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ENERGY TRANSITION DIALOGUES

INTELLIGENCE BRIEFING

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SCROLL DOWN!

INDIA'S GREEN PUSH?

UNLOCKING GE VALUE

GIQ SNAPSHOT: GREEN TECH

NEXT WEEK'S EVENTS

INDIA'S TRANSITION: TIME TO REIMAGINE VALUE CHAINS

Frank Wouters, Senior Vice President – Energy Transition, Reliance Industries

Reliance Industries is aiming to build an entire green value chain, starting with solar and hydrogen. We are going to manufacture trucks that are fueled by hydrogen and we are looking into building a battery factory. This is hugely ambitious, but it is justified by the need for scale in this industry – India is a great and growing market.

Three points determine the price of renewable technologies, whether it is a solar cell or a hydrogen electrolyzer. One is the efficiency of the conversion, which dictates how cost-efficient you are. But the next actions are tied to scale. The bigger it is, the cheaper you can make things and if you have that scale effect, you can manage your supply chain better. Looking ahead, solar energy will be the default choice for India if there is a need for extra capacity. Within five to ten years, you will see the first elements of a pan-India solar network developing. Once this is established, it is just a matter of building it up. India has already pledged 450GW of renewable energy capacity by 2030.



FULL INTERVIEW HERE

TOP TAKEAWAYS

- A pan-India solar power generation network is very viable by 2031.
- “Made in India” hydrogen fuel powering Reliance Industries’ 10,000-plus trucks would be a robust circular solution.
- Reliance Industries aims to rebuild its entire value chain – starting with boosting solar and hydrogen capacity.

\$10BN will be invested by the company in new energy business over three years.

22% of India's target to have 450GW of renewable energy capacity by 2030 will be supported by the company's plans to enable at least 100GW of solar energy.

Sources: Reliance Industries

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HYDROGEN

INDIA'S QUANTUM LEAP FOR ENERGY SECURITY?

Dr. Arunabha Ghosh, Climate Expert & CEO, Council on Energy, Environment and Water (CEEW)

Unlike some other technological big bets, India has chosen not to let this bus – green hydrogen – pass by.

It has understood the entirety of the hydrogen supply chain from upstream manufacturing, to transportation storage, and downstream use. Even more so, India uses about 5.5bn tons of hydrogen on an annual basis. It is already a fairly large part of what is a 90bn ton global market. This signal to embrace green hydrogen is not just from a government policy point of view, but also the private sector. That said, we should be cognizant that there must be a staged transition, because some applications will come earlier than others. For example, long-distance freight transport or the potential to use

green ammonia might come earlier than the use of green hydrogen in steel making.

Blue versus green

India is the world's second largest manufacturer of steel, second to China. If we were to move towards green steel, we could wait for green hydrogen costs to come down significantly over the next 15 years or so. However, our analysis suggests that if you blend 9% of green hydrogen with natural gas in steelmaking, you can introduce green hydrogen at any stage of the cost trajectory (while also starting to blend in blue hydrogen). It is important to move our thinking from an "either-or" stance when it comes to blue and green hydrogen.



[FULL INTERVIEW HERE](#)

TOP 5 NEWS STORIES

- Aramco to Split Gas Business to Prepare for Hydrogen
- ACWA POWER Plans Largest Saudi IPO since Aramco
- Oman: \$1.5bn CE Projects Open for Investment
- DEWA to Release a Green Hydrogen Strategy
- Cummins Arabia Commits to Hydrogen Revolution

450GW

of renewable energy capacity by 2030 is India's clean energy target.¹

100%

of India's hydrogen consumption currently comes from fossil fuels.²

80%

of India's hydrogen is projected to be 'green' by 2050, meaning it will be produced by renewable electricity and electrolysis.³

17%

is the share held by iron and steel in terms of total energy consumption across India's industries – making them the most energy intensive. They are followed by chemicals and petrochemicals at 4%, with construction at 2%.⁴

1st

India will see the largest increase in energy demand of any country up to 2040, so hydrogen is key to preserving energy security.⁵

1/Republic of India's Ministry of Power 2/The Energy and Resources Institute (TERI) 3/The Energy and Resources Institute (TERI) 4/Republic of India's Ministry of Steel 5/ International Energy Agency (IEA)

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PODCAST THIS WEEK

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CIRCULAR ECONOMY: UNLOCKING VALUE?



