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SPECIAL REPORT

Q4 2020

THE GLOBAL ENERGY TRANSITION

ACCELERATED BY COVID-19?

EXCLUSIVE 22 OPINION EDITORIALS

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CHAPTER 1
OVER THE HORIZON?

Hydrogen Economics Finally Appeal

Hydrogen is an area within the green space that is gaining much traction. It initially appeared uneconomic. But today we're generating excess green electricity, so it makes absolute sense to direct this to producing green hydrogen. Critically, this gas can also be stored and used to fuel heavy transport where battery power can't.

By Kristina Haverkamp
Managing Director, German Energy Agency

A win-win model can be created between countries like Germany – which supplies technology, machinery, and investment – and those that have the natural resources and demand, such as Australia and the Arab Gulf.

With limited sunshine and space, Germany is only targeting 10GW of indigenous hydrogen production in the medium-term. We'll look to import green hydrogen over the long-term while continuing to export our expertise.

"A win-win model can be created between countries like Germany – which supplies technology, machinery, and investment – and those that have the natural resources and demand, such as Australia and the Arab Gulf."

Allocation: Let's be smart

An enormous amount of money is about to be spent, which could shape our infrastructure, buildings efficiency, energy systems, and zero emissions mobility for decades to come. On a global level, about $26trn in stimulus packages has been pledged so far. Germany has €130bn planned, of which 43% will be dedicated to green projects. Let's make sure we get it right. ■

Unity Vital for Hydrogen Success

Investors' interest in hydrogen has transformed in the last five years. More stakeholders are coming together to explore it as momentum to leverage clean energy grows.

By Dr. Anthony Yuen
Managing Director, Head of Commodities, Pan-Asia Citi Research

Technology has also advanced, so it will be interesting to see if a similar cost curve can be achieved as was done with renewables. Mainland China has set a strong policy direction for investment in hydrogen fuel cells. If they can emulate what they did with solar, costs for hydrogen could collapse.

Calling investors!

The banking and finance community has been readily available to fund the renewables sector in the past decade, aided by favorable tax policies. Investment into energy storage took a little longer with question marks around revenue streams; there will be similar questions for hydrogen. It's not yet clear how revenue will be generated as factors like the dynamics of hydrogen plans and offtake agreements still must be worked out. The cost

"Mainland China has set a strong policy direction for investment in hydrogen fuel cells. If they can emulate what they did with solar, costs for hydrogen could collapse. Watch this space."

trajectory for hydrogen is also in development. Another differentiator to renewables is that financing for hydrogen will more likely come from the corporates themselves or venture capital, with less facilitation from the larger investor community.

Getting from A-Z

Transportation will be a big trend to watch as the world emerges from the Covid-19 pandemic. Will we witness a permanent change in public transport, remote working, and international travel? Or will 2020 only be a transient period? The answer will all have a profound impact on how we think about the energy system going forward. The EV market currently produces 2mn cars a year, compared with 100mn sales of combustion engine cars. Could the EV market ever satisfy global transportation demand? It could very well be hydrogen that provides the answer in this regard. ■

Hydrogen Needs More R&D – and Fast

R&D is a critical enabler to move from blue to green hydrogen generation. We need sustainable innovation and investment in technology to explore different types of production and utilization.

By Dr. Nader Mosavat
Director, Faculty of Engineering & Technology, Muscat University

Synergy and integration between industry and academia will play an integral role in making hydrogen a viable energy product and sector in the region. Raw ideas developed in academia need both local and international support from industry to increase technology readiness and reach successful commercialization. Funding for research and trialing pilot applications in the field will be part and parcel of any future success.

Unleashing Oman's potential?

Oman will continue to rely predominantly on oil and gas in the coming decade. Thereafter, we could see a massive turnaround in terms of hydrogen application and its role in the country's energy agenda. Tapping into Oman's natural advantage of solar radiation and using hydrogen as baseload storage will be invaluable. Questions remain about how we'll utilize the full extent of hydrogen produced hybrids, or how we'll manage the massive disruption of fuel cell technology in transportation and other industries. With essential R&D in place, the full potential can be realized. ■

"Tapping into Oman's natural advantage of solar radiation and using hydrogen as baseload storage will be invaluable. With R&D, the full potential can be realized."

