

# PIONEERING THE FUTURE OF SUSTAINABILITY







# INNOVATIVE

## PIONEERING THE FUTURE OF SUSTAINABILITY

Based in Abu Dhabi, Masdar is a global leader in renewable energy that is advancing commercially viable solutions in energy, urban development and clean technologies in the UAE and around the world.



# WHO WE ARE

## WHO WE ARE

Headquartered in the UAE, we have been advancing the development, commercialization and deployment of cutting-edge solutions for more than a decade. Masdar's expertise lies in the development of clean energy projects, sustainable urban planning and development, the commercialization of high-impact innovations and facilitating world-class industry and knowledge platforms that accelerate the adoption of clean-tech solutions.

Masdar operates in some of the world's most exciting, cutting-edge industries, creating a vibrant corporate culture and partnership model that is constantly pushing the limits of science, engineering and design.

We are partners in the UAE's transition to a knowledge-based economy and are passionate champions of sustainable development. We seek to be a model of sustainability for other companies, just as we help the UAE to be a model of sustainability for the wider Middle East.

## OUR OWNERSHIP

Masdar is wholly owned by the Mubadala Investment Company, a pioneering global investor that deploys capital with integrity and ingenuity to accelerate economic growth for the long-term benefit of Abu Dhabi and the UAE.

A global leading strategic investment company, Mubadala has operations in more than 50 countries globally and manages assets of approximately US\$229 billion, creating lasting value for its shareholder, the Government of Abu Dhabi.

In addition to investing in industries such as conventional energy, healthcare, and real estate, Mubadala works to develop global industrial champions in sectors such as aerospace, ICT, semiconductors, metals and mining, and renewable energy. Mubadala's investment approach prioritizes partnerships with best-in-class organisations and a commitment to the highest standards of governance.





# WHAT WE DO

## WHAT WE DO

Masdar brings technical expertise, innovation and experience to help solve some of the most difficult challenges in renewable energy and sustainable urban development. We identify and develop commercially viable solutions that push forward the world's ability to address key issues such as energy access, water scarcity, climate change and the need for a more diverse energy mix.

Promoting the UAE's economic development vision, we build local talent and R&D capabilities, innovate new industry solutions and contribute to the country's economic diversification. We help solidify the UAE's position as a hub for renewable energy and clean-tech industries.

Our work includes renewable energy power projects of all sizes; sustainable urban development through Masdar City and its clean-tech cluster; collaborative sustainability innovation, research and development projects; and knowledge platforms that bring together different audiences – from thought leaders and policymakers to SMEs, young professionals and high school students – in different collaborative forums to drive progress in these fields.

Cooperation and partnership are pillars of our execution model, whether through strategic co-investments or joint research and development projects with peer organisations based in the UAE, the wider Middle East or across the globe.

## OUR PURPOSE

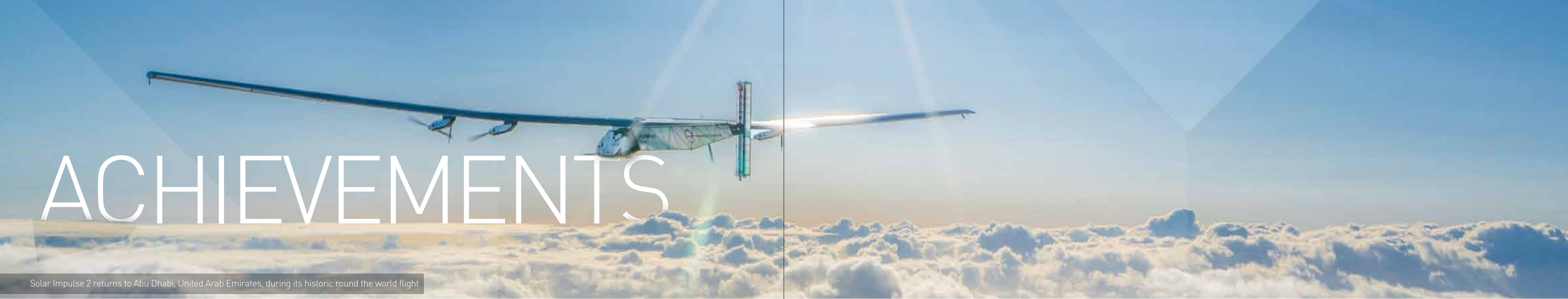
Masdar was founded by Abu Dhabi's leadership as a powerful mechanism to foster home-grown innovation and the development of cutting-edge technologies, as part of the UAE's ongoing economic diversification agenda, while also serving the vital cause of climate change mitigation.

