# “Decarbonizing MENA: Levers for Action” – Presentation at the Clean Energy Business Council Annual Summit, 26 Nov 2024

Dr. Nasser Saidi, in his role as the Chairman of the Clean Energy Business Council, provided introductory remarks at the Annual Summit held in Dubai on 26th Nov 2024.

Titled “Decarbonizing MENA: Levers for Action“, the presentation covered the discussions around the key outcomes of COP29, whether the rising renewables capacity is sufficient in the backdrop of NZE commitments in addition to how disparities related to climate threats and financing are widening. Furthermore, the discussion also highlighted how GCC are in a unique situation of becoming global hubs for “old” and “new energy”.

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# "The case for new green deals in the Gulf", article in Aspenia Issue No.89-90, Oct

# 2020

Dr. Nasser Saidi's article titled "The case for new green deals in the Gulf" appeared in Aspenia Issue No 89-90, issued in Oct 2020, and is posted below. A PDF file of the article can be downloaded here.

**The case for new green deals in the Gulf**

*The world is in a "new oil normal", with permanently lower prices. The oil rich countries of the Gulf need to diversify and focus on clean energy alternatives. Europe has a significant role to play here, too, as the EU and the GCC should develop a strategic techno-energy partnership.*

The Gulf Cooperation Council (GCC) is weaving its way through two major shocks. Covid-19 and the Great Lockdown resulted in a collapse of oil prices, against a background of climate change and global energy transition. The imf projects an estimated 4.9% decline in global growth this year, with cumulative output losses to the tune of over 12 trillion dollars for the 2020-21 period. Within the GCC, growth is forecast to shrink by 7.1% in 2020, before, optimistically, rebounding by 2.1% next year.

One unintended consequence of the current health crisis has been a record decline in global oil demand, along with emissions reduction and cleaner air as lockdowns were imposed across the globe. I would venture that we are currently in a "new oil normal", with permanently lower oil prices. It is imperative, therefore, that the GCC's recovery model include a strong clean energy policy component and structural reforms, alongside a recasting of its economic diversification model and social contracts. The current GCC economic model – over-dependence on fossil fuels, pro-cyclical fiscal policies and generous government subsidies – are unsustainable in the medium to long term.

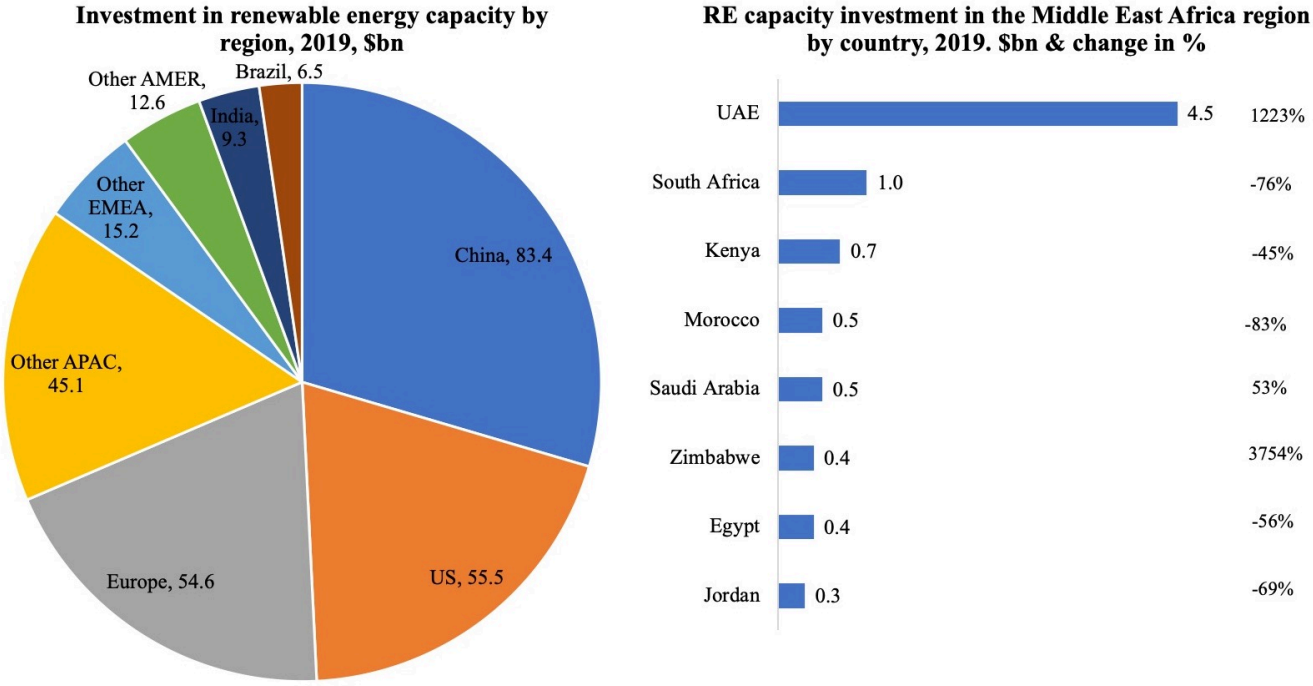
THE PATH LESS TRAVELLED. As countries enter the second phase of the Covid pandemic of easing restrictions along with social distancing norms, there are two divergent paths for economic activity. One track is that government stimuli, together with lower fossil fuel prices, result in diminished incentives to invest in clean energy and clean tech. This will lead to a business-as-usual mode, to a pre-Covid-19 path. Crises and disasters (sars, 9/11, the 2008 Great Financial Crisis) have been associated with temporary dips in carbon emissions, with a 1.5% decline in output associated with a 1.2% drop in $co_2$. Emissions pick up again, typically with a vengeance, once activity recovers. Recent history provides evidence: it is estimated that following the global financial crisis in 2008-09, carbon emissions increased by 5.9% as a result of policy stimuli.