Aditya Shah
Head of Circular Economy Investments, Creek Capital

FULL PODCAST HERE

In the Gulf region, Saudi Aramco and ADNOC have been consistently working towards reducing the emissions of their oil barrels. And over the last few years, their carbon footprint has been much lower than their international counterparts. The path to success for oil and gas companies in a transitioning world is to continuously invest in R&D and technologies that put them on a circularity map.

The latest investments around CCUS are good examples. It is all about being disruptive in your strategy and implementing all the best practices far ahead of your peers – then others will follow suit.

We are also seeing a lot more proactive and harmonized approaches from investors around the principles of circular economies, which was lacking before. This proactiveness plus collaboration is a gamechanger. These include emerging initiatives like the Climate Action 100+ (\$55trn worth of assets under management) and the Net Zero Asset Managers Initiative (\$40bn+ of assets under management). Investors will be more assertive in their demands for an ESG report or evaluation of companies' impact. There is a dire need for standardized reports that are more transparent and less discretionary than what we see today.

FULL PODCAST HERE

Katarina Uherova Hasbani
Founder & Managing Director, Enrupt



As the push for climate action intensifies, some firms set targets that are challenging and at times, undoable. Breaking down these targets into digestible actions that can be implemented by companies is very important.

For a shift towards a circular economy, we first need to understand a company's footprint – its different products and solutions, etc. We must try to understand companies targets. If there are no mandatory targets set by regulation, then they default to the initiatives established by the non-governmental sector or international organizations. The UN's Sustainable Development Goals (SDGs) are a great starting point.

We also need to look at the hotspots. What are the most burning problems that the company can address within the coming two to three years? This is a good way to get things moving in typically very complex organizations, like oil and gas companies. And we must also remember in the conversation about circular economies that when you put the right price on something, people's behaviors change and investors come into play. Much depends on putting a price on waste; doing so means we would not have problems introducing a circular economy. This cannot be imposed hastily as it would create too much of a pricing shock for the markets, but that is where we are inevitably heading.



Dr. Rachel A. Meidl
Fellow in Energy and Environment, Center for Energy Studies, Baker Institute for Public Policy

FULL PODCAST HERE

We must be careful when trying to accelerate circularity. First, we must define what we are trying to achieve and understand that anything under the circular umbrella is not necessarily sustainable. This is very important, especially as we do not have any methodologies for understanding the sustainability of circular actions.

The definition for a circular economy is quite vast and there are not a lot of metrics or baselines for circularity. Plus, companies and investors do not have specific goals and targets. There is also a fundamental disconnect in our society about the economics of hydrocarbon and

the glaring lack of awareness around material inputs. We need to find a different way to educate the public and policymakers. The current dialogue forces unqualified competition between one material or technology against another. This method prematurely selects winners without any scientific basis and disregards the energy inputs and the social and environmental impacts across the lifecycle. Almost all alternative energy technologies rely on polymers, for example – this warrants a demand for hydrocarbons. Investing in and scaling up advanced recycling technology where we can chemically convert post-use and difficult-to-recycle plastics is one way to tackle the plastic waste crisis.

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GIQ SNAPSHOT GREEN TECHNOLOGIES – INVALUABLE ALLIES

Green Technologies form one of our Top 5 Themes of the Energy Transition that we delve into every day as part of GI's Energy Transition Dialogues. We also host weekly events with the world's leading voices on how green technologies and digital tools are rapidly climbing energy firms' agenda in the global pivot to low carbon growth.

