

ENVIRONMENTAL CENTENNIAL

2071



2071
الْمَئُوْدَةُ الْبَيْنَ قَدْمَيْهِ
Environmental Centennial

ENVIRONMENTAL
CENTENNIAL

2071

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50 years ago, the environmental efforts of the United Arab Emirates began with the vision and wisdom of the country's founder, the late Sheikh Zayed bin Sultan Al Nahyan. His vision extended well beyond the immediate horizon at that time and still guides us now and in the future.

By launching the Environmental Centennial 2071, we will continue to follow the steps of our forefathers and set a comprehensive, flexible environmental vision that outlines the prospects over the next 50 years for achieving global environmental excellence and leadership.

His Highness Sheikh Hamdan bin Zayed Al Nahyan

Ruler's Representative in Al Dhafra Region

Chairman of the Board of Directors of the Environment Agency - Abu Dhabi





By adopting the Environmental Centennial towards the next fifty years, we build on the deep foundations set by our ancestors, and the great efforts by those who preceded us, to shape our future and set our ambitions so that we become the best in the world in environmental and climate action, so that future generations enjoy the abundance of conserved nature and Abu Dhabi advances with green development.

His Excellency Mohammed Ahmed Al Bowardi

Minister of State for Defence Affairs, and Vice Chairman of the Board of Directors of the Environment Agency - Abu Dhabi



Inspired by the UAE leadership's visionary 50-year planning horizon and in alignment with the UAE's *Centennial Plan 2071*, we drew on our current successes, consulted global future megatrends, and mapped our environmental aspirations. We have proudly and ambitiously pursued an integrated plan that boldly aims to continue Abu Dhabi's transformation into a green global centre for sustainable economy, renewable energy, eco-innovation, and advanced science and technology.

Her Excellency Razan Khalifa Al Mubarak

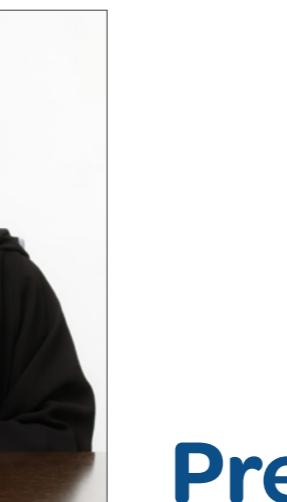
Managing Director
Environment Agency – Abu Dhabi





During the development of the Environmental Centennial 2071, we relied on scientific foundations and adopted a participatory approach that led us to prominent government partners who showed the highest levels of dedication and teamwork to achieve a better future, and we also received motivation and inspiration from our people who did not hesitate to join our journey.

Her Excellency Dr Shaikha Salem Al Dhaheri
Secretary General
Environment Agency – Abu Dhabi



Preface

The next fifty years map developed by national manpower was based on future foresight methodologies, relied on the analysis of future global megatrends, pressures, goals and practices, and long-term Emirati visions and plans across different fields.

And so with our partners, people, and other stakeholders in the public, private and academic sectors, we developed the fifty-year map, which is based on three main pathways. The first pathway describes the ambitions of conserving Abu Dhabi's environment, its natural resources and ecosystems within advanced frameworks to ensure a healthy environment for all. The second pathway aspires to make Abu Dhabi a green force that embraces sustainable energies and economic models to address and adapt to climate change locally and internationally. The third pathway sheds light on the enablers that will drive the future toward excellence, innovation in green science and technology, and equipping future generations with awareness and education.

The participatory principle that we adopted in the development of the Centennial was the most important and valuable in our journey. Had it not been for the support of our partners and their teams from various sectors, and the valuable feedback received from all the experts who reviewed it from the government, private, academic and public sectors, and if it were not for the responses from the public which enriched the societal aspect, we would not have developed the Centennial with its integrated dimensions.

Following EAD footsteps and with the aim to achieve the directions of our leadership to adopt future foresight, and to make Abu Dhabi's environment healthy and vibrant for future generations, we started working on the Environmental Centennial 2071, whose foundations were inspired by the UAE Centennial 2071 that aspires to make UAE the best country in the world by the 100th anniversary of its union.

And because environmental protection is our most important duty, we were keen on being proactive in integrated environmental planning that include vital sectors in the emirate, so that we set a comprehensive environmental vision and a balanced development model that considers nature, green development, and environmentally friendly scientific and technological advancement.

Sheikha AlMazrouei
Acting Executive Director
Integrated Environment Policy and Planning
Environment Agency – Abu Dhabi



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Pathway 3: Environmental enablers to lead the future



Introduction

- Abu Dhabi is the world's best in environmental conservation
- Centennial Pyramid
- Purpose
- Preparation Principles

Abu Dhabi is the world's best in environmental conservation

Abu Dhabi Environmental Centennial 2071 draws the pathways toward the future and lays the foundations for the next 50 years journey, so that Abu Dhabi becomes the world's best in environmental conservation, to participate in achieving UAE vision to be the best country in the world.

To this end, the Centennial lays out 3 main pathways:

Pathway 1: Vibrant emirate thriving in nature

Pathway 2: Green force resilient to climate change

Pathway 3: Enablers for future environmental leadership

Each pathway includes 4 pillars, and every pillar sets out a vision, goals, and future programmes.

Centennial Pyramid

UAE Centennial 2071

Vision: World's best country

Environmental Centennial 2071

Vision: Abu Dhabi is the world's best in environmental conservation

3 Pathways

12 Pillars and visions

33 Goals

76 Programmes



Purpose

- Participating in the achievement of leadership directions through alignment with UAE Centennial 2071
- Strengthening Abu Dhabi's rank in environmental conservation
- Setting environmental conservation visions for the next 50 years according to future trends, pressures, targets and practices
- Integrating environment, economy and other sectors to achieve sustainable future
- Exploring opportunities to invest in advanced sciences and technology for environmental conservation

Preparation Principles

Thorough assessment

Assess long-term national visions and plans in different areas and identify all relevant trends and directions.

Analyse global trends, pressures, objectives and future practices for environmental conservation.

Centennial formulation

3 pathways, 12 pillars, 33 goals, and 76 future programmes, have been developed across key sectors.

Stakeholders' participation

Engage EAD and Abu Dhabi stakeholders from all sectors including government entities, private sector, NGOs, academia and the public.

Regular review

Conduct periodic review and update every 5 years to accommodate future changes.



The Starting Point

- Emirati long-term ambitions
- Global future megatrends

Emirati long-term ambitions

UAE and Abu Dhabi governments have developed coherent and integrated long-term frameworks, strategies and plans, applying best practices in future foresight, to continue the legacy of the late Sheikh Zayed bin Sultan Al Nahyan and move forward in his footsteps to achieve the goals of the country's leadership.

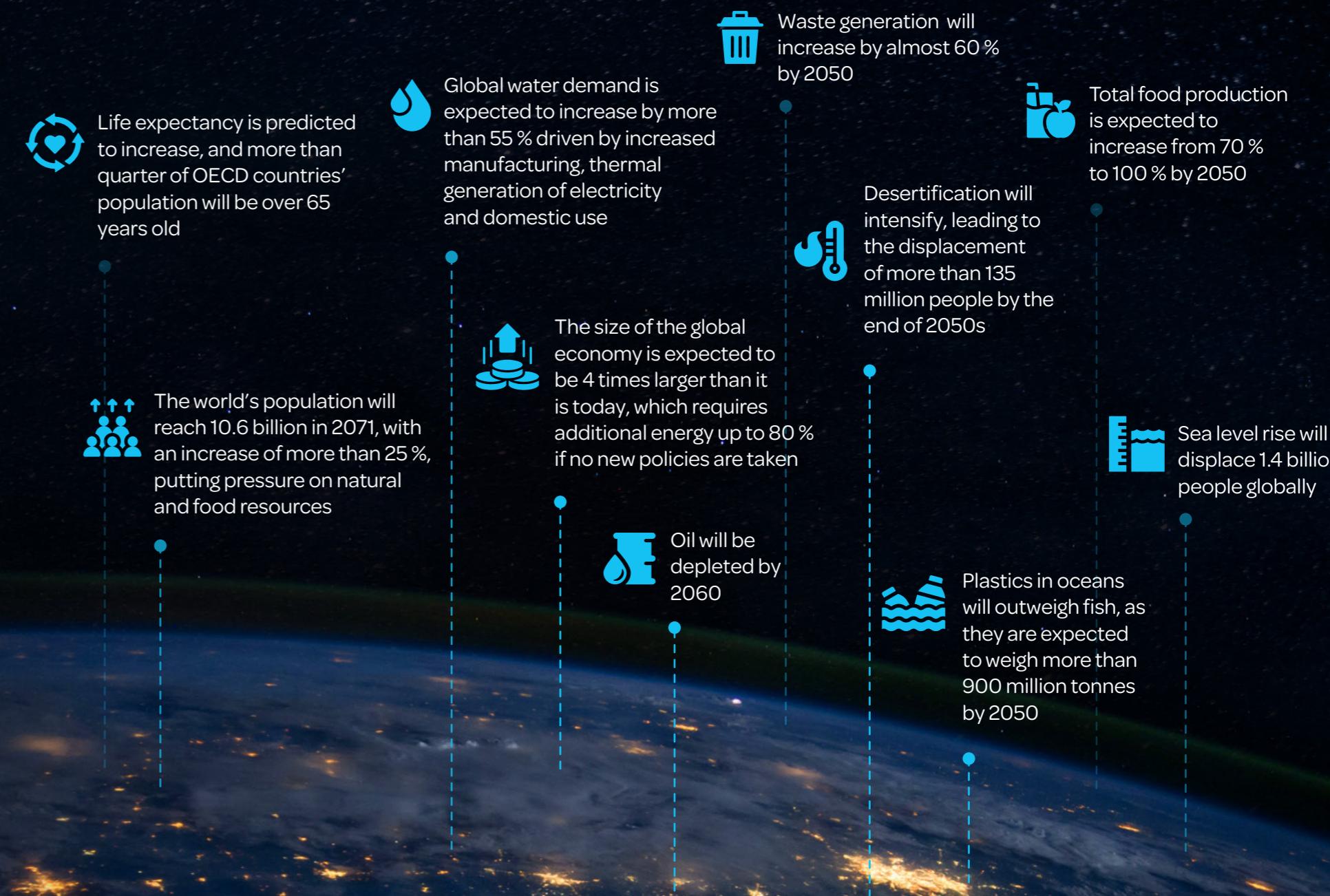
The Environmental Centennial 2071 has been designed based on visions, goals and programmes that are intended to frame the next 50 years for Abu Dhabi environment, achieve long-term UAE's ambitions, Abu Dhabi government directions and foundational strategies, and support an integrated governance system that serves as a reference for decision-making in Abu Dhabi, so that future plans for all sectors are aligned with the Centennial.



Global future megatrends

The Centennial has been built according to the future global megatrends, as they go beyond short and long-term trends, and it reflects the solutions to these trends through its future programmes with integrated dimensions and a clear perspective.

Current and future trends have been examined for each pillar, in addition to what governments require to achieve sustainable development and efficiently address challenges that emerged in recent years, to adopt a holistic environmental vision for the next 50 years. This will be deemed as a framework that enables vital sectors to achieve common environmental direction, and make Abu Dhabi the best in the world in conserving the environment.