The second path is a green one wherein countries implement cop21 commitments and energy transition policies, moving to "Green Deals". This could take multiple forms: we could accelerate the decarbonization of power and road transport, place greater emphasis on energy efficiency investments, phase out subsidies, launch policy incentives to reduce carbon emissions and make a concerted effort to provide no bailouts for industries or business models that are not viable in a low-carbon world. Proactive fiscal policies can help nations become more climate-resilient through investment in climate resilient infrastructure and cities, along with instruments to transfer climate risks to markets (carbon taxes and carbon trading).

According to IRENA's 2020 "Global Renewables Outlook: Energy Transformation 2050", decarbonization of the global energy system – away from fossil fuels to renewables – could generate 98 trillion dollars in cumulative growth, adding an extra 2.4% to global gross domestic product. This is a conservative estimate that does not even take into account the negative growth effects of climate change and rising temperatures.[1]

CLEAN ENERGY AND CLEAN TECH INVESTMENTS. Governments in the GCC have been vocal supporters of renewable energy projects despite their vast fossil fuel reserves. The Covid-19 crisis has temporarily slowed deal-making in renewable energies in recent months, and this will likely affect investment levels in 2020. In comparison, renewable energy investments in the wider Middle East and Africa slipped 8% to $15.2 billion in 2019, from a record total of 16.5 billion in 2018.[2] The uae was the biggest investor in renewables in the region last year, with the massive 4.3bn Al Maktoum iv solar project, while Saudi Arabia is accelerating investments, with a total 502 million dollars invested (including a windfarm project). Record-breaking bids in renewable energy auctions in Saudi Arabia and the uae have made solar power cost-competitive with conventional energy technologies. The United Arab Emirates is already ahead of the curve in terms of deployed energy storage to support its grid during high demand hours with two NaS battery storage projects in Abu Dhabi and Dubai.