Mixing Green Solutions is a No-Brainer

No one solution dominates. A tradable zero emission scale and integrated mix of green energy solutions must be developed.

By Dr. Linda Wright
Chief Executive, New Zealand Hydrogen Association

Hydrogen and battery power, for example, don't need to be mutually exclusive as fuel-free mobility solutions. We must identify operational advantages and limitations for all solutions and dovetail them together. Additional funding in R&D to enable discovery of efficiency of scale, investment in infrastructure, technology development and deployment, and upskilling are all required. It's also imperative to solve where and how to integrate across energy systems, both domestically and regionally. The transportation and export of hydrogen and hydropower are just two examples of successful collaborations that New Zealand is pursuing in the Asia-Pacific region.

"The transportation and export of hydrogen and hydropower are just two examples of successful collaborations that New Zealand is pursuing in the Asia-Pacific region."

Make it easy

Governments must legislate provisions and fiscal incentives across the economy to motivate the behavioral changes required for residential, commercial, and industrial sectors to go green. New Zealand is well on track in this regard and we are very committed to reducing and redressing the importation of fossil fuels. Today, it's 85% renewables, with legislation mandating 100% by 2035. ■

Tech Integration is Essential

Integrating technologies is no easy task, especially amid a pandemic. But it's paramount to the long-term growth of the Middle East's energy industry.

By Dr. Symeon Kassianides
Chairman & CEO, Hyperion Systems Engineering Group

Particularly in the last two years, companies in the region have started successfully adopting digital technologies that lie under the umbrella of the 4IR. This encompasses operating areas like production planning, shipments, supply chains, and quality reviews to improve efficiencies. But now for the trickier part: fully integrating legacy foundation technologies with 4IR tools like AI, blockchain, predictive analytics, and more. Some oil majors and NOCs in the Middle East are well-prepped for this digital transformation, demonstrating strong appetite for adoption by building appropriate infrastructure and instilling thought processes. But there is still much work to do.

"Not only will we see digitalization being used to cut operational costs, but we'll also see stronger cooperation between stakeholders on how to make digital tools a seamless, safe, and profitable part of daily operations."

Step change

Through a very unfortunate default, the Covid-19 crisis and the resulting drop in energy demand and revenue are forcing a step change in how the energy industry views and uses digitalization. Not only will we see digitalization being used to cut operational costs, but we should also see stronger cooperation between stakeholders on how to make digital tools a seamless, safe, and profitable part of daily life. Just two months into this crisis, solutions are being developed remotely to be implemented at plant sites. As these new methods gather pace, it will make going back to the old status quo much more difficult. ■

What's Next for Data Processes?

The Covid-19 pandemic has reset the clock on technology, supply chains, and how businesses tie together. As companies and governments pursue their energy transition, questions around 5G and data sharing come into play. How should we manage and utilize the new data being processed and filtered through new systems? How much of it should be shared?

By Dean Mikkelsen
Data Management Manager, Rumaila Operating Organization

Many nations in the EU and elsewhere operate today in what they see as a liberalized market for data, where they can sell the product as a pathway to recoup the investment that was made to collect it. The Middle East is making progress on establishing local data centers; Oracle recently opened one in Saudi Arabia, for example. Countries in the GCC can opt to keep sensitive data private while simultaneously building shared infrastructure, knowledge, and skillsets. This delicate balancing act can be mastered, and the effort will pay dividends.

"Oil majors don't have to completely reinvent the wheel. For one, pipes and connections can be used to supply solar power to the grid."

A fresh start?

Oil majors like BP, which has fully committed to the energy transition, don't have to completely reinvent the wheel when it comes to physical infrastructure. Certain facilities can be repurposed. Pipes and connections can be used to supply solar power to the grid, for example. This could create opportunities for countries with poor infrastructure to be revamped, i.e. Iraq's power ecosystem. Beyond energy, this could also help local communities and economies thrive. ■

A President Biden: Sounds Good!

A win for Democrats in the US election in November will result in a big transition in energy policy.

By Amos Hochstein
Former Obama Administration International Energy Envoy

For starters, strict regulations will be reinstated on activities, like flaring from shale production, and money will continue to be spent on renewable energy infrastructure. The oil and gas sector will have to adapt. American companies have been laggards at doing so thus far, although some have begun to take steps in this direction. By contrast, European majors, like BP, have demonstrated tremendous efforts at transforming their strategies in line with the energy transition.

