partnership with Dubai Municipality used the same method. Completed in December, the surveys with beach goers and hotels along the Dubai coastal front with release of results in the New Year following final analysis.

Identifying Hotspot Areas of Ecosystem Services

Commencing at Abu Dhabi Emirate level, we are adopting a participatory approach utilising the expert knowledge in the UAE to identify hotspots of ecosystem services related to blue carbon habitats. Our aim, is to better understand habitat extent, habitat condition, services provided and where they might be most under threat in the future for specific blue carbon areas (broken into

Mangroves are a key ecosystem for thriving biodiversity.

several regions across the UAE). These will then be discussed in working groups with biodiversity and ecosystem service experts to try to determine where there is a prioritisation of services with results being disseminated in the New Year.

Sharing Lessons Learned from the Blue Forests Project

Our Blue Forests Project aims to address challenges related to blue carbon methods and policy incorporation through coordinated on-the-ground demonstrations where better coastal ecosystem management is achieved by harnessing the values associated with carbon and ecosystem services, addressing key knowledge gaps, and providing experience and tools for greater global application. This four-year project is an initiative of the United Nations Environment Programme (UNEP), funded by the Global Environment Facility (GEF), co-financed by project partners and managed by GRID-Arendal. We continue to share lessons learnt from this project with the international community by being a member of the project steering committee as well as being an intervention site for the project, which allows us to work and share alongside the other sites including Madagascar, Mozambique, Ecuador and Indonesia.

Please visit http://www.gefblueforests.org for more information.

Deploying Indicator Reporting Information System (IRIS)

IRIS is an enterprise web application that aims to reduce the institutional burden associated with recurring environmental reporting obligations. It further aims to improve the timely production of national, regional and global environmental assessments by enabling faster exchange of data between levels of Government. IRIS aims to be a significant contributor to institutional capacity development by providing an online "knowledgebase" making it possible to share indicator and reporting knowledge resources. In line with fundamental AGEDI principles, IRIS will be licensed as an Open Source software.

Following a successful soft-launch at the third UN Environment Assembly in 2017, EAD and UN Environment have collaborated to deploy IRIS at sub-national and national level respectively.

During 2018, we deployed IRIS in EAD for testing in a sub-national institution setting. UN Environment have introduced IRIS to West and South African countries and to African Small Island Developing States; already we see deployment of a number of IRIS variants.

In April, the AGEDI Partners held a Strategy and Technical Workshop at UNEP HQ in Nairobi, Kenya and discussed the continued refinement and deployment strategy, notably IRIS' potential for Sustainable Development Goals (SDGs) reporting. In December, EAD and UNEP initiated a joint IRIS Governance framework to oversee the IRIS programme.

AGEDI uses Fourth Generation Technology

AGEDI is always looking for innovative ways to better communicate, bridge and enhance the science to policy interface. Utilising different mechanisms and means to collect data in a more creative way is another step towards resource friendly communication.

AGEDI selected Al Wathba Wetland Reserve, an important wetland of Abu Dhabi Emirate. AGEDI used this pilot project to test the use of fourth (4th) generation technology tools for enhanced communication on the importance of these ecosystems but also as a means to tie a story together on the layers of information collected on coastal blue carbon habitats.

This pilot project tells the story of the site through 360 videos with experts' drive-through, photo-spheres, and links to important

H.E. Razan Khalifa Al Mubarak, EAD's Managing Director opening the EoE Symposium.

information through photography, documents and infographics embedded. Viewers learn what is in the reserve and why it is important, the value of ecosystem services provided, the amount of blue carbon sequestered, and the sharing of lessons learnt through international projects.

Progressing the Eye-on-Earth Vision

Eye-on-Earth (EoE), established by AGEDI, enables the generation, sharing and application of environmental and related social and economic data and information to support informed decision-making for sustainable development. Today AGEDI acts as the Network Coordination Unit for Eye-on-Earth.

