

EXCLUSIVE INSIGHTS /// ACTIONABLE INTELLIGENCE /// EXCLUSIVE SURVEY ANALYSIS

ENERGY TRANSITION DIALOGUES

INTELLIGENCE BRIEFING

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SCROLL DOWN!

BLEND H2 & LNG! ENERGY-WATER SQUEEZE FIXES? INDIA'S COVID-CLIMATE JOURNEY ADNOC'S BLUE AMMONIA DEAL

INDIA: NET ZERO BY 2070? STILL A BIG STRETCH

Arunabha Ghosh, CEO,
Council on Energy, Environment and Water (CEEW)

India's CO₂ emissions still have not peaked. Comparatively, the UK's peaked in 1973 and have a 77-year transition period to get to net zero as per their target. Meanwhile, the EU has a 71-year transition period and the US a 43-year transition period. Now, if India peaks in 2030 and the aims for net zero by 2050, the country will have a shorter time to transition to net zero than any other country – ever.

First and foremost, we should set net zero targets. This gives direction and certainty to the world beyond countries' borders, as well as markets. Plus, we must focus on near-time targets. Therein lies the strength of India's energy transition. It is the only G20 country whose actions are consistent with a 2 degrees Celsius world and it is already on track to achieving the goals of the Paris Agreement. Making near-term targets far more robust helps add even greater credibility to India's long-term strategy.



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TWO MINUTE WARNING INTERVIEW SERIES

CONTINUED FROM PAGE 1

Arunabha Ghosh, CEO, Council on Energy, Environment and Water (CEEW)

Net zero by 2070?

This is going to be extremely aggressive in terms of the effort needed. Still, it is a reasonable bet to take. Beyond setting a net zero target, we must ask ourselves: how will India's climate policy help to transform the economy into one that is more resilient and more competitive? Then we would have to ask ourselves new questions, such as: are we going to still make steel by 2050? If the answer is yes, will

it still follow the same processes we see today? The answer is most likely not. Considering net zero from a broader economy point of view partly means becoming developers of emerging and disruptive technologies. Then the transition and net zero goals become more than just announcements, but a holistic energy revolution – one that India is already very much a part of.



38% of India's installed electricity generation capacity is generated by renewable sources, as of November 2020.

Source: IBEF

\$42BN+ has been invested in India's renewable energy sector since 2014.

Source: India's Department for Promotion of Industry and Internal Trade (DPIIT)

\$9.83BN is the inflow of foreign direct investment (FDI) in India's non-conventional energy sector between April 2000 and December 2020.

Source: India's Department for Promotion of Industry and Internal Trade (DPIIT)

3rd is India's global ranking in terms of its renewable energy investments and plans in 2020.

Source: British Business Energy

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HYDROGEN



Natural Gas & Hydrogen: Blend!

Camilla Palladino, Executive Vice President – Corporate Strategy & Investor Relations, Snam

Hydrogen is going to be 20-25% of the energy market in a fully decarbonized Europe. The question is: what is the best way to get to that 20-25% from what is essentially zero today?

One of the plausible options is repurposing existing gas infrastructure. Currently, 70% of our pipelines can carry hydrogen. In other words, the material from which they are made is 'hydrogen ready'. Furthermore, it only needs minor changes. Ultimately, with limited infrastructure investments, blending hydrogen into the natural gas network is a great option to scale up hydrogen – and do so quickly.

A hydrogen backbone?

A recent study with 23 European transport system operators from 21 countries states that by 2040, Europe can have 40,000 kilometers of hydrogen pipelines. Note that the vast majority of these kilometers will be converted from existing infrastructure. Hydrogen's ease of transport makes it viable to create a European market, which gives additional supply security. The cost of creating a 'hydrogen backbone' is between \$40-\$80bn. But once completed, the cost of transporting hydrogen would be significantly lower than the costs we see today.



FULL INTERVIEW HERE!