US plays catch up

Oil companies in the US have been living under a false narrative during the Trump administration, which has lulled them into a sense of immunity from a rapidly changing world outside. US oil majors, like their European and Asian counterparts, must make acquisitions into clean and green technology and renewables. If they maintain their non-committed posture, they will simply not survive.

"Oil companies in the US have been living under a false narrative during the Trump administration, which has lulled them into a sense of immunity from a rapidly changing world outside. If they maintain their non-committed posture, they will simply not survive."

Energy independence: A myth

Another misconception is one of energy independence. We are living in an interlinked world of global commodities. The idea that we are more independent if we produce more oil is a fallacy, which sets a dangerous set of expectations, because it's unattainable. We may see some of the stronger US shale producers recover from this year's oil demand shock if prices stabilize at current levels. However, the reality is that all producers – shale or not – will have exposure to similar events in future. Any party who disputes this interconnectivity best take heed. ■

Support for Green Economy Tots Up

The circular economy concept is picking up on a much larger scale as test cases prove it cuts costs.

By Anish De
Partner, National Head, Energy & Natural Resources, KPMG India

Technology is continuing to provide companies with several tools and options, allowing them to not only reduce costs but also reduce the environmental impact of what they are selling. It's critical that corporates are made responsible for Scope 3 of the emissions chain. Without this, we'll all simply carry on doing what we've always done. Consumer perception is also key. Once user preferences change, it follows that the costs of producing those goods can also shift.

India's net-zero attitude?

As one of the world's largest consumers, India has seen a huge shift in appetite for renewables this year, away from coal-fired power plants. The same applies to investments in energy storage and hydrogen. The concept of net-zero has been gaining traction nationwide and is being implemented on a much larger scale across industries. However, unlike many other countries in Asia, this has stemmed largely from companies' volition. Government regulations have played a complementary role in renewable energy and energy efficiency, but they have not mandated that activity. Companies are independently defining their goals to reach a net-zero future. ■

"Corporates must be made responsible for Scope 3 of the emissions chain. Without this, we'll all simply carry on doing what we've always done. Consumer perception is also key."

CHAPTER 2

MOMENTUM BUILDING FOR GREEN ECONOMY?

Positive Sentiment Buoys Green Plans

There has been a tremendous trend towards renewables over the last five years, creating increasingly competitive prices.

By Christopher Cantelmi
Principal – Infrastructure & Natural Resource,
International Finance Corporation (IFC)

The drop in costs of both solar and wind power have been exponential across the board. In Jordan, for example, one of the earliest adopters of renewables in 2004, solar prices started at 14 cents per kilowatt hour (kwh). Today, we see one or two projects in the region operating at around 2.5 c/kwh. Technology and sunny and windy climates have helped Jordan create this new energy reality, with the same applying to countries like Egypt and others in the GCC.

Rethinking capital

Another success factor has been the track record of how projects are structured. The GCC introduced the independent power producer (IPP) concept more than 20 years ago, blending the banking market into projects with long-term government guarantees. This has encouraged cheaper sources of capital. Government action in the region will continue to be the main driver and determinant of the volume of projects brought online, usually projected forward a couple of years.

"The pandemic may slow one or two projects down, but the overall push for renewables remains robust."

Needless to say, this is subject to state off-takers' decisions on capacity needs. There has been limited liberalization to allow off-grid and self-generation recently, but large-scale utility projects continue to dominate.

Promises kept

The challenges to economies and businesses posed by this year's pandemic may slow one or two projects down, but the overall push for renewables in the Middle East will continue. Investment decisions on infrastructure typically take years to get deployed. So once those commitments are made, they are seldom derailed by short-term obstacles. Ultimately, it's economics that will determine continuation. ■

Sustaining Green Momentum Needs Attention!

GCC countries' weakening financials will make it harder to attract investors for large energy projects. Green projects, such as renewables, won't be exempt.

By Dr. Firas A.H. Al-Abduwani
CEO, Hussam Technology Company

This is despite the significant strides that have been made in recent years to spur the energy transition across the region, both socially and economically. Companies' budgets are strained by today's lower oil prices, which have been exacerbated by the Covid-19 pandemic. For one, it has hampered the deployment of cost-effective labor for project execution.

