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

Energy Transition INTELLIGENCE BRIEFING

CLIMATE PENPAL

GI Consultancy Intelligence Publishing

ISSUE 60, MONDAY, SEPTEMBER 19th

SCROLL DOWN

MENA REGION INSIGHTS EXCLUSIVE SOUNDINGS EVENTS THIS WEEK

ENERGY TRANSITION: "No matter how important the climate factor is, each country will work at its own pace and strengths when it comes to transitioning to clean energy. Therefore, you are going to see a variety of progress when it comes to policies and regulations in different countries and different regions."

H.E. Sharif Al Olama
Undersecretary, UAE Ministry of Energy & Infrastructure for Energy & Petroleum Affairs

FULL INTERVIEW HERE

GI Consultancy Intelligence Publishing

Dr. Christoph Noeres

Head of Green Hydrogen
Thyssenkrupp Nucera

Better Electrolyzers Key to Driving Down Cost of Green Hydrogen

Further optimizing the electrolyzers technology by reducing the use of precious materials in it, as well as other materials, will help cut the costs and dependency when markets become disruptive. What we have seen over the last year is an unusual situation of the supply markets. We saw raw materials and precious metals reaching peaks that we have never seen before. A lot of companies are working on electrolysis technology, but the way forward is to spend more time and investment to further optimize the supply chain. We have 1GW of supply chain to manufacturing electrolysis technology today and we will expand that to around 5GW by 2026.

Tight Collaboration Among Players

As we are going into a completely new era - we need tight collaboration between industrial partners, operating companies, technology providers, and regulatory bodies in specific countries to make sure there are proper business cases. We need transport systems, hydrogen hubs, and pipelines – and those collaborations would be needed to make those significant investments. But the first phase will be investment in existing installations that would change from gray towards green hydrogen.

Significant Growth of Assets

Those small projects that have risen in the last two years from five to ten megawatt projects, will rise to multi-hundred-megawatt or even giga projects. It takes typically three to four years from the financing up to the final startup date of a plant. But in the next five years, we will see significant growth of projects coming online. Year by year, we will see green hydrogen getting more important as part of the overall energy mix around the world.

**Paraphrased Comments*

"A lot of companies are working on electrolysis technology, but the way forward is to spend more time and investment to further optimize the supply chain."

FULL INTERVIEW HERE

GI Consultancy Intelligence Publishing

INSIGHTS

The Ups and Downs of a Planned City

Bill Spindle
Climate & Energy Editor
SEMAFOR

India's most ordered city offers some lessons, but not solutions, for today's nation.

Clean lines. Sharp edges. Platonic forms.

This is India? Well, sort of.

Squaring the oh-so-orderly city of Chandigarh with the sprawling, chaotic, bursting-with-life urban spaces in the rest of India is no simple task. The dual capital of two states — Punjab and Haryana — Chandigarh is at once the country's most deliberately planned city and one that exists altogether apart from India today.

Chandigarh was conceived by independent India's first leader, Jawaharlal Nehru, as a futuristic, utopian experiment in the aftermath of the violent partition that created two nations from Britain's Indian empire in 1947. With Lahore, the capital of the Punjab region under British rule, ending up in Pakistan, India needed a new state seat for the Punjab region that remained behind.

The new capital was planned, and its construction overseen, by Westerners: the Swiss-French architect/designer/urban planning giant Charles-Edouard Jeanneret, better known as Le Corbusier, and his cousin Pierre Jeanneret. They were contracted in 1950 by the Nehru-led government.

My wife and I spent a week in Chandigarh, which had somehow eluded my widespread travels throughout the country during the four years I was posted there with The Wall Street Journal. The city is everything the rest of India's urban spaces are not — organized, open, attentive to its public spaces, full of trees and only mildly burdened by traffic congestion.

There are many lessons the rest of India could take from Chandigarh's meticulous city plan and the strict municipal zoning enforcement that assures its preservation. As the head of the city's environmental department pointed out, almost no other cities are seeing population and automobile ownership rise at the same time they are increasing the area devoted to open space and parkland.

City leadership has worked particularly well with the population to inculcate pride and engagement in preserving and improving on parks and green spaces. During early morning strolls around the city, I found the city's numerous parks full of joggers and walkers, yoga practitioners and badminton players.

CLICK HERE TO READ FULL ARTICLE

MENA REGION CAN LEAD THE WORLD IN GREEN HYDROGEN & RENEWABLE ENERGY

A potential regional champion is emerging

As the global steel industry eyes switching to direct reduced iron (DRI) production and using green hydrogen to reduce emissions, the Middle East and North Africa (MENA) region is in a prime position to start producing carbon-neutral or green steel, finds a new report from the Institute for Energy Economics and Financial Analysis.