The message is simple: green technologies are vital allies in making low carbon growth a reality. This is especially true for oil and gas entities as they grapple with volatile demand forecasts and lower-for-longer oil price scenarios. Leveraging green technologies can help energy entities bolster operational efficiency, streamline costs, and hit environmental targets – coveted support as companies face greater pressure than ever to transform.

Both awareness and appetite are certainly ramping up in the Middle East. For one, ADNOC has obtained cost savings of \$2bn over the last five years by using new technology and digitalization to increase drilling efficiencies and maximize operations.¹ The energy giant's Panorama Digital Command Center uses AI and big data to measure all key performance indicators (KPIs), including environmental data across the entire value chain. And Abu Dhabi's 2GW Al-Dhafra Solar PV IPP project is scheduled to be the world's largest single-site solar power plant, using approximately 4mn solar panels.² The cost competitiveness of renewables is also dramatically improving. The weighted average cost of electricity in the G20 countries from offshore wind could fall by almost 50% by 2030 from 2019 levels, onshore wind by 45%, utility-scale solar PV by up to 55%, and concentrated solar power by 62%.³



Digital tools under the 4th Industrial Revolution (4IR) will prove especially valuable. Consider that this group of digital tools alone – AI, Internet of Things (IoT), big data, blockchain, 3D printing, robotics, drones, gene editing, 5G, nanotechnology, and solar PV – represent a \$350bn market. And it could soar to \$3.2trn by 2025.⁴ The trend of energy-tech partnerships is also gaining strength, with recent alliances including tech and energy heavyweights, respectively, Microsoft and TotalEnergies teaming up to drive digital innovation and sustainability goals.⁵

Sources:
1 ADNOC; 2 Source: Emirates Water and Electricity Co. (EWEC); 3 IRENA; 4 United Nations Conference on Trade and Development (UNCTAD); 5 Microsoft

KEY INSIGHTS Views shared on our exclusive weekly events platform.

“Today, more and more engineering companies are partnering with technology companies to create reporting dashboards that enable accurate CO₂ measurements. Last year marked the point that the world realized the importance of ESG – 2021 will be one of innovation and accurate CO₂ reporting.”

Ann Rosenberg, Senior Vice President for Sustainable Development, Wood

“There is a lot that we could do to bolster sustainability, including using digital tools to increase electrification and bolster CCS projects. Coming up with a ‘one size fits all’ solution is hard, but there are many incentives to try.”

Matthew Harwood, Senior Vice President, Strategy, Risk and Sustainability, McDermott

250bn

could be added to the industry's upstream operations by 2030 by making use of advanced connectivity to optimize drilling and production throughput, as well as improve maintenance and field operations, according to McKinsey & Company.

3.4bn

is the anticipated value of the global digital talent acquisition market by the end of 2025, rising by 64% from \$2.2bn in 2020, revealed ResearchandMarkets.com.

4%

global success rate for sustainability initiatives means many business leaders now know they need to do substantially more, highlights Bain & Company.

WE ASK

HOW CAN COMPANIES BEST SUPPORT THE GROWTH OF GREEN TECHNOLOGIES IN 2020 AND BEYOND?

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THIS WEEK'S EVENTS

ENERGY TRANSITION DIALOGUES Consultancy Intelligence Publishing

TWO MINUTE WARNING INTERVIEW SERIES

Tuesday /// Sept. 21st /// 12:00 (UAE)

Marischa van Zantvoort
Founding Partner & CEO
Magnifor



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HYDROGEN FULL COURT PRESS

Omar Germouni
CEO
TranSengY

Wednesday /// Sept. 22nd /// 11:00 (UAE)



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PODCAST WEDNESDAY /// SEPT 22nd /// 13:00 (UAE)



Jessica Robinson
Founder & Managing Director
Moxie Futures



Hawazen Nassief
Vice President - ESG & External Affairs
NESR



Dr. Patrick Schröder
Senior Research Fellow
Environment and Society Programme
Chatham House



Michelle Meineke
Director
Energy Transition Dialogues

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