Exclusive Insights /// Actionable Intelligence /// Interviews /// OpEds

Energy Transition

GI Consultancy Intelligence Publishing

INTELLIGENCE BRIEFING

ISSUE 54, MONDAY, JULY 4th

SCROLL DOWN

ENERGY TRANSITION REPORTS INSIGHTS EXCLUSIVE SOUNDINGS

UAE ESCO Markets Growing at Rapid Pace Ahead of COP28

Faisal Al Raisi, Chief Operating Officer, Etihad ESCO

Big players and developers in the UAE are approaching energy service companies (ESCO) such as Etihad ESCO in a bid to get their sustainability initiatives onboarded ahead of the UAE's hosting of the 28th Conference of Parties on Climate Change (COP28) in 2023. They are aligning their construction to net zero goals, an excellent opportunity for the ESCO business. We also hope that the COP meeting will place a focus on the carbon credit markets as these will enable the building sector to take their projects forward.

CONTINUED ON PAGE 2

How important is ESCO in the energy transition?

An ESCO plays a key role in the building sector's ambitions to cut carbon emissions. We are supporting Dubai to become a leading example of energy efficiency in the world. Etihad ESCO is one of the 11 programs focused on demand side management part of the sustainability strategy of the Dubai Supreme Council of Energy. Our target is to reduce and save 1.4 terawatt hours of electricity and 4.9bn imperial gallons of water by 2030. We need to achieve 1mn tons of abated carbon emissions from the retrofits of at least 30,000 buildings in Dubai by the same date.

CONTINUED *Faisal Al Raisi, Chief Operating Officer, Etihad ESCO*

Since our inception, we have secured about 8,000 buildings for retrofitting. We work on existing buildings of ten years and older, both in the public and private sectors. These include projects such as the Dubai Airport, soccer fields, golf courses, residential buildings, 500 commercial towers, over 100 residential villas, thousands of mosques, and several hundred gas stations. With the scale of our engagement, we have been dubbed as a super ESCO in the region. We also work on new developments to implement projects from the design stage.

How receptive is the region towards retrofitting?
Retrofit is not a new field, yet not everyone easily understands the whole concept. It is not about simply replacing a chiller or about replacing a whole building. ESCO in Europe is centered on sustainability, but here in the region they understand it more in terms of financial incentives. While there is good acceptability of the concept in Dubai, there is still resistance in the private sector due to lack of knowledge. We provide detailed feasibility studies and many solutions to demonstrate how clients can optimize savings and enhance their assets, including 100% financing of a project. We brief the top management and technical teams on what an energy audit involves for their facilities.

What makes the UAE an ideal environment to drive low-carbon growth?
The UAE is committed to achieving sustainable development and was the first in the region to announce its ambitions to reach net zero emissions by 2050. Over the years, we have seen the ESCO industry grow from three in 2013, to 30 international and local companies today. We also focus on education, tying up with international institutes and local universities to offer courses related to our field. For every single project, there are at least three candidates from the client and their technical team to enroll in relevant courses. After three to five years, when we step out of the project, our clients have the knowledge on how to continue independently.

How is the sector attracting the interest of the younger generation?
Hiring has grown along with the business and the education sector has partnered with us in this regard. Sharjah University, University of Dubai, and British University in Dubai have all introduced programs related to our field and we do see the younger generation now looking at opportunities in the field of sustainability.

How has collaboration worked for ESCOs in the region?
One cannot clap with one hand. Partnerships are a win-win solution because both parties can learn from each other. In the industry, we work with both national and international ESCOs. We have expanded our collaboration agreement in other parts of the region as well through our partnership with the Sustainable Energy Authority of the Kingdom of Bahrain for example, to aid them in the setup of their own national super ESCO. And we are looking to replicate that for other countries such as Qatar, Turkey, and Saudi Arabia.

Is technology a challenge in the industry?
Technology is constantly being upgraded. There are many new ideas, concepts, and products from all the big players in our industry - in software, platform technologies, smart meters, and anything related to building. Technologies are becoming smarter, more advanced, and cheaper. Solar panels are one example, becoming more efficient and more affordable.

What response have you had from the consumer market in the UAE?
We conducted a project in 2019 as part of an initiative by the Dubai Government to install solar and do a retrofit for 5,000 individual homes. This was executed in ten months and had an excellent response. Many are now coming to us, asking for similar initiatives for their homes. In the hospitality sector, we also have some of the large brands approaching us and more than 50 private schools in Dubai have reached out for our support to help them become more sustainable.

FULL INTERVIEW HERE

GI Consultancy Intelligence Publishing

Habiba Al Marashi

Founder, President & CEO of Arabia CSR Network
Co-Founder & Chairperson of Emirates Environmental Group

Companies with ESG Practices in Place Thrive

National entities that have made it globally understood what their ESG (Environmental, Social, and Governance) policy is, will help them open markets, build their reputation, enhance their brand image and secure the right type of investment. They must understand that it is an integral part of their growth and development so putting it in their core strategy with proper measurement tools and capacity building is important.