**Figure 1 . Investment: Global vs. Middle East**



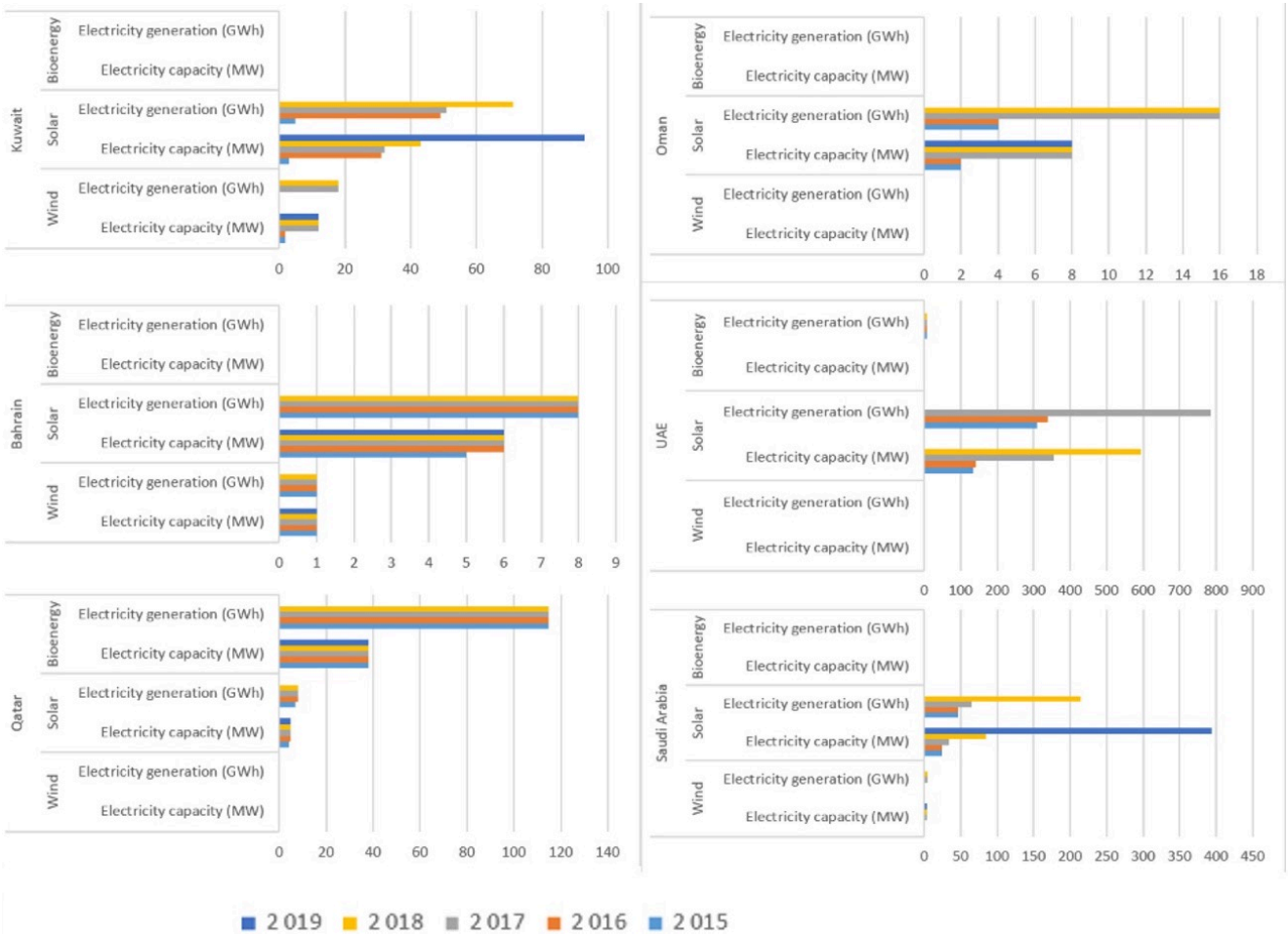

*Source: Global Trends in Renewable Investment 2020*

During the pandemic, governments have reiterated their commitment to support renewable energy policies. Recent announcements – Oman's financial closure of its Ibri ii plant, uae's upcoming plans to develop the world's largest solar

power plant (2 gigawatt) in Abu Dhabi's Al Dhafra region (at a historically low price of 1.35 us cents per kWh), came just hours after Dubai awarded a contract for a project (part of a solar park designed to produce 5 gigawatts by 2030) to generate power at a tariff of 1.7 us cents per kWh, confirm the region's commitment to the sector.

New renewable energy projects in the region are becoming increasingly reliant on private funding (versus government support previously). Private power developers, who can borrow internationally at historically low interest rates, are helping to lower financing costs thereby leading to even cheaper power. The bottom line is that growing private sector participation in energy projects along with technological innovation that is rapidly lowering the cost of renewable energy production and storage, will accelerate the energy transition in the Arabian Peninsula.

