

COMMERCIAL RESEARCH



THE NEW ENERGY ECONOMY



ENERGY WEALTH TO TARGET
REAL ESTATE IN COMING YEARS

NEW BUSINESS CLUSTERS WILL
DRIVE RENTAL GROWTH

INDIRECT EXPOSURE THROUGH
ALTERNATIVE PROPERTY ASSETS

THE NEW ENERGY ECONOMY

What the changing energy landscape means for real estate

We are currently in a period of tectonic change for the energy sector, as it adapts to new sources of supply, technology advancement, unprecedented grid management pressures and rising consumption of electricity. This will have long-term implications for demand for real estate, both for occupation and as an investment.

Over the coming decade we believe transformation in the energy landscape will result in more cross-border property investment, and new business clusters emerging, creating demand for occupier space. We also expect to see economic diversification in many energy exporting nations, which will lead to new development of property to accommodate change and growth.

“THIS WILL CREATE OPPORTUNITIES FOR REAL ESTATE INVESTORS AND DEVELOPERS.”

We see the changes principally occurring in locations with a traditional weighting to energy markets, which are already evolving to match the new trends. These established centres will host the reforms, not be eclipsed by them, thanks to access to industry expertise. Also, we expect there to be overlap with digital economy locations, thanks to growing use of cutting edge technology by the energy sector.

All this will create opportunities for real estate investors and developers.

Shale and renewables

In recent years, shale oil and gas has transformed the USA from being an importer to an exporter of energy. This in itself is changing the accepted geography of where oil and gas are found, and brought a new wave of growth to energy industry clusters that had previously been viewed as mature.

Oil will remain a major source of energy for many decades to come, however renewable sources are steadily expanding their global market share –

from 5.2% in 2007, to 12.1% in 2017, according to UNEP/Bloomberg. Government deadlines for vehicle production to switch to hybrid or battery in coming decades will gradually tip the balance of motorcar demand from petrol to electricity.

Also, the price of renewable energy has fallen significantly, which has spurred use. Since 2010, costs of new solar photovoltaics have decreased by 70%, wind by 25% and battery costs by 40%, according to the International Energy Agency (IEA). Research firm, Wood Mackenzie, is forecasting annual growth rates of 11% for solar and 6.0% for wind energy worldwide over the next two decades, compared to 0.5% per annum for oil. Solar and wind projects are projected to form 23% of the global power market by 2035.

An associated impact of renewables growth has been pressure upon grid management and balancing. This is evident both in the UK and German electricity markets currently. As renewables are intermittent sources of

FIGURE 1
Brent Crude Price
Since 1 Jan 1997 (USD/BBL)



Source: Reuters, Knight Frank Research

FOSSIL FUEL EXPORTERS ARE DIVERSIFYING THEIR ECONOMIES.

SAUDI ARABIA IS WORKING WITH SOFTBANK'S VISION FUND TO BUILD UP 200 GIGA WATTS (GW) OF SOLAR CAPACITY



“THE PRICE OF RENEWABLE ENERGY HAS FALLEN SIGNIFICANTLY, WHICH HAS SPURRED USE.”

supply the grid network is having to work in unprecedented ways to match supply and demand. This has led to significant reductions in grid capacity margins and the birth of a new sector focused upon grid balancing services.

These services (such as battery and gas turbines) require land to be situated upon and thus offer a new energy related occupier market to landowners. In addition, and for the same reasons stated above, ‘behind the meter’ batteries and supply from gas turbines and combined heat and power (CHP) plants are seeing growth as major users of power and gas are looking to take greater control over supply resilience and cost.

Bond-like assets

Unsurprisingly, nations who are major exporters of fossil fuels are taking steps to diversify their economies. Saudi Arabia, for instance, is working to position itself in the new energy economy, particularly renewables; and diversify income sources with overseas non-oil investments. The Kingdom is working with Softbank’s Vision Fund to build up 200 gigawatts (GW) of solar capacity – to set this in context, global nuclear power production in 2016 was 390 GW. Through a 5% stake in Uber, a \$45bn injection into Softbank’s technology fund, and

investments into Magic Leap, which develops “mixed reality” headsets, Saudi Arabia further adds to its focus on robotics and artificial intelligence.

