Energy Transition Dialogues
DAILY BULLETIN

Consultancy Intelligence Publishing

THURSDAY /// APRIL 28th

TOP 10 DAILY NEWS DIGEST

- PRICE SURGE CAN SLOW DOWN ENERGY TRANSITION
- INDIA WILL REACH CARBON NEUTRALITY BEFORE 2070
- RESEARCHERS THINK SOOT CAN HELP WITH ENERGY TRANSITION
- JAPAN'S JERA, THAI POWER COMPANY EYE ENERGY TRANSITION
- BUSINESS TRAVEL NEEDS TO DO MORE TO IMPROVE SUSTAINABILITY
- DEWA TO SPEND $11BN TO EXPAND RENEWABLE ENERGY CAPACITY
- WE MUST HALVE OUR ENERGY USE TO AVOID CLIMATE CATASTROPHE
- NEW HYDROGEN FUEL CELLS USE CHEAP IRON INSTEAD OF COSTLY PLATINUM
- POWER CONSUMPTION TO TRIPLE, AS WORLD STRIVES TOWARDS LOW-CARBON
- TOTALENERGIES, SAUDI ARABIA'S ALTAAQA COLLABORATE ON EV CHARGING STATIONS

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SOUNDINGS

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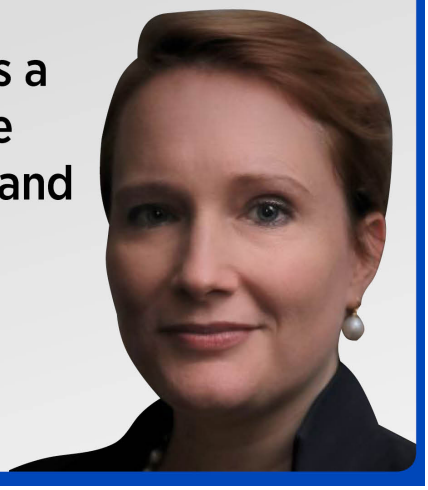
"It is a stroke of luck if you get hydrogen industry to scale and that it becomes commercial, based on the cumulative efforts of combining many small parts that then become more valuable as a whole. We certainly need more comprehensive cross-border pricing mechanisms, collectively and

Dr. Fiona Simon
CEO
Australia Hydrogen Council



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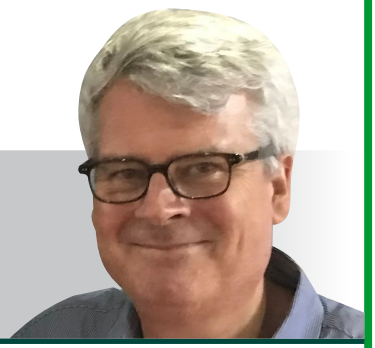

Bill Spindle
Council on Foreign Relations
International Affairs Fellow in India

At the World's Largest Oil Refinery, the Energy Transition Gets Underway!

Few places capture the promising yet perilous state of the world's energy transition better than where I visited earlier this week: the world's largest oil refinery, situated in a once-empty desert along the Gulf of Kutch on the Arabian Sea. Reliance Industries' facility processes about 1.4% of all the oil produced in the world every day. Even here, the transition to renewable energy is gaining momentum.

Here Reliance Industries Ltd. takes in 1.4mn/bl of crude each day from tanker ships offshore. The facility is a sprawling forest of pipes, tanks, boilers, generators, and catalyzers, all landscaped very attractively with flower beds, greenery, and ponds hosting geese and ducks and migratory birds. It operates 24-7-365, turning oil into the full array of fossil fuel-based products the world demands. These include everything from gasoline, diesel and jet fuel to the petrochemicals used in plastic packaging and clothing. The facility grew in three rounds of rapid development between the late 1990s and the mid-2000s, transforming Reliance into a global energy titan and its leader, Mukesh Ambani, into one of the world's wealthiest and most powerful magnates.

These days, in a previously unused corner of the complex, something else dramatic is getting underway. Another vast expanse of sandy soil has been flattened, just as the rest of the land once was. The foundations are being laid for the most ambitious integrated renewable energy project in the world. Ambani, whose father founded Reliance and built it into an oil and gas giant, is building a huge solar panel factory here. That's just for starters. This will be followed by a massive factory to produce batteries for storing renewable energy produced by the solar panels.

Then will come another giant factory to make hydrogen electrolyzers, a carbon-free technology coming into view as a potential mainstay of the new energy age for making steel and fertilizers, as well as powering ships and perhaps someday even planes. Following the electrolyzer plant will come another factory that will manufacture fuel cells. These will deploy the hydrogen to power trucks and buses, perhaps cars. It's an ambitious plan that starts with Reliance itself reaching net-zero carbon status by 2035 and builds from there to help India reach its national goals along the way to net zero by 2070. Ambani has vowed to pour $80 billion of investment into the project before the end of the decade, a scale and speed rivaling anything Reliance has done. ■

**Paraphrased Comments*

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Energy Technology: where and what does China want to innovate?

China's technological strengths in clean energy transition are proven in the last decade. From renewables to energy storage, China has built and demonstrated its leadership in manufacturing and applications of new technologies, while contributing to drive down their costs and accelerate scaling of their deployment, both domestically and globally. Such capability is also reflected in fossil-based power generation where technology innovation plays a key role in reducing emissions and capturing efficiency gains, enabled by digitalization and driven by most restrictive regulations and standards.

