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UAE analysis 2015

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**THE UAE – HUB OF THE NEXT  
ENERGY REVOLUTION?**



RE100 IS A GLOBAL CAMPAIGN WORKING WITH THE WORLD'S MOST INFLUENTIAL BUSINESSES TO BECOME 100% POWERED BY RENEWABLES.

THIS ANALYSIS IS DESIGNED TO PROVIDE AN OVERVIEW OF THE CURRENT AND FUTURE RENEWABLE ENERGY LANDSCAPE IN THE UNITED ARAB EMIRATES. THE JOURNEY TO 100% RENEWABLE IS ALREADY UNDERWAY IN THIS REMARKABLE PART OF THE WORLD. JOIN US.

**THE UAE SHOULD BE RECOGNIZED FOR ITS LOW CARBON LEADERSHIP. ITS GREEN GROWTH PLAN TO CREATE 160,000 NEW JOBS BY 2030 AND BOOST GDP UP TO 5%, CLEARLY SHOWS HOW CLEAN ENERGY BENEFITS PEOPLE IN THE REGION.**

## THE UAE – HUB OF THE NEXT ENERGY REVOLUTION?

Our global energy landscape is rapidly changing. Increased energy demand in emerging markets, uncertain energy prices and international pressure to reduce carbon emissions, mean governments and businesses see the economic and security benefits of shifting to clean energy.

The United Arab Emirates (UAE) is at the heart of this shift – the same as it was at the heart of the last energy boom. And just as its massive oil reserves provided a springboard for the incumbent energy revolution, its huge solar resources and cutting-edge technology development are shaping the region as a hub for the new, clean energy revolution.

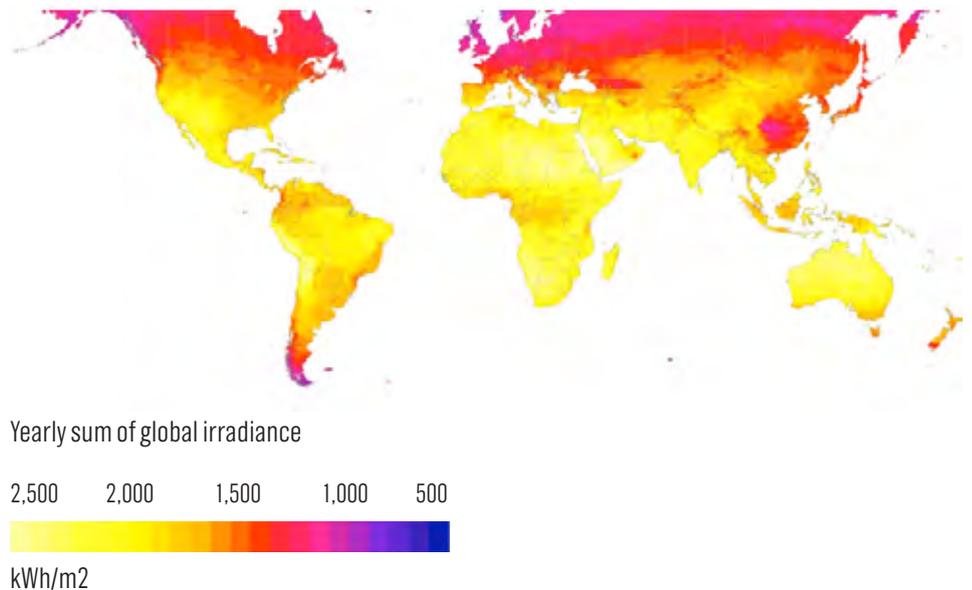
This analysis explores the UAE's role in shaping the world's new energy future.

## THE NEW ENERGY FUTURE

The environmental, economic and efficiency benefits of renewable energy are well-documented. This is especially the case for solar power. According to the International Energy Agency's (IEA) future energy scenarios, solar energy alone could satisfy up to a third of global power demand from 2060 onwards. And today solar is growing at an unprecedented rate. Since 2010, the world has added more solar photovoltaic (PV) capacity than in the previous four decades<sup>1</sup>, with Bloomberg New Energy Finance reporting that global investment in solar energy totalled almost US\$150 billion last year.<sup>2</sup>

Uniquely positioned in the world's solar 'hot-spot', the UAE is set to be one of the biggest beneficiaries of this impressive solar sector growth (Figure 1).

