

“A World of Shifting Sands”

Will Oil States Lead the Clean Energy Revolution?

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“The World Future Energy Summit is no less than a summit for the future of the world itself.”¹ This was the feeling that seemed to radiate through the thousands of energy ministers and business executives that gathered in the Abu Dhabi Conference Center on January 21, 2008 for the start of the first annual World Future Energy Summit, or WFES. As the conference attendees took their seats for the opening keynote speech, the excitement was further elevated by a big-screen video depicting the proposed Masdar Development, a completely sustainable city powered entirely by renewable energy. But it wasn’t until the first-ever life-size hologram, projecting the image of Prince Charles onto the stage, began to speak about his personal commitment to promote sustainable energy that a real sense of awe rippled through the audience. “[If we don’t change the current energy system] it will simply mean the extinction of the human race, rather than the end of the world,” said the Prince’s brother, the Duke of York, who spoke shortly after the Prince. “If our design is for destruction, then we are doing great – if not, then what is that design?” said world-renowned architect and author of *Cradle to Cradle*, William McDonough. Some speakers, however, had a more optimistic tone. “We think that the oil-producing nations can work together to ensure a safe future for our environment,” said His Excellency, Mohammad Ahmad Al Bowardi, the Secretary General of the Abu Dhabi Executive Council.

The largest of its kind to date, the World Future Energy Summit brought over 3,000 people to the United Arab Emirates (UAE) for three days to showcase and debate the technologies that many believe will ultimately replace the current global infrastructure of fossil-fuel energy that drives modern civilization and development.² There are many forces pushing the world in this direction. As Shane Bush of Standard Chartered Bank put it, “The twin drivers of climate change and energy security have risen to the top of the political agenda across the world over the past two years.”³ The once-marginal theory of peak oil has become a mainstream idea in many countries. Rapid economic development is forcing countries like China and India to look for new energy sources to fuel their industrial growth. Many countries and world leaders have begun to take up this cause in the name of international cooperation and planetary well-being.⁴

Yet underlying this altruistic global call for change that was the theme of the World Future Energy Summit is a puzzling paradox. Not far away from the city of Abu Dhabi lies the Persian Gulf, home to 26 of the world's 40 super-giant oil fields and half of the world's remaining reserves.⁵ As the fourth-largest producer of oil in the world, the UAE has grown in less than 40 years from a land of warring desert tribes to a regional center of trade and commerce, boasting two world-class cities.⁶ Oil is what drives the UAE's development, giving it a strong interest in maintaining oil's primacy as a global energy source.

And yet, the central focus of the World Future Energy Summit was the government-backed \$15 billion Masdar Initiative, the largest investment in renewable energy made by any country in the world.⁷ While most Middle Eastern oil producers have followed the US and China in stalling global agreements to limit carbon emissions and promote clean energy, the UAE has suddenly catapulted itself to the forefront of the clean-energy movement. In contrast, it would seem that a country like the US could benefit much more in the long term from the use of sustainable energy, as it is highly dependent on imported oil and has massive potential to generate cheap, domestic energy from renewable sources.⁸

The UAE, however, is not on a goodwill mission to save the planet from the harmful effects of fossil fuels. This government has a strategic and economic interest in becoming a hub for renewable energy research and innovation. The Masdar Initiative may have a ripple effect across the Middle East, motivating other oil-producing nations to jump on the bandwagon and, ironically, causing the largest wave of global investment in renewable energy to come from oil states. At the same time, it should push the US and China away from the backward energy paradigm that they currently cling to. In order to understand the motivations of each country and their implications, we must first examine all of the interests at stake.