Toward the next 50 years

- 1 Vibrant emirate thriving in nature
- 2 Green force resilient to climate change
- 3 Enablers for future environmental leadership





Pathway 1

1 Vibrant emirate thriving in nature

This path sets the ambitions of protecting Abu Dhabi's environment through 4 pillars to achieve the optimal conservation of biodiversity and natural resources to fulfil Abu Dhabi 2071 vision to have the best sustainable ecosystems and most advanced environmental health plans and frameworks in the world.

Vibrant emirate thriving in nature

 10

Goals

 21

Programs



Pillar

Conserved biodiversity



Clean and healthy air for all



Soil and water that support life



Optimal environment for a healthy society



Pillar vision

Abu Dhabi achieves life balance and becomes a safe heaven for biodiversity through comprehensive conservation efforts on land and sea.

Abu Dhabi occupies an advanced position worldwide in terms of pollutant-free air quality, and the integrated air quality control and monitoring system in all sectors.

Abu Dhabi has sustainable soil and water that support different life forms as a result of the collaborative work between the various sectors, the effective management of water supply and demand, and the use of innovative technology to achieve optimal management.

Abu Dhabi leads the world in environmental health, as it relies on advanced frameworks and systems whose essence is to support the needs and well-being of the society.

1st Pillar Conserved biodiversity



Vision

Abu Dhabi achieves life balance and becomes a safe heaven for biodiversity through comprehensive conservation efforts on land and sea

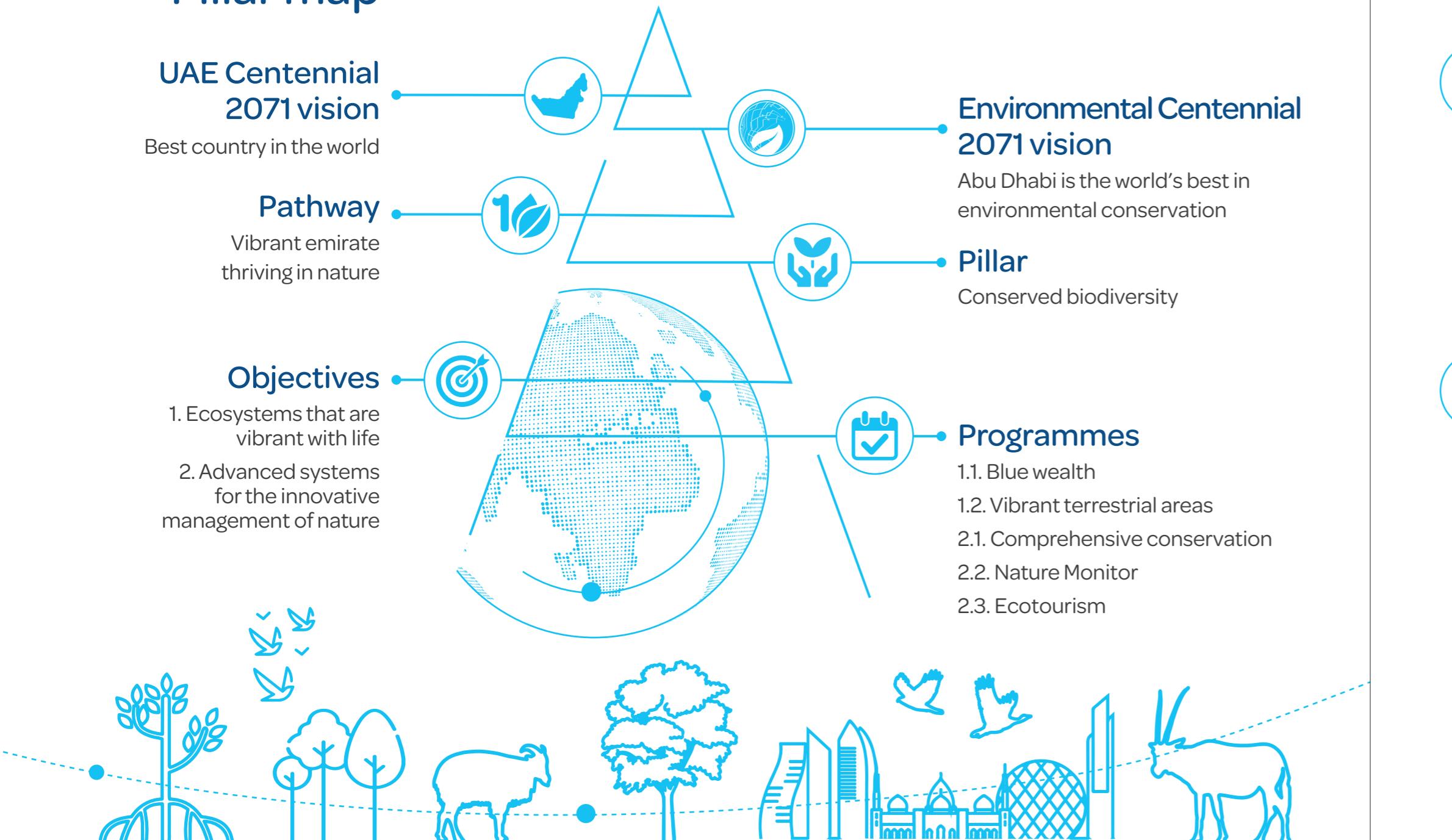
Biodiversity is the measure of variety of life on earth and is essential for sustainable development. It includes genetic, species and ecosystem diversity. Life on the planet in all its forms, including humanity, depends on biodiversity, and therefore all must engage in conserving it.

Current and future trends and drivers

- It is expected that the deterioration of biodiversity and ecosystem services will continue due to increase in the size of pressures such as population number, development acceleration, cities and infrastructure expansion, pollution increase and effects of climate change.
- Global terrestrial biodiversity is expected to decline by 10% by 2050.
- Plastic will outnumber fish in the oceans by 2050.
- The global farmed fish market share will exceed that of wild capture fisheries.
- The value of market and non-market sectors associated with coastal and marine areas in Abu Dhabi is expected to double by 2030 compared to 2013.



Pillar map



Future programmes



Blue Wealth

Sustainable fish and marine stocks that achieve nutritional balance through the termination of illegal, excessive and unsustainable fishing practices, the expansion of sustainable aquaculture in line with the food security governance system, the application of household fish farms that rely on renewable energy for sustainable production, and the employment of innovative standards, practices and technologies to preserve and rehabilitate marine habitats and species and reduce marine environmental discharges.



Comprehensive Conservation

Sheikh Zayed Protected Areas Network for marine and terrestrial areas has a societal value and represents scientific, cultural and tourism platforms that provide different enablers for studies, scientific research and practical experiments worldwide, and a studied and protected genetic diversity for all species through gene banks for animals and plants that are properly managed, along with proactive measures that avoid hybridisation and gene dilution.



Nature Monitor

Innovative advanced and real-time systems for monitoring terrestrial and marine environments that uses satellites, artificial intelligence systems, and biorobots that do not disturb species, to monitor the quality of ecosystems and living resources and report instantly to ensure their sustainability and support decisions.



Vibrant Terrestrial Areas

Reverse terrestrial biological deterioration through protecting and restoring terrestrial ecosystems, promoting their sustainable use, and innovating in systems and technologies for sustainable management of forests, desertification and invasive species, plant labs to support scientific research, green products, and testing of environmentally appropriate species for the emirate, preserving local seeds, organising their markets and conducting seed research, development of community programs and activities that would support and involve individuals in sustainable greening efforts, and innovative systems for managing and organising vital environmental activities.



Ecotourism

An integrated system for ecotourism in the emirate that consists of systems, practices, services and standards aimed at protecting the environment, reducing tourism negative impact, raising environmental awareness, classifying and motivating environmentally friendly hotels, stimulating green business tourism, ecologically sound water tourism, sustainable voluntary tourism programmes, and green tourism investments that highlight the beauty of environmental diversity in the emirate such as innovative desert lodges, and virtual eco-tourism platforms.

2nd Pillar

Clean and healthy air for all



Vision

Abu Dhabi occupies an advanced position worldwide in terms of pollutant-free air quality, and the integrated air quality control and monitoring system in all sectors

Air pollution is one of the biggest health and environmental challenges in the world and it includes ambient and indoor air pollution and noise.

Current and future trends and drivers

- Experts have warned that 90 % of the world's population is at risk of air pollution, as being a silent killer that causes premature death of 7 million people every year.
- Studies have shown that air pollutant concentrations in some cities are much higher than acceptable health standards (e.g. WHO Air Quality Guidelines). The situation is likely to remain as it is and significant reduction efforts will be required to limit its health impacts.
- Levels of sulfur dioxide (SO_2) emissions are expected to be 90 % higher and nitrogen oxides will be 50 % higher by 2050 than they were in 2000.



Pillar map



Future programmes



No Pollutants

Apply regulations aligned with local, national and international standards for all outdoor and indoor air pollutants and the protection of the ozone layer, and standards for each sector in the emirate that ensure comprehensive sustainable development, procedures and controls for gas emissions and the treatment of pollutants.



Environmentally Friendly Traffic

Smart regulation and control of traffic systems, take measures to reduce pollution and noise caused by the transport sector, and promote the concept of shifting to high-speed public clean trains, vehicles, planes and ships.



Improved Ventilation

Incorporating indoor air quality systems into buildings, houses and closed public places for real-time readings on their levels, intelligent analysis of their sources, and linking them to the emirate's environmental health system, innovating in natural ventilation practices and air cleaners, and regulation to implement them.



Smart Factory

An intelligent system for controlling pollutants resulting from industrial facilities using modern technology that directly feeds government agencies with all industrial sector emission and discharge data through smart systems.



Control Room

Advanced data analysis that utilizes artificial intelligence, monitoring using remote sensing, real-time, and automated mechanisms to collect air and noise pollutants data, integrating systems between government sectors and providing real-time analysis that relies on artificial intelligence for all data to support decision-making.

3rd Pillar

Soil and water that support life



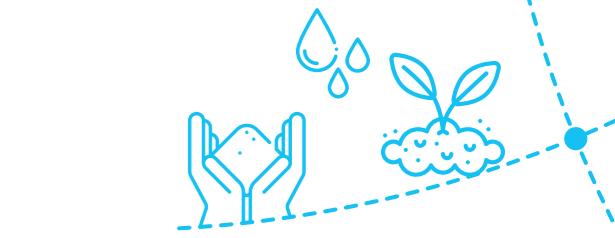
Vision

Abu Dhabi has sustainable soil and water that support different life forms as a result of the collaborative work between the various sectors, the effective management of water supply and demand, and the use of innovative technology to achieve optimal management

It is certain that water and soil have a high inherent value for all peoples around the world as they are the cornerstones of life and are limited resources.

Current and future trends and drivers

- Many experts have described freshwater as the “new gold” as the basis and intrinsic value of the global economy.
- The total economic value of groundwater in Abu Dhabi, which is currently estimated at between 15.5 to 18 billion dirhams per year, is expected to increase due to high demand and unsustainable extraction rates that exceed natural recharge rates.
- According to United Nations projections, soils in the year 2050 are exposed to an increase in salinity and the loss of fertile lands due to the phenomenon of urbanisation.