Figure 1: Global distribution of solar radiation



Source: <http://www.greenrhinoenergy.com/solar/radiation/empiricalevidence.php>

<sup>1</sup>IEA, TECHNOLOGY ROADMAP - SOLAR PHOTOVOLTAIC ENERGY, 2014 [http://www.iea.org/media/freepublications/technologyroadmaps/solar/technologyroadmapsolarphotovoltaicenergy\\_2014edition.pdf](http://www.iea.org/media/freepublications/technologyroadmaps/solar/technologyroadmapsolarphotovoltaicenergy_2014edition.pdf)

<sup>2</sup>[http://www.pv-magazine.com/news/details/beitrag/bnef--clean-energy-investment-rises-for-the-first-time-in-three-years\\_100017727/](http://www.pv-magazine.com/news/details/beitrag/bnef--clean-energy-investment-rises-for-the-first-time-in-three-years_100017727/)

The UAE has so far only set modest targets to increase renewable energy. Its biggest cities, Abu Dhabi and Dubai aim to provide just 7%<sup>3</sup> by 2020 and 15%<sup>4</sup> by 2030, respectively, of their energy needs through renewables.

But these relatively low renewable targets should not be mistaken for a lack of ambition. Based on the increasing capacity of renewables in the region, compared to other members of the Gulf Cooperation Council (GCC) and even the MENA (Middle East & North Africa) region as a whole, the UAE is in fact already leading the way (Figure 2).

**Figure 2. Installed renewable\* energy capacity in the Middle East**

	Solar		Wind	Biomass and waste	Geothermal
	PV	CSP			
Algeria	7.1 <sup>c</sup>	25 <sup>a</sup>	0 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Bahrain	5 <sup>b</sup>	0 <sup>b</sup>	0.5 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Egypt	15 <sup>a</sup>	20 <sup>a</sup>	550 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Iran	4.3 <sup>c</sup>	17 <sup>b</sup>	91 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Iraq	3.5 <sup>d</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Kuwait	1.8 <sup>c</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Libya	4.8 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Oman	0.7 <sup>c</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Qatar	1.2 <sup>c</sup>	0 <sup>a</sup>	0 <sup>a</sup>	40 <sup>a</sup>	0 <sup>a</sup>
Saudi Arabia	7 (2013)	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Syria	0.84 <sup>c</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
UAE	22.5 <sup>a</sup>	100 (2013)	0 <sup>b</sup>	3 <sup>a</sup>	0 <sup>b</sup>
Yemen	1.5 <sup>a</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>

<sup>a</sup>2012 <sup>b</sup>2011 <sup>c</sup>2010 <sup>d</sup>2009

**\*Excluding hydro**

Furthermore, the UAE is set to diversify its economy through the development, and ultimately, export of renewable energy and clean technology. The government's UAE Vision 2021 clearly sets out its goal to reduce the nation's dependence on fossil fuels while increasing the use and development of renewable energy. The government also recently launched its Green Growth Strategy to create 160,000 new jobs by 2030, which aims to bring a total boost to the country's GDP of up to 5%. The country's low carbon efforts are also illustrated by the fact renewables projects worth a combined US\$1 billion are currently being developed.<sup>5</sup>

<sup>3</sup><http://gulfnews.com/business/sectors/investment/dubai-triples-renewable-energy-target-to-15-by-2030-1.1444765>

<sup>4</sup><http://www.masdar.ae/en/media/detail/abu-dhabi-investing-in-an-evolving-world-energy-market-7%target-for-Abu-Dhabi>

<sup>5</sup>UK Government, UAE - Energy gap, 2014 <https://www.gov.uk/government/publications/uae-energy-gap/uae-energy-gap>

## SOLAR POWER OFFERS THE STRONGEST ECONOMIC OPPORTUNITY.

This month, the country's first public comparison of different energy technology costs was published by the UAE Ministry of Foreign Affairs, the International Renewable Energy Agency and Masdar Institute of Science and Technology. Based on current incremental energy prices, the study suggests the UAE's energy mix could see at least 10% renewables by 2030, with more than 25% in its power generation by the same period.<sup>6</sup> Critically, this growth would save US\$1.9 billion a year by 2030.

