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Energy Transition INTELLIGENCE BRIEFING

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SCROLL DOWN

Scaling up Financing Only Way to Accelerate Energy Transition for All

Jonas Moberg
CEO, Green Hydrogen Organization

We need a blended concessionary financing solutions on a scale that we've never seen before. That is the only way we are going to really accelerate the energy transition. It should be the kind of blended solutions that apply to developing countries and emerging markets. Because if we don't supply those, then we're going to see most of the developments in the US and some emerging markets like China and India and so on, but we are not going to see it in where it must be. It is important to work together with the big multilateral banks like the World Bank, IFC and the European Bank Reconstruction and Development, as well as commercial banks and other financial institutions. We need to scale up mixed financing and guarantee instruments in a new way that really enables fast transition.

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Jonas Moberg
CEO, Green Hydrogen Organization

What should happen now to accelerate adoption of green hydrogen?
There are a lot of things that need to happen. We need to put financing in place, which is why it is important to work together with public multilateral banks and commercial banks to enable the financing of these enormous projects. We need good standards and rules, so we know that green is truly green. We need to work with governments to make sure we get faster in securing final investment decisions and putting the right laws in place.

How has hydrogen economy progressed over the past year?
We see a huge amount of activity in several markets. One of the key events in 2022 was the adoption of the Inflation Reduction Act in the US, which provides many incentives, including a production tax credit of up to $3 per kilo of hydrogen, and has driven a lot of activities in the US. At the same time, we are seeing a growing number of measures in Europe to make green hydrogen more competitive as it imports from around the world. Those measures are starting to have an impact elsewhere – in countries like Egypt, like Oman, the UAE, Saudi – all becoming the homes of very large-scale developments. We are seeing very exciting projects on the ground in Morocco and things becoming quite advanced in Mauritania and Namibia, Latin America and in parts of Asia.

Have standards started taking shape?
Everyone wants to see standardization. But at the same time, we are seeing many jurisdictions adopting standards and definitions depending on whether they have large renewables potential or producing more oil and gas. Then, there are a couple of global efforts such as the green hydrogen standard that we are currently testing and piloting with a group of companies, which in a sense tries to bridge the gap. For example, if you start to produce green hydrogen in the Gulf and wish to export them to Europe, you should be able to satisfy the import requirements within the EU. But what is good in most of these standards, is that it follows the same methodology in terms of calculating emissions. On this front, we're doing all quite well.

What remains to be the main challenge?
Hydrogen is a new industry, so there are a lot of technical challenges - from technical ones to legal issues to risk sharing in offtake agreements. There are also a wide range of policy issues and some of those needs to be dealt with commercially. But also, as soon as some of the companies and hosting governments have found solutions, it's also a matter for organizations like ours to come in and say, let us put those lessons and solutions out there in public, so we can learn faster in other markets.

Do you see more experimental approach in the industry?
I think that we are in quite a unique situation with big companies both competing and forming partnerships, wanting to learn. We've got to remember it's new, it's a fluid situation. And sometimes figuring out new things can result in high transaction costs and delays and so on. And that's something that we really have to work hard to fight against. One important way of doing it is absolutely to learn, for example, through our webinar series focused on various areas such as contracting, offtake agreements and so on.

Is hydrogen getting the attention it needs in international forums?
I think it is being discussed and that's great. But we need to move from discussing to acting even more. And that means that we need to be practical in terms of the financial solutions, in terms of the industrial clusters we develop and so on. It's been great to see at COP26 and COP27 and we now have really a kind of litmus test and credibility, a challenge, but also incredible opportunities to build up, to really demonstrate that these big projects are becoming viable across the world and that we are starting to build them.

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Justine Roure
Deputy Vice President, Strategy and Policy
Oil & Gas Climate Initiative (OGCI)

Collaboration in the oil and gas industry is critical to accelerating the transition

At OGCI, we have 12 member companies, including independent oil companies (OICs) and national oil companies (NOCs). Apart from the natural competition between energy leaders, we have seen the value of sharing knowledge between our members and others. This leads to greater and cleaner competition – bringing out the industry's best. This year it will be key for the industry to demonstrate the progress that has been made to achieve the transition and what solutions we can bring to the table.