Varying speeds

Progress on the energy transition has differed from country-to-country. For example, the UAE took an early lead and has established a strong portfolio of green projects. But Oman has taken a different route. It only started to form initiatives on regulation for solar, energy efficiency, commercial and industrial infrastructure three years ago. So far, no IPPs have been signed.

Silver lining?

Despite the lower oil price cycle, there could be a silver lining for a transformational opportunity – if seized imminently. One focus area must be establishing a tangible value for carbon. Without this, or an alternative short-term incentive mechanism, the market will simply not change.

"Despite the lower oil price cycle, there could be a silver lining for a transformational opportunity – if seized imminently. One focus area must be establishing a price for carbon. The market will simply not change without it."

Also, we must focus on local job creation and learn to adapt to more diverse job roles. Developing human resources means informed decisions can be made from the bottom-up.

In-country value

Creating stronger local supply chains is another area for improvement, especially as most equipment for the renewables sector is currently imported. SMEs also require supportive financial structures, especially as they tend to have a lower-risk appetite than those in the more solid and cost competitive utilities sector. All these challenges must be overcome to see real change. ■

Investors' Green Appetite Unabated

Renewables are emerging front and center for businesses wanting to cut costs, especially in today's economic climate. Be it for large power plants or decentralized operations, renewables are an increasingly popular route.

By Jeremy Crane
CEO and Co-Founder, Yellow Door Energy

Despite the impact of Covid-19 on finances, investors are still actively seeking opportunities. It's a relatively safe bet. Electricity will always be in demand, so renewables – increasingly the cheapest option – are a positive market to invest in. And that's not to mention the policy drivers behind the growth of renewables, notably Middle Eastern governments' National Visions and the Paris Agreement.

Bolster private activity

The current economic climate could – and should – spur governments into more decisive and effective policies that help the private sector increase renewable projects. The Middle East's renewable initiatives differ country-to-country. For example, the UAE and Jordan stand out as pioneering leaders. Others, such as Pakistan and Oman, have only recently started to make significant commitments.

"If government policies can enable businesses to be creative and collaborative, nations will ultimately be leaner and more competitive in the global market."

A distributed energy transition is one that enables a bottom-up approach, which means a broad segment of the private sector can participate in the electricity generating business. Construction companies, developers, investors, and operational and maintenance companies are just some of the private actors ready to do so. A whole new industry segment is being created in the energy space, which will allow more economic efficiency and create jobs.

Remove the hurdles

Making this a reality means having a more flexible approach by governments and the removal of any barriers to business. Providing such stimuli to energy transition projects could potentially improve corporations' bottom lines by 10%.
This support must also encompass small and medium-sized enterprises (SMEs), which account for such a crucial segment of economies in the Middle East. Overall, if governments' effective policies can enable businesses to be creative and collaborative, they will ultimately be leaner and more competitive in the global market. ■

Stress Breeds Innovation

The pandemic and global economic crisis have created the opportunity to make a real difference to net-zero targets. Historically, the best technological advances have happened in times of stress and conflict. Although Covid-19 has caused horrendous damage to the world, it has also made us realize that much more can be done on climate change.

By Anita Nouri
CEO, Green Energy Solutions & Sustainability

Renewables have fared well so far this year despite fossil fuel prices bottoming out, but we need global coordination and action to make a real impact on net-zero programs. Without this, we risk missing exciting new avenues in the sustainability space, such as with hydrogen fuel or projects like ours, which make electricity from landfill gas.

Every size matters

Financing in the region for smaller projects is a challenge. Some players have been able to resolve this by bundling ventures together. And while larger projects do still face legislative and regulatory hurdles, there is stronger political support behind them. It all comes down to economics; we need to make both money and energy. In the Middle East, we still suffer from a monopoly approach, but progress is being made with mechanisms like public-private partnerships (PPPs). This avenue ultimately opens the marketplace to more buyers and sellers.

"It all comes down to economics; we need both money and energy. In the Middle East, we still suffer from a monopoly approach, but progress is being made with mechanisms like public-private partnerships."