**Figure 2 . Electricity generation and capacity in the GCC**




*Source: IRENA Statistics.*

NEW GROWTH MODELS. The new oil normal presages permanently

lower real oil prices and the prospect that plentiful fossil fuel (including shale), with increasingly ubiquitous, cheap renewable energy, along with energy transition policy and regulatory measures, will lead to an increasing proportion of fossil fuel reserves becoming stranded assets. This poses an existential threat to the GCC countries, though they are among the world's low-cost producers. The imf estimates that the GCC's net financial wealth (estimated at 2 trillion dollars at present) could be depleted by 2034, with non-oil wealth depleting within another decade.[3] The policy imperative for the GCC goes beyond recasting economic diversification strategies that are vulnerable to pandemics, to new development and growth models, with a focus on developing "green deals" as well as "blue deals" (given the vulnerability of GCC coastal areas to climate change). All this, while supporting increased economic digitization too. The current combined crises are a wake-up call for GCC governments to design economic recovery programs to accelerate decarbonization and encourage investment in cost-competitive sustainable technologies. Pre-Covid, there were an estimated 6,722 active infrastructure projects with a combined value of more than 3.1 trillion dollars planned or under way in the GCC. These plans should be radically revised to invest in climate resilient infrastructure covering energy, water, transport and cities. Such a well-planned recovery would cut pollution, reduce the outsized carbon footprint of the GCC and also lead to job creation: each million dollars invested in renewables or energy flexibility is estimated to create at least 25 jobs, while each million invested in efficiency creates about 10 jobs.[4] The added macroeconomic benefit is that the GCC would release oil supply for export rather than subsidize wasteful domestic energy-intensive consumption and production activities.

**Figure 3 . Energy transition in the Middle East OPEC nations, 2050**

| | Thousand jobs | Increment from current plans |
|---|---|---|
| **Renewables** | **816** | **169%** |
| Solar | 365 | 223% |
| Bioenergy | 139 | 156% |
| Wind | 236 | 259% |
| **Energy sector** | **3317** | **12%** |
| Renewables | 816 | 169% |
| Energy efficiency | 1059 | 11% |
| Energy flexibility & grid | 433 | 17% |
| Fossil fuels | 975 | -24% |
| Nuclear | 35 | -35% |

Source: IRENA, "Measuring the socioeconomics of transition: focus on jobs", February 2020.

BUILDING BLOCKS OF A RECOVERY PROGRAM. I see four major steps to be taken in order to launch a successful recovery in the Middle East.

1. Structural reforms. The lowest hanging fruit is the phased elimination of fuel and utilities subsidies that are a drain on government finances. Removing subsidies frees up fiscal resources to provide financial incentives for the ubiquitous use of clean energy and clean technology within the broader framework of a "zero net emissions policy". Regional cooperation is required to support renewable energy growth across the region through a GCC integrated grid, unification of environmental standards along with a removal of barriers to trade and investment, to benefit from large economies of scale and avoid costly and wasteful duplication. A

regional GCC grid could change global power infrastructure by creating an energy corridor to East Africa, to Europe through Egypt and to India and Pakistan through a sea cable. Power exports would compensate the GCC for the gradual secular decline of fossil fuel exports through the export of higher value-added solar power.

2. De-risk fossil fuel assets. Across the GCC, state-owned enterprises (soes) and government-related enterprises (gres) are majority owners and operators of upstream and downstream oil & gas (the power sector), while also investing heavily in renewables (even increasing their market share of new capacity relative to private firms in recent years). Given the growing risk of oil & gas reserves becoming stranded assets, the GCC states need to repurpose their soes and gres to support and survive a low-carbon energy transition plan. Saudi Arabia has recently shown the way through the partial privatization of Aramco. The privatization of oil & gas assets should be part of an overall strategy of sharing the risk of potentially stranded assets with investors. Proceeds of the privatization of fossil fuel assets need to be invested in a transformation of the economies of the GCC, sustainable diversification based on partnership with the private sector, with a strategy focused on investing in human capital and sectors capable of competing in increasingly digitized economies.
3. Green financing is integral to fuel climate change policies, for a low-carbon transition. Introducing carbon taxes should be the main plank: such taxes would not only raise revenue and increase energy efficiency, they would provide part of the funding for decarbonization strategies. The imf finds that large emitting countries need to introduce a carbon tax that rises quickly to 75 dollars per ton by 2030, consistent with limiting global warming to 2°C or below. For a country like Saudi Arabia, revenues from a carbon tax

(35 to 70 dollars per ton of emissions) could raise some 1.9% to 2.7% of gdp in revenue[5] in addition to reducing pollution, and being the most effective tool for meeting domestic emissions mitigation commitments. **The other plank for the capital rich GCC is "green finance".** The financial centers of the region could become regional and global centers for new energy financing, for the issuance of "green bonds" and Sukuk, as well as for facilitating the listing of Clean Energy and Clean Tech companies and funds. Ideally, this should be complemented with the creation of Green Banks to finance the private sector. Such institutions would support energy efficiency policies, retrofit where necessary, make climate risk mitigation investments and so on. The imf has estimated an annual financing gap of 2.5 trillion dollars through 2030 to attain the global targets set through the Paris Agreement and the broader un sdgs. Climate finance reached record levels of $360bn in 2019 – but this remains a tiny fraction of the required amount.

