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INDIA'S ENERGY TRANSITION: ROLE OF RENEWABLE ENERGY AND CHALLENGES

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India is the 4th largest consumer of energy in the world after China, the USA, and Russia but it is not bestowed with bountiful energy resources. Therefore, meeting its ever-growing demands and development needs, India is importing nearly 90% of its needs that seriously affect the energy security. So, to realise the energy needs for achieving 8-9% economic growth while also ensuring energy requirements of the population at affordable prices and reliable energy supply presents a major challenge. Hence, to meet its rising demand, using all available domestic resources of oil, coal, uranium, thorium and importantly the renewable sources is vital for the future. Today, within the realm of India's energy policy, renewable energy is a key pillar of India's energy transition.

Speaking at the 57TH Annual Convention of Industry Executives 2017 organised by the Society of Indian Automobile Manufacturers (SIAM) Nitin Gadkari, Minister of Road Transport

& Highways, Government of India told, "the government has a robust policy to reduce imports of crude and curb pollution and decided to move up to the hardest emission standards of BS-VI from BS-IV by 2020." India's efforts to shift to environment-friendly fuels is certainly a part of its commitment under the Paris Climate Accord to reduce carbon emissions compared to its gross domestic products by 33-35% from 2005 levels by 2030.¹ India pledges that by 2030, 40% of the country's electricity would come from renewable sources such as solar, hydro, bio and wind.² India has an estimated renewable energy potential of about 900 GW commercially exploitable sources (solar - 650 GW, wind - 102 GW, Bio-energy - 25 GW, small hydro - 20 GW and assuming 3% wasteland.)³ Yet, at present, it contributes only a small percentage to the country's energy mix. Despite the increasing contribution of renewable energy sources to the total energy mix of India (17.5% as of April 2017),⁴ the growth is slow in the deployment of

renewable energy in the transportation sector or climate-friendly urban development projects.

The importance of cutting energy-related CO₂ emissions and achieving the goal of limiting climate change is at the heart of India's energy transition. Achieving sustainable growth and limiting climate change has put in motion a transition in the way that energy is produced, distributed and consumed. Innovation and the accelerated use of low-cost renewable energy, energy efficiency, widespread electrification and the use of information and communication technologies are essential to accelerating this energy transition.

Amongst the fastest growing economies in the world, India has the responsibility to enact an enabling concrete policy framework that provides long-term certainty for the private sector and ensures a positive environment for the energy transition. Markets signals must be put in place that creates financial incentives for low-carbon solutions. The transition should bring into line with the UN Sustainable Development Goal as it covers all sectors of the energy system and would ensure an affordable, secure and sustainable supply of energy. Renewable energy offers a wide range of benefits such as the nation's energy security, climate, and employment, and will have widespread benefits for the nation's economy and for the way society operate in the century.

There is growing evidence that transition to renewable energy can support economic growth and improve human welfare, mitigating climate change that can certainly increase employment generation.⁵ International Energy Agency (IEA) in 2017 stated that employment in renewable will be dominated by China, India, Brazil and the United States in the world.⁶ The Indian government's push for 175 GW of Photovoltaic (PV) installations by 2022 is generating great impetus. In India Solar PV employs more than 103,000 people in grid-connected (31,000 jobs) and off-grid applications (72,000 jobs)⁷ and the wind industry has estimated 48,000 jobs.⁸ Meeting the increasing labour requirements of the renewable energy sector will require stable and concrete policy frameworks that encourage, stimulate investments, promote education, and skill development and training. Yet, reaping the full benefits of India's energy transition requires bringing into line energy policies with a broader set of economic policies and institutional structures of the nation.

India is witnessing increased use of solar and wind power on a large scale in recent years, based on technology innovations and cost reductions. The recent development of renewable energy technology has occurred in spite of slow economic growth and low oil prices in India. Also, driven by energy shortages, energy security, climate change, air pollution, steady improvement of cost-competitiveness of the Solar PV and onshore wind power. Increased

investment in innovation needs to start now to allow sufficient time for developing the fundamental new solutions that are needed for multiple sectors and processes in the future. Technology collaboration will also be part of this transition, all current energy applications, economically viable technology solutions are limited today. Technology innovations efforts will need to be complemented by new market designs, new policies and by new financing and business models.

Renewable energy offers a way for India to meet its growing demand and improve its energy security by diversifying energy sources while reducing environmental impacts. But getting there would require a substantial shift in investment. Mobilising diverse sources of capital for a sustained flow of energy investment, which meets these aims should be a policy priority for the country.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes

¹ Live mint "NitinGadkari to auto firms: No alternative go green fuel shift," 17th November 2017. <http://www.livemint.com/Industry/oRBDkucykrT8ve6M9QOpHJ/Nitin-Gadkari-to-auto-firms-Shift-to-alternative-fuels-or-b.html>

² *India Today* "For transport minister NitinGadkari, Green fuels the answer to Delhi's pollution woes, November 17, 2017. <http://indiatoday.intoday.in/story/for-transport-minister-gadkari-green-fuel-the-answer-to-delhi-pollution-woes/1/1091369.html>

³ Ministry of New and Renewable Energy, Government of India, A new dawn in Renewable Energy, December 18,

2016. <http://pib.nic.in/newsite/PrintRelease.aspx?relid=155612>

⁴ Economic Times, Energy World, India's renewable energy capacity crosses 57 GW. June 14, 2017. <https://energy.economictimes.indiatimes.com/news/renewable/indias-renewable-energy-capacity-crosses-57-gw/59137130>

⁵ *Perspective for the energy transition: Investment needs for a low-carbon energy system*, OECD/IEA and IRENA 2017

⁶ Ibid.

⁷ Ministry of New and Renewable Energy (MNRE) government of India and CII, Estimate 2010

⁸ IRENA, *Renewable Energy and Jobs, Annual Review 2016*, http://www.se4all.org/sites/default/files/IRENA_RE_Jobs_Annual_Review_2016.pdf