"The MENA region can lead the world if it shifts promptly to renewables and applies green hydrogen in its steel sector," says author of the report Soroush Basirat.

Fortuitously, the region's sector is dominated by direct reduced iron-electric arc furnace (DRI-EAF) technology, which releases lower emissions than the increasingly obsolete coal-fuelled blast furnace and basic oxygen furnace (BF-BOF) process used in 71% of global crude steel production in 2021.

Basirat says the DRI-EAF process, which uses syngas made from natural gas or gasified coal and also electricity, could be zero emissions if green hydrogen (produced using renewable energy-powered electrolysis) and electric arc furnaces powered by renewable energy were used.

"MENA has an established supply of DR-grade iron ore and its iron ore pelletising plants are among the world's largest.

"In 2021, MENA produced just 3% of global crude steel but accounted for nearly 46% of the world's DRI production.

"MENA's knowledge of this specific steel technology is an invaluable asset. This production knowledge, abetted by further work on iron ore beneficiation, pelletising and DR plants, is among the most important steel decarbonisation pillars, and will greatly assist MENA's transition.

"Compared to other regions, MENA's existing DRI-EAF capacity means no extra investment is needed for replacing the base technology. All new investment could be focused on expanding production of green hydrogen among other renewables.

"If it acts fast, MENA has the potential to lead the world in green steel production."

The International Energy Agency (IEA) in its Net Zero Emissions scenario models the global share of hydrogen-based (H_2) DRI-EAF production reaching 29% of primary steelmaking by 2050.

BloombergNEF estimates that 56% (840 million tonnes) of primary steel production will come from H2DRI-EAF by 2050 in a net zero emissions scenario.

Soroush Basirat notes MENA has excellent solar resources to aid production of green hydrogen from renewable electricity.

"A switch from gas-fuelled DRI to green hydrogen could commence ahead of other regions, given MENA's in situ capacity of DRI-EAF.

"Initially, it would be possible to replace 30% of gas with hydrogen in the incumbent fleet of DR plants without any major equipment modifications.

"The region could then move towards 100% green hydrogen to produce carbon-free steel."

Source: IEEFA

FULL REPORT HERE

REPORT

CUTTING-EDGE DISRUPTIVE LOW-CARBON TECHNOLOGIES: WHAT TO EXPECT FROM CHINA?

By: CN Innovation

In our Insight report of April 18, 2022, we shared where, what and how China wants to innovate its energy technologies, clustered around five innovation priorities and eight innovation eco-systems.

Now we would like to narrow the scope down to low carbon technologies and seek to answer the title question based on a recently published blueprint - the "Science and Technology Action Plan (2022-2030) for Achieving Carbon Peaking and Carbon Neutrality" (The Action Plan). It was jointly released on 18th August by the Ministry of Science and Technology and eight other relevant ministries.

1. Objectives

With the belief that science and technology is the "1st motive power" to achieve carbon neutrality, the Action Plan sets the following time-bound objectives that will lay the foundation and define the pathway to achieve carbon neutrality before 2060:

– By 2025, achieve major breakthroughs in key industries and core technological areas, to support the 14th FYP targets of reducing carbon intensity of GDP by 18% and energy intensity by 13.5%.

– By 2030, achieve breakthroughs in some cutting-edge disruptive technologies, shape up a series of highly impactful low carbon technological solutions and deliver 50 demonstration projects with different technologies, to support the country's NDC target of 65% carbon intensity reduction below 2005 level under the Paris Agreement.

2. Action areas

The Action Plan listed the following 11 areas:

1) Green and low carbon energy technologies: 50 categories of technologies are listed, covering clean coal conversion and utilization, renewable power generation, nuclear power, smart grid, energy storage, non-power renewables utilization, hydrogen and energy saving.

2) Industrial process reengineering: 30 categories of technologies are identified covering low or zero carbon (LZC) steel, LZC cement, LZC chemicals, LZC non-ferrous, and resource recycling and heavy-machinery reengineering. Integration of digital technologies (big data, AI and 5G) is considered an important element in process reengineering.

3) Buildings: 13 categories of technologies are identified, covering direct current (DC) solar energy and storage power distribution, highly efficient electrification of building energy uses, heat and power synergies, and innovative low carbon building materials.

4) Transport: 7 categories of technologies are identified, covering new energy driven transport equipment and green transportation system.

5) Negative carbon and non-CO2 GHG reduction: 24 categories of technologies are identified, covering CCUS, ecological carbon sinks (both green and blue), methane, NOx, and carbon sink accounting and monitoring.

6) Cutting-edge disruptive technologies: 7 categories. See below in a separate section.