Access to data and knowledge is critical for NOCs to lower methane intensity

In 2018, OGCI member companies set a target to reduce methane intensity and are now aiming for well below 0.20%. All our members comply with a common target and standard. Collectively, our member companies reduced their emissions by 40%. In 2021, we launched a satellite monitoring campaign in Iraq to help tackle methane emissions in oil fields. When detected, the methane emissions were significant, with an average emission rate of almost 1,500kg CH4 per hour. Through data and engagement with local companies, we saw plumes of methane disappear. The project was so successful that we expanded to Kazakhstan, Algeria, and Egypt. At OGCI, we have a role in running data campaigns with the Aiming for Zero Methane Emissions Initiative. We identify the location of big plumes and share knowledge on tracking methane emissions. For COP28, we will be focused on how the industry can reduce methane emissions as much as possible.

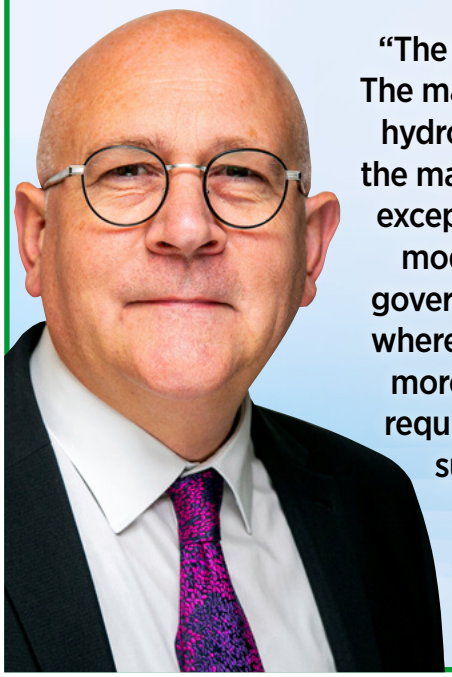
The Gulf region has the potential to lead on CCUS hubs

At OGCI, we launched a global search on carbon capture, utilization, and storage (CCUS) hubs. We took a deep dive into specific regions and storage capacities. We analyzed super emitters that can be interested in CCUS to gain insights on potential customers. The Gulf area is one of the most promising to develop CCUS. Since we launched our CCUS KickStarter initiative in 2019, member companies have announced over 25 CCUS hubs. For example, the Aramco hub in Jubail plans to capture 9 million tons of CO_2 by 2027. So, these will not be built in a minute, but CCUS activities are ongoing worldwide. We need a strong message from governments regarding policy incentives and mechanisms to take these projects to the next level.

**Paraphrased Comments*
Source: Microsoft Middle East & Africa Forum for Sustainability Leaders

WEEKLY SOUNDING

RENEWABLES



"The renewables sector is still a very low-margin industry, full-stop. The mature renewable sector of onshore and offshore wind, solar and hydropower, are all largely loss-making industries. If you look at all the manufacturers of offshore wind, they are all loss-making, perhaps except in China. It's a major challenge in the whole macroeconomic model of trying to grow renewables and expecting industry and governments to get behind it. If it's basically a loss-making industry, where does it go? It's not going to invest in future growth. There are more than double the numbers of offshore wind turbines that are required to meet country pledges by 2030 than the current global supply chain can supply. So, something's going to change."

Stuart Broadley
CEO
Energy Industries Council

Elephant Dung Paper to Trains

Bill Spindle
Former Council on Foreign Relations International Affairs Fellow in India

Energy shifts are little scary. But remember: Yesterday's fears are today's nostalgia.

Technologies transition. The tools we use evolve. Or we evolve them, if I can put it that way. Stone to iron, which gets replaced by bronze; clay is exchanged for paper, which gets displaced by liquid crystal displays; horses pull carts, which become cars.

Happens in energy, too: fire to photons to...well, we really don't know yet. Maybe nuclear fusion someday, a veritable sun in our pocket.

Perhaps oddly, we respond emotionally as these technologies come and go. We fear them until we miss them. Fire inhabits our nightmares as we harness it to realize our dreams.

The 1955 film *Pather Panchali*, by legendary Bengali director Satyajit Ray, captures this ambivalence in its opening scene. It is the dawn of the modern age in early 20th century Bengal. Teenage Durga and her little brother Apu stand under a matrix of foreign, buzzing electrical transmission lines. They walk into a field of tall grass and wait — for the whistle of the train.