1st energy company in Europe to introduce a mix of 5% hydrogen by volume and natural gas into its transmission network was Snam.

2020 saw Snam test the world's first hybrid hydrogen turbine designed for a natural gas transportation infrastructure.

70% of Snam's pipelines are ready to carry hydrogen.

50% of the \$9bn earmarked for Snam's 2020-2024 business plan is for the replacement and development of assets to standards that are also compatible with hydrogen.

2050 is when Snam aims to transport entirely decarbonized gas (hydrogen and biomethane) to help strengthen Italy's role as a European hub, as well as export to Northern Europe.

Source of data points: Snam

TOP 5 HYDROGEN NEWS STORIES

[UAE to Commission 1st Green Hydrogen Plant](#)

[25GW Hydrogen Mega Project Set for Oman](#)

[Middle East Set to Become Hydrogen Hub?](#)

[Hydrogen, Ammonia to Power 63% of Shipping by 2050?](#)

[Hydrogen from Food Waste?](#)

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PODCAST

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THIS WEEK **Water-Energy: Fixing the Squeeze?**

FULL PODCAST HERE!



Edoardo Borgomeo
Water Specialist, World Bank

Tough decisions and political commitment: these are needed to tackle water scarcity. To overcome these issues, there are three steps that countries could take immediately.

The first is to focus more on demand, ranging from community education to plugging infrastructure-related leaks and avoiding water-thirsty crops in arid areas. The second is realigning demand, which may mean that some countries have to make difficult decisions and move water from sectors where water is not used very productively towards sectors where it can be used more productively. And thirdly, increase supply.

Be water smart!

The more water we give to people, the more water they are going to use. Therefore, just relying on water technology to solve our global water crisis is a misplaced view. Rather than building desalination plants, it might be better to reduce water consumption in agriculture,

for example. And try to have a food trade policy that does not aim at food self-sufficiency only, but also tries to balance internal food production with food trade. If you do that, you reduce your agricultural water consumption and you are then better able to live with the limited land and water resources that you do have.

Count and count again

Implementing water accounting into water policy is something that policymakers should be more alert to. Water accounting relates to measuring how much water is available in the system and how much water different users are consuming. Paradoxically, we always talk about water efficiency, but in most countries, we do not have water accounts. There are some best practices, such as in Singapore, which has integrated technology with strong water governance, all of which rests on data. There are also examples in the Middle East and North Africa (MENA), albeit on a smaller scale.

FULL PODCAST HERE!

Dr. Muhammad Shahzad
Senior Lecturer & Research Scientist, Northumbria University (NU)



Investor confidence is one of the missing links in scaling up clean technologies; we must move beyond comfort zones.

Beyond cutting edge technologies and sophisticated desalination solutions, we also need a comprehensive strategy that encompasses a proper awareness campaign, pricing, and policies for water management. This is the only way to secure investors and companies' confidence. For example, there are major opportunities in improving water consumption in agriculture – one of the world's biggest water-consuming sectors. Innovative solutions in this space can reduce consumption by 70% and boost crop production by up to 40%.

Warning bells!

Water risk is a growing issue for energy companies – one that could lead to a greater chain of challenges, like reputational damage. How can energy companies better manage this risk? Take traditional utility companies as one example. They are incorporating more renewable energy sources into their operational norms, such as solar power generation, which not only supplies cleaner energy, but also cuts water consumption.

14% of the GDP in the Middle East and North Africa (MENA) could be affected by climate-related water scarcity by 2050.
Source: World Bank

FULL PODCAST HERE!



Peng Wang
Professor, King Abdullah University of Science and Technology (KAUST)

Big potential: that could be the role of solar energy in helping tackle the world's pressing energy and water challenges.