Put a price on carbon (finally)

Carbon emissions targets are a useful transition tool, but the region lacks an internal market for this. Ultimately, this means that projects, which are successfully reducing CO_2, are stymied by an inability to trade on any local market. Some have resorted to selling credits to other countries to cash in. It's relatively simple concepts like this where we must see major change. ■

Reshaping Carbon Attitudes

The challenge to meeting the Paris Agreement commitments is more long-term than it's immediate.

By Dr. Pablo Izquierdo Lopez
Senior Manager – Energy Auditing & Consultancy, Smart4Power

There has clearly been disruption to the sector this year. But on the bright side, the pandemic has opened up the opportunity for businesses and society to reinvent their thinking on climate change and to find new avenues of sustainability. The Paris Agreement targets, and the Nationally Determined Contributions (NDCs), are necessarily challenging – and many have struggled to comply.

Push and pull

There are only a few examples of best in-class practices of net-zero strategies being implemented across the Middle East, and those tend to be very customized. The approach to net-zero must be viewed and pushed from both the supply and demand side.

Carbon trading, for example, is a useful market mechanism to move the overall economy in an environmentally beneficial direction. But overall, it has been elective and not compulsory. A single-sided approach of carbon capture and storage (CCS) to offset emissions to achieve net-zero is unrealistic. We also need to reduce industrial and residential energy demand and emissions across all operations and infrastructures. Implementing greater efficiencies within buildings is just one example, which offsets similar processes along that same supply chain. We must maximize such opportunities and continue to seek others. ■

"The approach to net-zero must be viewed and pushed from both the supply and demand side. The push must equal the pull."

Time to Unite!

How to help stay one step ahead in tough times? Share intelligence and knowledge.

By Christian Cravedi
SVP, Hub Manager, India, Middle East & Africa, Energy Industries, ABB

In today's world of the 4IR, the energy industry must collaborate on technology more than ever – both on legacy and modern tools. Identifying a clear, united purpose is vital to sustainable progress.

Amid today's challenges, we must all innovate and adopt solutions that are in line with our current limits. In this vein, more and more collaborations are emerging across a broad spectrum. This includes the oil and gas industry, environmental services, as well as the power, water, and chemical sectors. These business synergies are being crafted to maximize companies' value propositions. Integrating the tools of the 4IR, such as AI, into this mix unleashes ever-growing potential for companies' plans. This encompasses worker safety, business continuity, efficiency, and productivity.

"Green technologies are the next frontier for energy firms. Are you ready?"

Leader or follower?

Evolving green technologies – such as tools to expand the hydrogen market – are undoubtedly the next frontier for energy firms. But the pace of progress will differ between companies. Different types of utilization of the 4IR toolkit will evolve for different purposes at different times. But what is a clear priority for all is that we can no longer think in silos.

We must all consider ourselves in a visible and open souk where the 'product' of the hydrocarbon chain is able to work alongside many other 'products' in the souk, such as renewables. All the 'products' are critical to improving our quality of life. Whatever combination helps establish the right balance – identified through knowledge-sharing – is invaluable. ■

CHAPTER 3
NEVER STOP TRANSITIONING?

The Trick to Corporate Survival?

If businesses are going to survive for another 50 to 100 years, they must transform now. History has shown that energy companies have not always been successful in this endeavor.

By Sir Mark Moody-Stuart
Chairman, UN Global Compact

Some have tended to move slowly and carefully. But many are now accepting the view that oil demand will peak at around 100mn b/d – the market is rapidly changing around them. This is an exciting time for the energy industry and the global transition. We must be better coordinated and bolder.

Investors' incentives?

Oil majors choosing to make cuts in dividends are most likely to get support from large investors, such as pension funds, if they can do two things.

First, the usual story of being able to show what they plan to do with the extra cashflow. And second, which is new, show how they are making a commitment to the energy transition. Energy entities, including international oil companies (IOCs), that have already made that commitment would be foolish to exit now, even if the sector is under a certain amount of stress. A slight transatlantic divide is emerging, with European majors seemingly more committed to this path and eager to seek the necessary skillsets.

"There has been a strong tendency towards electrification within the scope of alternative energy, but we should not necessarily commit everything to this. Like oil, electric battery storage technology also uses materials that originate in difficult parts of the world."

What's next?

