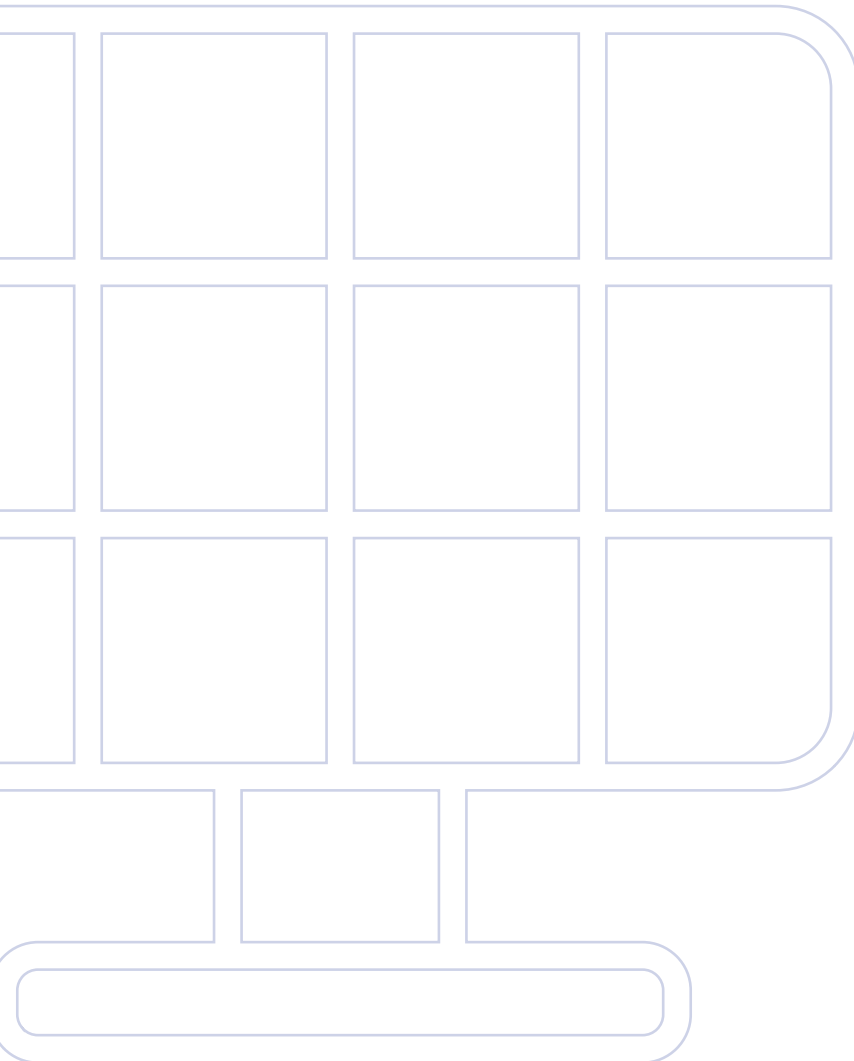


# REMAP 2030: A RENEWABLE ENERGY PROSPECTS FOR UAE



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## Context and Background

In 2012, 27.2 gigawatts (GW) was the total electricity generated in the UAE; however, the demand is ever increasing for electricity as well as for water and largely due to the growing population, expanding the economy and climatic considerations.

To meet this rising demand in a sustainable manner, the UAE is focusing on renewable energy sources, which will minimize the environmental impacts relative to traditional sources of energy.

In 2012, the UAE launched the Green Economy Initiative, under the slogan 'A green economy for sustainable development.' It aimed to make the UAE one of the global pioneers in the green economy and the various products and technologies associated with it; the core focus on creating a long-term sustainable environment for achieving Vision 2021.

Also, the UAE is looking to increase by 30 percent its power generation from clean energy by 2030 as well as aiming to produce 25 to 30 percent of its electricity requirement from both nuclear and solar energy.

## Need

Rapid economic and demographic growth over the past decade has pushed the UAE's electricity grid to its limits. According to Federal Competitiveness and Statistics Authority in 2013, installed fossil fuel generation capacity, which accounts for nearly all of the UAE's capacity, rose up to 27 (GW). State-led entities manage the national electricity grid in each of the seven emirates.