When they hear it, Apu races towards it. The locomotive cuts a path across the screen, its thick, black smoke filling the sky. From the other side of the tracks, through the speeding rail carraiges, we see Apu stand in awe as the mechanical beast speeds towards the big city, his future. But we also know this scene takes place in retrospect. There's a powerful sense of the director, our storyteller, looking back from that future.

Over time, we tame these technologies. We learn to leverage and live with them, and then we consign them to history. We wrangle our trepidation into affection, and then we package it up into nostalgia. It's a necessary process, like grieving, that helps us move on

BILL SPINDLE

T.R Raghunandan in his workshop among his model locomotives.

to confront and conquer the next new technology. That's what Satyajit Ray is doing with the *Apu* trilogy, a coming of age tale in which this movie is part one.

I've thought a lot about this since visiting T.R. Raghunandan, a retired elite Indian bureaucrat who spends much of his time fashioning exact scale models of historic steam locomotives out of elephant dung paper. Yes, that would be paper made from pachyderm poop. Raghunandan swears it's uniquely suited for his purposes, soft and malleable yet durable.

We often think of energy transitions as purely technical undertakings. But as I explain in this earlier post, the most obvious challenges right now are less scientific than political and economic — the mire of vested interests, greenwashing and outdated business models. There are emotional and psychological impediments — fears, really, of change, of the unknown, of the daunting challenges ahead — holding us back, too. These hurdles are underappreciated, I believe, and more attention to clearing them away would help us through the thicket of our mid-transition malaise.

India's railway moved from the last steam locomotive to fully electric ones in less than a generation. This happened so quickly partly because India was playing catch up. The newer technologies, first diesel then electric locomotives, already existed elsewhere and India subbed them. But this also involved a lot of cultural and social adjustment, first and foremost for the men who drove and kept up the steam locos.

Ceremonies were held to commemorate the retirement of these machines, and almost invariably them men who worked them. "Black Beauty Contests" marked their twilight years, drawing crowds and media coverage. It was the end of an era.

Raghunandan feels that same nostalgia. He grew up in Kerala in a family historically consigned to the lowest rank of Indian society. The were Dalits, once known as "untouchables." His mother nonetheless became a medical doctor. She was 101 years old and lived nearby on her own when I visited Rhaghunandan last year, Raghunandan studied at one of the country's top universities and landed in India's elite civil service. He worked on local governance issues and eventually

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retired, becoming an international consultant to encourage emerging democracies from Mongolia and East Timor. He had a moment of international acclaim when he started a website, I Paid a Bribe, which encouraged regular citizens to admit each time they paid a bribe, explain the circumstances and how they felt. It was a way of fighting, through empowerment by cathartic exposure, an endemic problem that hamstrings India's economy and leaves many Indians ashamed and dispirited.

By folding, rolling and punching holes in Elephant poop paper, Raghunandan has continued the process of packing an era off to an emotionally manageable past so we can appreciate it, learn from it, and move on, confident in that knowledge.

"For me, trains and railway locomotives are all part of the romance of visiting my village," he told me as we sat in the garden of a once-rural home now in a suburb of the city of Bengaluru. "My grandmother would tell stories at night and you would always hear this ghostly hoot of steam engines. And every time we would hear that we would run out and stand at the gate from where you could see the train 200 or 300 meters away. You would wave at the train. It's one of the enduring memories of my

childhood. We always had such affection for the train. It made all this fuss when it went by. So busy, with all those levers working. It sets off something in your mind."

Today his models are fantastically detailed, miniature reincarnations of actual historic locomotives right down to the number and placement of faux rivets.

Raghunandan sees these machines as the culmination of an era.

"Not a single electronic device in them," he said. "The whole thing is mechanical. And if you break it down, all based on principles you learned in the sixth grade. Electricity was a paradigm shift, when you're dealing with a motive force, an energy you cannot see. Here you can see the water being converted into steam by the heat, you can sense the pressure the steam creates. From there it's about levers and gears and wheels and springs. This is caveman logic carried to its final pinnacle of evolution."

SOURCE: THE ENERGY ADVENTURE (R)


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