There has been a strong tendency towards electrification within the scope of alternative energy, but we should not necessarily commit everything to this. Like oil, electric battery storage technology also uses materials that originate in difficult parts of the world. Hydrogen is an obvious alternative for the industry to focus on, be it blue hydrogen or green hydrogen. Looking ahead, it's important to allow alternative transport and storage methods to be sourced in a green and sustainable manner, while using hydrocarbons in tandem as a transition resource. Whatever your next step, just make sure you take one: change or be changed. ■

The Time is Now

Globally, appetite for a greener path in the economic recovery from Covid-19 is growing.

By Frank Wouters
Director, EU-GCC Clean Energy Technology Network
& Former Deputy Director-General, IRENA

Green recovery plans in Europe are playing an instrumental role in economic stimulus packages, for example. Yes, we are still seeing infrastructural investment in traditional power lines. But we are also witnessing funds being used to convert natural gas pipelines to hydrogen – a fast-developing area that has come into sharp focus.

Renewables hold on

The global economic downturn has placed tremendous economic pressure on all kinds of power generation, but it appears that renewables are weathering the storm better than others. Businesses operating wind turbines and solar panels have fixed costs, so they are less vulnerable than those encountering marginal costs, such as fuel usage. Renewables are not immune to stress, however. Renewable grid operators must still overcome the challenge of managing intermittent demand and finding sustainable and scalable battery storage remains pertinent.

"The global economic downturn has placed tremendous economic pressure on all kinds of power generation, but it appears that renewables are weathering the storm better than others."

"Net zero ambitions by oil and gas companies are commendable. But so far, they have been limited to Scope 1."

Hello hydrogen

In 2019, 20% of oil and gas executives wanted their companies to imminently start investing in hydrogen, one survey showed. This comparative number rose to 42% this year, plus the pipeline of green hydrogen projects is multiplying fast. Net zero ambitions by oil and gas companies are commendable. But so far, they have been limited to Scope 1 (internal company operations) and Scope 2 (purchased energy). Yet, most emissions take place within Scope 3, which is where the fuel is produced and sold. We must see more progress.■

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Urgent Need for Tailor-Made Solutions

It's a difficult time for humanity. The challenge we are facing with the pandemic is one that needs a combined effort by all parties: developers, governments, and technology providers.

By Yousef Al Ali
Executive Director, Masdar Clean Energy

Of course, the economy itself is facing a lot of challenges. Demand has declined, production, communication, travel, and the shipments of products face many issues and restrictions. What we can do as renewable energy developers is offer cost-effective technical solutions that are tailor-made for the requirements of these governments.

Masdar's footprint

Today, if you look at Masdar, we offer more than 5GW capacity worldwide, operating in more than 30 countries, from across North America, Europe, Africa, the Middle East, Central Asia, India, Indonesia, and Australia. When it comes to growth, we always try to diversify. Of course, we can't shy away from mature markets like the US; a huge liquid ecosystem where we would want to position ourselves alongside other global developments. The European market is another mature market where we should have an important role to play.

"Saudi Arabia is one of our biggest markets and one of the biggest renewable markets generally in the region."

"In the next two years, we'll have at least 4-5GW operational in Saudi Arabia. Implementation is happening on time."

Saudi calling?

In the next two years, we'll have at least 4-5GW operational in Saudi Arabia. Implementation is happening on time. Saudi Arabia is one of our biggest markets and one of the biggest renewable markets generally in the region. It's an industrialized country and you have almost 50-60GW of capacity in the kingdom. ■

Dose of Reality for Oil Majors

Oil majors adding green projects to their portfolios must adjust their expectations on rates of return. Companies have started to write down oil-fired assets and reserves and to explore investing into utilities and power generation.

By Paddy Padmanathan
CEO & President, ACWA Power

With proven track records of delivering big infrastructure projects, oil and gas corporations should have success. However, the challenge will be in stepping away from a market of oscillating prices that has brought an average return on investment (ROI) of 15%, into one that is heavily regulated and that generates closer to 7%. The massive infrastructural investment required upfront for renewables projects also take longer to produce returns.

Emerging norms?