Working in these future-focused industries helps drive the strategic Abu Dhabi and UAE-wide ambitions – as outlined in UAE Vision 2021 and Abu Dhabi Vision 2030 – to diversify the scope of economic activity and drive growth in high-value, knowledge-intensive sectors.

Given the UAE's familiarity with extreme climate environments and the energy intensity required to live in such conditions, the significant benefits that can be gained from clean energy and sustainable development are very clear. The nation is, therefore, well positioned to build on its international leadership in conventional energy in order to champion future energy solutions and systems.

Masdar's work also supports the United Nations' Sustainable Development Goals, which include sustainable access to energy and climate action, and other multilateral pacts, such as the 2015 Paris Agreement.

London Array, one of the largest offshore wind farms in the world



Solar Impulse 2 returns to Abu Dhabi, United Arab Emirates, during its historic round the world flight

## ACHIEVEMENTS SO FAR

Masdar's dramatic growth since its launch in 2006 has come during a time of enormous transformation in the renewable energy and sustainability sectors. In its first decade, Masdar both contributed to this growth and evolved in response to the sector's ongoing development.

Masdar developed what was then the region's largest solar photovoltaic (PV) farm, as well as the region's first and at the time largest concentrated solar power (CSP) plant.

Internationally, Masdar is part of different consortia and joint ventures that, among other accomplishments, have delivered the

world's largest offshore wind farm and the world's first CSP plant to deliver grid power 24 hours a day.

Perhaps the most tangible symbol of Masdar's achievements is Masdar City, the Middle East's first sustainable urban development that is today home to one of the largest concentrations of energy-efficient buildings in the world.

Masdar City is home to the Mohamed bin Zayed University for Artificial Intelligence (MBZUAI), a graduate-level research institution and the world's first university for artificial intelligence (AI). This vibrant free zone is also home to the International Renewable Energy Agency (IRENA),

which became the first intergovernmental organization to be headquartered in the Middle East.

In addition, Masdar has played a significant role in the enormous potential of renewable energy and clean technologies. The Masdar-backed Solar Impulse 2, the world's first to fly around the world without using a drop of fuel, attracted international attention and excitement.

Knowledge platforms such as Abu Dhabi Sustainability Week have driven industry growth by bringing together governments and business leaders to create partnerships and agree on actions.

The Zayed Sustainability Prize, established in 2008 recognizes companies, schools, non-profits and inspiring leaders around the world in honour of the sustainability legacy of the UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan. The direct and indirect impact of the previous winners' solutions have, to date, benefitted over 335 million people worldwide.





# GUIDING PRINCIPLES

## VISION

To make Abu Dhabi the world’s reference for knowledge and collaboration in the advancement of renewable energy, clean technologies and sustainable development.

## MISSION

To advance the development and adoption of commercially viable solutions in renewable energy and sustainable real estate to address the sustainability challenges of the UAE, the Middle East and international markets.

## OUR VALUES

### Pioneering

We are champions of innovation, always pursuing excellence to give us an edge in business, thought leadership and company culture

### Sustainable

Our three core pillars of economic, social and environmental sustainability inform our every decision, ensuring our business is profitable, ethical and future-focused.

### Agile

We are adaptable, flexible and resilient. We strive to achieve continuous growth across the business, seizing opportunities, adapting to challenges and recovering quickly from adverse impacts.

### Inclusive

We are a diverse organization that values our employees, ensures their engagement, and provides equal and equitable opportunities for all



# CLEAN ENERGY

## A COMPREHENSIVE APPROACH TO CLEAN TECH

Masdar is active across the fields of renewable energy and sustainability, working with partners to address challenges on both sides of the energy supply and demand equation. Masdar Clean Energy focuses on supply-side challenges, while its Energy Services department offers full turn-key supply and demand side energy management solutions to clients through energy performance contracting and operations and maintenance services.