4. The Covid pandemic has accelerated the digitization process as people, governments and businesses have shifted online. The digitization of the energy sector is next through investments in smart grids, smart city technologies and the deployment of new digital technologies, low-cost cloud computing, the IoT, big data analytics, artificial intelligence and blockchain. This is an unprecedented strategic opportunity for the GCC countries to participate in the Fourth Industrial Revolution through the digitization of their dominant energy sectors, with massive "soft" (including training and building digital human capital) and "hard" investments by industry, prosumers, and governments to increase transform their economies and increase overall productivity growth.

GEOECONOMIC CONSEQUENCES. The year 2020 will likely witness the largest decline in energy investment on record, mostly due to Covid. A reduction of one-fifth – or almost $400 billion – is expected in capital spending compared with 2019.[6] Fossil fuel supply investments (e.g. exploration) have been the hardest hit while utility-scale renewable power has been more resilient, but this crisis has touched every part of the energy sector. As the energy transition progresses in the European Union and the United States becomes a net energy exporter, it implies less energy dependence on GCC. This lessens the region's geopolitical and geoeconomic importance. How should the GCC react? First of all, greater regional economic integration is required, with a focus on infrastructure and logistics: energy, water, transportation, digital highways. As noted above, a new energy infrastructure would enable the GCC to shift to selling renewable-energy-based electricity to Europe (via an interconnected power grid), to East Africa, but also to Pakistan, India and East Asia. Secondly, the GCC needs to formalize their shifting trade and investment patterns towards Asia and China through new trade and investment agreements with China, Japan, Korea, and the Asean countries. Thirdly, a new extended Gulf security arrangement needs to be negotiated to reduce arms expenditure and focus on economic development. Finally, the EU and the GCC should develop a strategic techno-energy partnership: the Gulf countries could supply solar-generated electricity, while Europe contributes as a renewable energy and climate change technology partner.

**Figure 4 . China-GCC trade and investment**


*Source: IMF DoTS, Refinitiv Datastream, AEI's China Global Investment Tracker.*

[1] Matthew Kahn et al, in their 2019 paper "Long-term macroeconomic effects of climate change: a cross-country analysis", found that a persistent increase in average global temperature by 0.04 degrees Celsius per year, in the absence of mitigation policies, reduces world real gdp per capita by more than 7% by 2100; abiding by the Paris Agreement limits the temperature increase to 0.01°C per annum, which reduces the loss substantially to about 1%. According to a nasa study, 2010-2019 was the hottest decade ever recorded. A goal of the Paris climate accord was that global temperatures need to be kept from rising more than 1.5°C, but a United Nations report in Nov 2019 found that the world's emissions would need to shrink by 7.6% each year to meet the most ambitious aims of the Paris climate agreement.

[2] See "Global trends in renewable energy investment 2020", Frankfurt School-unep Centre, BNEF report, June 2020.

[3] "The future of oil & fiscal sustainability in the GCC region, imf Working Paper, January 2020.

[4] IRENA, "Global renewables outlook: energy transformation 2050, April 2020.

[5] IMF, "Putting a price on pollution", December 2019.

[6] IEA, "World energy investment 2020".

# Comments on Surviving the Covid-19 economic crisis in MEED, 24 Mar 2020

Dr. Nasser Saidi's comments appeared an article titled "Surviving the Covid-19 economic crisis" that appeared in MEED on 24th Mar 2020.

Comments from the article are posted below. The full article can be accessed here.

*"It looks like the oil price war that is now launched is a strategic move by Saudi Arabia to weaken or destroy shale oil," says economist Nasser Saidi, founder and president of Nasser Saidi & Associates.*

*"It was bound to happen. There are two factors negatively effecting oil – renewables and shale. Shale was eating into the Opec plus share. They either wait and continue to lose market share or they act. They could choose now or later. They chose now."*

*"I estimate that because of the losses, the GCC needs to raise $160bn-180bn in 2020 to maintain current spending deficits and provide financial support to some industries such as aviation," says Saidi.*

No significant announcements have been made about projects being delayed or cancelled in the region, but the projects sector will be significantly affected by cuts to capital spending. *"The likelihood is that many will be delayed or postponed," says Saidi. "And the net result is that structural adjustment, in terms of diversification, will be more difficult unless they bite the bullet and open up privatisation and public-private partnerships (PPPs). To me, this is the time to provide incentives."*

# Making it Clean: Changing the Global Energy Mix, Article for Aspenia, Jul 2018

*The article titled "Making it clean: changing the global energy mix" was published in the latest Aspenia Issue, July 2018, and can be downloaded in English and Italian.*