In October, the Eye-on-Earth Alliance (EAD-AGEDI, IUCN, UN Environment, World Resources Institute (WRI) and Group on Earth Observations (GEO) invited supporters of evidence-based environmental decision making to Convene, Converge and Collaborate at the Eye-on-Earth Symposium in Dubai. The three-day symposium was concurrent and co-located with the UN-World Data Forum. The focus was on progressing the EoE vision by catalysing and strengthening bilateral and multi-lateral partnerships. The symposium comprised thirty-six sessions and involved eighty-seven experts from 40 different countries. The sessions were webcast, with some session's attracting over sixty remote participants from across the globe. The symposium sessions defined and organised by the EoE Global Community and were a mixture of presentations, panel discussions, and in-depth, interactive, multi-hour workshops.

In our capacity as EoE Network Coordination Unit, we attended the Data for Development Festival in Bristol, UK in March, organised by the Global Partnership for Sustainable Development Data (GPSDD). EoE is a recognised partner of the GPSDD. The event brought together over 300 data experts and advocates to network and to exchange knowledge, experiences and ideas about creating and using data to enabling sustainable development.

In November Eye-on-Earth were selected, from amongst 900 entities, to participate in the Paris Peace Forum (PPF). Convened by the President of France in commemoration of the 100th anniversary of the end of the First World War hostilities the PPF is an annual gathering of projects that seek to support global governance processes in reducing the root causes of conflict. AGEDI and UN Environment participated in a panel discussion on EoE as a multilateral mechanism that enables equitable access to ecosystem services and thus prevents conflict.

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

Participating in and Supporting Regional and International Events

In March, we attended the Indian Ocean Conference on Blue Carbon, which was hosted by the Commonwealth Scientific and Industrial Research Organization (CISRO), Indian Ocean Rim Association (IORA) and the Department of Foreign Affairs and Trade (DFAT) in Australia. We participated in policy-focused discussions that aimed to review the current policies relevant to blue carbon that exists in IORA member states (including Nationally Determined Contributions).

In the same month, we supported the Global Adaptation Network (GAN) Forum, hosted by Zayed University and UN Environment. Support included presenting climate change impacts in the Gulf and the adaptation challenges involved, based on our Local, National and Regional Climate Change Programme.

In April, we presented the Marxan Application of our 2013 Systematic Conservation Planning Assessments and Spatial Prioritisations project during the Data Validation and Review Workshop for Marine Biodiversity in the UAE, hosted by Emirates Nature-WWF. They are using AGEDI's project as the baseline upon which they can take the study further in their own Systematic Conservation Planning project.

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

ABU DHABI SUSTAINABILITY GROUP (ADSG)

Established in 2008, the Abu Dhabi Sustainability Group (ADSG) is a multi-stakeholder membership organisation that aims to encourage co-responsibility in Abu Dhabi towards achieving the goal of economic, environmental and social sustainability. Its mission is to promote sustainability management in Abu Dhabi by providing learning and knowledge sharing opportunities for government, private companies and not for profit organisations in a spirit of cooperation and open dialogue. ADSG has grown from an initial membership of just 14 in 2008, to 50 members in 2018.

Recognising Impact

The ADSG Sustainable Business Leadership Awards and Recognition scheme, launched in 2015 and supported by EAD, recognises best practice in sustainability and awards organisations who have demonstrated sustainability impact.

ADSG organised this year's awards under the theme *Taking Nature into Account*. ADSG received 35 entries from the most impactful organisations:

- **Best Sustainability Initiative** - Dubai Supreme Council of Energy's Dubai Carbon Abatement Strategy,
- **Best Sustainability Report** - Emirates Nuclear Energy Corporation,
- **Sustainability Manager of the Year** - Phillipa Grant, AESG,
- **Sustainability Leader of the Year** - Saeed Alabbar, AESG,
- **Best Sustainability Communications Programme** - Borouge for their sponsorship of EAD's Sustainable Campus Initiative, and
- **Best Energy Management Initiativ**e (a newly launched category in collaboration with Energy Institute) - Dubai Supreme Council of Energy.