## Idea

To develop a more efficient national grid that will interconnect all seven emirates. The Emirates National Grid (ENG) project aims to interconnect the four authorities that are responsible for supplying power throughout the Emirates:

- Federal Electricity and Water Authority (FEWA)

- Abu Dhabi Water and Electricity Authority (ADWEA)
- Dubai Electricity and Water Authority (DEWA)
- Sharjah Electricity and Water Authority (SEWA).

One of the main advantages of the ENG project is the financial savings that will result from the reduction in installed reserve capacity at each utility system. It also enables the commercial transfer of electricity between the power authorities.

The ENG interconnected system also provides a stronger capacity to withstand major sudden disturbances, such as the loss of production units and failure of grid elements, whether due to outages or natural catastrophes and another type of crisis.

## Project

The UAE contributed AED 800 million to the AED 5.1-billion project to build a regional power grid, which is expected to save the participating countries up to AED 18.4 billion (USD 5 billion) in electricity costs over its lifetime and will lay the foundation for a common GCC energy market.

Abu Dhabi's Masdar has two global ventures; Masdar and DB Masdar Clean Tech Fund respectively, the funds are focused on building portfolios in some of the world's most promising and pioneering companies working on clean technology and renewable energy.

Masdar Special Projects focuses on small and medium-sized applications in often challenging conditions and geographies; it has delivered 14 projects in 5 countries with 13 ongoing projects across 9 different countries.

Since 2009, Abu Dhabi has hosted the International Renewable Energy Agency (IRENA), which is the first inter-governmental organization to have its headquarters in the Middle East.

IRENA is an inter-governmental organization that supports countries in their transition to a sustainable energy future and serves as the principal platform for international cooperation,

a center of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy.

IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bio-energy, geothermal, hydropower, ocean, solar and wind energy; pursuing sustainable development, energy access, security, and low-carbon economic growth and prosperity. Abu Dhabi Government has set a target that by 2020, at least 7 percent of power generation should come from renewable energy.

## Story

### UAE's Journey towards Sustainable Energy

In 2010, the UAE Cabinet approved the Green Building and Sustainable Building standards to be applied across the country. Application of these standards started at government buildings early 2011, and the project is expected to save AED 10 billion by 2030, reducing around 30 percent of carbon emissions.

In July 2014, the Ministry of Energy established a new department for energy conservation and energy efficiency. One of the goals of this department is to establish a database of energy consumption by different sectors across the UAE, thus facilitating a comparison of the performance across sectors.

Emirates Authority for Standardization and Metrology (ESMA) promotes the use of efficient electrical equipment. In 2012, it launched an efficiency-labeling scheme for window and split-unit air-conditioning systems, eliminating highly inefficient units from the market. Since July 2014, ESMA has also banned the import of inefficient incandescent light bulbs. The scheme is expected to cut energy use by 500MW per year.

The Ministry of Energy announced that fuel prices across the UAE would be deregulated from August 2015, adopting a new policy linked to global prices. This decision corresponds to the UAE's efforts to ensure sustainable development while preserving the environment, achieve a balance between economic and social development, and to provide a high quality of life for

future generations. In case of any violations, a complaint can be submitted to the Ministry of Energy via the dedicated number 056-5467942 and the email id [fuelprice@moenr.gov.ae](mailto:fuelprice@moenr.gov.ae).

## Abu Dhabi

The Regulation and Supervision Bureau works actively with residents to reduce electricity and water consumption and demand.

Emirates Energy Star (EES) is a joint venture between Etisalat and Pacific Controls to reduce the GHG emissions of the UAE and the fuel bills of its companies, by retrofitting existing buildings with energy saving control systems and achieving savings of 10-35 percent. The program is now working successfully with all types of legacy systems, ranging from buildings with or without building a management system (BMS), facilities with chilled water systems and those with package units. Depending on the depth of the installed asset base, the program is tailored to suit the financial capacities of the building owner.