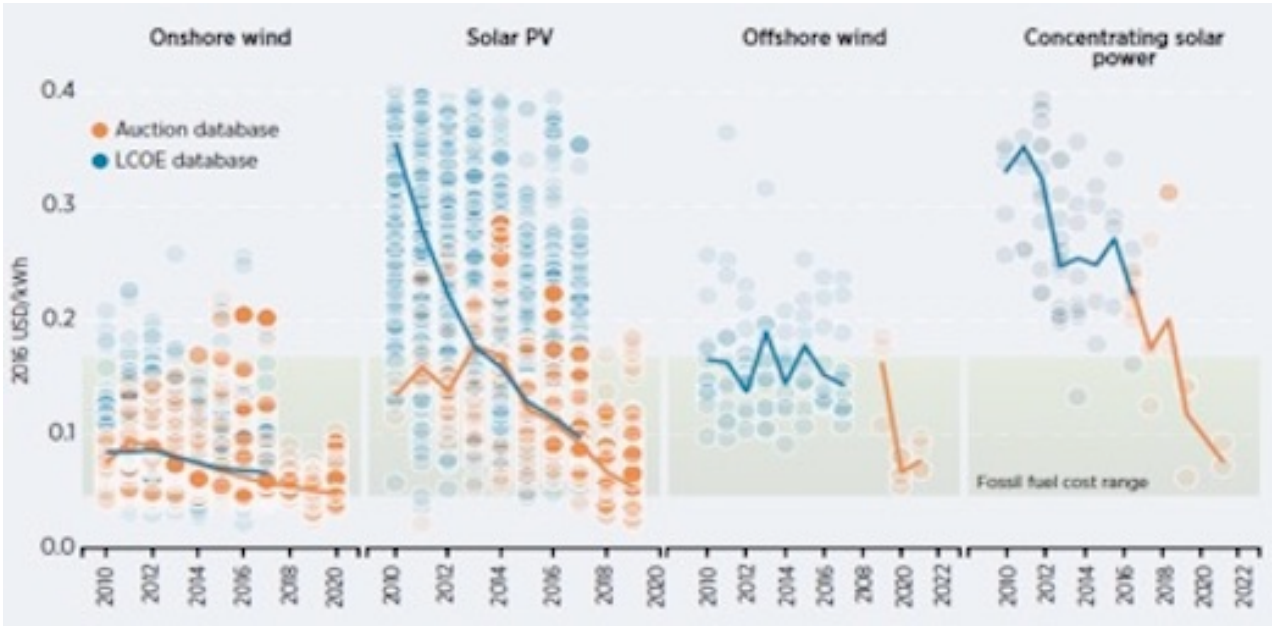
The speed of transition to a new global energy mix has accelerated in the past decade. A changing global economic geography with a shift towards fast growing energy-hungry emerging economies (China specifically) as the main growth engines meant a corresponding increase in energy demand that propelled energy prices upwards. Oil prices hit an all-time high of USD 145 in July 2008 before the Global Financial Crisis, and then later in August 2013 to around USD 115. High oil prices provided an incentive for nations (especially emerging ones that ran high oil trade deficits), households and businesses to find substitutes for fossil fuels and lower energy intensity. The EU provided subsidies for renewable energy investments. Concurrently, the OECD countries implemented energy efficiency policies aimed at energy saving, leading to a trend decline in energy used to GDP ratios by some 1%-2% per annum, and breaking the historical link between economic growth and energy demand.

Two additional factors supported the acceleration in energy transition: technological innovation and growing awareness of climate change risks. Innovation in hydraulic fracturing or fracking techniques to extract "tight oil, resulted in the shale revolution and a rapid growth of on-shore oil production in the US. Fracking technology has diffused internationally and its cost has declined: the breakeven oil price for new

shale oil wells ranges between USD 46-55, while an oil price between $24 and $38 would cover operating expenses in the US.[1] And the shale oil revolution is spreading internationally: Argentina's Vaca Muerta (Spanish for Dead Cow), is a shale gas and oil formation the size of Belgium, with technically recoverable oil reserves and shale gas of 27 billion barrels and 802 billion cubic feet respectively, the second largest in the world after China's 1.12 trillion cubic feet. Technology is changing the economic geography of energy and its global market!