Shams in Abu Dhabi is one of the largest renewable energy project in the Middle East





Gemasolar, Spain

## A COMPREHENSIVE APPROACH TO CLEAN TECH

From the world's largest and first-of-a-kind renewable energy projects, to small-scale solar home systems, and from North America, Europe and Africa to the Middle East, Asia and South Pacific, Masdar Clean Energy has been transforming the status quo in communities and markets for more than a decade. Masdar has, since it was established in 2006, invested US\$ 4.5 billion in renewable energy projects, which have a combined value of US\$ 14.3 billion. Leveraging technologies in wind, solar PV and concentrated solar power (CSP), the total generating capacity of these projects is nearly 5GW.

Some of the most significant projects include the 630MW London Array offshore wind farm – one of the world's largest wind farms in operation – and the 402MW Dudgeon Offshore Wind Farm. The UK is also home to one of

Masdar's "world firsts": the 30MW Hywind offshore wind farm in Scotland represents the world's first commercial-scale floating offshore wind farm, which is connected to Batwind – the first integrated energy storage system in the world to be connected to a floating offshore wind farm.

Another landmark Masdar project is the Gemasolar CSP plant in Spain. Using sunlight to heat molten salts as a heat storage technology, the plant became the world's first utility-scale facility to deliver electricity to the grid 24 hours a day. Also in Spain, Masdar partnered to develop the 100MW-combined Valle 1 and 2 parabolic trough plants, which again incorporate molten salt storage technology. Combined, these projects supply enough electricity for Spain's Andalusia region.

## REGIONAL EXPERTISE

In the MENA region, pioneering projects include the 100MW Shams concentrated solar power (CSP) plant in Abu Dhabi, one of the largest CSP plants in the world and the first of its kind in the Middle East and North Africa. The 117MW onshore Tafila Wind Farm in Jordan was the first commercial utility-scale wind power project in the Middle East. Also under development in Jordan is the 200MW Baynouna Solar Energy Project, the country's largest solar power plant.

In the UAE, Masdar was part of a consortium to develop the 800MW Phase 3 of the Mohammed bin Rashid Al Maktoum Solar Park in Dubai after setting a record-low bid price at the time for solar power generation of US cents 2.99 per kWh.

Masdar experienced a landmark year in 2019, expanding its presence into another five countries across the world. The company is now part of consortia developing Saudi Arabia's first wind farm and the largest in the Middle East, Morocco's Noor Midelt Phase 1 solar hybridisation power plant – the first of its kind in the world, and a 100MW solar project in Uzbekistan. The company also signed an agreement to develop solar projects with a total capacity of 400MW in the Republic of Armenia and entered into new markets by acquiring stakes in the Rocksprings and Sterling wind farms in the United States and Hero Future Energies in India.





Water Pump Solar Project, Barbados

## GLOBAL IMPACT

Across all its projects, both large and small, Masdar Clean Energy works to push the frontiers of technology, systems integration, performance and commercial viability. Most projects achieve enhanced outcomes and breakthrough results via Masdar Clean Energy partnerships with organisations in government, industry, academia and the non-profit sector.

Worldwide energy security cannot, however, be delivered solely via utility-scale projects. Masdar Clean Energy's Energy Services team delivers small, distributed and localized projects and installations in challenging and remote locations, often far off the grid. The team brings the technology, project management and partnership expertise gained from Masdar Clean Energy's large-scale projects to bring clean energy to rural locations.

Benefitting hard-to-serve communities, these projects range from tiny Pacific Island micro-grids and rural solar home systems in Afghanistan and Morocco, to onshore wind in the Republic of Seychelles and off-grid community solar PV projects in Egypt. Project sizes range from 1.7 kilowatt (kW) rooftop solar home projects to community solar PV and wind generation facilities with capacities from 100kW to 10 megawatts, although most are less than 1 megawatt.

In Egypt, 62,000 homes, schools, mosques, health clinics and government buildings across more than 140 communities have benefitted from the Energy Services team's activities. This includes adding more than 30MW of solar power that avoided CO<sub>2</sub> emissions of 42,700 tonnes.

Projects across 11 islands in the Pacific region added more than 6MW of clean power and help these communities save 3.2 million tonnes of fuel every year.

Similarly, renewable energy projects are now under development across 16 Caribbean Island nations to help reduce reliance on

fossil-fuel imports, increase energy access, and enhance climate change resilience.

Additionally, the Energy Services team offers energy management solutions to clients through energy performance contracting including: on-site renewable energy generation; building enhancements & retrofits; HVAC replacement & optimisation; lighting upgrades; energy performance design reviews; and asset operations and maintenance services.