Estidama, which is the Arabic word for sustainability, is an initiative developed and promoted by Abu Dhabi Urban Planning Council (UPC). Through Estidama, Abu Dhabi is progressing the principles and imperatives for sustainable development, while recognizing the unique cultural, climatic, and economic development needs of the region.

## Dubai

H. H. Sheikh Mohammed bin Rashid Al Maktoum issued a resolution to implement green building specifications and standards in new buildings, and in 2014, this building code became mandatory for all new buildings in the emirate.

Wetex is a global platform organized by DEWA in Dubai. It brings national and international companies closer to the latest technology and resource management solutions. The exhibition presents all the latest developments in the water, energy, technology and environment sectors.

On the demand side management, the Dubai Supreme Council of Energy (DSCE) set a governance framework to streamline existing energy practices across the DSCE entities to optimize synergy and energy efficiency. The council identified policies and regulations to steer demand-side management in the emirate in three key areas: power, water, and transportation fuel.

## **Purpose of the REMAP 2030: A RENEWABLE ENERGY PROSPECTS FOR UAE**

- Implementing demand abatement and energy efficiency measures
- Evaluating energy consumption
- Developing intensity mapping for the emirate
- Introducing abatement technologies for water, power, and transportation fuel.

Also, in 2009 the Government of Dubai established the DSCE, which oversees all aspects of energy in the emirate and developed the Dubai Integrated Energy Strategy 2030 to drive energy decarbonization and ensure efficient use of energy.

In January 2015, Dubai announced a revision of its targets for the share of renewable energy in the total energy mix up to 7 percent by 2020 and 15 percent by 2030.

## **Sharjah**

Sharjah Electricity and Water Authority (SEWA) created a unit called the Conservation Department with a target to conserve electricity, water, and gas. SEWA started efforts towards creating one of the best model cities of power conservation with an ambitious strategy and creative initiatives for energy conservation. In 2015, Sharjah was declared as the City of Conservation in the region for the next two years and aimed to achieve sustainable development in the emirate. The initiative focuses on the implementation of energy efficiency, with a target of a 30 percent reduction in the consumption of power and water in the emirate of Sharjah.



## Ajman

Green Building committee in Ajman Municipality and Planning Department was formed to support energy conservation efforts.

## Impact

The UAE has developed its own comprehensive civil nuclear energy program which includes four new nuclear reactors with an estimated capacity to provide 25 percent of the UAE's electricity needs by 2020. This will reduce the dependency on fossil fuel for energy. By creating diverse sources of energy, the UAE will ensure that its people will have an ample supply of energy at a fair value while supporting the environment.

The UAE was ranked the third rank in the world in the production of concentrated solar power (CSP) in 2013. It has continued to increase its usage of solar energy throughout the country and is a major champion of renewable energy. It is planning to build the world's largest Concentrated Solar Power (CPS) project on a single site in Dubai with a capacity of 1,000 MW.

As one of the leaders in support developing countries, the UAE is investing more than USD\$ 1 billion in energy projects around the world, including wind, solar and electric power.

The UAE is one of the pioneer countries that will roll out electric cars in the near future.

- Investigate a framework for efficient dispatch of interconnectors between UAE utilities – including ensuring harmonized calculations of variable cost of generation in each utility;
- Investigate a similar framework for trading on existing interconnection between the UAE and neighboring Kingdom of Saudi Arabia (KSA) and Oman;
- Evaluate the benefit of additional interconnectors to neighboring countries in conjunction with Gulf Cooperation Council Interconnection Authority (GCCIA) trading framework plans. Provide a financing framework to allow Transmission System Operators (TSOs) and/or developers to bring forward projects.

### **Fostering innovation and supporting policies**

- Build on the Shams initiative across the UAE by promoting financial incentives for rooftop solar, initially targeting low-rise buildings;
- Encourage clean energy research and development by government, private sector companies as well as academic institutions, for UAE and Gulf Cooperation Council (GCC) countries' based solutions;
- Promote the establishment of centers of excellence across the UAE, building on the Masdar model<sup>7</sup>;
- Promote new green energy policies and funding mechanisms, focusing on customers, in an effort to create upward demand.

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