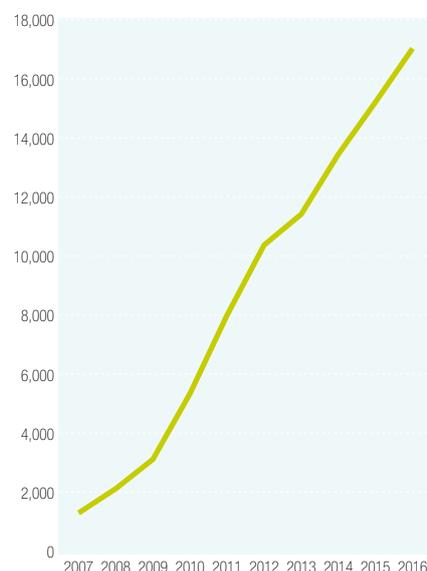
In the United Arab Emirates (UAE) the process of diversifying the economy is at an advanced stage, with the development of Dubai, with its Free Zones and transport hub, to complement the oil

wealth of Abu Dhabi. To the south of Dubai, the Mohammed bin Rashid Al Maktoum Solar Park is currently in its third stage of development, and is planned to reach 5 GW of power generation by 2030. In Abu Dhabi, the world’s largest solar plant built to date is set to open in spring 2019.

The recent rally in the oil price means that several Middle Eastern nations are once again paying money into their sovereign wealth funds, which they will be looking to deploy. This is occurring at a time when bond yields for the higher rated nations are rising, signalling an improving economy, thus improving prices on real estate. We therefore believe a larger share of sovereign wealth investment could target real estate in the coming years, to take advantage of property’s fixed income cash flow characteristics, and potential upswings in the rental cycle.

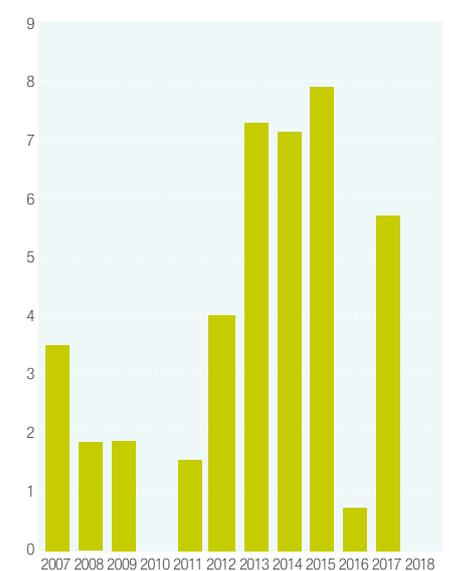
Aside from offering investors a bond-like alternative for those seeking a long-term steady income stream, real estate also