The reality is that returns are commensurate with the level of risk. Acceptance of this and a general shift in expectations of what it means to move into ethical investment will take time. But interest in the green economy spectrum is undeniably on the up. Private equity and high-net-worth individual family offices are demonstrating keen interest, for example. Financing sources for renewables remain quite traditional, with banks and import-export agencies still the main pools of liquidity. Large funds are starting to pay more attention but have yet to enter in any significant way. The Covid-19 pandemic has certainly helped refocus this to an extent, as has a lack of attractive alternatives for placing funds into banks, currently offering negligible interest rates. ■

"The challenge will be in stepping away from a market of oscillating prices that has brought an average return on investment of 15%, into one that is heavily regulated and that generates closer to 7% – nearly half."

The Future? Environomics.

Environomics: modeling carbon efficiency across the entire energy ecosystem and value chain.

By Morgan Eldred
Managing Partner, Digital Energy

This means identifying answers to vital, albeit sometimes tough, questions. How soon can the industry use hydrogen? Should we take produced water from oil wells into forward osmosis? Should we use artificial intelligence (AI) and advanced data analytics to model carbon efficiency from meters and field workers' workflow? What type of power should we use? These, and many more, are considerations within the environomics model. The economic crisis triggered by the Covid-19 pandemic has accelerated the need to look at these new metrics.

Embrace digital territory

This new territory must leverage the digital tools of the 4IR to succeed. Today, some digital solutions are being used for supply chain optimization and carbon efficiency – by operators and regulators – to improve productivity. For example, especially in today's economic climate, incentives for something as simple as reducing fuel usage is driving digital interest across industries. And technology companies like Apple, Google, and Amazon are linking into the energy sector with solutions as they aspire to be carbon neutral. But this is just the beginning; more must be done.

Trust will be a critical ingredient to success as more sectors and industries start to use 4IR tools. For one, the level of testing on AI and whether the recommendations for its use and other solutions are truly optimized will be questioned. But this is part and parcel of environomics – a future we all need to embrace.■

"Should we take produced water from oil wells into forward osmosis? Should we use artificial intelligence (AI) and advanced data analytics to model carbon efficiency from meters and field workers' workflow? These questions are the tip of the iceberg."

Diversification: A Great Ally

It's time for the GCC to diversify. It has successfully executed sustainable power and utilities projects. Now it must look at other industries, including transportation. This does not come without its challenges.

By Dr. Steven Griffiths
Senior Vice President, Research & Development, Khalifa University

Take hydrogen storage as an example. This is an area of exponential interest, but it has yet to produce commercially viable technologies. We need more R&D in many of the new applications we are studying – and that requires capital.

Ramp up green stimulus

The Covid-19 pandemic has triggered trillion-dollar economic packages, predominantly in the US and Europe. If governments could apply a somewhat similar approach to clean energy R&D and hydrogen research, for example, we would be in good shape. The pandemic is bound to cause some delay in industrial investment in the power sector globally, with utility scale projects possibly less impacted. Sustainable transportation, such as ridesharing, will also be challenged due to social distancing. But in the meantime, other areas like electric vehicles (EVs) and soft transport (i.e. bikes) can continue to grow.

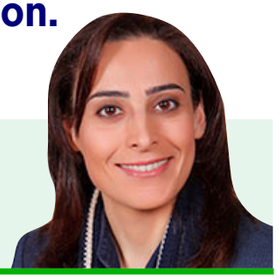
"Covid-19 has triggered trillion-dollar economic packages. If governments could apply a somewhat similar approach to clean energy R&D, we would be in good shape."

Collaborative R&D is key

Meeting today's demand for power in a sustainable manner with solutions like electrification, smart grids, water, and hydrogen technologies requires collaboration. There is a real opportunity for academia, governments, and business to do this. One route would be to push technologies coming out of universities to large companies, so they can be adopted and commercialized. At best, they could be utilized for immediate benefit. An alternative pathway, which is more socially and economically impactful, would be to help students become entrepreneurs. This would allow them to take an area of less prominent R&D to commercialization. Looking ahead, how we think of R&D must evolve – and quickly. ■

NOCs Face a Crossroads

Covid-19 has been an eye-opener for NOCs and brought the energy transition forward. Resource-rich countries in the GCC have built their economies around oil and gas extraction. But now, they face an increasingly fast paced energy transition.