Similarly, technological innovation and investment have dramatically cut the cost of renewable energy. Since 2009, the global benchmark levelised costs of electricity (LCOE) for solar PV has tumbled by 77%, and that for onshore wind by 38%, while lithium-ion battery price index shows a fall from $1,000 per kWh in 2010 to $209 per kWh in 2017[2]. Declining battery costs means falling energy storage costs, which addresses the problem of intermittency of renewable energy. The decline in battery storage costs also means a potential revolution of international trade in renewables-based chemicals and fuels. Government policies to curb climate change alongside technological advances and rapidly falling costs for solar and wind power[3] has meant that renewables are becoming increasingly more competitive, resulting in unsubsidized clean energy world records last year. There is no longer a need to subsidise renewable energy system solutions: global renewable energy prices will be competitive with fossil fuels by 2019 or 2020.

**Fig 1: Global levelised cost of electricity and auction price trends for solar PV, CSP, onshore and offshore wind from project and auction data, 2010-2022** *(Source: Renewable Power Generation Costs in 2017, IRENA, Jan 2018)*




There has also been a massive shift in public opinion and awareness of the implications of global warming. Addressing the risks of climate change has become a key policy priority embodied in the COP21 commitments. All nations (except the US Trump administration) have committed to reduce emissions by at least 20% compared to business-as-usual by 2030. The subsequent COP 22, 23 commitments have all seen unwavering support from countries across the globe (ex-Trump's US).

**A New Oil Normal**

The implication of the above trends is that there will be a permanent and persistent secular downward shift in the demand for fossil fuels, putting downward pressure on oil prices. This is the New Oil Normal. For coal producers & coal based utilities and fossil fuel producers and exporters like the GCC countries, the risk is that their vast coal and hydrocarbon reserves will become 'stranded assets': they will no longer be able to earn an economic return.

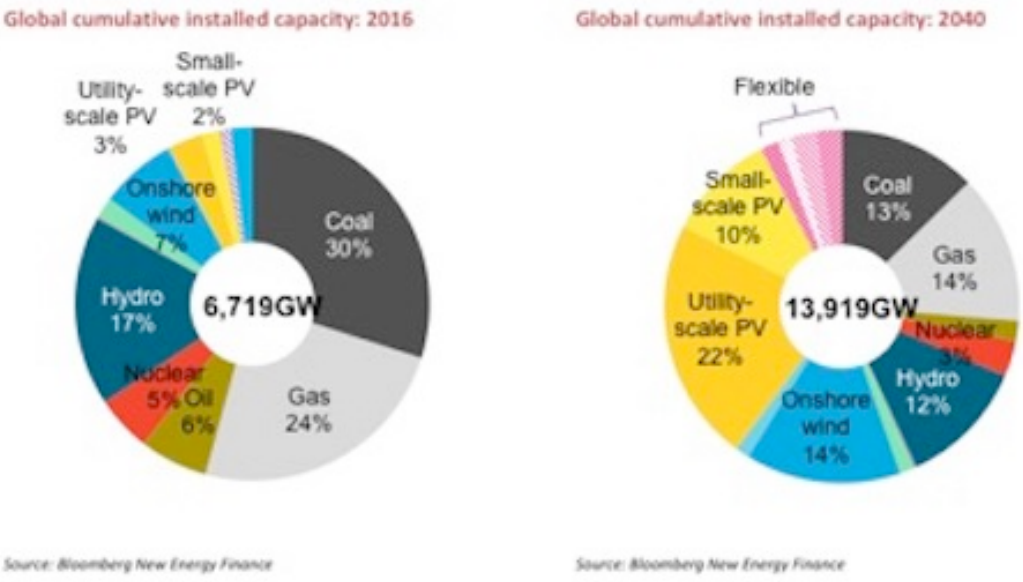
The bottom line is that the increasing prosperity of emerging nations, greater energy efficiency, technological innovation and policy commitments to reduce carbon emissions are resulting in a radical changes of the global energy mix and market. Looking ahead, given their size and demographics China, India and other emerging Asian countries will account for around two-thirds of the growth in energy consumption over

the coming decade, to be followed by Africa. Increasingly, these emerging economies are switching to renewable energy sources, given their economic and environmental competitiveness.

**A New Energy World is emerging**

New investment in clean energy reached USD 333.5bn in 2017, up 3% from the year before but short of 2015's record-high USD 360.3bn, but higher in real terms. A record 157 gigawatts of renewable power were commissioned in 2017, up from 143GW in 2016, and far out-stripping the 70GW of net fossil fuel generating capacity added last year. Solar alone accounted for 98GW, or 38% of the net new power capacity coming on stream during 2017[4]. A regional comparison shows that the balance of investment has shifted from Europe as largest-investing region to Asia. China set a new record for clean energy investment in 2017, and the UAE was among those investing more than USD 1bn in clean energy along with 10 other emerging nations (from a total 20 countries). And Saudi Arabia announced a massive 200 gigawatts solar power development in the Saudi desert with Softbank that would be world's biggest solar project and would be about 100 times larger than the next biggest proposed development!