Every project creates an outsized impact by transforming lives through the delivery of new electricity access. In addition, projects have a multiplier effect by contributing to local and national social and economic development initiatives – such as providing technical training to local utility engineers, improving water security, and unlocking educational and business opportunities through the provision of new sources of electricity.



Samoa Cyclone-Proof Wind Farm, Pacific Islands



# MASDAR CITY



## WHERE SUSTAINABILITY IS A WAY OF LIFE

As a pioneer in sustainable development and a hub for research and development, Masdar City is building the community and spearheading the innovations to realize greener, more sustainable urban living.

The city is a powerful business enabler and a strategic base through which businesses can build their network locally and globally, explore multiple investment opportunities and test new technologies. This is facilitated by the city's free zone.

As one of the world's most sustainable urban communities, Masdar City is fostering an innovation ecosystem – a hub connecting education, research and development, business and investment.





Home to one of the largest clusters of Leadership in Energy and Environmental Design (LEED) certified buildings in the world, Masdar City features both passive and active energy and water saving features that ensure all buildings are certified to at least 3 Pearls (equivalent to LEED Gold) under Estidama, Abu Dhabi's sustainable building rating system designed for the specific needs of the UAE climate.

## A HOME FOR SUSTAINABILITY

Masdar City is a place where sustainability, innovation and community move hand in hand. The city is testing the ideas that will become tomorrow's reality. With its unique blend of expertise in innovation, architecture and design, Masdar City, is doing just that. With over a decade of experience pioneering sustainable development, Masdar City is a world leader ready to share its knowledge and its lessons with the world.

The city's master plan integrates office, residential, educational, leisure and retail in a way that maximizes walkability and facilitates use of public transportation, including personal rapid transit and group rapid transit systems. Ultimately, up to 50,000 people will live in Masdar City, while up to 40,000 will work and study there.

The master plan's orientation of the city and its high density design helps optimize shading and capture prevailing winds to produce naturally cooler outdoor public spaces, while also reducing indoor cooling requirements. Buildings are constructed using low-carbon cement, recycled aluminium and sustainably sourced wood, while energy-efficient buildings mean Masdar City consumes 40% less energy and water than other comparable developments in the UAE. In addition, the city is powered in part by clean energy generated from an on-site 10MW solar power plant and a 1MW solar rooftop system.

The city also offers a range of investment opportunities to purchase or lease land plots to develop projects designed to enhance mixed-use community living. A non-exhaustive list of investment opportunities includes apartments, office buildings, schools, retail outlets, light industrial facilities, research and development initiatives and hotels.



Masdar City, United Arab Emirates





Masdar City's award-winning Etihad Eco-Residence

## ECO-VILLA

Expanding its pioneering innovation in sustainable living, Masdar City has designed and built its first low-carbon single-family home. The Masdar City Eco-Villa consumes around 72% less energy than conventional villas of comparable size in Abu Dhabi, and features solar PV to generate renewable energy and achieve a net-zero energy footprint.

The four-bedroom optimized natural lighting, a high-performance envelope, low-energy LED lighting and a range of other sustainability features. Crucially, its construction cost is similar to that of a standard villa.

## CORE TENANTS

Masdar City is home to major local and international tenants, including the headquarters of the International Renewable Energy Agency (IRENA) and the 800-strong regional head office of Europe's largest manufacturing and electronics company, Siemens. Aerospace company Lockheed Martin, is a major tenant which operates its Center for Innovation and Security Solutions (CISS), the first facility of its kind for the company outside the United States.

In May 2018, French multinational Saint-Gobain broke ground on its first Multi Comfort House in the Middle East. Saint-Gobain will build the 400-square-metre Multi Comfort House on a 2,200-square-metre site next to the Masdar City Eco-Villa.

The Etihad Eco-residence, which comprises 500 apartments in 11 buildings, was awarded Sustainable Design of the Year at the 2017 Emirates Green Building Council (EGBC) MENA Green Awards, Sustainable Construction Project of the Year at the Big Projects Middle East Awards 2017, MENA Green Building Awards 2018, and Sustainable Project of the Year 2018 at the 2018 MEED Awards.

The city is also home to the Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) - the world's first university dedicated to artificial intelligence. The graduate-level, research-based academic institution will offer specialised degree programs for local and international students in the field of Artificial Intelligence from January 2021.



