



SUMMARY OF DISCUSSION POINTS

How will India's Future Energy Strategy Evolve?

Thursday 8 October 2020

INTRODUCTION

At its latest roundtable on Thursday 8th October 2020, The London Energy Club (LEC) addressed the challenges and opportunities created by the world's 4th largest energy economy – India.

Moderated by **Mehmet Ögütçü**, the LEC Chair and joined by: **Dr Ajay Mathur**, Director General, The Energy Resources Institute, India, **Dr Anupana Sen**, Executive Director, Electricity Research Programme, Oxford Institute for Energy Studies, UK, **Nicole Thomas**, Programme Manager, India, International Energy Agency, and **Nandakumar Janardhan**, Energy Policy Specialist, Institute for Global Environmental Strategies, Japan, the deliberations have resulted in a number of key messages for government and business leaders on future energy choices, policy options and partnership opportunities.

At present India relies on coal and imported oil as the main providers for its energy requirements. There is a huge deficit. There is the opportunity for renewables – 4th largest wind power installed, solar, hydrogen and hydro. There is a move towards renewables, but how quickly will this take place, and will India manage to achieve the transformation before 2050, and will the Indian Government be able to finance this transformation?

India is in competition with China (the largest energy consumer) and in this transformation, India will be in competition with China, in terms of technology, industry and raw materials. Will the relationship be collaboration or competition. What are the implications?

DR AJAY MATHUR (DIRECTOR GENERAL, THE ENERGY RESOURCES INSTITUTE, INDIA)

India is the fourth largest energy economy in the world. But it is not yet a developed country; it is still developing.

The provision of electricity is based on coal. But on other hand 11% is provided by wind and solar, and with hydro, provides 34% in total.

There is a huge energy deficit in India: India uses 0.6 ton of oil equivalent per year per person, as opposed to the OECD figure of 4 tons per year as a minimum.

And with the developing economy in terms of building, 2/3rds of the buildings which will exist in 2023 have yet to be built. A massive building programme. Cement and steel demand will increase as this demand picks up.

The energy demand is still increasing and India will be the largest increasing demand in the world. But mainly fossil fuels.

India is approaching the point at which there is round the clock renewables available. Within two years will be competing head to head with old electricity. Prices will be similar to coal electricity. This means that there is no incentive to add more coal fired power stations going forward. While It is expected that demand will double in the next 15 years.

India is at a crossroads in terms of energy supply sources for the future. Choices made in India today will have a huge impact on how the global energy market works in the future.

Choices have been made. There will be 175 GW of renewable energy by 2022.

Investments on the user side:

Benefits will include in agriculture – solar electricity for pumped irrigation, so cutting costs and subsidies.

Regulatory authorities supporting solar and private citizens are putting in place roof-top solar.

The road ahead for coal will be tough. It will not disappear in 2 years, and expect that up to 2027/28 there will be an increase in the use of coal (alongside more renewables). By 2050 it is expected that coal will still provide 10-15% of energy, and then expected to be zero or near zero by 2060. There will be a backlash from the coal industry, which will need to be handled.

Will still be replacing imported coal by coal mines in India, for some time to come.

Question: And how will hydrogen work in India. Any impact on the energy supply scene? Supply based but didn't go anywhere. What has changed in 2020, is that demand for hydrogen has expanded (more than ammonia) balancing in the electricity sector, and included in coking coal for making steel. Estimate that with better electrolyzers, will reach \$2/kg by 2030. Could become v important between 2020 and 2030. Beyond 2030 replacing the source of hydrogen. Case is better than ever was, now.

DR ANUPANA SEN (EXECUTIVE DIRECTOR ELECTRICITY RESEARCH PROGRAMME, OXFORD INSTITUTE FOR ENERGY STUDIES)

When looking at what will happen in India in terms of transition we need to look at the rest of the world as well. In particular, the global oil and gas markets and the move towards clean energy around the World.