**Fig. 2, Global cumulative installed capacity, 2016 and projected, 2040** *(Source: Bloomberg New Energy Finance)*




Renewable energy sources are set to repre

sent
almost three quarters of the USD 10.2trn the world will invest in new power generating technology until 2040, with solar and wind dominating the future of electricity (Fig 2). The world is also increasing investments in clean technologies. A transport and mobility revolution (electric vehicles) will lead to cleaner, healthier cities for increasingly urbanised populations. Not just 'smart cities' but also 'clean cities'.

**Twin Revolutions: Renewables and AI & Blockchain**

We are witnessing the birth of twin revolutions which will conflate: AI and Blockchain technologies are fusing with new energy. AI is supporting the 4th industrial revolution: think energy and water digitization, smart grids, smart meters, "deep learning"[5], demand management (i.e. manage demand response of different devices that run in parallel), and digital asset management (i.e. where machine learning algorithms collate, compare, analyze, and highlight risks and opportunities across a utilities infrastructure thereby providing an opportunity for power companies) among others. Blockchain technology has the potential to offer a reliable, low-cost way for financial and/or operational transactions to be recorded and validated across a distributed network with no central point of authority, leading to a greater decentralization of energy systems.[6] Applications lie across a vast spectrum: digital tokens to reward users for saving energy, adding smart contracts onto a blockchain, asset and inventory tracking, traceability of water, gas & electricity flows & maintenance, data sharing, fraud detection, electric vehicle charging, and so on. Peer to peer energy trading[7] , the ability of neighbouring homes, 'prosumers', to sell solar energy to one another as well as to a shared grid is already being tested.

The challenge to the widespread adoption of blockchain technologies will be to develop an enabling legal and regulatory framework. Country policy frameworks need to be developed to focus on cleantech investments, innovation and

commercial conversion, in addition to 'soft' and 'hard' investments to facilitate and integrate the twin revolutions of clean energy and AI and blockchain technologies.

**Clean Energy & Economic Development**

Energy, water and basic infrastructure are building blocks of economic growth and development. Some 1.1 billion people, of which some 600 million in Sub Saharan Africa, do not have access to electricity. In the absence of electricity they cannot have access to the internet and the digital economy, digital services, let alone participate in the 4th Industrial revolution. The renewable energy revolution offers a new hope to spur and enable economic development of Africa (with its largely untapped hydro and solar potential), India and Asia, using off-grid power systems and decentralisation that do not require expensive, centrally administered national grids. Renewable energy can be local, at village level.

**A Renewable Energy Promise?**

The IEA has recently warned that the world is headed for irreversible climate change in five years[8]. It is increasingly unlikely that we will be able to keep global warming below 2°C despite COP commitments. Our best hope is to accelerate the global adoption of intelligent renewable energy systems and clean tech for our cities and transport systems, to rapidly change the global energy mix and mitigate the risks of catastrophic climate change.

[1] See Federal Reserve Bank of Dallas https://www.dallasfed.org/-/media/Documents/research/econdata/energycharts.pdf?la=en

[2] See Bloomberg New Energy Finance (BNEF) https://about.bnef.com/blog/tumbling-costs-wind-solar-batteries-squeezing-fossil-fuels/

[3] IRENA estimates that renewable energy will cost less than fossil-fuel generated electricity by as early as 2020.

[4] http://fs-unep-centre.org/sites/default/files/publications/gtr

2018v2.pdf
[5] Google cut its electricity bill with AI: the DeepMind-powered AI coordinated datacenter tasks like cooling, and led to a 15% improvement in power-usage efficiency in 2016. Source: https://www.greentechmedia.com/articles/read/google-employs-artificial-intelligence-to-cut-data-center-energy-use#gs.SuwB65o
[6] See Exploring the Impact of Blockchain in the Energy Industry http://nassersaidi.com/2018/02/15/exploring-the-impact-of-blockchain-in-the-energy-industry-30-jan-2018/
[7] The Brooklyn Microgrid paroject: http://brooklynmicrogrid.com
[8] https://www.theguardian.com/environment/2011/nov/09/fossil-fuel-infrastructure-climate-change