ESG Fundamental Requirement for UAE

Many companies in the UAE are looking closely at their internal operations and when they do, others follow. In the last three years, ESG frameworks have become a fundamental requirement to the success and sustainability of any organization in the UAE. While focused on climate action, they align their policies, practices, and the pillars needed to be in place. They look at how they can become more cost effective and efficient. They understand that they need to reduce their carbon footprint, for example by installing solar panels in their warehouses and headquarters.

Starting Sustainability with Quality

Entities in the UAE have begun adopting international standards and benchmarks. Quality is one of the top steps towards the sustainability journey and the UAE was the place where everybody was pushing for this. Today, organizations have numerous international certifications. This has created a certain amount of competition between entities and has pushed the bar higher. Companies are holding themselves accountable without the enforcement of the law, and that is what makes the UAE standout from others in the region. ■

**Paraphrased Comments*

Dr. Roberto Aguilera

Energy Economist
Curtin University, Oil and Gas Innovation Centre

Natural Resource Could Determine Hydrogen Type

Canada could use hydropower while countries with strong nuclear energy may apply it in their production. The same concept applies to Australia, which has a large coal industry which can be combined effectively with Carbon Capture and Storage. I believe that using natural gas as electricity for (blue) hydrogen production has the most potential as a transition fuel over the coming decades while the industry scales up. It can create demand for hydrogen until the green variety is ready to come in. In the end, economics will play a major role in determining the balance.

Investors Need Security of Demand

This is the main issue for investors in hydrogen. Energy companies in Australia are moving forward under intense pressure to reduce emissions and improve their environmental performance. They are investing in clean technologies such as CCS and hydrogen, even without the assurance of having security of demand.

Policy Support Necessary Until Hydrogen Becomes Profitable

The overarching point of hydrogen is to reduce emissions and policies can impact this through regulations such as carbon taxes. They can make fossil fuels more expensive or cleaner fuels more attractive through grants and subsidies. But in the long run, hydrogen should eventually be able to be independently profitable.

LNG Mechanics as Model for Hydrogen

Hydrogen market contracts could be modelled on LNG as they have similar considerations, such as long distance and complex shipping requirements, and so long-term agreements between buyer and seller would make economic sense. And in terms of infrastructure, hydrogen could adopt similar set ups to LNG in terms of storage and delivery technologies. ■

**Paraphrased Comments*

GI Consultancy Intelligence Publishing

INSIGHTS

THE ENERGY DEMAND REPERCUSSIONS OF ADVANCED DIGITALIZATION

By: CN Innovation

Digitalization and decarbonization feature the trends of our time. They are intertwined in that digitalization enables carbon emission reduction via improving energy efficiency, bettering integration of renewables and optimizing power system while empowering the broadest social participation in clean energy transition. But it also requires electricity to drive the digital infrastructure that captures, transmits, processes and stores data, as well as displays data in customized format and executes the desired instructions.

Therefore, stable and uninterrupted power supply is a pre-requisite to operationalize telecommunication systems, IoT, big data, cloud and edge computing, bitcoin mining, etc. As digitalization accelerates, what are the repercussions on power demand?
This Insight China report assesses the energy demand implications of China's digital revolution.

1. The digital revolution
With over one billion netizens, China is the world's largest digitalized society. It is also the world's 2nd largest "digital economy" next to the US. In 2020, the Chinese "digital economy", measured by both the value-add of digital ICT industries and the value created by the digitalization of industries and services, amounted to US$ 5.4 trillion (compared to $13.6 trillion in the US), accounting for 38.6% of the country's GDP (64% in the US) last year.

The Chinese government launched a largely digital driven "New Infrastructure" scheme in mid-2020 amidst the pandemic, aiming to lay a strong foundation for the expected post-pandemic recovery and growth. The plan has seven focuses, including 5G base stations, ultra-high voltage power transmission lines, inter-city and intra-city rails, charging piles for EVs, big data centers, AI and industrial IoT.

And, in November 2021, the Ministry of Industry and Information Technology (MIIT) published China's 14th Five-Year Development Plan (2021-2025) for the ICT Industry1, aiming to build and enhance a digital infrastructure that is high-speed, ubiquitous, integrated and interconnected, smart and green, secure and reliable. Some specific growth targets for 2025 are set: grow the number of 5G base stations from 0.7 million in 2020 to 3.64 million in 2025; data center computing power from 90 eflops2 to 300 eflops; and smart terminal devices from 3.2 billion in 2020 to 4.5 billion in 2025.

2. Power requirements of digital infrastructure
The digital infrastructure is built with basic digital devices, all need electricity to power them. These devices can be grouped into the following three categories: data acquisition, data transmission and data processing/storage.

2.1 Data acquisition and display devices
These include sensors that convert the property or status of a physical system into digital signals (e.g. smart meters, digital surveillance), and smart interactive devices (such as phones, tablet computers, Wifi boxes, TVs) that both capture data and display results. Even though individually, the energy consumption of sensors and devices is miniscule, only a few watts in most cases, but when multiplied by their number – often in millions or even billions, the energy use becomes very significant. The 2018 IEA study3 estimated a total of 15.5 billion such devices in operation worldwide and that each consumed 22kWh per year on average.