The worldwide push for the use of clean energy and the subsequent shift in UAE energy policy leading up to the first World Future Energy Summit is the result of a number of culminating forces. Energy from burning fossil fuels has driven worldwide economic development for the past two centuries. This has resulted in a buildup of carbon dioxide emissions in the atmosphere that, according to the Intergovernmental Panel on Climate Change (IPCC), is greater than anything the world has experienced in the last 420,000 years.⁹ While there has been much debate in the political sphere as to whether or not these emissions are responsible for global climate change, an overwhelming consensus has emerged from the world's leading scientists that climate change is indeed being

caused by human activity.¹⁰

This buildup has caused global temperatures to rise by about 1.08 degrees Fahrenheit thus far, and could cause an additional increase of 2.52 to 10.44 degrees in the next century.¹¹ The IPCC's fourth assessment report warns that on our current path, climate change could cause massive melting of the Greenland and Antarctic ice sheets by the end of the century.¹² Already, climate change has begun causing storms to intensify, and rainfall to dramatically decrease in some areas and to increase in others.¹³ The IPCC has also predicted that the effects of climate change could cause as much as a 5.5% reduction in world GDP by the end of the century.¹⁴

At the same time, the use of fossil fuels for the past two hundred years is leading the world toward the depletion of these resources. In the 1960s, Shell geologist M. King Hubbert predicted that the rate of US oil production would peak and begin to decline between 1965 and 1970. Hubbert's theory was ridiculed until US oil production peaked in 1970.¹⁵ Since then, it has been predicted by many of the world's leading geologists that the peak in world oil production will occur between 2010 and 2020, followed soon after by the peak in world gas production.¹⁶ Once the rate of oil production begins to decline, supply will not be able to keep up with demand and oil prices will increase even more dramatically than they have in the last few years.¹⁷ Essentially, the era of cheap oil that has fueled rapid economic growth throughout the developed world will come to an end.

Many skeptics of peak oil point to the fact that more and more oil is being discovered each year. Technological innovation, they argue, will allow us to continue discovering new oil and to come up with new, inexpensive ways to extract it.¹⁸ In the 1970s, the world saw an increase in oil discovery in response to the oil shock of the 1970s caused by the OPEC embargo and the US production peak. The same thing could happen again, the skeptics argue. However, while discoveries have increased slightly, the overall trend for discoveries is also downward. While increasing world demand has warranted a discovery of around 22 billion barrels of oil a year to keep pace with production, discoveries have only been around 8 billion barrels a year on average over the last decade.¹⁹

These economic and political pressures caused by peak oil and climate change come at a time of rapidly increasing worldwide demand for energy, mostly from the two Asian giants – China and India – and other developing nations. In fact, world energy demand is expected to grow 55% by 2030.²⁰ China is bringing two new coal power plants online every week.²¹ As China's standard of living increases, the demand for cars and therefore gasoline is also increasing at an alarming rate. The Indian conglomerate Tata has just come out with a design for the cheapest car in the world, which will allow the average Indian family to own

a car for the first time, greatly increasing demand for gasoline.²² While many say that citizens of developing countries have a right to achieve the standard of living enjoyed in the US, it may come at the cost of dramatic increases in global carbon emissions and in the world price of oil as demand goes through the roof.

The resounding call that was sounded at the World Future Energy Summit for a global shift to the use of clean, sustainable energy would seem to be the ideal solution. For the time being, however, fossil fuel is the cheapest way to achieve growth, and China and India will not give that up any time soon. In fact, the complex network of oil, gas and coal dependence that is rooted in the global economy will, for all the forces working against it, be a tough one to crack. At the center of this network is the global oil infrastructure and the fact that two-thirds of the world's oil is concentrated in the Middle East.²³ While prices of renewable energy are rapidly decreasing and becoming competitive with fossil fuel, it will still be some time before they are competitive enough to completely overtake the current system.