The independent judging panel, selected for their sustainability expertise, consisted of H.E. Laila Abdullatif, Director General of Emirates Nature-WWF (formerly known as Emirates Wildlife Society in association with WWF), Dr Jenny Davidson, Director for Learning and Teaching in the Exec. Ed. Department at Newcastle Business School, and Mark Gough, Executive Director, Natural Capital Coalition.

H.E. Razan Khalifa Al Mubarak, Managing Director of EAD and Huda Al Houqani, Director of ADSG with the winners of ADSG Awards 2018.

Discussion during the CEO Plenary Session at the Abu Dhabi Sustainable Business Leadership Forum 2018.

Inspiring Others to Implement Sustainable Business Models

Held over two days, the Abu Dhabi Sustainable Business Leadership Forum 2018 brought together over 200 leaders and sustainability professionals to share their insights and expertise. Discussions inspired attendees to implement sustainable business models for a resilient future, with several global and local thought leaders participating in plenary sessions on a range of topics related to sustainable best practice across sectors. This year's theme *Taking Nature into Account* focused on how a natural capital approach allows businesses to streamline their operations, conduct more effective risk assessments and enhance business capability.

We launched the Arabised Natural Capital Protocol during the forum, as part of a wider collaborative effort between EAD, ADSG and the Natural Capital Coalition to commence a series of workshops in the Emirate to engage with business on the concept of natural capital. The forum highlighted work done by ADSG on energy efficiency, through a collaborative effort with the Energy Institute in the UK. Dolphin Energy Limited sponsored this year's forum, and Etihad Airways supported as Official Airline Carrier.

PROGRESSING WITH FLAGSHIP PROGRAMMES

ADSG currently leads three flagship programmes:

Energy Efficiency Flagship Pilot Project

Launched in 2017 with the support of the Environment Agency - Abu Dhabi (EAD) and in partnership with the Energy Institute, the aim of this project is to combine training, knowledge sharing, events, awareness and implementation of energy efficiency improvements to support demonstrable reduction of energy consumption and behavioural change toward energy consumption in Al Mamoura Building A and its residents. The project aims to:

- Raise awareness regarding energy management principles and efficiency,
- Showcase EAD's leadership role in energy efficiency specifically and sustainability broadly,
- Promote the Government Vision and exposure to all entities through the leadership of EAD (in this Pilot project) and participation of leading organisations who are residents of Al Mamoura, and
- Provide an opportunity for ADSG members and other organisations more widely across the UAE to participate in a unique and specifically tailored programme that will help to inform and shape their internal energy management processes, strategies and implementation.

A working group of energy efficiency 'champions' representing entities within the building including organisations such as Mubadala, EAD and SERCO have submitted their energy audit reports which has identified energy efficiency improvements within their respective areas of the building. The next phase of the project is underway, with the launch of the EnergyAware tool, tailored for Abu Dhabi, to build engagement in saving energy and identifying improvements.

Natural Capital Flagship Programme

Launched in February 2018 with the support of EAD and in collaboration with the Natural Capital Coalition during the annual Abu Dhabi Sustainable Business Leadership Forum 2018, the initial phase of this programme involved the launch of the arabised version of the Natural Capital Protocol that offers organisations a standardised approach to account for and report on natural capital, which can be renewable or non-renewable in their business strategy. In addition, two full-day workshops were held in partnership with the Natural Capital Coalition with over 45 sustainability professionals in attendance with around 500 professionals being introduced to the environmental and economic values of taking nature into account when making business decisions.

The Gulf Region Finance Leaders' Circle of Practice

The Circle of Practice was launched in 2015 in partnership with HRH The Prince of Wales' Accounting for Sustainability Project (A4S). The Regional Case Studies and Benchmarking Project, launched 2018, aims to benchmark existing sustainability practices in the finance functions of organisations and companies, and develop regional case studies to highlight trends and best practices. In October 2018, ADSG gathered leaders from the finance community to share knowledge and support each other in developing more sustainable business practices and exploring how to integrate sustainability into decision-making.