Given the above, the direction China wants to steer its energy technology innovation will not only matter for China to achieve its carbon neutrality goals, but also have much larger global impacts.

This report presents the Chinese priorities in energy technology innovation, on the basis of the 14th FYP for Energy Technology Innovation (the Plan), jointly released by the NEA (National Energy Administration) and the MOST (Ministry of Science and Technology) on the 2nd April 2022.

The Technology Shortboards

Does China have shortfalls in energy technology innovation? Absolutely, and plenty. The Plan has identified the following three major gaps that need to be bridged:

1) Heavy dependency on imports in key technology equipment, as well as some critical components, specialized software, and important base materials;
2) Lack of clear competitive advantage in originality, game-changing and forward-looking technologies even in those Chinese advantaged industries such as solar, wind and batteries; and,
3) "Loose and weak" innovation ecosystem among industry, academia and research circles where policies and mechanisms fall well behind the need to achieve major technology breakthroughs, to turn the R&D results into market-ready products, and to "tolerate" failures in R&D process.

The Plan sets out detailed strategy and actions of how the world's largest manufacturer will address those clearly identified shortfalls.

The Strategic Goals:

The Plan has laid out the country's strategic focuses to further innovate technologies that will "overcome the country's current shortboards, consolidate its longboards, achieve real impact via concrete projects and form synergies for collaborative innovation".

The objective is fixated on achieving major breakthroughs in key technology equipment and shaping up obvious advantages in a batch of specific energy technologies that are rising quickly and with continued emergence of new businesses and new models. In the meantime, the energy technology innovation ecosphere is further strengthened, and technology innovation strongly supports and guides energy industry's high-quality growth.

The strategy is clustered around five priorities: continue innovation in renewables, re-construction of the power system, safe and efficient nuclear power, clean and efficient use of fossil fuels, and accelerated digitalisation.

Five Task Clusters for Innovation:

Accordingly, the Plan has laid out five task clusters for innovation:

1) Advanced renewable power generation and comprehensive utilisation, which lists 17 key tasks. It stresses the focus on large scale and high penetration of renewables, and also on "higher efficiency, lower cost and more reliable" renewables including hydro, wind, solar, biomass, geothermal, ocean energies. Hydrogen is included in this cluster.
2) New power system and its supportive technologies, which puts 12 key tasks on the list. The focus is on grid connection technologies for both large-scale renewables and distributed renewables, as well as smart and generation-grid-load interactive grids. Energy storage technologies are included here too.
3) Safe and highly efficient nuclear power technologies, which covers 11 key tasks to improve the competitiveness of currently applicable technologies, optimize the 3rd generation technologies through standardization, and strengthen innovation in strategic technologies including small modular reactors (SMR), (Super) High Temperature Gas Cooled Reactors, and Molten salt reactors.
4) Fossil fuel "greening" technologies, which specifies 37 proposed key tasks, covering conventional and unconventional oil and gas exploration, transport, refining and distribution; clean and efficient utilisation of coal including CCUS, and development of gas turbine technologies.
5) Digitalisation technologies, which contains 16 proposed key tasks, covering common technologies in broad and deep application of digital technologies in traditional coal, oil and gas, power plants and grids that define a new phase of integrated development of "energy and IoT".

VIEW FULL REPORT HERE

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ENERGY TRANSITION DIALOGUES

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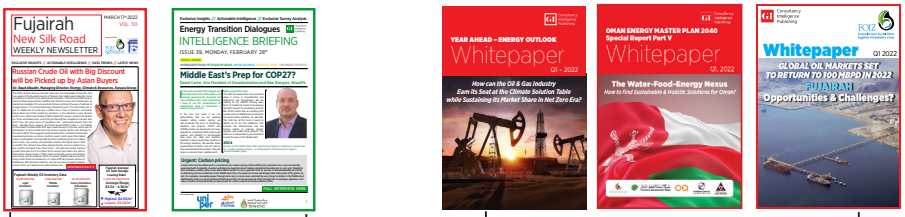

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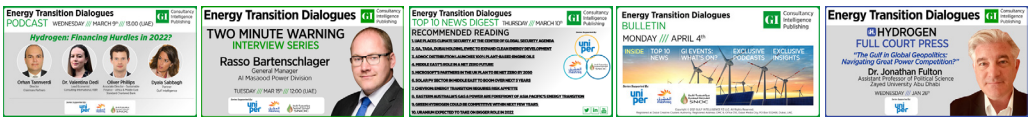
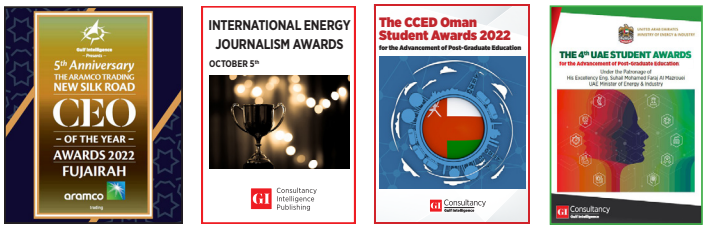


ANNUAL AWARDS



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