Solar power offers the strongest economic opportunity. Other technologies such as geothermal and hydrogen power are seen as viable complements in the UAE's renewables journey, but due to falling costs coupled with the region's vast resources, solar is now accepted as the key competitive alternative to oil in the UAE.

An illustration of this is the recent decision by the Dubai Electricity and Water Authority (DEWA) to contract Saudi Arabian power company ACWA to build a 200-megawatt solar power plant providing electricity at 5.85 cents per kilowatt-hour – the lowest solar electricity price in history.<sup>7</sup> Once complete, the Mohammed bin Rashid Al Maktoum Solar Park will be the UAE's biggest. Generation will be further boosted by Dubai's recent announcement to invest US\$3 billion to increase capacity from 1 gigawatts (GW) to 3 GW. The park will also be home to a renewable technology research and development center, as part of the city government's aims to make Dubai a renewables hub. Indeed, the city was dubbed the "capital of the green economy" in a recent UN-backed report.<sup>8</sup>

## INNOVATION AND INTERNATIONAL COLLABORATION

In UAE's capital Abu Dhabi, the government has been eyeing renewable energy opportunities for some time – both at home and abroad. The government's future energy company Masdar – a huge investment which in itself signals the UAE's desire to be a leader in the clean technology market – recently opened one of the world's largest concentrated solar power farms, called Shams 1. The facility has a 100 MW capacity, which will supply power to 20,000 homes in the UAE. The project is a joint venture between Masdar, French Total and Spanish Abengoa Solar, and when fully constructed, will account for almost 68% of the region's renewable energy capacity.

Masdar also has a joint venture with BP called Hydrogen Power Abu Dhabi, to build the world's first hydrogen-fuelled power plant to run on natural gas, limiting emissions by using carbon capture and storage technology. The hydrogen power plant will generate around 400 MW electricity, and could provide more than 5% of all Abu Dhabi's current power generation.

Then there is the celebrated Masdar City, Abu Dhabi's flagship city development, which was built to better understand the clean technology possibilities for future low carbon living. It is scheduled for completion in 2016 and is estimated to use 70% less electricity than other cities in the region. While some of the approaches trialled by Masdar City might not provide scalable results, the experience has enabled the UAE to explore a range of innovative options for renewables and other clean technologies.

For example, critical to the region is access to fresh water, so Masdar City is currently testing desalination plants powered by renewables, with a goal of having commercially viable desalination facilities throughout the UAE by 2020. Although this technology is crucial to the region, the UAE also recognizes its global importance as climate change puts increasing pressure on current freshwater resources. The City is also planning to build the Gulf's first geothermal energy facility, with co-operation from Icelandic company Reykjavik Geothermal – another way to explore the full range of renewable energy options available.

<sup>6</sup>Renewable Energy Prospects: UAE report, 2015 [http://www.irena.org/remap/IRENA\\_REmap\\_UAE\\_report\\_2015.pdf](http://www.irena.org/remap/IRENA_REmap_UAE_report_2015.pdf)

<sup>7</sup><http://www.bloomberg.com/news/articles/2015-01-15/acwa-power-wins-contract-to-build-dubai-solar-plant-acwa-ceo>

<sup>8</sup>Dubai Carbon Center of Excellence, State of green economy report 2015, 2014 [http://dcce.ae/public/uploads/editor-images/files/State%20of%20Green%20Economy%20Report%202015\\_100ct2014\\_locked.pdf](http://dcce.ae/public/uploads/editor-images/files/State%20of%20Green%20Economy%20Report%202015_100ct2014_locked.pdf)

## CORPORATE DEMAND FOR RENEWABLE POWER

At the same time government agencies are seeing the benefits of renewable energy, the UAE's most influential companies – looking to secure low cost power supply – are also taking advantage of the abundance of cheap solar in the country.

The major telecommunications companies du and Etisalat are leading in the local commercial sector. du has just completed its fifth solar site installation which is well on its way to becoming 100% renewable, and joins four more sites in the UAE that are already running on 100% solar energy. Etisalat has large solar stations at 50 locations in the UAE, as well as solar and wind power in Egypt and Afghanistan.