Pillar map

UAE Centennial 2071 vision

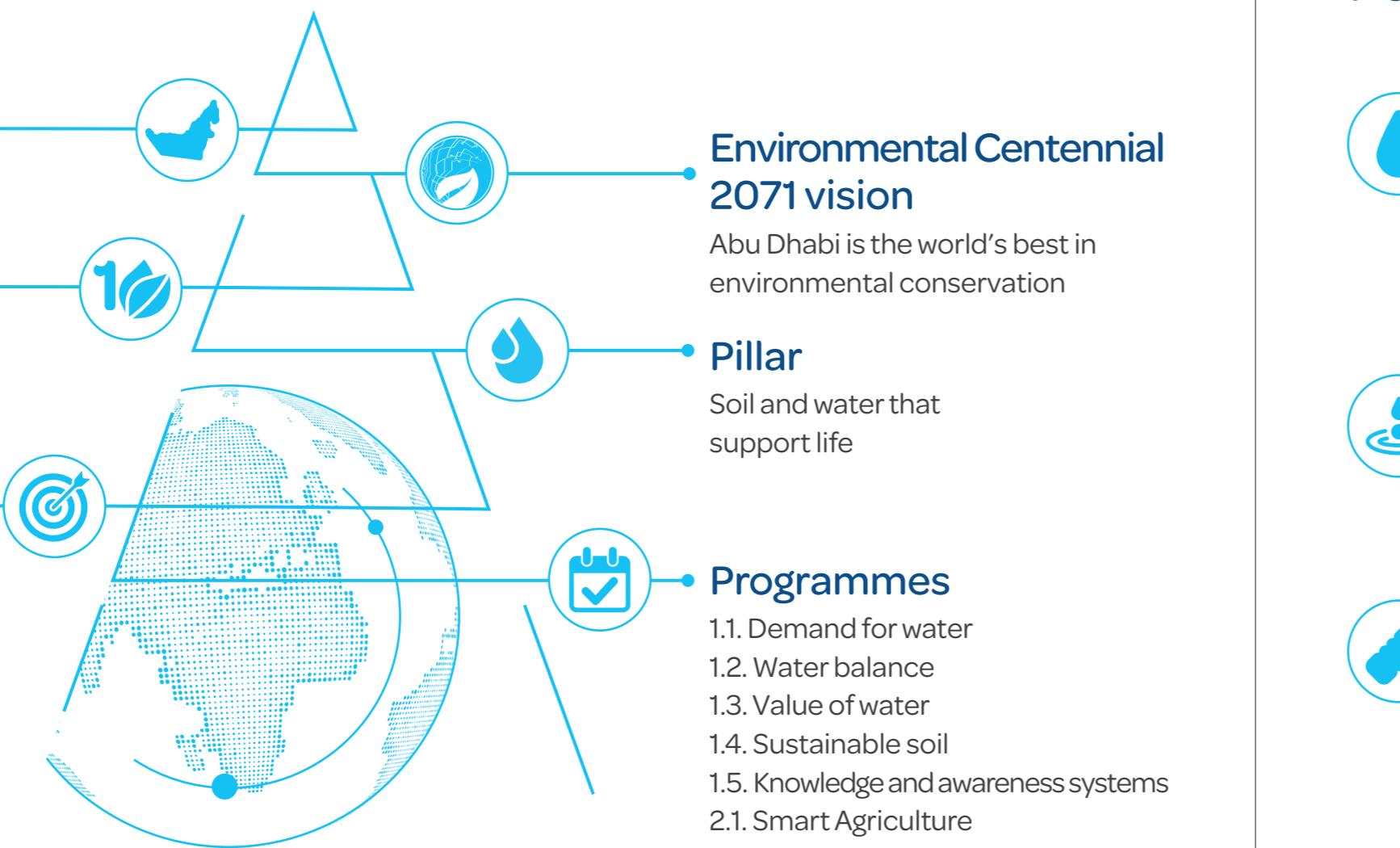
Best country in the world

Pathway

Vibrant emirate thriving in nature

Objectives

1. Comprehensive management of water and soil resources
2. Sustainable governance of water, energy and food



Environmental Centennial 2071 vision

Abu Dhabi is the world's best in environmental conservation

Pillar

Soil and water that support life

Programmes

- 1.1. Demand for water
- 1.2. Water balance
- 1.3. Value of water
- 1.4. Sustainable soil
- 1.5. Knowledge and awareness systems
- 2.1. Smart Agriculture
- 2.2. Reactive governance

Future programmes



Demand for Water

A regulatory framework aimed at enhancing the emirate's competitiveness in raising the efficiency of water use in various sectors, providing advanced infrastructure supported by artificial intelligence, space technology, remote sensing, mathematical models and environmentally friendly initiatives to estimate water demand, achieve the highest economic and environmental return, and enhance food and water security.



Water Balance

Advanced water management begins with tracking and calculating the movement of water in the emirate and outside it within specific sectors, through which a fixed total volume of water supply for these sectors is flexible, determined and linked to smart hydrological monitoring networks.



Value of Water

Advanced and continuous economic, social and environmental studies to improve the tariff model, which in turn will affect the behaviour of individuals and the consumption of vital institutions and sectors, and an integrated understanding of the challenges and opportunities of the water sector and losses in networks to raise efficiency and rationalise consumption.



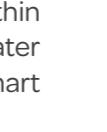
Knowledge and Awareness Systems

A smart system to collect and organise water and soil data from all concerned parties within a comprehensive database, and develop an awareness programme to support the community and provide guidance targeting priority areas to raise awareness of challenges, solutions and health impacts.



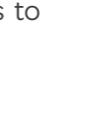
Sustainable Soil

A framework for sustainable land use supported by monitoring programmes that reduce soil degradation and manage land use in a sustainable manner through following sound agricultural practices to increase agricultural production, achieve food security, improve soil quality and fertility, and raise organic content using fertilisers and organic inputs to achieve adaptation to local conditions and practices, including the land farming and aquaculture activities , in addition to developing plans for land use for residential and agricultural purposes and innovation in technology and practices for soil rehabilitation.



Smart Agriculture

Innovation in designing agricultural systems to mimic natural systems and contribute to preserving natural water resources, raising the efficiency of irrigation, using alternative water sources, and limiting the cultivation of crops with high water consumption, adapting to climate change and applying the latest agricultural technologies, artificial intelligence, research and development, and supporting plans and production systems toward sustainable agricultural development.



Reactive Governance

Governance that considers all concepts and interrelationships between water, environment, energy and food elements based on research and best practices, and ensures integrated planning of sectors through which a practical map is created for making comprehensive decisions that are taken into consideration at all sectors.

4th Pillar

Optimal environment for a healthy society



Vision

Abu Dhabi leads the world in environmental health, as it relies on advanced frameworks and systems whose essence is to support the needs and well-being of the society



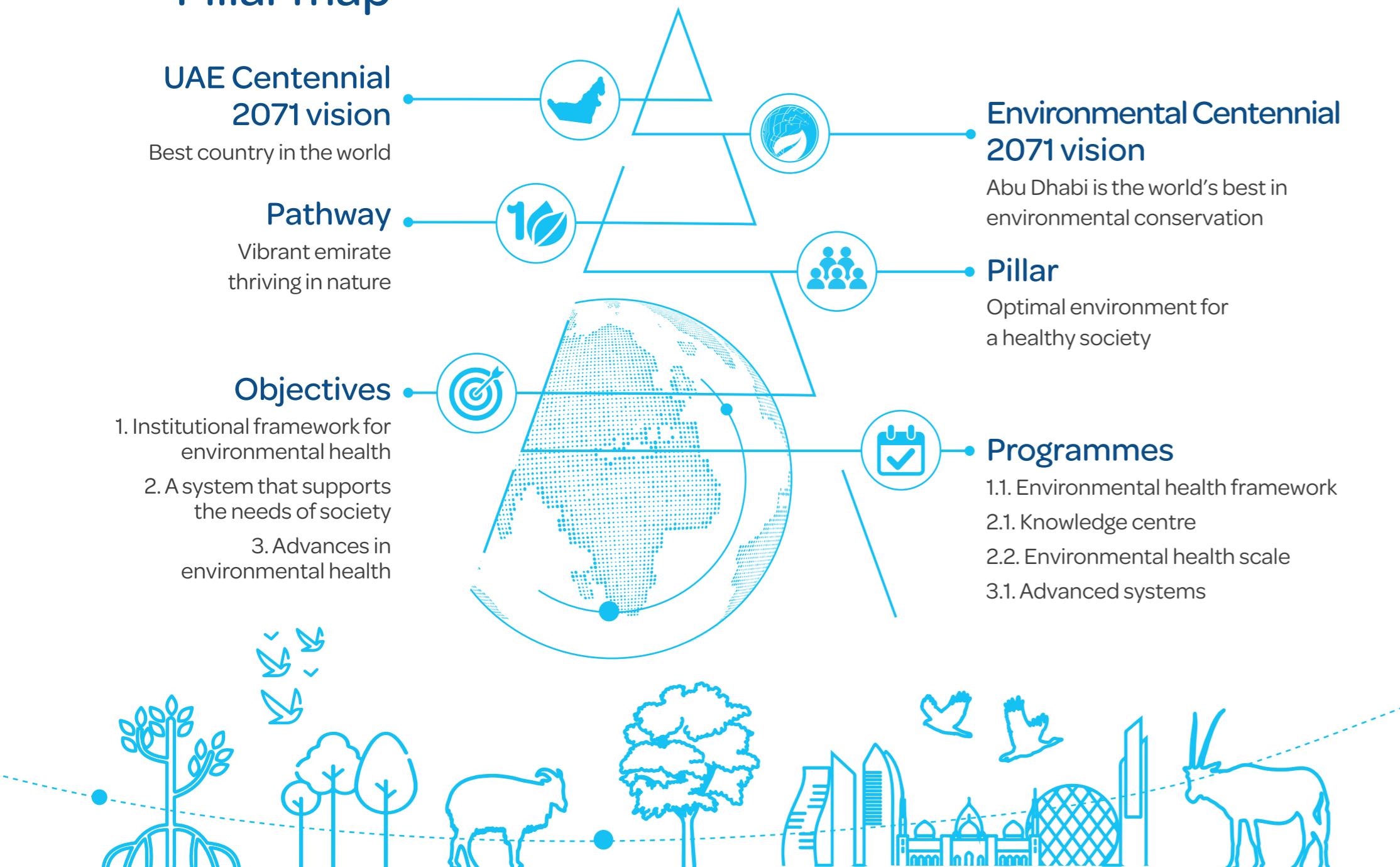
Environmental health includes several aspects, the most important of which is the prevention of human injuries and diseases associated with the natural environment and pollution by assessing environmental sources and hazardous factors and limiting exposure to them in order to enhance the well-being of society.

Current and future trends and drivers

- Due to climate change, temperature-related deaths will increase by 257 % by 2050.
- Global studies have showed that 24 % of global deaths are related to the state of the environment, which accounts for approximately 13.7 million deaths annually.
- Researchers continue to produce studies on environmental impacts on the health of individuals or natural habitats by looking at factors affecting health and outcomes that are geographically specific and linked to a specific period of time, and compare them with environmental studies using best practices.



Pillar map



Future programmes



Environmental Health Framework

An effective environmental health framework that ensures the integration of health efforts in different aspects including human, animal, plant and environment, and follows a systematic approach to conceptualizing, classifying and analysing actual or projected environmental health issues, linking monitoring programmes, and supporting and developing advanced indicators, policies and programmes.



Environmental Health Scale

An innovative and standardised method based on best practices in the field of environmental health to measure environmental quality data, identify and evaluate environmental sources and hazardous factors, and analyse harmful pollution levels that may negatively affect human health, thus achieving the emirate's environmental health security.



Knowledge Centre

Geographically, temporally and socially available data and information, especially for the most vulnerable population groups, concerned government agencies and researchers on diseases and risks related to environmental health, and ensuring that the best applied research is conducted to develop knowledge about the environment and deduce the extent of recovery to educate the community about related issues and methods of prevention and respond to their concerns.