FIGURE 2
U.S. Shale production
Billion Cubic Feet



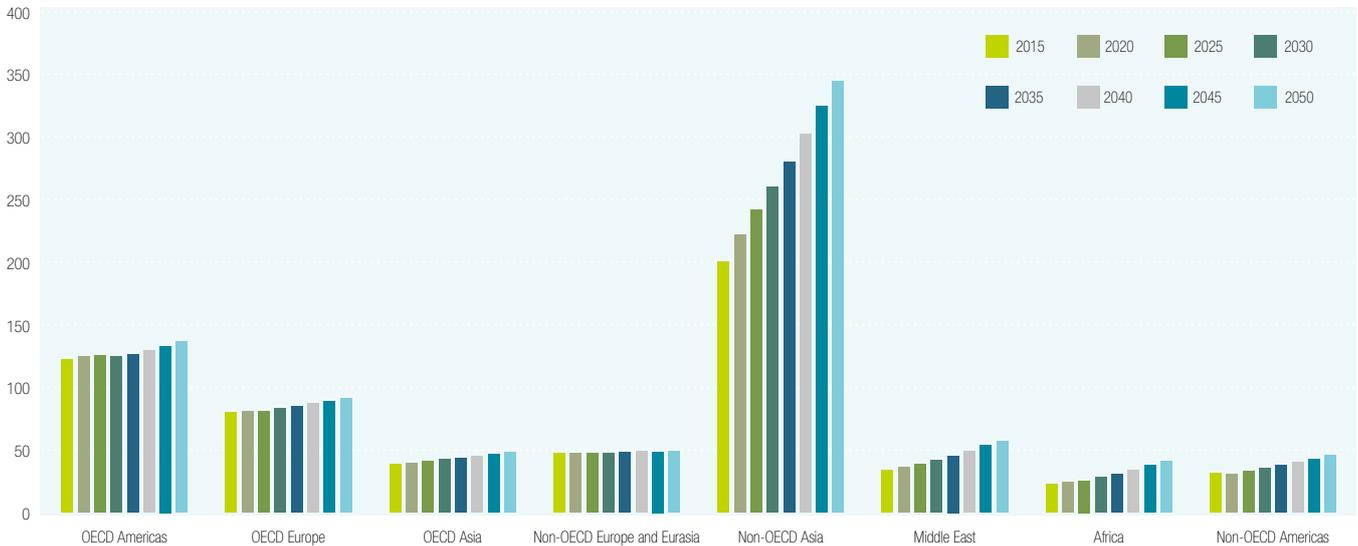
Source: EIA

FIGURE 3
Sovereign wealth capital flow into UK
Billions USD



Source: RCA, Knight Frank Research

FIGURE 4
Global projected energy consumption
 from 2015 to 2050, by region (in quadrillion British thermal units)*



Source: EIA. *The figures from 2020 onwards are forecasts. Projections are based on the EIA reference scenario, a business-as-usual estimate, given known technology, technological, market, and demographic trends.

presents a growth asset that can offer increasing levels of income through rental growth, new developments and asset management. As the economy strengthens, development activity picks up, and with capital supply, sovereign wealth funds stand to benefit from the potential upsides of real estate investments.

Winds of change

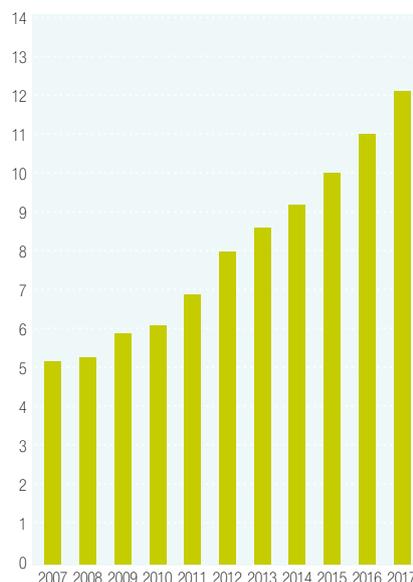
Capital flowing from existing energy hubs in search of diversification is just one side of the impact on property investment. We also expect to see more investment from those who currently have limited exposure to the energy sector, in order to exploit future economic trends, such as the rise of renewables.

The IEA found the worldwide energy investments of US\$1.7 trillion in 2016 to correspond to 2.2% of global GDP. As investors search for yield in a low interest rate environment, private capital is

“ACCORDING TO THE OECD CHINA IS ALREADY THE WORLD’S LARGEST PRODUCER OF RENEWABLE ENERGY BY A CONSIDERABLE MARGIN.”

showing mounting interest in energy sector assets. The private sector led the way in renewable energy investments in 2016 with 92% of the total investment volume of US\$263 billion. Institutional investors are increasingly considering renewables as part of their core portfolio.

FIGURE 5
Share of renewables in global power production 2007-2017
 %



Source: UNEP, Bloomberg New Energy Finance; FS-UNEP Collaborating Centre

In Asia, this could be a fast growing area for property investment, as the region is expected to see the strongest growth in future energy consumption, according to the OECD. China is already the world’s largest producer of renewable energy by a considerable margin.

We could also see new types of building assets emerge for investors to target, such as mini power stations in urban settings, as renewables, battery storage and artificial intelligence (AI) allows the development of local power grids.

Also, real estate can offer indirect exposure to the new energy economy. This can be through the business premises that serve the sector, from specialist assets like wind farms to mainstream investments like office buildings and homes. There will also be opportunities via change of use, as cities evolve their real estate stock to match the economic changes.