Two different area will assist India in their energy transition over the next 10 years:

1. The slow down in demand for fossil fuels, as a result of COVID 19. May not pick up for a while.
2. The resulting surplus results in lower oil and gas prices (c\$40/barrel at present) in the medium term.

This is a great help to India. Increases energy security, both fiscal and physical. Net importer at present. Reduces the fiscal space.

LPG and kerosine subsidised, and fertilisers – so adds to fiscal deficit. Lower prices creates fiscal space.

This will assist in the trade balance and because of lower costs will give the Indian Government more headroom in its budgets. For every \$10 drop in the price of a barrel of oil, India's bill for oil falls by \$15bn. In addition, there is a saving in subsidy of \$2bn. Allowing space to reallocate expenditure. So India is entering a very favourable period. Conditions are aligned for energy transition.

In terms of finance for the transition to green energy, there will be a considerable requirement. Does India have enough capital for new investment. No need for India to do so. FDI will play a significant part in this. FDI is a difficult area, with considerable red tape and bureaucracy. But in terms of the global energy market, investors will want to invest in India, as a key area for energy investment over the next 10 years, and to

hedge. But it will assist if the Indian Government reduces the barriers to entry.

In terms of the India/China relationship and the dependence on Chinese technology, the global renewable supply chain being focussed on China means that most countries in the World have the same issues. The advantage is that costs have fallen enormously over the last 5-7 years. But there is geopolitical risk. However, if this China supply chain is disrupted, the targets for green energy will not be achieved. Just needs to be managed carefully. And China relies on other countries for components as well. The supply chain needs to be protected.

The relationship with China is likely to slow the transition for India. And restoring the relationship in the near future looks unlikely. Difficult to re-shore the supply chain in the short to medium term.

Interestingly, the EU put on tariffs in 2013 on Chinese equipment, to boost local solar industry. But this did not work; Europe could not compete on cost.

The Indian regional outreach for energy to the likes of TAPIS (Afghanistan/Pakistan) and Iran have been in discussion for 20 years. Little progress has been made and do not expect that progress will be made in the foreseeable future. Buyers' market, and costs are too high.

In terms of LNG purchases, again it is a buyers' market and India is moving from long term contracts to spot market imports. It is a very competitive market and LNG has to compete with the much reduced costs of green energy. India will reshape the market, in what is an increasingly competitive market. But likely to have a place in the mix for the next 10 years, as a transitional energy provider.

And private citizens are putting in place roof top solar.

Key question: Where is the technology coming from to reduce emissions from coal, and how it can be afforded. Who should pay for it? Policy frameworks and technology is available. Consumers cannot afford in India, and stuck on where the investment should go. Each region is working on its own path. Intractable question at present.

NICOLE THOMAS (PROGRAMME MANAGER INDIA, INTERNATIONAL ENERGY AGENCY)

The relationship between the IEA and India is of huge importance. There are huge gaps if IEA doesn't fully understand India and its energy policy; the data and analysis is vital. IEA can assist with energy security and

sustainability, and there is mutual benefit. Can assist India with energy access and efficiency, and by sharing best practice – both ways.

India became an associate country in 2017. Currently working towards a strategic partnership. However, neither India nor China are members of OECD, so cannot technically be full members of IEA.

The World Energy Outlook report will be available next week. And a special report on India is being produced in the first quarter of 2021.

In terms of the wider picture, COVID's impact on the energy sector has been a significant drop in demand and carbon energy is at a cross-roads. In terms of India, there is the opportunity for major reform in the energy sector through policy changes, but this will involve significant investment. But 2020 is proving to be a bad year for energy investment. However, investment in renewables is doing better than investments in fossil fuels. And less impact on tendering. Overall, for investment to increase, the Indian government needs to reduce the price risk for investors, through reducing regulatory risk. Capital is available.

NANDAKUMAR JANARDHAN (ENERGY POLICY SPECIALIST, INSTITUTE FOR GLOBAL ENVIRONMENTAL STRATEGIES)

Where is India on nuclear?