Advanced Systems

A system that proactively addresses anticipated threats, epidemics and environmental factors affecting health to help direct interventions and prevent harm to humans and ensure advanced knowledge of the interactions between environmental and health impact through the development of smart systems.



Pathway 2

Green force resilient to climate change

Pathway 2 includes four pillars to achieve excellence in climate action so that Abu Dhabi becomes resilient and proactive in addressing climate change, adopts various renewable energies to transform into a low carbon fleet, consolidates the concept of a circular economy toward the closed loop with no waste, and follows a green economy approach that competes with the best economies in the world while integrating natural capital and converting to green infrastructure.

Green force resilient to climate change

10 Goals

24 Programs



Pillar

Excellence in
climate action



Renewable and
diversified energies



Green economy that
drives development



Circular economy
towards zero waste



Pillar vision

Abu Dhabi is branded by flexible frameworks, proactive plans and advanced systems to achieve carbon neutrality, adapt to climate change, and protect its society, environment and infrastructure.

Abu Dhabi achieves leadership in renewable and clean energies with the availability of nuclear energy, biofuels, hydrogen and a diverse, low-carbon fleet.

Abu Dhabi positions itself as a green economic force worldwide by following an approach that reflects natural capital and ecosystems services, and stimulates green investments, businesses, infrastructure, urbanism and architecture.

Abu Dhabi pioneers in circular economy, resources efficiency, and the reduction of waste and emissions, through promoting state of art waste management and sustainable patterns to encourage the reuse of materials to remain in a closed loop.

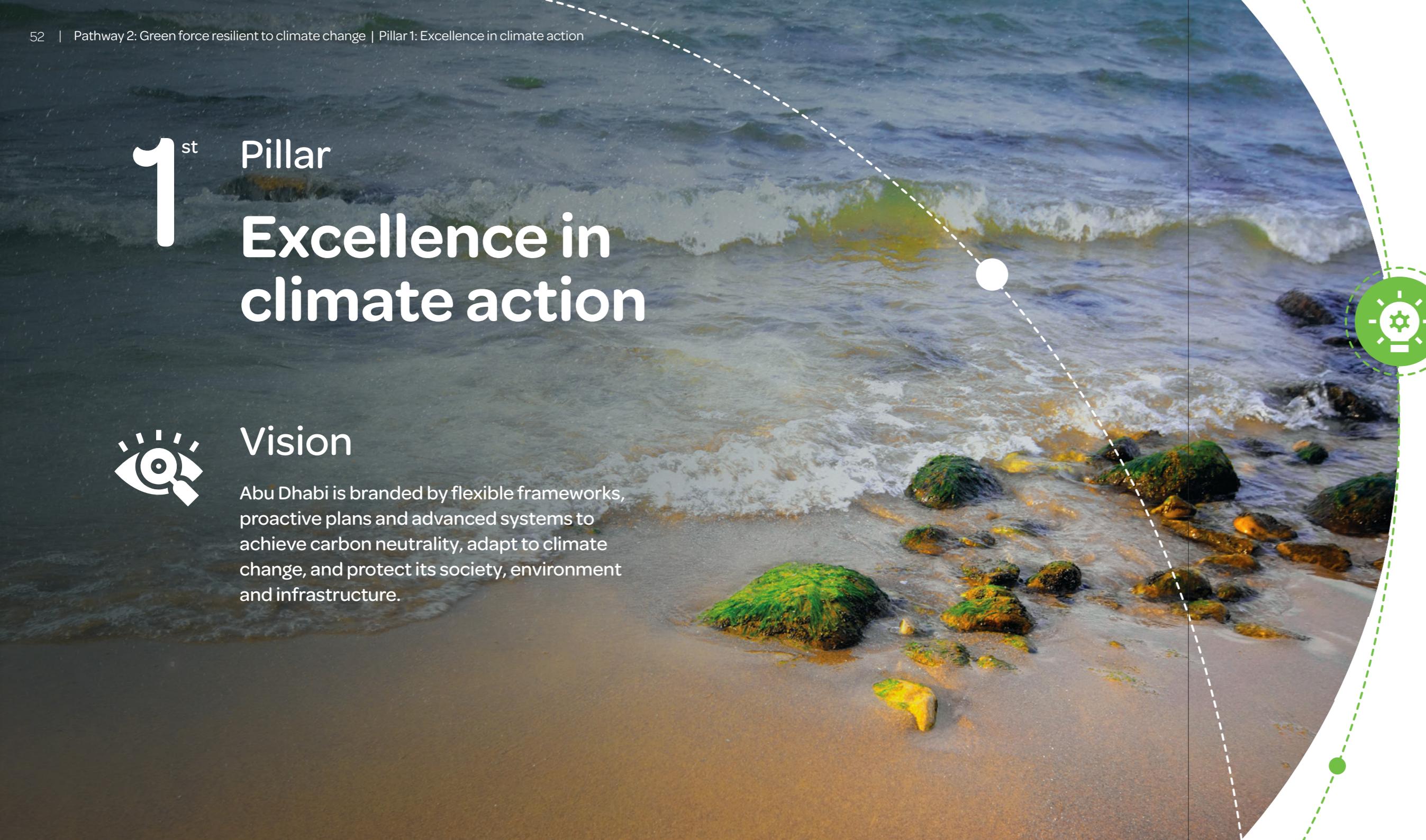
1st Pillar

Excellence in climate action



Vision

Abu Dhabi is branded by flexible frameworks, proactive plans and advanced systems to achieve carbon neutrality, adapt to climate change, and protect its society, environment and infrastructure.

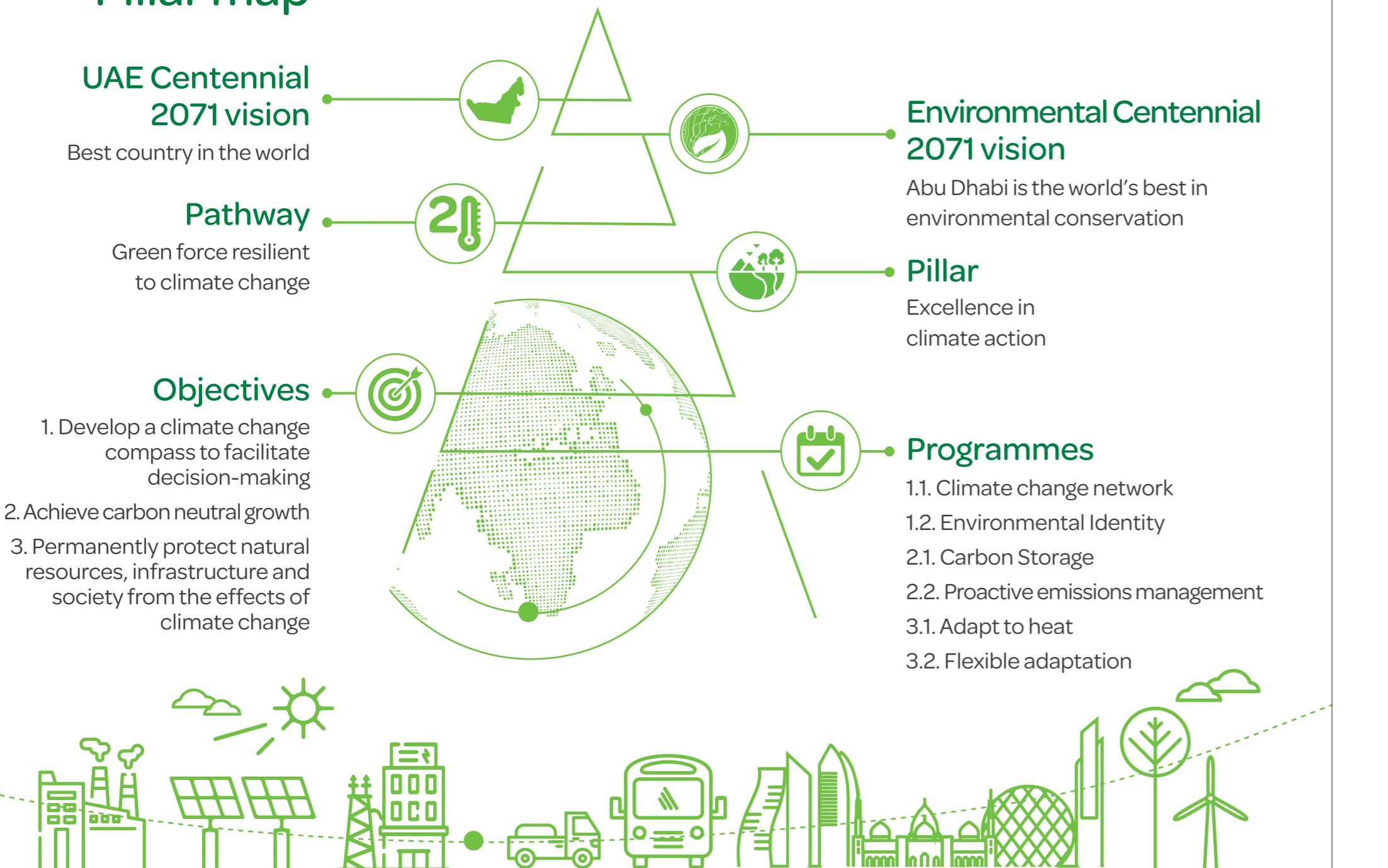


Climate change is the issue of the times facing the world, and its impacts are wide-ranging and unprecedented in scale.

Current and future trends and drivers

- The UAE has announced its goal to achieve climate neutrality by 2050.
- Globally, carbon neutrality must be achieved by 2050 to ensure that the temperature does not rise by more than 1.5 °C, or by 2070 to ensure that the temperature does not rise by more than 2 °C.
- Droughts caused by climate change threaten to reduce agricultural production by 20 percent by 2080.
- Climate change will be the number one global threat to human health in the twenty-first century due to its effects on the increase in disease.

Pillar map

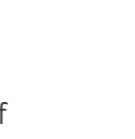


Future programmes



Climate Change Network

An effective network to coordinate the efforts of governmental, private and academic sectors in response to national and global requirements and to set goals, strategies and policies, relying on an integrated system to adapt to the effects of climate change, including data, measurement, reporting, verification, research and knowledge-based planning.



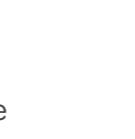
Proactive Emissions Management

A climate information, data and knowledge system for the Emirate of Abu Dhabi that supports scientific research, predicts the implications of climate change, and relies on advanced analytical frameworks for emissions data based on artificial intelligence technology to develop proactive plans for all sectors for any impacts related to climate change.



Environmental Identity

An environmental identity that instantly measures the rate of environmental footprint for each individual, organization and sector through digital system to support decision making, standards for sustainable environmental footprint and incentives to achieve it, and an automated assistant affiliated with the system that educates individuals and institutions about daily numbers, practices and needed solutions.



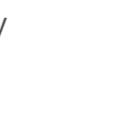
Adapt to Heat

A global centre and Emirati capabilities devoted to lowering temperatures by exploring and using engineering, natural sciences and advanced technology in cooling, and contributing to repairing the ozone layer.



Carbon Storage

An investment system for negative emissions technology to reach carbon neutrality, applying pioneering construction and engineering solutions that contribute to preserving natural habitats, and adopting nature-based solutions to absorb carbon such as carbon capture for biofuels or the sustainable conversion of carbon emissions into useful products.