We have clean technologies that are at a mature stage that could allow us to reach a sustainable energy-water nexus. Now is the time to move from the pilot and smaller scale phase and towards mass use. However, there are hurdles that deter these technologies from scaling up. One is simply a lack of confidence in such technologies. Another

issue – particularly relevant for developing countries – is the lack of financial support and/or a lack of institutional mechanisms that are required to push such vital technologies forward.

10,000 tons of oil per year are consumed for desalinating 1mn liters of water per day.
Source: MDP

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SURVEY ANALYSIS

THERE'S A HOLE IN THE BUCKET – A BIG ONE.



Michelle Meineke
Director, Energy Transition Dialogues

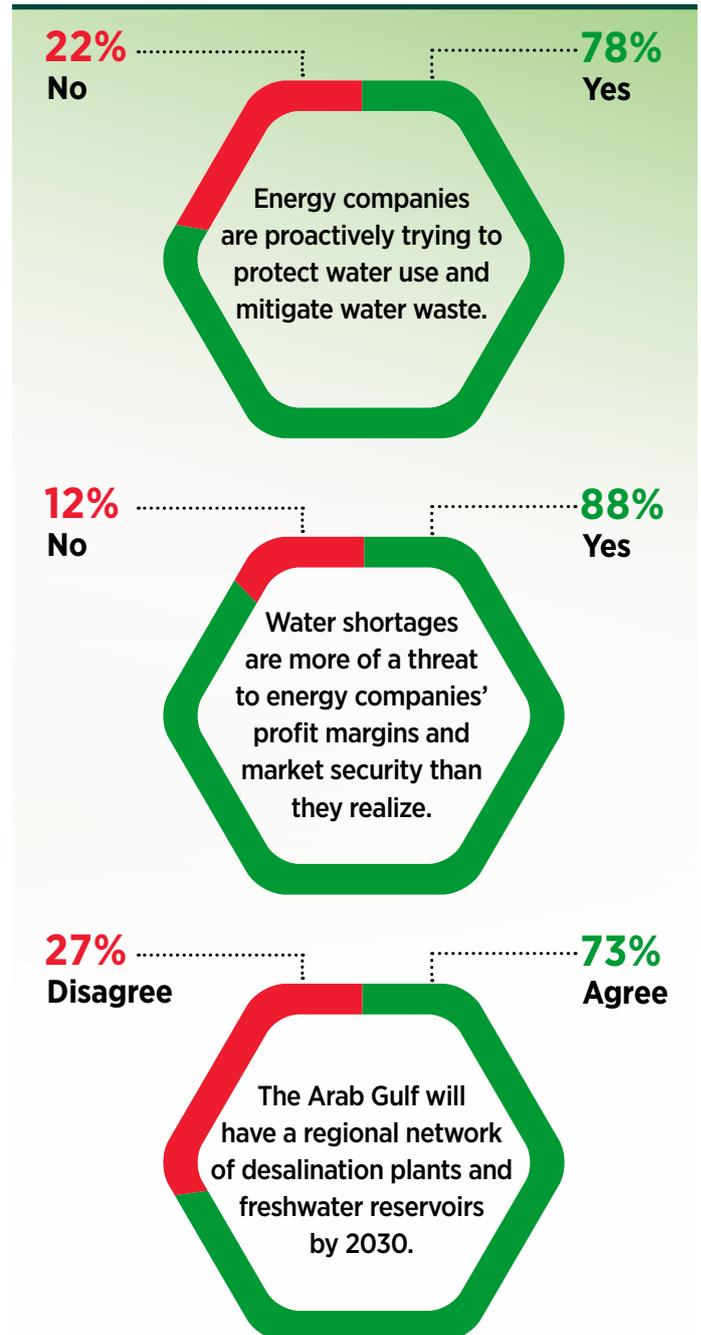
It is good news – and high time – that 78% of respondents believe that energy companies are proactively trying to protect water use and mitigate water waste. But this is like celebrating summiting a mountain only to discover that you are about to plummet down an Everest-sized cliff on the other side.