Mark Gough, Executive Director of Natural Capital Coalition at the launch of ADSG Natural Capital Flagship Programme.

Supporting Members

In 2018, ADSG provided 45 members with knowledge-sharing opportunities, capacity building and one-on-one support on various topics related to sustainability management and reporting.

ADSG conducted one Peer-to-Peer workshop in April with the objective of creating a platform to exchange ideas on best practices, present global and regional case studies and have subject matter experts present their experience. The workshop, attended by 30 sustainability professionals from ADSG member organisations, focused on 'Impact Valuation to Support Decision-making'. Guest speakers presenting their business case included Dana Gas and EXPO 2020 Dubai.

On the capacity-building front, ADSG provided two certified training courses on GRI Standards for newly reporting companies. The course covered a range of topics including SDGs, national visions, conducting materiality, reporting on the environmental, social and economic management approaches as well as launching the report. Over 30 sustainability professionals in Abu Dhabi gained certification through GRI training and 14 members published their sustainability reports in 2018. In addition to this, 10 members availed of one-on-one support meetings in support in their sustainability reporting and management practices.

Delegates attending the launch of ADSG Natural Capital Flagship Programme.

Members of the Gulf Region Finance Leaders' Circle of Practice.

Providing a Platform for Members to Share Experiences

The ADSG journal provides a platform for members and stakeholders to share their sustainability experiences, insights and achievements. Through a series of interviews and articles, it shares global thought leadership on sustainability issues. Each issue showcases an interview with CEO-level leaders from the corporate or government sectors. Over the last three years, ADSG has published 9 issues of the journal where 15 CEOs have been interviewed and over 1,500 copies distributed locally and internationally. To date, ADSG has received over 25 article contributions from its members and partners.

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

REGIONAL AND INTERNATIONAL COLLABORATION

INORDER TO ACHIEVE OUR VISION OF A SUSTAINABLE FUTURE, WE HAVE MAINTAINED CLOSE PARTNERSHIPS WITH A RANGE OF REGIONAL AND INTERNAL 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 in 2017, 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. In 2018, ICBA welcomed a new Board of Directors. The nine-member board, chaired by H.E. Razan Khalifa Al Mubarak, Managing Director of EAD, comprises renowned experts from government and non-government organisations, donor agencies, as well as international research and development organisations from the Middle East, Africa, Asia, Europe and Australia.

EMIRATES NATURE-WWF (FORMERLY KNOWN AS EMIRATES WILDLIFE SOCIETY IN ASSOCIATION WITH WWF

Emirates Nature-WWF has been our partner since 2001. Throughout 2018, we worked together on several fronts including the surveying and tracking of Green turtles, a workshop on biodiversity, assessing the potential for uptake of electric vehicles in Abu Dhabi and developing a roadmap for implementation.

We also collaborated with them on our "Rethink Plastic" campaign with Yas Mall offering its visitors the opportunity to exchange plastic bags for eco-friendly shopping bags making a visible commitment to reduce plastic waste by making a pledge.

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 Centre 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, we hosted the Roots & Shoots Annual Awards where 12 schools were honoured for their outstanding achievements to help people, animals, and the environment. This year, we hosted world-renowned conservationist, anthropologist and UN messenger of peace Dr Jane Goodall at the Arabian Oryx Protected Area. During her visit, Dr Goodall learnt about EAD's conservation efforts for the Arabian Oryx. She also met with a number of young aspiring scientists from EAD.

This year, we again rolled out the Student Ambassador Programme, which provides students with a platform to meet and discuss ideas with local and international inspirational environmental influencers. So far, students have met Robert Swan, the first person in history to walk to both the South Pole and the North Pole. In 2018, students met with Dr Majid Al Qassimi, Acting Assistant Under-Secretary at the Ministry of Climate Change and Environment.

For more information about the Roots and Shoots programme, please visit www.rootsnshoots.ae