New clusters

Occupier markets will adapt to the changing geography of energy, as new industry clusters are created, and existing clusters evolve. Fossil fuels were central to the first three industrial revolutions, which resulted in huge technological and socio-economic advances. This transformed global geography by creating

vast economic clusters, and previously unimagined new types of building. The transformation of geographies will also be true of the fourth industrial revolution.

Electric cars, wind farms, shale drilling, smart cities, and roofs covered in photovoltaics, are examples of how the new energy economy is bringing in rapid change. This has already created a knock-on demand for business space for firms who operate in these rising industries. There will be more examples to follow, as the world adopts smart grids, energy storage, and local power generation.

In some cases, new business clusters will be developed, particularly in the Middle East where we could see bespoke, master-planned centres built to accommodate growth. However, most new energy hubs around the world seem to be initially developing in existing fossil fuel locations. This is largely because they offer access to existing industry knowledge, infrastructure and finance.

Energetica, Scotland’s Energy Corridor stretching from Bridge of Don in Aberdeen, north to Peterhead and west around Aberdeen International Airport, is a case in point. The long-term economic development initiative already has access to energy industry know-how, an established supply chain, and aims to create a world-class development cluster to attract and retain talent to Aberdeen City and the Shire’s strategic growth areas.

An interesting twist on the rise of the new energy sector clusters is the crossover

with IT hubs. Hi-tech is driving the migration towards electrification, while the new energy sector is utilising technology to develop smart solutions. AI can facilitate the interaction between sites of generation and consumption, pre-empting base- and peak load capacities and thus preventing supply shortages. Consequently, we believe that some new energy firms may gravitate towards the tech business clusters in cities, and further drive rental growth in these markets. Pursuing the reverse logic, places in the Middle East are already working towards becoming global tech centres.

There are also examples of the new energy economy creating new economic demand in traditional industrial centres, and even leading to urban regeneration. This ranges from shipyards producing wind turbines, to dock facilities being expanded to serve the future market for decommissioning oil rigs. Some former industrial sites, particularly dockyards, have been redeveloped as wind farms.

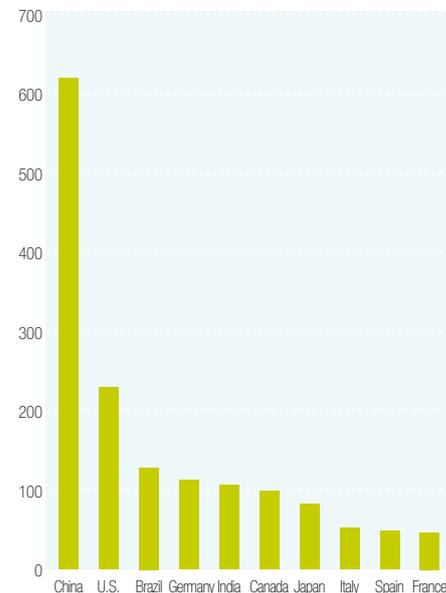
Real estate in transition

All this points to changes and opportunities ahead for real estate markets. New types of property to develop have already emerged, and others will follow. Also, the knowledge that change is coming is set to encourage more sovereign wealth fund money to target overseas property markets, thanks to the rally in the oil price. This will provide the diversification of income necessary for fossil fuel economies to plan for

FIGURE 6

Renewable energy capacity

Leading countries in installed renewable energy capacity worldwide in 2017 (in gigawatts)



Source: IRENA

long-term economic development, both in renewables and other industries.

Both the rise of the renewables sector, and the desire by oil exporting nations to expand into new industries, is set to create new economic hubs. These will require capital for development, or redevelopment, to match new occupational demand for real estate. New communities are set to emerge, and existing ones face significant change, as the world of energy adapts to a new era.



WIND FARMS, ONE EXAMPLE OF AN ALTERNATIVE ASSET

“ELECTRIC CARS, WIND FARMS, SHALE DRILLING, SMART CITIES, AND ROOFS COVERED IN PHOTOVOLTAICS, ARE EXAMPLES OF HOW THE NEW ENERGY ECONOMY IS BRINGING IN RAPID CHANGE.”

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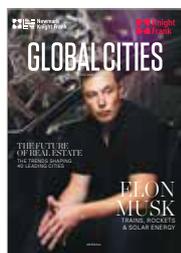
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