What is the cliff? The 88% of respondents who said water shortages are more of a threat to energy companies' profit margins and market security than they realize. Many are still walking blindly towards the cliff, not considering the depth of economic and social disasters that go hand-in-hand with severe water shortages.

That 4mn people in Cape Town in 2019 ran out of water was a big red flag, waving furiously with flashing neon lights. Yet the message has not fully sunk in. In 2020, companies reported maximum financial impacts of water risks at \$301bn – five times higher than the cost of addressing them (\$55bn), according to CDP. And this does not take into account the world's rising population (9.7bn by 2050, +26% on today, said the UN) nor the intensifying climate-related stresses on water tables.

This is especially true in the Middle East and North Africa, home to some of the world's fastest rising populations up to mid-century and one of the planet's most vulnerable spots for climate change. Clearly, focusing on well-trodden routes is not going to work as well in the 2020s, such as ramping up desalination instead of seriously addressing rising demand. The Middle East is home to the world's greatest concentration of desalination projects.

And that was fine (ish) when the conversation was just about water security; but now it is also rightly about decarbonization. So, throwing big money at scaling up desalination no longer has the same favorable narrative it once did. Desalinating 1,000 cubic meters of water per day consumes the equivalent of 10,000 tons of oil per year, according to MDPI – a no-go trade against the backdrop of the global energy transition. Some of the solutions may be clear (page 4), although certainly not easy. But surely energy entities can sweat harder to protect the blue stuff that lies at the heart of keeping the planet – us included – alive?



Survey source – ETD

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INSIGHTS INTO INDIA

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As Goes Covid, So Goes Climate... Why Should We Who Aren't Indian Care?



Bill Spindle

Council on Foreign Relations, International Affairs Fellow, India

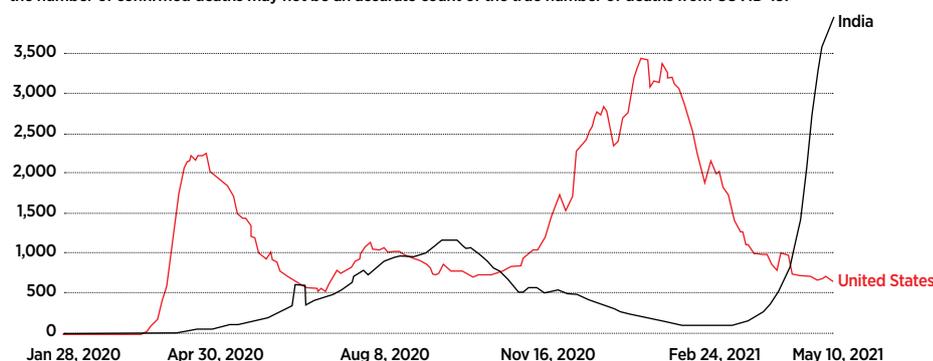
The Covid crisis in India continues unabated. Should we care? That's a callous question – put baldly for a reason. It's the same question I keep asking myself as I tackle this project on climate change and the energy transition in India. Should we, those of us who are not Indian and lead our lives outside India, care about the impact of climate change and the energy transition all the way over "there"? My answer: Yes, a lot. It's worth thinking through.

What's a little weird is those questions don't seem so brutally insensitive when it comes to climate and energy. After all, I often remind myself in pondering how to convince those of you with no India connections to stay with my outpourings... India is a long ways away and at least theoretically, it is capable of addressing its own climate and energy challenges. We have climate challenges of our own to focus on. And yet, can we really distance ourselves? That's the trouble – we can't, any more than we can afford to not care about India's Covid catastrophe. When it comes to climate, what happens in India matters immensely to all of us. Here's the reason in a nutshell:

- India is likely to be the fastest growing user of energy on the planet in the coming decades, doubling or even tripling its demand as a remarkably young population grows, moves from the countryside into cities, and becomes wealthier.
- India, already the third-largest emitter of greenhouse gases (GHG), has an energy system dominated by fossil fuels, including about three-quarters of its electricity generated by the most GHG-producing fuel of them all: coal.