Flexible Adaptation

Flexible development plans at the sectoral level that strengthen the leadership role of Abu Dhabi in the field of adapting to the effects of climate change, activating advanced risk management in various sectors and assessing the level of vulnerability through comprehensive planning for these sectors to reduce risks, and using nature-based solutions to improve the ability to adapt to climate change.

2nd Pillar

Renewable and diversified energies



Vision

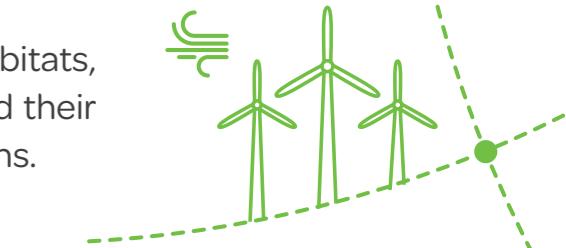
Abu Dhabi achieves leadership in renewable and clean energies with the availability of nuclear energy, biofuels, hydrogen and a diverse, low-carbon fleet



Renewable energy is produced from wind, water and the sun, and it can also be produced from the movement of waves and tides, or from geothermal energy, as well as from agricultural crops and trees that produce oils.

Current and future trends and drivers

- It is expected that 24 % of the world's energy needs will be met by hydrogen by 2050.
- The end of the oil era will be before 2060, which will affect the energy market, for example the electric vehicle will account for 90 % of the energy market, and solar and wind energy will be cheaper than the energy produced from fossil fuels by 60 %.
- The proportion of vehicles using low carbon energy is expected to reach 100 %.
- Renewable energy facilities can affect land use and wildlife habitats, and some technologies may consume large amounts of water, and their manufacture and transmission may result in pollutants and emissions.



Pillar map

UAE Centennial 2071 vision

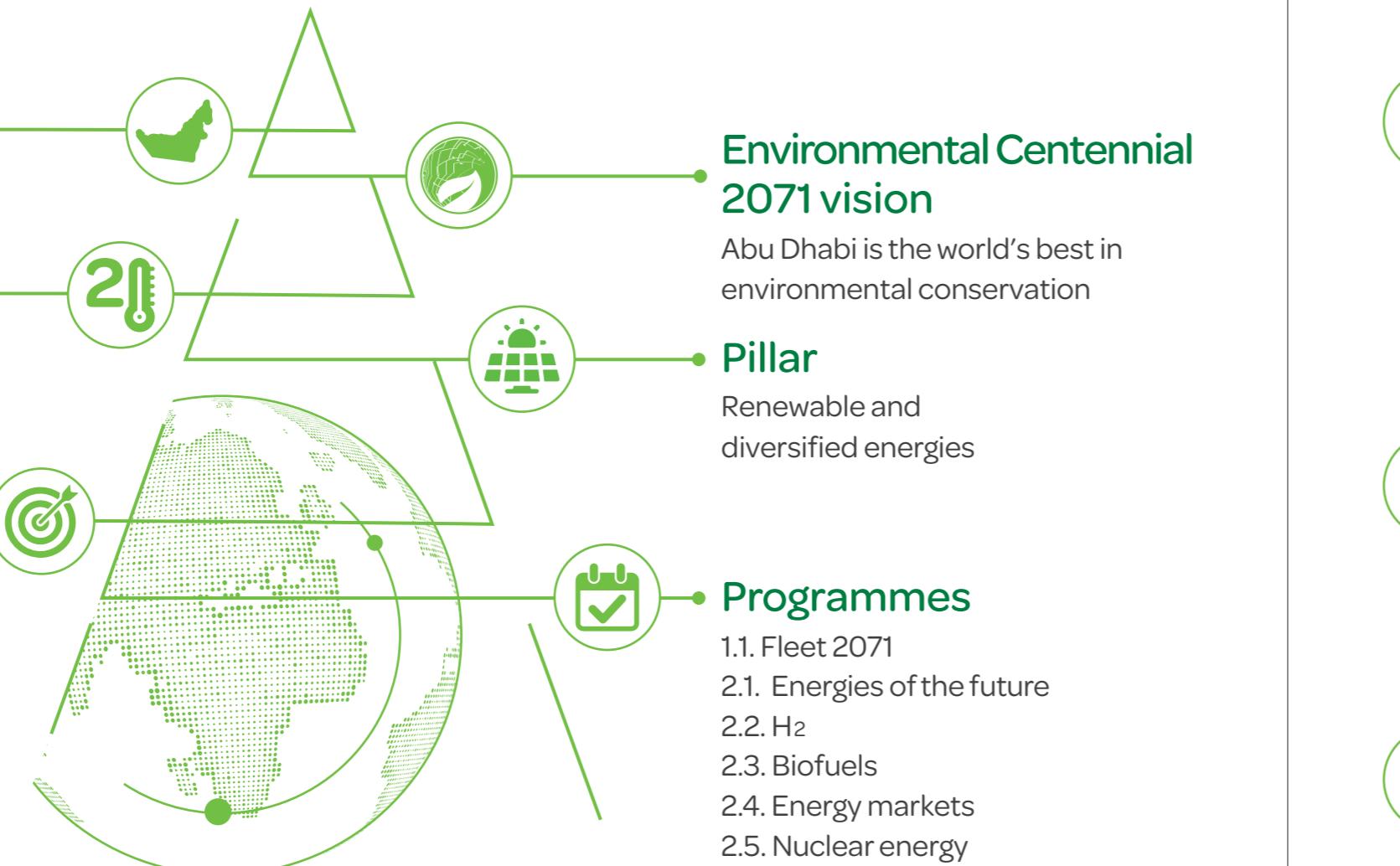
Best country in the world

Pathway

Green force resilient to climate change

Objectives

1. A diversified low-carbon fleet
2. Diverse renewable and clean energies that meet local needs



Future programmes



Fleet 2071

A low-carbon, autonomous fleet that operates with hydrogen, electricity, biofuels, nuclear and solar energy, super batteries and other energies and technologies of the future, comprising planes, vehicles, ships, and high-capacity environmentally friendly public transportation, and the provision of advanced infrastructure to support new fleets, to achieve the reduction in energy consumption and pollution.



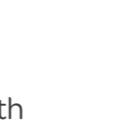
Energies of the Future

A proactive platform for studies of environmentally friendly future types of energies, which support advanced energy solutions and energy infrastructure based on the highest sustainability practices and evaluate emerging energies and their environmental benefits.



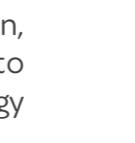
H₂

Various uses of hydrogen as one of the environmentally friendly energies in industry, transportation, power generation, buildings and infrastructure as part of the global shift in adopting hydrogen in energy production to achieve the principle of no pollutants and emissions.



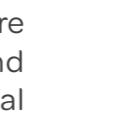
Biofuels

Adopting sustainably managed biofuels among efforts to increase the proportion of renewable and clean energy in the emirate total energy mix.



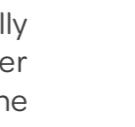
Energy Markets

Rapid expansion of renewable and clean energy by stimulating its market in the emirate and ensuring its rapid adoption by all, and encouraging innovation in the renewable and clean energy business sector for current energies such as power or future energy such as hydrogen.



Nuclear Energy

Exploiting nuclear fission technology to run daily applications such as operating cars, homes and factories, and exploiting nuclear fusion technology to generate power and provide clean fuels.



Super Batteries

Innovation and expansion in the use of green batteries such as carbon batteries for energy production, or batteries that use radioactive waste to produce electricity.

3rd Pillar

Green economy that drives development



Vision

Abu Dhabi positions itself as a green economic force worldwide by following an approach that reflects natural capital and ecosystems services, and stimulate green investments, businesses, infrastructure, urbanism and architecture



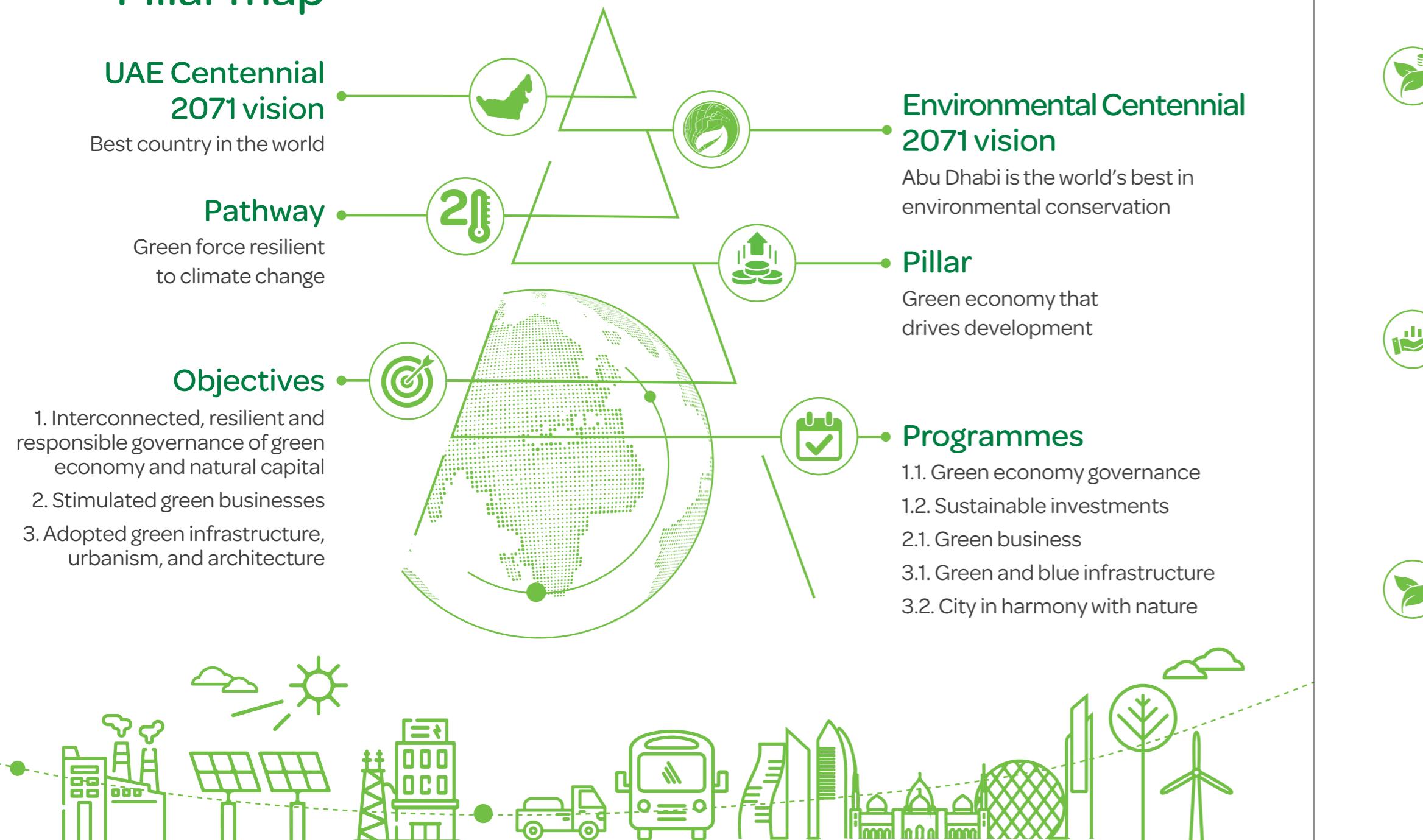
The pressures affecting the environment often arise from economic systems, and thus environmental protection requires a change in the economic rules with the aim of stimulating the transition to a green economy that guarantees a better life in the long-term.