In addition to the culmination of these forces, the oil-power dynamic that has been played out over the last century is vital to understanding the current conditions in the Middle East and why the UAE's new direction is so unorthodox for the region. Oil first became important as a strategic resource during World War I when vehicles such as tanks and planes began to back the armies that fought on the ground. As was remarked at the time, "The Allies floated to victory on a sea of oil."²⁴ In anticipation of dwindling domestic oil supplies, Britain and the US began major oil explorations in the Middle East soon after.²⁵ With the introduction of the Ford Model T just a decade earlier, oil was becoming a mainstream commodity and the role of oil in western economies for the next hundred years began to be solidified.²⁶ After World War II, it was clear that Britain was in relative decline as a world power, and the major US oil companies, known as the Seven Sisters, took on the majority of the oil exploration and production activities in the Middle East.²⁷ The economic boom in the US after the war and the creation of the national highway system tied US economic prosperity and oil even closer together.²⁸

In the early 1970s, however, dramatic changes began to occur that would set the stage for the current era and the energy challenges we face today. In 1973, the combination of the US oil production peak and the rise of Arab nationalism led the Organization of Petroleum Exporting Countries (OPEC) to dramatically raise world oil prices for the first time. Simultaneously, the governments of the Middle East, which had already begun to nationalize their oil industries, rapidly accelerated this process, decreasing US and European influence over the region.³⁰ This was the first time the cartel was able to assert its power on the global economy, and its impact ripples across the world to this day. The oil

crisis of 1973 turned into a global energy crisis, leading US firms into a frenzy of exploration for new oil supplies around the world.³¹ Although much of the US's interests in the Middle East were divested, the region continues to grow in strategic importance as world oil supplies dwindle.

Just a few years earlier, the global environmental movement took off with the first celebration of Earth Day. It was motivated by the increasing hazards of pollution throughout the industrial world. The early 1970s also marked the beginning of concerns about the increased buildup of carbon dioxide emissions, which, with the onset of the oil crisis, led the US and other countries to truly invest for the first time in renewable energy research and development.³² Incidentally, it was around this time that the seven tribes on the Gulf Coast near Qatar successfully united to form the UAE, which gained its independence from Britain in 1971.³³

Although the crisis of the 1970s soon dissipated and the world sunk back into its old habits, oil continued to play a critical role in the economic, social and political development of the Middle East. The new oil export payments that Middle Eastern countries began to acquire after the 1970s have created tremendous wealth throughout the region, leading to rapid economic development. In 1950, Saudi Arabia was still a largely nomadic society; its largest city maintained a population of about 50,000 and there were no paved roads throughout the entire country. Today, Jeddah – its largest port – has a population of 1.5 million and has become a world-class city. The country is covered with multi-lane, paved highways connecting hundreds of cities and towns.³⁴

The discovery and exploitation of oil in the Arab world has also led to a consolidation of power in the national governments of the Middle East. In most Arab countries, political parties were abolished by the 1960s, and authoritarian rule characterized most regimes.³⁵ These governments have fallen victim to the bureaucracy and corruption often caused by excessive oil rents, a phenomenon called the resource curse or “Dutch Disease.” In such a case, the discovery and exploitation of a valuable resource like oil causes the currency of the country in which it is discovered to significantly increase in value, effectively making the country's other exports uncompetitive on the world market.³⁶ The large amount of oil revenue that the government collects also displaces the need to collect taxes, making the government less accountable to its people. However, many of the Arab states still produce significant benefits for their populations through massive welfare programs. This “rentier pact,” or “ruling bargain” as it is often called, has led, for the most part, to political stability.³⁷

Nowhere have these trends been more pronounced than in the UAE. Of all the Middle Eastern countries, the UAE has managed to achieve the most rapid and impressive growth and modernization. The two most prominent

emirates, Dubai and the capital Abu Dhabi, have respectively become large industrial and commercial centers. The country has also achieved an impressive per capita income of \$55,200.³⁸ As the last Arab state to gain its independence, the UAE came into being at a time of increased concern about the long-term sustainability of oil production. This, combined with its unique economic development as an established center of trade with a capitalistic society similar to that of the West, hints at why the leaders of the UAE have had the foresight to do things differently.³⁹ Rather than letting the oil rents be used inefficiently, the government of Abu Dhabi began investing its revenues in a sovereign wealth fund – a fund of financial assets that is controlled by the state. Since 1976, this fund has grown to become the largest of its kind today, with a value estimated at around \$625 billion. In fact, the emirate now makes more money from this investment than it does from selling oil. Many other Arab states began investing their oil revenues soon after, either as a sovereign wealth fund or internally.⁴⁰