Daily new confirmed COVID-19 deaths

Shown in the rolling 7-day average. Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.



Source: https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&pickerSort=desc&pickerMetric=new_deaths_smoothed_per_million&Metric=Confirmed+deaths&Interval=-7day+rolling+average&Relative+to+Population=false&Align+outbreaks=false&country=USA-IND

- India is emerging as a renewable energy powerhouse, possessing some of the best solar and wind resources on the planet – and a determination to exploit them.
- India can't make this transition alone, not fully and as quickly as the world needs, any more than it has the necessary resources to battle the fallout of a coronavirus spread that has thoroughly overwhelmed its health care system.

One step is helping India rapidly push coal from its energy mix in ways that don't impede economic development, which virtually requires growing energy demand. India needs hundreds of billions of dollars in investment to build out its new energy system, and major global investors are increasingly interested in sinking hundreds of billions of dollars (and more!) into infrastructure like that. They can work together to break impasses slowing this flow of funds, with governments helping

pave the way. Just now, Indians are seeing their health care system – which has suffered from gross under-investment for time immemorial – collapse around them. Rebuilding it better will be a colossal undertaking. If phasing out coal is a global priority, the governments of the US and India might be attracted to an idea like this one from the Brookings Institution – an aid plan to help ameliorate the social costs of a coal phase out. That would help the world and allow India to invest more in health care without putting the energy transition on the back burner.

Finally, or better yet firstly, even bigger emitters – the US and China – can radically step up their own climate and energy game. That would be helping themselves while helping India most of all, since India is especially vulnerable to climate risks from floods to droughts and everything in between.

FULL ARTICLE HERE!

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ADNOC RAMPS UP BLUE AMMONIA PLANS

TOP 3 TAKEAWAYS



- **ADNOC WILL ADVANCE A WORLD-SCALE BLUE AMMONIA PRODUCTION FACILITY IN RUWAIS IN ABU DHABI – REAFFIRMING ITS PUSH IN THE EMERGING HYDROGEN MARKET.**
- **THE FACILITY HAS MOVED TO THE DESIGN PHASE AND WILL SPUR THE UAE'S EFFORTS TO CREATE LOCAL AND INTERNATIONAL HYDROGEN VALUE CHAINS.**
- **THE FINAL INVESTMENT DECISION FOR THE PROJECT IS EXPECTED IN 2022. START-UP IS TARGETED FOR 2025, WITH AN ANNUAL CAPACITY OF 1,000 KILOTONS.**

Source: ADNOC

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NEXT EVENTS - JOIN US!

ENERGY TRANSITION DIALOGUES

PODCAST THURSDAY /// MAY 27th /// 13:00 (UAE)



Oil Majors & Climate Tech: What's Next?



Tarry Singh

Founder & CEO, deepkapha.ai
Founding Member, Focus Group AI4H, WHO



Jean Paul Sacy

Middle East Regional Director
BakerHughesC3.ai



Dr. Satyam Priyadarshy

Technology Fellow & Chief Data Scientist
Halliburton



Michelle Meineke

Director
Energy Transition Dialogues

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Zoom Meeting ID: 872 7404 6993 Password: 12345

ENERGY TRANSITION DIALOGUES



H₂ HYDROGEN

FULL COURT PRESS

Dr. Laura Nelson

Executive Director, Green Hydrogen Coalition
Former Executive Director of the Utah Office of Energy Development

Wednesday /// June 2nd /// 11:00 (UAE)

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ENERGY TRANSITION DIALOGUES



TWO MINUTE WARNING INTERVIEW SERIES

Tuesday /// June 1st /// 12:00 (UAE)

Dr. Antonio Sanfilippo

Chief Scientist, Energy Management Program Director
Qatar Environment & Energy Research Institute

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