2.2 Mobile communication stations
Mobile telecommunication has evolved from first generation (1G) in 1986, to 2G (1994), 3G (2000), 4G (2010) and then today's 5G deployment, with faster speed, wider bandwidth and lower latency. Most of the smart-phone-based Apps were made possible only after 4G was introduced, and today, 5G is the enabling telecom infrastructure required for industrial IoT, remote medical operations and automatic driving systems.

Due to its limitations in signal transmission distance and obstacle penetration capability, a 5G station is not just one transmission tower. It is composed of one macro site (also called base station), plus many lower-level micro-sites, pico sites and femto sites in order to cover a given area. Table 1 below provides some technical specifications (transmission distance, number of connections and power requirements) of different 5G sites.

Source: © CN Innovation (www.cn-innovation.tech).

EXCLUSIVE SOUNDINGS

HYDROGEN: "Ireland is considering the energy transition through the lens of what is affordable, sustainable and what gives security of supply. We are looking at all the assets that we have in the first instance. We could blend some of our hydrogen into the gas network to get it up and running and we will involve agencies in Ireland that have been operating gas safely for decades."

Catherine Sheridan
Chief Operating Officer, EIH2

NETZERO: "Global success on reaching net zero will depend largely on actions by the planet's largest emitters — China, the United States, the European Union, and India — but there are steps the nations of the Middle East can take, with the benefit that many of these steps will improve the finances and economies of these countries regardless of whether the world reaches net zero. External financial assistance can help, but some measures can be taken independently."

Dr Howard J. Shatz
Senior Economist, RAND Corporation

CIRCULARITY: "Part of why plastic pollution exists is not because plastics are harmful. Rather, it is the collection method and how we deal with plastics after we are done with using them. We do not have the correct infrastructure on a domestic scale yet at a capacity that can absorb what we produce. Through Rebound Plastic Exchange, we aim to provide a global circularity for plastics."

Maryam Al Mansoori
General Manager, Rebound Exchange

POISED TO LEAD:
HOW THE MIDDLE EAST AND NORTH AFRICA CAN ACCELERATE THE GLOBAL ENERGY TRANSITION

By: Clean Air Task Force (CATF)

With its heavy reliance on fossil fuel production, use, and sales, the MENA region faces clear challenges, but also opportunities, in decarbonizing its economy consistent with the goals of the Paris Agreement.

Near-term efforts to diversify its offerings to meet the future needs of the global fuels marketplace could help the region retain market share, continue to make use of its fossil fuel endowment, and meet domestic climate goals while contributing to the mitigation of greenhouse gas emissions from hard-to-abate sectors.

The MENA region has many of the key ingredientsneeded to be a world leader in the supply of zerocarbon fuels produced using low-carbon methods. This includes the availability of extensive and low-cost energy resources, both fossil and renewables, critical infrastructure (industrial base, fuel transportation, deep water ports), large potential geologic carbon storage capacity (including in depleted oil and gas fields), capital resources, available land, supply chain, and engineering capacities. Through regional collaboration, MENA countries could leverage early experience and capacity to develop technical and policy concepts that would build confidence in zero-carbon fuels coming from the region while informing critical policy debates elsewhere. While the challenges to advancing zero-carbon fuels are real – especially on the demand-side, where there is uncertainty on how growing demand for zero-carbon fuels will translate to price premiums necessary to cover the incremental costs of hydrogen produced with renewable energy and natural gas with carbon capture and storage and methane management – there is a lot the region can be doing to proactively create a marketplace that values low-carbon attributes of both main production pathways. This includes technical collaborations, leadership on domestic policy frameworks and enabling environments, and advocacy to encourage a level playing field so that fuels will be judged by their lifecycle, carbon dioxide-equivalent attributes and not their production methods. Clean Air Task Force stands ready to support regional leaders to advance these critical climate solutions.

Source: Clean Air Task Force (CATF)

FULL REPORT HERE

Table 1: Status of the Regulatory Framework for Carbon Capture, Utilization, and Storage in GCC Countries

Source: Table is taken from the Masdar Institute which examined the GCC countries[26]

Regulatory Domain (X:MAJOR GAP; -:MINOR GAP; BLANK:NO GAP)	Bahrain	Kuwait	Oman	Qatar	KSA	UAE
CO_2 classification	X	X	X	X	X	X
Ownership of subsurface facility	–	X		X	X	–
Transboundary CO_2	X	X	X	X	X	X
Environmental impact study						
CO_2 impurity	X	X	X	X	X	X
CO_2 capture regulation	–	X		X	X	–
CO_2 transportation regulation	–	X		X	X	–
CO_2 storage regulation*	X	X	X	X	X	X
Liability during the post-closure period	–	–	X	–	–	–
Regulation for CCS with EOR	X	X	X	X	X	X
Incentives	–	–	X	–	–	–


GI
Consultancy
Intelligence
Publishing