By Laury Haytayan,
MENA Director, Natural Resource Governance Institute

NOCs face the risk of stranded assets and the challenge of deciding what they should do next. Governments in the region must demonstrate stronger political will, with clear policies that can be enforced to ensure companies in-country have strong momentum to move in the same direction. Not all NOCS will take an identical approach to how they tackle the energy transition. Saudi Arabia's Aramco and Algeria's Sonatrach, for example, will have different tracks, both in scope and speed.

Demand-driven policies

Policies should not be dictated to or be limited by the oil price, or oil supply. These two elements can be managed overall, as we've witnessed in the current market. Demand is the one element that can't be controlled. As domestic demand rises, countries should increasingly strive to meet this need with renewables, freeing up more oil and gas resources for export.

"Not all NOCS will take an identical approach to how they tackle the energy transition. Saudi Arabia's Aramco and Algeria's Sonatrach, for example, will have different tracks, both in scope and speed."

Eyes on hydrogen?

NOCs must remain as relevant and as competitive as possible, allowing for diversification when needed, while still catering to their social contract commitments. Hydrogen is one of the innovative tools that can support the Paris Agreement, with it currently drawing strong investment and interest. Many European companies have recently demonstrated a keen interest to collaborate with governments in the region on joint venture hydrogen sourcing projects. ■

Power Lines Are the New Pipelines

It's not enough to just install solar and wind in the power sector. We must look to electrify across all segments of the economy. This means the Middle East must adopt a more integrated approach to meet climate targets.

By Jessica Obeid
Academy Associate – Energy, Environment & Resources Program
Chatham House

Construction is one example, with offices and residential units exacting a huge pull on energy. Continued research and investment into diverse technologies that offer system flexibilities and resolve questions, like storage capacity, are also critical. The region has done well to set ambitious targets, but it has not been clear enough on the steps required to achieve them. Many governments have realized this and have reset timelines to 2030. A regulatory framework and action plan are needed if countries are to reach their targets – and fast.

Bright spots?

The economic impact of the pandemic, compounded by lower oil prices, has thrown the Middle East into stress. But for the energy transition, there is a silver lining. For one, fuel subsidies may now be reduced or eliminated faster as governments look to reduce spending. Investors have also been reminded of how volatile oil markets can be and are looking to make more sustainable bets. In this regard, we've already witnessed sovereign wealth funds selling shares in oil assets and looking for new opportunities. In turn, this should encourage governments to step up in their commitments. ■

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SOURCE OF SPECIAL REPORT

These Opinion Editorials by high-level members of the global energy industry tackle the key issues that need fixing in order to make the energy transition an environmental and economic success.

Twenty-two interviews have been held since Q2 this year, including on-the-record discussions with seven CEOs and multiple Directors.

All have been directly harvested from Gulf Intelligence's exclusive Two-Minute Warning Interview, released every Tuesday, and the company's Energy Transition Dialogues webinar, which is live every Thursday. Both are free for all to join.

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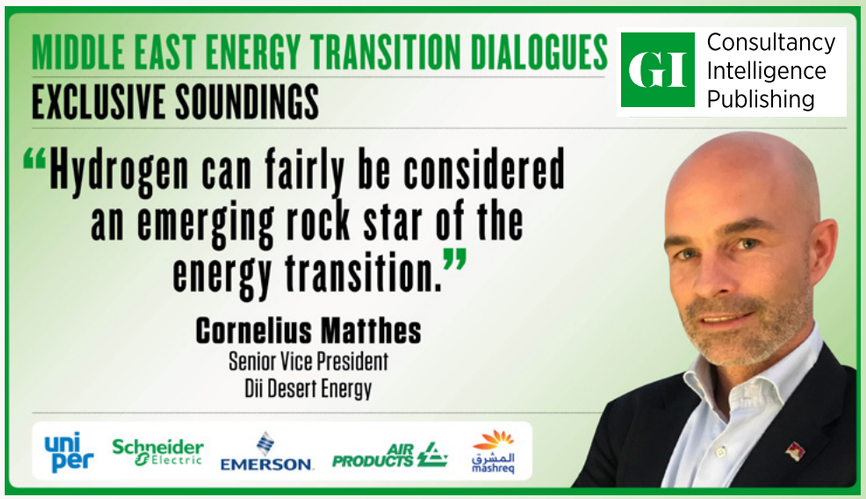

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