7) Demonstrative projects: build 50 demonstrative projects in the 5 areas listed above. In addition, build integrated solution demonstrations in industrial parks, cities, social districts, agricultural zones, etc.; and based on those demos, develop technical standards for LZC technologies and their applications.

8) Carbon neutrality decision-supporting system: 5 soft-technology categories are listed, including technology roadmaps, carbon emission MRV, Scope I, II and III standards and accounting, digitally enabled decision-support system, and technology evaluation system.

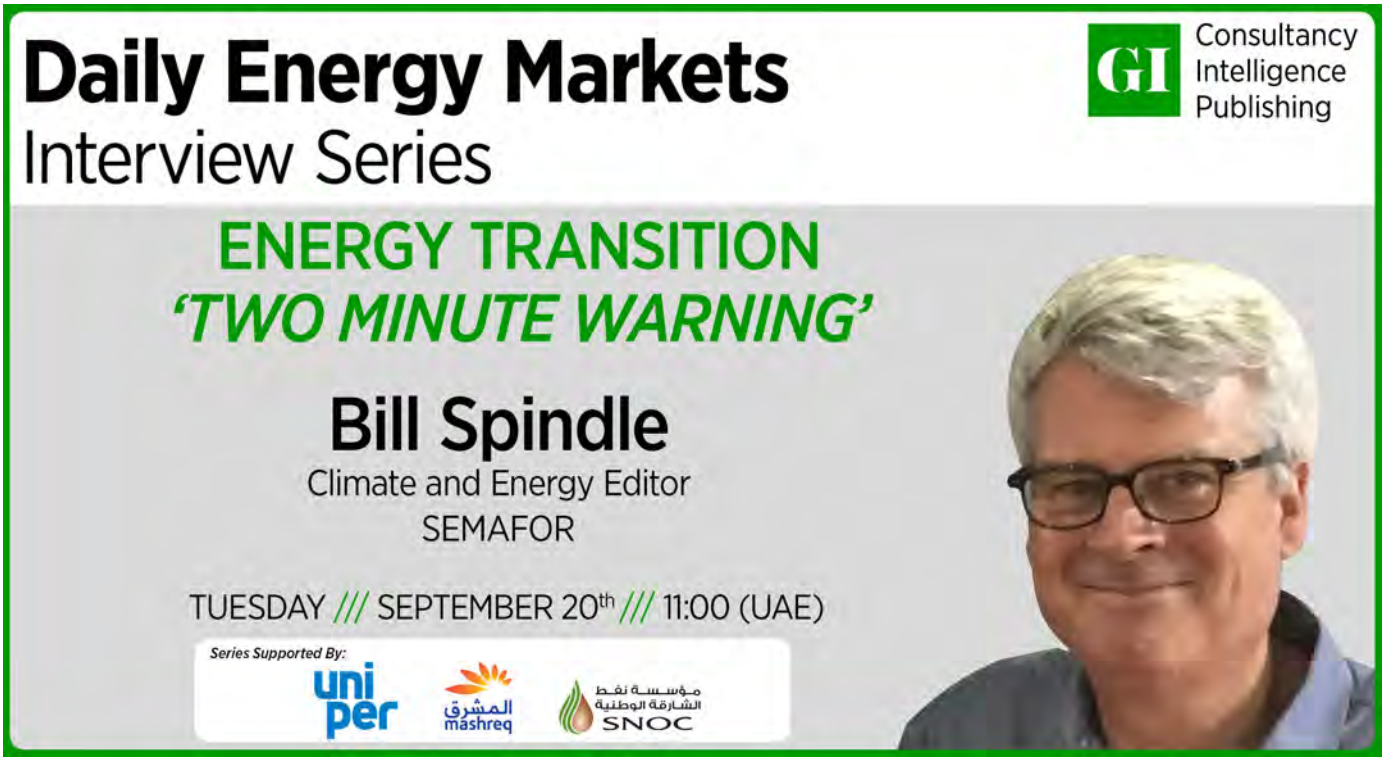
9) Innovation eco-system: create synergies between innovative projects, innovation centers/clusters and the required talents, with public funds geared towards major projects, which will be awarded through bidding by leading scientists.

10) Company support: support start-up companies with incubation platforms, label companies with "low-carbon", "zero-carbon" or "negative-carbon" categories to direct social funding to those companies, organize technology competitions, and provide IP support, etc.

11) And international cooperation: strengthen cooperation with existing international organizations, explore the possibilities of joint technology R&D centers and cross-country technology transfer agencies with interested countries and parties, and convene international fora around LZC carbon technologies and innovations.

FULL REPORT HERE

EVENTS THIS WEEK




GI
Consultancy
Intelligence
Publishing