Current and future trends and drivers

- More than half of the global GDP - around 172 trillion AED - depends on nature.
- The transition to a green economy is expected to create millions of new jobs worldwide. In contrast, millions of jobs are expected to be lost due to climate change, rapid technological development and depletion of resources such as oil.
- Governments are developing ambitious long-term plans to adopt green infrastructure, which are green or blue networks of natural and semi-natural areas that are designed and managed to provide a range of ecosystem services such as water and air purification, thus improving the quality of life, supporting the green economy and reducing harmful and expensive infrastructure.



Pillar map



Future programmes

Green Economy Governance

A participatory governance system across all sectors that is based on the principles of integration, cooperation and efficiency, starting with having a comprehensive inventory of green economy assets, natural capital and ecosystem services, and their value for people, the economy and nature, then, exploring opportunities, setting ambitious goals, defining transformation paths, and setting effective commitments and partnerships, while ensuring public participation, and the integration and the adoption of green economy principles and nature-based solutions.

Sustainable Investments

Environmentally friendly investments that are stimulated by communication, education, social and leadership interactions to raise awareness about green economy and the relation between improving the environment and its impact on the society and economy, and innovative financial solutions for green investments that are not only focused on new sources, but on redirecting resources, and reducing government subsidies that negatively impact the environment.

Green Business

Sound green business governance system that ensures attracting and directing enterprises and entrepreneurs to supportive entities and platforms, divides into stations starting from developing the idea, research, planning, deciding best market entry option, registering the project legally and then launching, policies that support the needs of entrepreneurs especially small and medium-sized enterprises and startups, innovative exhibitions to display national products, talents and inventions locally, internationally, and to tourists, providing guidelines and best practices for eco-

friendly production processes, and a platform dedicated for training, awareness programmes and information exchange within the green business sector.

Green and Blue Infrastructure

Explore opportunities to implement green and blue infrastructure in the emirate through research, develop an emirate wide digital map for it to support decision-making, incorporate its considerations into infrastructure policies and plans, and other vital sectors, encourage its adoption in residential neighbourhoods by reviving its culture, providing tools that facilitate and stimulate green infrastructure design and construction practices reflecting local conditions, and utilize houses with green infrastructure as models for testing, providing data for improvement and supporting decision making.

City in Harmony with Nature

Urban designs and establishments that can float on water or mimic natural forests and living cells to enable the creation of vital buildings that renew their cover, breathe carbon and air pollutants in the atmosphere and turn them into beneficial outputs, adapt and respond to climatic conditions, and produce energy from movement, air currents and gases around them, and communities consisting of corridors, public spaces and places in the form of smooth layers that rise to form floating forests to reduce mobility and distribution, and are manufactured from environmentally friendly materials covered with local and threatened plant species that have a greater ability to absorb emissions and pollutants or add value for biodiversity conservation.

4th Pillar Circular economy towards zero waste



Vision

Abu Dhabi pioneers in circular economy, resources efficiency, and the reduction of waste and emissions, through promoting state of art waste management and sustainable patterns to encourage the reuse of materials to remain in a closed loop

The economies of the Gulf Cooperation Council countries depend mainly on natural resources, and this is one of the challenges caused by the high-speed development movement during the past fifty years, which created the urgent need to transform a system that would achieve sustainability and efficiency in the use of resources.

Current and future trends and drivers

- Experts aim to promote the concept of a circular economy, which aspires to achieve zero waste and benefit from it economically, such as reusing or recycling 100 % of plastic waste to move the wheel of the circular economy.
- Huge capacity plants are being developed to convert remaining waste into energy all over the world to sustain ecosystems and reduce landfill.
- Globally, waste generation is expected to increase by nearly 60 % by 2050.



Pillar map

UAE Centennial 2071 vision

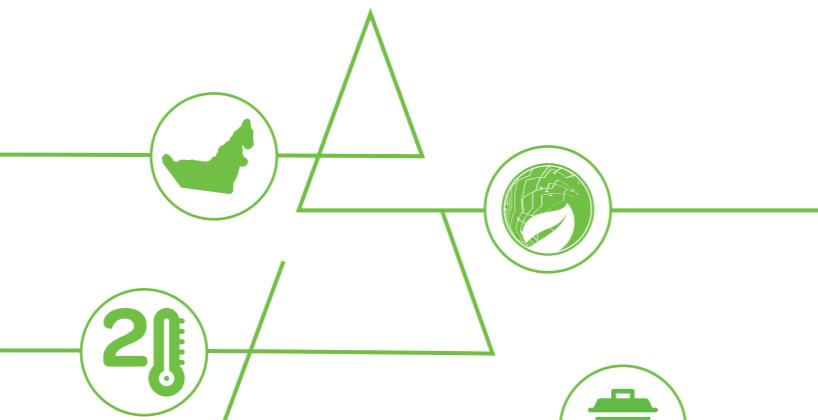
Best country in the world

Pathway

Green force resilient to climate change

Objectives

1. Sustainable production and consumption patterns towards waste-free cities
2. Markets that support the circular economy



Environmental Centennial 2071 vision

Abu Dhabi is the world's best in environmental conservation

Pillar

Circular economy towards zero waste

Programmes

- 1.1. City without waste
- 1.2. Energy from waste
- 1.3. Sustainable neighbourhoods and homes
- 1.4. Circular thinking
- 2.1. Sustainable resources
- 2.2. Circular market

Future programmes



City without Waste

State of art waste management by adopting innovative technology and programmes, in addition to using an advanced system and innovative infrastructure to automate the separation and transfer of waste to direct it using artificial intelligence toward appropriate recycling or manufacturing stations, the adoption of a smart system that includes high-precision satellite technology to identify waste in marine, land, air, and in the city, and robots fleet for instant cleaning for a waste-free city.



Energy from Waste

Waste-to-energy plants with huge capacity that convert waste into multi-use energy for generating electricity, heating and cooling, operating various industries and producing hydrogen.



Circular Thinking

Stopping one-way production and consumption practices through the application and support of circular economy practices and environmental innovation in business, investment and industry, raising knowledge of investors, entrepreneurs and producers with its positive returns, and on how to design, manufacture, use materials, products and waste within a closed loop, and stimulate positive behavior among individuals and institutions to ensure maximum benefit from waste and materials through self-recycling, to generate operational energy from waste, depending on advanced technologies and systems.



Sustainable Neighbourhoods and Homes

Neighbourhoods and buildings equipped with needed networks and technology to generate renewable and low-carbon energy, and convert steps into energy, applied green standards, and an Emirati model for environmentally friendly smart homes that are designed and built with recyclable and environmentally friendly materials, equipped with technology that ensures in-home recycling and smart waste separation and transfer, and achieve self-sufficiency in agriculture, and independence in energy production.



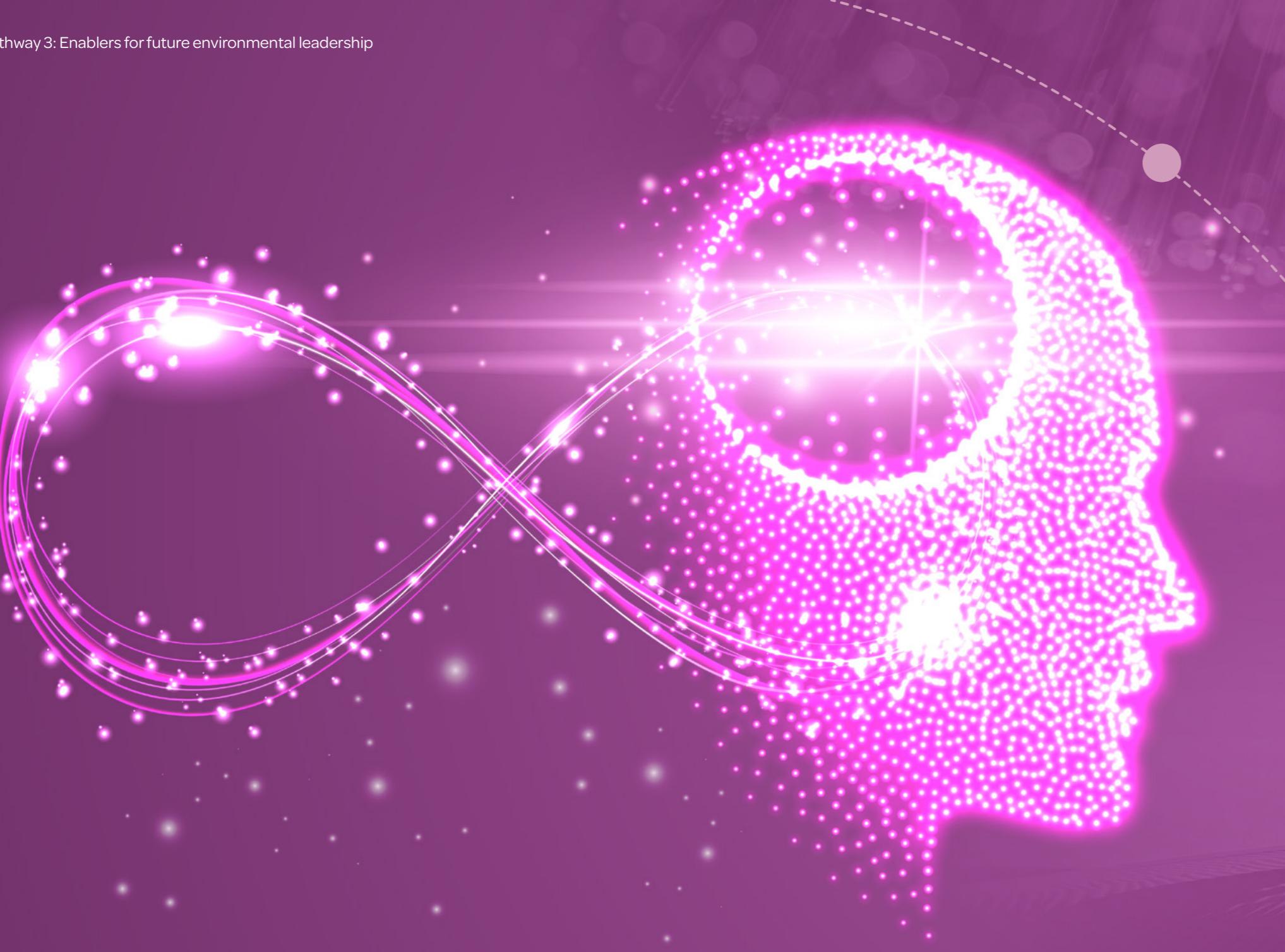
Sustainable Resources

Achieving the principles of circular economy to preserve natural resources by setting up a framework to create fundamental changes in usage patterns, convert to materials with economic and environmental returns, such as those that produce energy like biogas and methane gas, the requirements for reducing materials used in production and using long-term, recyclable or renewable materials, import approach that considers circularity by replacing limited materials with sustainable ones, and integrating the foundations of sustainable creative design in production and manufacturing practices to support materials stay within a closed loop.



Circular Market

A market for materials, products, services and industries that achieve environmental and economic efficiency and maximum utilisation of resources, based on research and analysis, partnerships between the government, private and academic sectors, creating creative circular models, setting sustainable policies and standards, integrating concepts and practices, and stimulating environments that attract investments, business, industries, innovations, and channels, and global exchange of knowledge, and national experiences that ensure the preservation of renewable and advanced circular models.