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Another policy that the UAE has pursued from the start is a push for economic diversification in order to combat the effects of Dutch Disease. While oil and gas sales still account for 30% of the country's GDP and 45% of its exports, the diversification effort has met with some success.⁴¹ When, in the early 1980s, the world price of oil dropped considerably from the peak it had reached during the oil crisis of the 1970s,

the UAE's GDP decline, at 34%, was low compared to the GDP decline of the other Gulf states.⁴² Abu Dhabi has managed to expand its heavy industry and manufacturing sectors, especially the aluminum industry. Dubai has become a regional center for tourism, financial services and trade. In fact, Dubai's impressive economic growth and diversification, combined with dwindling oil reserves, has caused it to become the first net oil importer in the Middle East. The fact that Abu Dhabi is still one of the largest oil producers in the world shows the stark contrast within the UAE between Abu Dhabi and Dubai. Each emirate has pursued development quite differently.⁴³

As the 21st century begins, the issues of climate change, peak oil and energy security have begun to resurface on the global agenda. This revival has been led by the economic expansion of China and India, the approaching world oil production peak and the increasingly visible effects of climate change on the global environment. The first international action to combat these forces was the Kyoto Treaty in 1997, in which many world leaders committed to achieving

substantial carbon dioxide emissions reductions before 2012. However, this measure has been highly ineffective.⁴⁴

The World Future Energy Summit and the launch of the UAE's \$15 billion Masdar Initiative came at a crucial time, right after world leaders met in Bali to determine the next steps after Kyoto expires in 2012.⁴⁵ The Masdar Initiative is positioned to make Abu Dhabi the world center for research into the most innovative new energy technologies. It consists of several components; first is the Masdar Institute, a graduate school devoted purely to energy research. This institute will also network with other leading institutions around the world to collaborate on energy research. Second, a large portion of the Initiative's funds are set aside for investment in new energy companies and technologies in order to encourage these enterprises to base their operations in the UAE; third is a large push for carbon dioxide reduction projects, supported by the Kyoto Protocol's Clean Development Mechanisms (CDM); finally, at the center of the Initiative is Masdar City, a six-square-mile free-trade zone that will be home to the Masdar Institute as well as office and lab space for the energy companies that choose to come to the UAE. The city is designed to be a model of sustainable development for the world, powered 100% by renewable energy and having many other sustainable aspects.⁴⁶ As the CEO of Masdar, Dr. Sultan Jaber, said in his speech to the conference to sum up the weight of the Masdar Initiative, "If we are to meet the energy challenge, then we must be bold."

Given the current state of the world energy infrastructure and the history of the UAE, there are several reasons that might explain why the UAE has made such a bold move. As an oil-producing nation partially responsible for a large amount of global carbon dioxide emissions, this may be an attempt by the government to market itself as "green." In a world where environmental responsibility is being looked at with an increasingly close eye, this may be a smart tactic.⁴⁷ But if the government is concerned about its environmental image, the country has many other initiatives to take care of this, such as its CDM projects or Dubai's mandate to make all new buildings in the city green. None of these come close to the scale of the Masdar Initiative. The UAE has other goals in mind.