Leading businesses from many other industries in the UAE are also beginning to invest heavily in renewables. ICT-enabled services company, Pacific Controls Systems is using solar PV systems in its Dubai headquarters that generate around 50 kW of energy to power its own lighting.

And Dubai Airports and DEWA have partnered to build 100 rooftop solar panels that will supply 48.8 MWh – about two thirds of the building's power – to the airport.

## POISED FOR GROWTH

The UAE is strategically located to take advantage of a rapid increase in demand for renewable power and clean technology. The government has already begun to see the cost benefits of solar power, despite the abundance of cheap oil and gas. And lessons are being learned from innovative flagship projects in Abu Dhabi and Dubai to understand where scaling up low carbon technologies can work best – within the region and in other parts of the world where international investment opportunities and technology transfer opportunities are opening up.

Stimulating corporate demand for renewable power in the UAE is still at an early stage, but strong signals from the increasing adoption of solar power technologies indicate growing appetite from the private sector. For the many local industries that are heavily reliant on water for manufacturing processes, the huge energy demand associated with desalinating water means cheaper sources of power are critical – and solar offers a huge opportunity to provide this.

Sheikh Ahmed Zaki Yamani, former oil minister of Saudi Arabia, predicted that we are now looking at the “end of an oil age”.<sup>9</sup> And like Saudi Arabia, other oil-producing states and regions in the Middle East also see clearly that the “new energy age” of a clean economy is where the smart business is.

As evidenced in this report, government organizations and businesses in the region are seeing the benefits of renewables as a cost effective and reliable source of power. And today, the UAE should be recognized for its low carbon leadership. Clean technology innovation and international collaboration is earning the UAE a reputation as a leading clean energy innovation hub, as the world looks – once again – to the region to help drive the next global energy revolution.

## RE100 IN THE UAE

RE100 activities in the UAE began with the launch of our seminal report RE100: The journey to 100%<sup>10</sup>, which outlines the roadmap toward universal use of renewables in the business and industry sector, and was unveiled at the World Future Energy Summit (WFES) in Abu Dhabi in January 2015.

As a strategically important region, we look forward to learning more about the leadership in the UAE, working closely with IRENA and expanding our outreach to businesses based in the area. After a successful panel discussion at the WFES we look forward to returning in January 2016 to share updates from RE100.

The Climate Group and CDP are actively seeking more opportunities for co-operation in the UAE and the rest of the Middle East. Innovative businesses that commit to be part of RE100 will set a positive example for the government and other companies to follow. Join us in the journey to 100%.

Please contact **Emily Farnworth** for more information.

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<sup>9</sup><http://reneweconomy.com.au/2015/saudi-arabia-sees-end-oil-age-horizon-11769>

<sup>10</sup><http://www.theclimategroup.org/what-we-do/publications/re100-the-journey-to-100/>

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The Climate Group is an award-winning, international non-profit. Our goal is a prosperous, low carbon future. We believe this will be achieved through a 'clean revolution': the rapid scale-up of low carbon energy and technology.

We work with corporate and government partners to develop climate finance mechanisms, business models which promote innovation, and supportive policy frameworks. We convene leaders, share hard evidence of successful low carbon growth, and pilot practical solutions which can be replicated worldwide.

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CDP is an international NGO that provides the only global system through which more than 5,000 companies and 207 cities report, manage and share vital environmental information. These insights enable investors, companies and governments to mitigate risks from the use of natural resources and identify opportunities from taking a responsible approach to the environment. Please visit [www.cdp.net](http://www.cdp.net).

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AN ACTION OF:

**WE MEAN BUSINESS**

We Mean Business is a coalition of organizations working with thousands of the world's most influential businesses and investors. These businesses recognize that the transition to a low carbon economy is the only way to secure sustainable economic growth and prosperity for all. To accelerate this transition, we have formed a common platform to amplify the business voice, catalyze bold climate action by all, and promote smart policy frameworks.

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The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre 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 bioenergy, geothermal, hydropower, ocean, solar and wind energy in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity.

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