# FREE ZONE

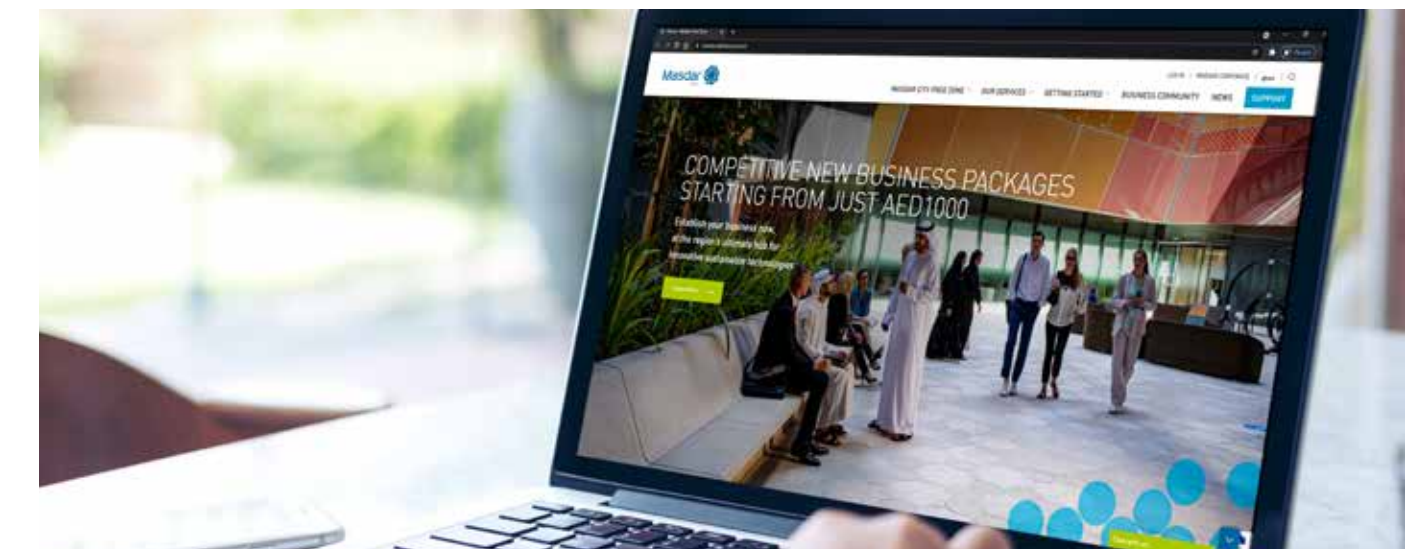


Masdar City is a free zone, incorporating a rapidly growing community of over 700 companies. The city has become the perfect place to start and operate a business, with a diverse mix of startups, SMEs and multinational companies working side-by-side.

Partners and tenants benefit from a range of comprehensive business support services, such as dual licensing, quick and efficient licensing and visa processing, incentives that include 100% company ownership, exemption from corporate and personal income taxes, unlimited repatriation of capital and profits, and cost-effective leasing opportunities.

These benefits, along with the extensive selection of restaurants, cafés and retail outlets, combine to create a vibrant and convenient location to conduct business.

Abu Dhabi is an exciting, multicultural city and a truly international capital. Located at the crossroads of Asia, Africa and the Middle East, Abu Dhabi is the capital of the United Arab Emirates, a business-friendly country with a heritage of tolerance and openness and a well-deserved reputation for welcoming citizens from more than 200 countries.





# INNOVATION



Shams in Abu Dhabi, one of the largest concentrated solar power projects in the Middle East

## CLEAN-TECH INNOVATION

Masdar thrives on innovation, taking technologies, and the region, to new frontiers. Masdar was the first company in the Middle East and North Africa to build a utility-scale concentrated solar power plant, the first to develop a commercial-scale carbon capture usage and storage (CCUS) project at a steel facility, with the Abu Dhabi National Oil Company (ADNOC), and the first to develop a commercial-scale wind farm in the GCC region.

Masdar also led the region's first sustainable seawater desalination project, which comprised five pilot projects using different technologies. Working with Abengoa, Suez, Veolia/Sidem, Trevi Systems and Mascara NT, the pilot project concluded that reverse osmosis and solar power are commercially attractive, sustainable long-term mainstream solutions to water and energy security in the Gulf region. This is particularly significant as conventional seawater desalination is energy intensive.



