

Q&A



Dr Leena Srivastava, Deputy Director General – Science, IIASA

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Looking to a low carbon future

Dr Leena Srivastava, Deputy Director General – Science, IIASA* provides an insight to how India is tackling poverty, pollution and skill set development as the country transitions to a low carbon future. She will be speaking further on these issues at IP Week 2020.**

How do you balance the demand to reduce poverty in India while growing the country's economy with a balance between conventional fuels and renewables?

Poverty reduction in India can take place either by increasing the opportunities for gainful engagement in the economic sectors or through the design of social intervention programmes. Some 94% of employment in India is in the unorganised sector (where employment terms are not fixed and regular, and the enterprises, often self-employed individuals or small or family businesses, are not registered with the government). It is also important to bear in mind that employment does not necessarily translate into poverty alleviation. Of the balance, only about 40% is in the private sector. In essence, rapid poverty alleviation would require a multi-pronged approach that would enable the participation of the poor in the service economy, promote entrepreneurship, enhance productivity and ensure

robust economic (industrial and agricultural) growth, among other measures. All such efforts would require not just a concerted effort towards capacity building but also access to favourable capital and affordable input costs.

A key input cost to support the competitiveness of the micro, small and medium enterprises in India is that of energy, making industry/enterprise extremely price sensitive. While coal is considered to be the cheapest form of energy, it is also the most polluting. Investments in this sector are likely to be challenged due to climate concerns. The supply chains, on the other hand, are totally dependent on petroleum products to move raw and finished goods, with the railways continuously losing ground to road for freight movement. The big push on LPG (liquefied petroleum gas) connections for household cooking purposes is also creating a dependence on this fuel as a desired choice for obvious reasons. The provision of clean energy in rural households would go a long way to improving efficiency, health and, therefore, economic productivity here too. India has a big challenge on its hands to balance its energy for growth demands with the need for curtailing greenhouse gas (GHG) emissions.

How is India's oil and gas sector addressing the energy transition – in terms of NOCs, IOCs and NGOs?

While on the one hand, the demand for LPG and gasoline has increased substantially in the last five years in India, the demand growth for kerosene has been virtually stagnant and that of diesel has been lower than the average growth. The demand for

the heavy ends perversely has seen a robust growth too. Going forward, the Indian government has announced its intention of making a major shift towards electric passenger vehicles in the next decade or so. This could have implications for gasoline demand, pushing production towards aviation fuel. These shifts in the petroleum product mix could have implications for India's crude imports as well as, maybe, for its refinery operations.

On the brighter side, both the oil and gas producers and the refiners in India have started making serious investments in the renewable energy sector. At the same time, ONGC has set a target to double output from its domestic and overseas oil and gas assets. Indian Oil Corporation, too, is investing in solar and wind. It also has a specific focus on bioethanol projects; in doing so it aims to support the government's efforts for diversifying into cleaner transport fuels. India's private sector entities too are making investments that would prepare them for the emerging disruptions in the energy sector.

The role of international oil companies (IOCs) in India's oil and gas sector is modest, although the country imports over 80% of its crude throughput, with LPG being the major petroleum product imported.

What technology initiatives are driving the development of sustainable energy in India; and who are the key Indian players?

India had announced a very ambitious set of Nationally Determined Contributions (NDCs) in response to the Paris Agreement on climate change. Most of these commitments centre around the

electricity and forestry sectors. The petroleum sector would be affected to the extent of meeting the energy intensity targets under the NDCs.

The key technologies driving the sustainable energy transition in India are solar and wind. Although it was expected that decentralised solar rooftop systems would have a major role to play in enabling energy access in the country, this option has not taken off – largely due to inadequate market development. With more than half a dozen major players – almost exclusively in the private sector – in both solar and wind technologies, and several aspiring players, renewable electricity generation in India is set to increase exponentially.

Acme Solar Holdings is the largest solar power producer in India, followed closely by Adani Power and Greenko Energy Holdings. Renew Power dominates the wind energy sector, closely followed by Greenko Energy Holdings. Tata Power has significant presence in both solar and wind power production.