Pathway 3

Enablers for future environmental leadership

The four pillars of this pathway focus on the common enablers across all other pillars of the centennial, to take the lead on shaping the future, becoming a pioneer in environmental conservation, creating positive change, and developing an extended vision for future generations; through the swift and wise adoption of green policies and regulations, non-traditional environmental education and awareness programmes, green solutions in future government work, and innovation in the fields of green science and technology, to equip the Emirati next generations with highest knowledge, skills and values.



Enablers for future environmental leadership

 13
Goals

 31
Programs



1st Pillar

Environmental pioneering and distinction



Vision

Abu Dhabi is pioneering in environmental action through shaping the future, creating change, achieving excellence in performance, and connecting ideas, minds, activities and partners as a basis for transformational environmental leadership

Excellence in future environmental action can only be achieved with a transformational leadership that ensures persistent future foresight, implementation and improvement.

Current and future trends and drivers

- Leadership is the driver of change, achievement of visions and goals, the engine of empowerment towards innovation, growth, and possessing the spirit of the impossible.
- Future leadership requires shifting away from traditional strategies and rigid plans to cover what is beyond and envision what will the future look like and the mega available options, aspirations that should be achieved.
- By 2030, the world will face a human talent shortage of 85 million people, resulting in unrealised annual revenues of \$ 8.5 trillion.



Pillar map

UAE Centennial 2071 vision

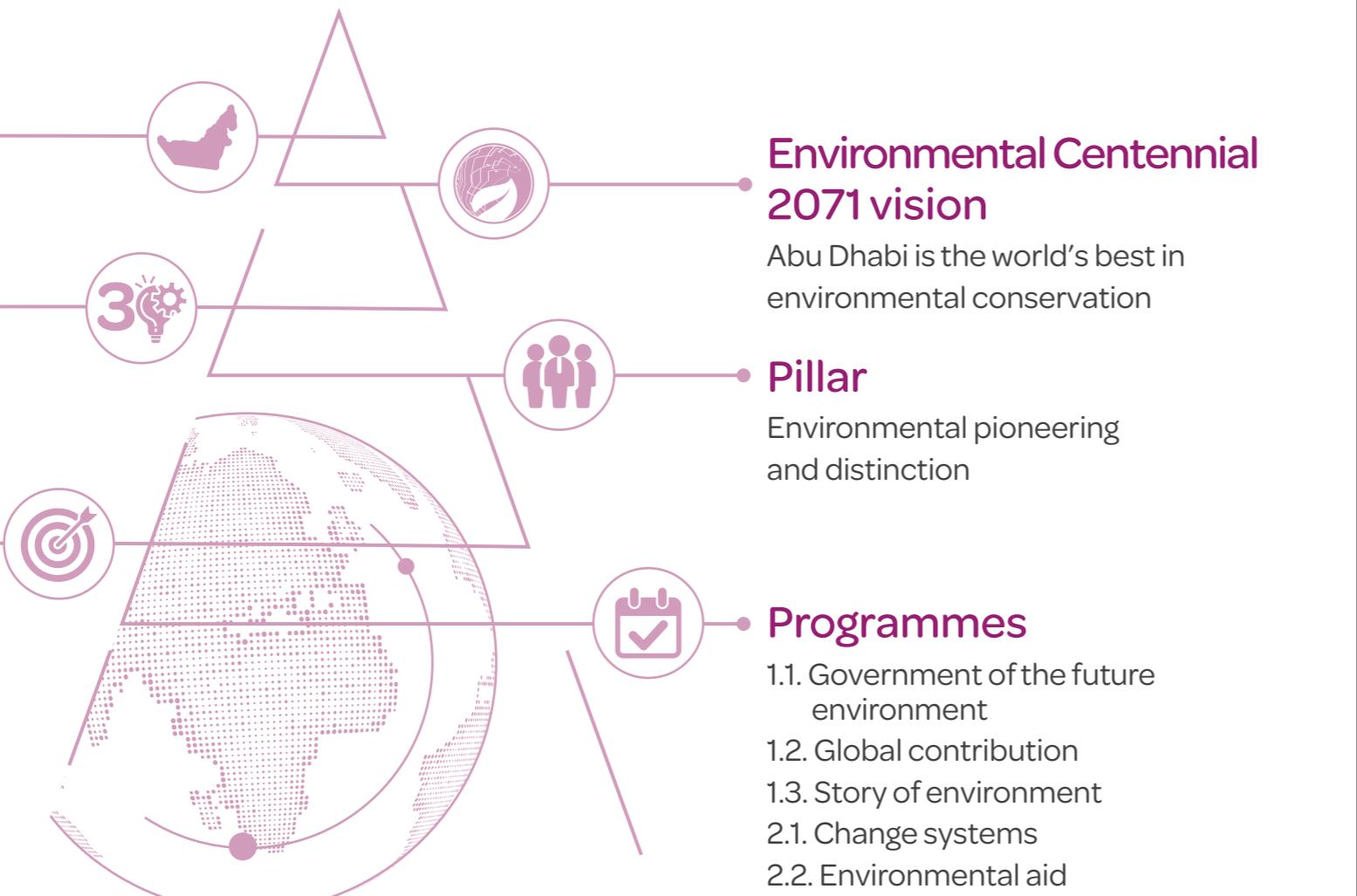
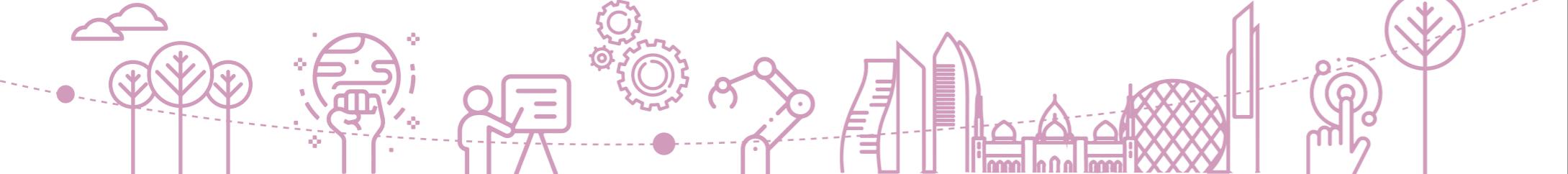
Best country in the world

Pathway

Enablers for future environmental leadership

Objectives

1. Leading the future
2. Creating change
3. Excellence in performance
4. Linking ideas, minds, activities and partners to achieve distinction, create change and shape the future



Programmes

- 1.1. Government of the future environment
- 1.2. Global contribution
- 1.3. Story of environment
- 2.1. Change systems
- 2.2. Environmental aid
- 3.1. Distinct workforce
- 4.1. Leadership networks

Future programmes



Government of Future Environment

A forward-looking government administration for environmental and climate action that looks to the future, takes advantage of challenges, seizes opportunities, employs disruptive technologies and takes bold and deliberate steps for adopting unprecedented solutions. An inspiring environmental governance informed by green ambitions and goals and creates passion among individuals to achieve these goals.



Global Contribution

The successful and ambitious adoption of international frameworks for environmental conservation and climate change, transformation into a global laboratory in light of these frameworks through innovating and piloting practices, exporting knowledge, linking initiatives at the local and regional levels to improve efficiency, performance and knowledge exchange, and adopting environmental projects in other countries.



Story of Our Environment

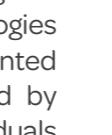
A virtual ecosystem of Abu Dhabi's environment history that includes integration of all related natural sciences such as plant science, climate science, hydrology, biology and zoology, linking them to health, social, economic, geographic and political sciences and dividing them over historical periods to create an integrated history of Abu Dhabi environment to provide best insights for decision-making and leadership.



Environmental Aid

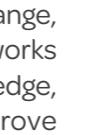
A regulatory and legislative framework for environmental aid that includes environmental volunteer work, provision of practices,

policies, scientific and knowledge sharing, and charitable environmental education, provided for cities and countries that have shortage in order to leave a positive global impact.



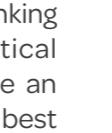
Change Systems

Systems, mechanisms and programmes to lead continuous change, achieve flexibility in adopted systems, promptly identify best standards and practices, and position creativity at the heart of work to create knowledge-based positive change, explore new ideas and support thinking from multiple perspectives.



Distinct Workforce

Empower all workers in environmental government work and benefit from their ambitions, passion and ideas, embrace diversity, and develop a workforce with the highest levels of commitment, flexibility, enthusiasm, optimism, technological intelligence, future thinking, and smart investment in talents to ensure an influential workforce that leaves a positive impact on government work, clients, society and the world on daily basis.



Leadership Networks

Various virtual networks that are designed to connect ideas, minds, activities and partners from all sectors including government, private sector, academia and the public, encouraging cooperation and team spirit to achieve innovation and excellence and create coherent systems that allow flexibility and creativity.

2nd Pillar

Inspiring green policies and regulations



Vision

Abu Dhabi adopts a local policy and regulations system that embraces environmental sustainability, and ensures participation, adaptability and proactiveness, to make it the most inspiring city in green policies and regulations



Environmental protection requires participatory work among all sectors and individuals, and therefore it needs clear and common environmental visions, concepts and priorities for all, and effective policies, regulations and incentives to achieve its goals.

Current and future trends and drivers

- Global developments in the fields of education, health and technology are empowering individuals in an unprecedented way, which will be matched by an increasing desire from individuals for transparency and participation in the development of public policies and regulations.
- Current and emerging environmental challenges overlap with various economic and social challenges and are constantly increasing due to the expected population increase and its consequences.
- The data revolution is among the most important trends affecting the field of policies and regulation, which must be exploited to inform their development.



Pillar map



Future programmes

Environmental Arrow

A comprehensive and coherent policy system for all environmental fields that sets innovative solutions to economic and social challenges according to advanced research and knowledge, and an environmental lab for policies under experiment or preparation that relies on artificial intelligence, collecting and analysing big data, real time scanning for best and most updated experiences, and providing instant advice to leadership.

Green Sectors

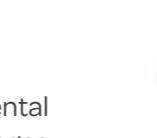
Green policies for non-environmental fields and sectors designed with best environmental sustainability standards by developing mechanisms to ensure this integration, continuous guidance to government and private sectors with best environmental practices and provide an advanced and intelligent platform that link between the environment and social and economic systems.

Green Justice

Enhancing environmental compliance bearing the rapid changes through a comprehensive environmental regulatory framework, binding green laws, an advanced and interconnected monitoring system that integrates people, machines and networks, and a platform for environmental lawyers whose goal is to promote environmental protection.

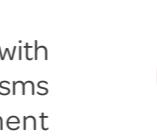
Innovative Adaptability

Smart flexible framework for developing and designing environmental policies and regulations, as well as innovative mechanisms and that ensure that government decisions, policies and regulations, are adaptable with rapid and unexpected events such as epidemics or disasters, etc.



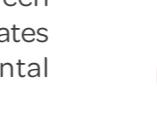
Automated Evaluator

Employing advanced technology and modelling to obtain effective and continuous evaluation and make corrective and instant decisions, the use of machine learning and robotics in enforcement and data collection, and a virtual evaluation platform that supports the formulation of networks with private sector companies, experts, researchers and the public to evaluate policies and regulations and publish results.



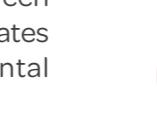
Intelligent Proactiveness

Mechanisms for observing future environmental and sectoral variables and developing scenarios and predictions for the future based on systems for data collection and analysis to understand and anticipate changes in environmental systems and its causes, and a framework that ensures the development of proactive policies to address environmental challenges before they occur or seize future opportunities.