Masdar Renewable Energy Water Desalination Pilot Plant, Abu Dhabi

Further expanding the real-world testing environment, the Masdar Solar Hub offers a state-of-the-art solar testing and R&D platform for PV and solar thermal technology. This provides a valuable resource for equipment manufacturers, system integrators and installers, project developers, utilities, investors and research organisations.

The Masdar City Free Zone itself supports innovation, creating a business-friendly industry cluster. Companies of all sizes can find inspiration throughout the city, while forging valuable partnerships with like-minded organizations.



Masdar Solar Hub, Abu Dhabi





Abu Dhabi Sustainability Week 2019 Opening Ceremony

## KNOWLEDGE PLATFORMS

Masdar believes that the advancement of our industry fundamentally depends on cooperation, partnership and knowledge transfer, with a holistic and inclusive approach across multiple stakeholder groups.

With this in mind, Masdar has created a number of powerful knowledge platforms for the global sustainability community. These include Abu Dhabi Sustainability Week (ADSW); the Zayed Sustainability Prize (ZSP); and strategic initiatives such as Women in Sustainability, Environment and Renewable Energy (WiSER), and Youth 4 Sustainability (Y4S).



### Abu Dhabi Sustainability Week

Abu Dhabi Sustainability Week is the largest sustainability gathering in the Middle East, held annually each January.

The event is dedicated to furthering our understanding of the major social, economic and environmental trends shaping the world's sustainable development, and to empowering the global community to realise viable and effective strategies to mitigate climate change and address the energy and sustainability challenges of the future.



### Zayed Sustainability Prize

The Zayed Sustainability Prize (ZSP), formerly known as the Zayed Future Energy Prize, is a tribute to the legacy of the late founding father of the UAE, Sheikh Zayed bin Sultan Al Nahyan – a visionary champion of global sustainability.

This annual award, announced at the ADSW Opening Ceremony, celebrates achievements that are driving impact, innovation and inspiration across five distinct categories: Health, Food, Energy, Water and Global High Schools.

Since its establishment in 2008, the Zayed Sustainability Prize has directly and indirectly impacted over 335 million lives.



Globhe Drone Pilot, Zayed Sustainability Prize 2020 winner





WISER, a Masdar-led impact-focused platform dedicated to inspiring women



World Future Energy Summit (WFES) is a global industry platform connecting business and innovation in energy, clean technology and efficiency for a sustainable future, attracting world leaders, international policymakers, industry experts, investors from the public and private sector and media.

WFES is held during Abu Dhabi Sustainability Week, which is hosted by Masdar.



WOMEN IN SUSTAINABILITY,  
ENVIRONMENT AND RENEWABLE  
ENERGY FORUM

WiSER is a Masdar-led impact-focused platform dedicated to inspiring women and girls to play an active role in addressing global sustainability challenges. The year-long initiative holds an annual forum during ADSW.

The Women in Sustainability, Environment and Renewable Energy (WiSER) platform was officially launched on the sidelines of the 70th United Nations General Assembly in September 2015.



A global platform bringing together wisdom and knowledge, Youth 4 Sustainability is dedicated to the education, engagement, and empowerment of youth around the world. The Youth Hub is a key component of Abu Dhabi Sustainability Week, which aims to prepare youth to carry forward the sustainability agenda by ensuring that relevant and actionable information is passed down to our future leaders.



The Climate Innovations Exchange, launched in 2018, supports the UAE's Ministry of Climate Change and Environment strategy to enable the sourcing and funding of climate change solutions and technologies. A World Future Energy Summit initiative, CLIX is a unique global marketplace located in Abu Dhabi, UAE, connecting entrepreneurs, innovators and investors on a global level to enable partnerships that will power climate change solutions through knowledge, innovation and funding.



# THE FUTURE

## LOOKING AHEAD

For more than a decade, Masdar has been pioneering clean technology and sustainable urban development.

As we help transform cities and communities locally, regionally and across the far corners of the globe, we are spreading awareness about the UAE's commitment to embrace the future through innovation, economic diversification and a partnership approach that knows it can overcome any hurdle.

The future is as bright as we want to make it. Through Masdar, Abu Dhabi and the UAE are embracing the huge potential that renewable energy and sustainability offer economies to energize growth, foster advanced R&D, and find solutions to global challenges. In doing this, we are accelerating the development of a thriving business environment full of new opportunities.

To learn more about Masdar or to partner with us across our broad scope of operations, visit our website: [www.masdar.ae](http://www.masdar.ae)





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