Many governments around the world, especially those of developing countries, are concerned about climate change and the effects it will have on the livelihood of their citizens. Rising sea levels, droughts, floods and temperature changes all have a significant effect on people's productivity and health. Again, however, this does not seem to add up for the UAE. With the government already trying to find ways to change the harsh desert climate that sees little rainfall or agricultural productivity, shifts in world water distribution from climate change might even help the UAE.⁴⁸

With Dubai – one of the most productive emirates – becoming a net oil

importer, the country may be looking for new sources of energy for domestic use. This is supported by Abu Dhabi's recent agreement with France to build two nuclear reactors in the UAE. Indeed, the government of Dubai has also mandated a 15% renewable portfolio standard for the emirate by 2015. However, while renewable energy sources may prove a useful supplement to the current energy makeup, the government of Dubai does not expect them to be a serious source of energy anytime in the near future because of the high costs.⁵⁰ If Dubai doesn't expect renewable energy to play a significant role, even though it is facing an energy shortage, it doesn't seem probable that the oil-rich Abu Dhabi will either.

While Dubai has done fairly well in diversifying its economy, Abu Dhabi is still very oil dependent. Growing the renewable energy sector, then, would seem like a good opportunity to follow in Dubai's footsteps. This is the most logical explanation for the UAE's change, of course; however, it goes farther than simply defying the resource curse. By positioning itself to be a hub for clean technology innovation and putting significant investments into the companies that are creating these technologies, Abu Dhabi is setting itself up to be a "technology exporter."⁵¹ Unlike oil, renewable energy is a domestic industry by nature and its products cannot be as easily exported or distributed worldwide. With current global trends pointing toward a potential shift in the global energy framework away from oil in the next fifty years, the UAE is making a bet that will allow it to remain at the forefront of the energy industry.⁵²

The only reasonable doubt that can be thrown at this idea is the fact that despite calls for renewable energy, many experts believe that oil is still in a position to dominate the global system for another century.⁵³ The UAE and other Arab states then stand to make astonishingly high profits from the rising price of oil for many years after the global production peak before other fuels start to replace it. If the UAE government is a profit-maximizing entity, it will do whatever is in its best financial interest. For the government to suppress the technologies that are developed within its borders until all its oil fields run dry does not seem out of the question.

For almost a century, the Middle East has played a vital role in shaping the energy industry worldwide and it will continue to play that role for many years to come. If other Middle Eastern countries follow the example of the UAE, they may be able to play a significant role in shaping the character and timeframe of a likely world transition toward renewable energy sources. Although the UAE has the biggest advantage, with the largest sovereign wealth fund, other Arab states have the capacity and the incentive to do the same. Both Kuwait and Qatar have sizable sovereign wealth funds of \$213 billion and \$60 billion, respectively.⁵⁴ Saudi Arabia, which in the past has invested its oil revenues internally, recently

announced a plan to create a sovereign wealth fund larger even than the UAE's, projected to be around \$900 billion.⁵⁵ Many in the Middle East, however, see their current prosperity as only temporary, as illustrated by the Saudi Arabian saying, "My father rode a camel, I drive a car, my son will fly a plane, his son will ride a camel."⁵⁶ Such an investment in the future of energy would ensure that this prosperity will be sustained for centuries to come. Multinational oil companies like British Petroleum (now Beyond Petroleum), Shell and Chevron have already made similar investments in research and development into renewable technologies in order to ensure that their control over the flow of energy around the world is maintained as well.⁵⁷

The 21st century is likely to be characterized by a struggle for energy between great powers. With China and India taking a greater interest in Middle Eastern oil, as well as the continued efforts of the United States to strengthen its control over the region, this struggle is already beginning to take shape. The US has the ability to prevent this tug-of-war across the Middle East by tapping its vast domestic renewable resources and making its own investment in clean energy.⁵⁸ As Lord Brown put it in his address to the World Future Energy Summit, "We are in a world of shifting sands, and in that world, [global players] need stable points." The UAE has ensured that it will retain a stable point far into the future. Who will follow its example?

In fact, Dubai's economic growth, combined with dwindling oil reserves, caused it to become the first net oil importer in the Middle East.

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