While nuclear is clean energy, there are fears and concerns, which mean that it does not have the place it should do in the energy mix in India. There is an unfavourable political debate, and public opinion is against nuclear. Non membership of NBD treaty.

There are 22 nuclear reactors in operation at present, producing 6.2GW of installed capacity and 4.8 GW under construction. There are more in the pipeline.

There is no shortage of local technology and material. Public opinion most critical factor is holding back nuclear development.

However, the demands for clean energy and a higher demand for electricity which means that nuclear needs to be an important part of the mix. But the way forward may well be with small and medium reactors rather than the large reactors which are in service at present. Large reactors are very costly and also take 10 to 15 years to build.

Small Modular Reactors (SMR) are from 15MW to 300MW. Can be installed in small cities, singly or in groups. With smart Cities, which are being built, and where energy demand will be high, SMRs may offer the best solution. Coal certainly isn't the solution. There is a great opportunity in India for SMRs.

LNG

Difficulty in replacing coal in India with LNG. Pricing issues and States control subsidy of energy on a state by state basis. There is space for natural gas, displacing coal but cannot compete on price, unless emissions are included; which are not. Electricity from renewables is cheaper than coal. So, there is no real space for natural gas. But could be the seasonal balance. There is a 25GW capacity for natural gas in India, which is not being used because of the high price.

China/India/USA Cooperation

The three major energy consumers. Is there any scope for them to work together to create better solutions. They are so important in terms of emissions?

The problem is scepticism in these three countries on emissions and their support for energy consumption, whatever the CO₂ implications, for the moment.

In addition, there are significant political challenges; both between the USA and China and India and China. But there may be scope for cooperation between India and the USA. There will be synergies and there may also be opportunities by involving Japan. (4th or 5th largest energy consumer). Perhaps active participation with India in jointly developing technologies, leading to cost reductions, shared knowledge and efficiency and have a bigger market opportunity. Already working in the transport sector.

Chinese Energy Policy

President Xi Jinping has announced that China will be carbon neutral by 2060. This was a surprise to the international worlds, and the Chinese people. This will result in policies being put in place to achieve this. Not yet visible.

The Paris Agreement produced a very ambitious plan to keep the temperature increase in the world below 2°C. There are six countries whose road to achieving this are on track. India is one of them, and the only G20 country on the list. As the USA has pulled out of the discussions on climate change, perhaps India and China could take over a leadership role, and establish a plan to keep below 2 °C.

India has an advantage in energy transition in comparison with China. When renewables started to be manufactured in the 1980s, the costs were three times that of coal. The costs are now equal to coal. India has many advantages over China for the deployment of renewables: weather, high-

tech Indian industries, levels of consumption, no heating systems for the winter. Less energy consumption. India has a better energy mix than China as well: More solar, more wind and more hydro. And India is reducing the dependence on coal much faster than China.

FINAL POINTS

- The challenge for the nuclear sector around the world. In particular, the aging workforce which is the biggest challenge. There need to be plans put in place to retrain the nuclear workforce.
- The importance of getting policy right, now in India. We are at a cross-roads for the path for future energy. Part of this is to ensure that economies and jobs are designed in a sustainable way. The IEA can help to put these policies in place.
- India should leverage on changes taking place in energy markets to optimise the transfer. Silos between energy sectors will collapse, and should focus on the potential benefit.
- The decarbonisation of the Indian electricity sector will happen. But there are sectors which will take longer than others: transport, industry and agriculture; and policy, technology and finance need to focus on these areas. But zero will be achieved.

NEXT MEETING

The next meeting of the London Energy Club will be on Thursday 5th November 2020 entitled Batteries vs. Oil: The Transition at 12:00 GMT

Chaired by Mehmet Ögütçü, Chair, London Energy Club

Speakers:

Ahmed Mehdi, MD Renaissance Energy Advisors

Andy Leyland, Head, Supply Chain Strategy, Benchmark Mineral Intelligence

Other speakers to be confirmed

Complimentary registration is at: <https://bit.ly/3nMG2ZH>