Participation Station

Social listening to people's feelings, opinions and positions through social media, a digital station for the participation of individuals, government, private and academic organisations in developing and testing policies, and regulation to find appropriate solutions for the emirate, activating global strategic partnerships and the active and continuous participation in global forums and activities that bring together various minds, talents and ideas to produce the best solutions.



3rd Pillar

Influential environmental education and outreach



Vision

Abu Dhabi employs a sophisticated environmental education and outreach system that is based on advanced technology and futuristic programmes to support lifelong learning, multiskilling, and environmental self-monitoring in individuals and organisations



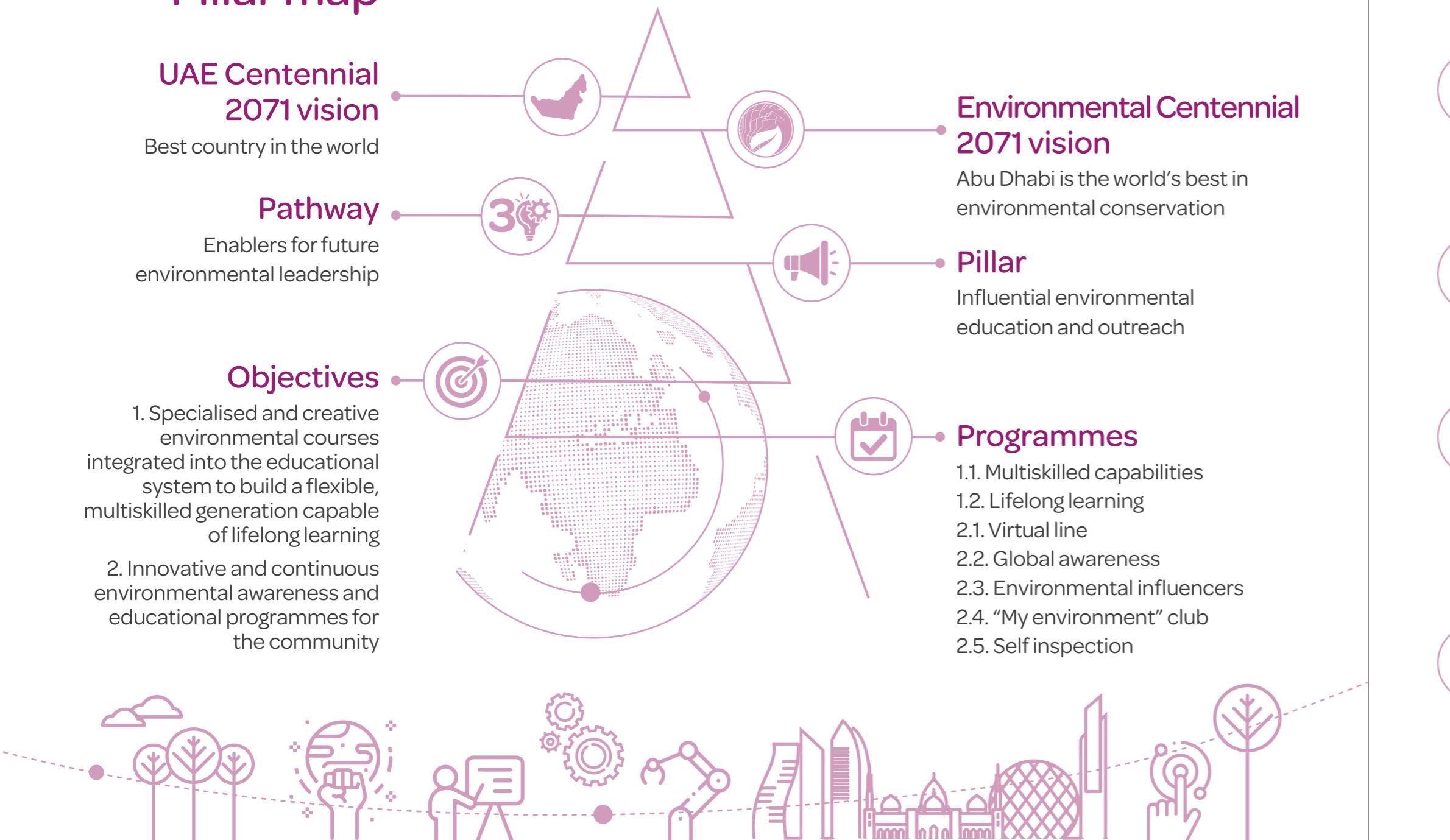
Future environmental pressures will require highly environmentally aware individuals that have the skills and knowledge to conserve the natural wealth that they inherited, for generations that will follow.

Current and future trends and drivers

- With the expected increase in life expectancy and accelerating changes in the labour market such as the global increase in automation, "lifelong learning" is expected become the norm, and governments will adopt non traditional programmes to support it.
- Due to the increasing environmental challenges and their global nature, environmental awareness is expected to shift from an individual lifestyle to a global social movement.
- The global workforce will be affected by future pressures such as climate change, which necessitate educational opportunities to build skills for those aspects in various fields.



Pillar map



Future programmes



Multiskilled Capabilities

Graduates of vocational schools and universities who are ready to enter the labour market with multiple skills that integrate their specialised fields (such as medical engineering, entrepreneurship, and artificial intelligence, etc.), with environmental sustainability, through global partnerships with the academic and private sectors.



Lifelong Learning

Investing in minds through lifelong environmental education integrated into childhood and youth education system curricula, accompanied with flexible environmental professional development programmes for post-youth stages.



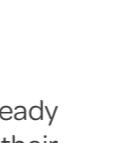
Virtual Line

Multi-sensory, interactive and flexible educational and outreach programmes that relies on augmented and virtual reality to stimulate understanding and enhance the preservation of information, and the employment of artificial intelligence to provide artificial teachers or trainers with immediate access to a huge data and knowledge centres, to greatly expand the horizons of learning.



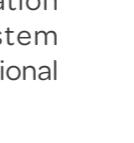
Global Awareness

Global awareness programmes that utilises digital translators, 3D hologram technology, and robots to speak all the world's languages, remove barriers and rely on effective remote programmes.



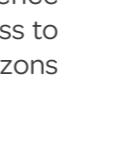
Environmental Influencers

Strong and varied environmental media content that harnesses all talent, arts, literature and media channels, an association of environmental experts and activists who take advantage of all real or virtual social and scientific platforms to leave an impartial educational footprint, and environmental robots in natural places accessed by the public that interact with individuals, spread awareness, statistics, warnings, and provide support and guidance.



"My Environment" Club

Community environmental platforms in residential neighbourhoods that offer innovative, deep, interactive, continuous and participatory programs and campaigns for different age groups aimed at spreading awareness about policies, laws, programmes, statistics, challenges, practices, and environmental guidelines that target all groups of individuals, in a clear and smart manner.



Self Inspection

Promote and develop responsibility so that every individual becomes an inspector, and every organisation becomes a pioneer in conserving the environment, through building deep and meaningful ties with individuals and organisations, intensifying their involvement in environmental action, and focusing on transformative initiatives to embrace, motivate, develop and direct society bearing the many differences and rapid changes.

4th Pillar

Green innovation, science and technology



Vision

Abu Dhabi achieves a balance between the tremendous technological and scientific advancement, and sustainable development, emerges as a specialised centre in green scientific and technological innovation, stands out in green research and solutions, and integrates them into future governmental environmental action



Technological and scientific advancement has never been faster than in recent years. And with its increasing pace, competitiveness and importance in advancing development, it's becoming necessary to direct this advancement toward achieving environmental sustainability.

Current and future trends and drivers

- Environmental conservation and green development will require continuous and increasing innovation in technology, science and the business sector.
- Countries and organisations will enter into a global competition to establish their own global centres of scientific and technological excellence.
- Future governments will require the integration of advanced technology into their own operations to remain effective and capable of accommodating the increase in population and its pressures.



Pillar map

UAE Centennial 2071 vision

Best country in the world

Pathway

Enablers for future environmental leadership

Objectives

1. Position environmental sustainability at the heart of the local innovation system
2. Intensify research and development for scientific discoveries, innovative green technology, and employ advanced solutions to serve environmental sustainability
3. Sophisticated governmental action that utilises creative systems



Future programmes

Centre of Environmental Innovation

Abu Dhabi forms a specialised innovation centre in green science and technology across various sectors, provides a platform for building international partnerships, and disseminating and sharing local environmental technology worldwide, and the required policies and regulation.

Community Innovation Incubator

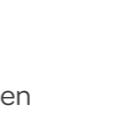
An incubator to stimulate societal innovation, improve the ability and opportunity of individuals to environmentally innovate in all sectors, develop solutions to various environmental challenges, facilitate the exchange of knowledge and experiences, discuss results, and access the latest laboratory equipment and tools.

Responsible Technology

Policies and standards toward a responsible technology for innovators that ensure that digital standards and strategies are aligned with environmental considerations.

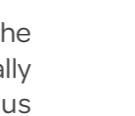
National Research Force

Motivate research, development and scientific studies through dedicated networks at the local and international levels, and with the public, private and academic sectors, in addition to launching Abu Dhabi international award for best innovative research in advanced green technology and science.



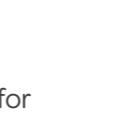
Biological Science and Technology

Stimulate biotechnology that benefits and learns from natural mechanisms and functions of systems and organisms, utilise biological materials to produce high value chemicals to create new green products and provide advanced health solutions, and draw inspiration from nature to find solutions to the challenges facing humanity by integrating biomimicry in technology, design and business.



High-tech Greening

Adopt advanced technology to sustainably green the emirate with limited water consumption and high value trees such as crop trees or carbon absorbents, that are not necessarily compatible with local climatic conditions.



Sustainable 3D Printing

Harness 3D printing technology that depends on environmentally friendly materials and clean energy in innovative industries and constructions such as vehicles, homes, buildings and biodegradable materials, converting waste into valuable products, and advanced research in the uses of bioprinting.



Advanced Emergency Management

Embed robotics, drones and space technology into an integrated system for immediate response to emergencies and environmental disasters, and proactive action to reduce their impacts.



Systems Management

A master system that uses artificial intelligence to manage all various environmental systems through a smart board that display geographic information for the emirate while enabling monitoring, modelling and analysis across all systems on an unprecedented scale and speed to comprehensively address environmental issues.



Embedded Service

Virtual centres to provide environmental services that achieve the highest standards of happiness and rely on applications of the Internet of Things, virtual and augmented reality, high-speed networks, big data analysis and artificial intelligence for proactive communication, anticipating and meeting customer desires, automatic improvement, and the launch of the smart environmental assistant to meet various customer inquiries.



هيئة البيئة - أبوظبي

Environment Agency - ABU DHABI

Our Partners



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DEPARTMENT OF ENERGY



شرطة أبوظبي
ABU DHABI POLICE



دائرة البلديات والنقل
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DEPARTMENT OF ECONOMIC DEVELOPMENT



دائرة الصحة

DEPARTMENT OF HEALTH



دائرة تنمية المجتمع
DEPARTMENT OF COMMUNITY DEVELOPMENT

Thanks and appreciation

This centennial was developed on a participatory approach between the Environment Agency - Abu Dhabi, its partners, and stakeholders from the government, private, academic, and non-profit sector, in addition to exploring the ideas and aspirations of our society members. Without the support of every contributing individual, this centennial would not have been developed in such integrated dimensions.

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preserving our heritage · protecting our future

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