Although the government launched the National Electric Mobility Mission Plan in 2013 with the aim of promoting electric and hybrid vehicles, these technologies have not really taken off. However, e-rickshaws have become very popular and are rapidly replacing the petrol/diesel/CNG run auto-rickshaws.

India has also done well in introducing energy efficient lighting and a range of energy efficient appliances.

What is being done to develop the skill sets necessary to address the energy transition? Where are key centres of excellence?

Although India has launched a Skill India Mission with the aim of increasing employability in various sectors, including renewable energy, the success of these initiatives is rather uneven. The Center for Energy, Environment and Water (CEEW) has estimated that 'to reach 100 GW of solar by 2022, India would need nearly 210,800 skilled site engineers and approximately 624,600 semi-skilled technicians for construction, most of whom would be needed to achieve the targeted 40 GW rooftop solar capacity addition'.

The Skill India Mission established the Skills Council for Green Jobs in 2015, to identify the training needs of manufacturers and service providers within the green business sector and implement various skill and

entrepreneur development initiatives. A study on the *Co-benefits of the new energy world of renewables for the people of India* by TERI and IASS Potsdam, estimates that the renewable energy sector could employ five times more people by 2050 than the entire Indian fossil-fuel sector employs today. It goes on to say that the employment impact per installed capacity of distributed renewable energy technologies is about 25 times greater than fossil-fuel based power generation.

However, while the demand is there and growing, a lot more needs to be done to respond adequately to this demand. Even if India meets its NDC targets of 2030 rather than its national targets of 2022, it would need more than a million skilled people in this timeframe, about a 100,000 per year. Major skills providers in this sector include the National Institute of Solar Energy, the National Power Training Institute and a few others.

India faces significant environmental problems, particularly in its urban centres – how can the country best mitigate GHG emissions and how fast do you see change happening?

The key environmental problem in urban India is related to air pollution, among others. While there is a link between the emissions of particulate matter and short-lived carbon pollutants, the mitigation of emissions of greenhouse gases (GHGs) would contribute more to the global climate change problem.

Having said that, the root causes of the very poor air quality in India's cities, particularly around the national capital region, include vehicular emissions, the burning of agricultural residues on agricultural lands, fuel combustion in power plants (including diesel gensets), biomass burning in urban areas, among others. Several of the measures for mitigating emissions of GHGs – shifting to renewable energy, electric transport, fuel efficiency improvements, etc – would yield positive co-benefits for local air pollution too. However, the severity of local air pollution and the associated actions tend to be looked at as seasonal requirements, as against the sustained transformative changes needed for tackling the GHG emissions challenge.

It also needs to be recognised that the local constituency for action on air pollution still remains stronger than that for mitigating GHG emissions.

Unfortunately, India still does not have a concerted strategic action plan to deal with the tangible problem of air pollution in its cities. Designing and implementing such a plan would have definite co-benefits in the form of climate action.

How is India's government helping drive the energy transition in terms of regulatory development and energy policy?

The Indian government has been providing various incentives to the renewable energy sectors over several years now. However, the experiential learning that has influenced frequent changes in policies has resulted in a very uneven growth of the sector.

Many schemes are underway – developing solar parks, with the promise of suitably developed land with all clearances, transmission system, water access, road connectivity, communication network, etc, to a cycle of accelerated depreciation with generation-based incentives for wind projects.

In 2018, the Ministry of New and Renewable Energy (MNRE) introduced the National Wind-Solar Hybrid Policy, with an aim to improve the efficacy of transmission infrastructure and use of land, in the hope of mitigating inconsistencies associated with renewable power generation. The power generated from such hybrid projects could be used for captive purposes, sold to third parties through open access, or sold to distribution companies at prescribed tariff rates.

However, the growth of the renewable energy sector in India is faltering, leading to several new measures being put in place. One such measure is the setting up of special purpose vehicles by public sector undertakings to acquire large tracts of land and put in place other measures to de-risk projects resulting in further cost reduction over and above those achieved through the reverse bidding process.

Supporting the development of renewable power, a major project on Intra State Transmission System was sanctioned by the government in FY 2015–2016 to develop some 20,000 MW of large-scale renewable power and improve the grid in the implementation stages. ●

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**IP Week 2020 will be held at the InterContinental Park Lane, London, on 25–27 February. See inside front cover for more details.