



CENTRE FOR AIR POWER STUDIES

New Delhi

CAPS InFocus: 22/2021

30 September 2021

Economic Impact of Global Warming: A Case for Boosting Nuclear Power Generation in India

Ms. Zoya Akhter Fathima
Research Associate, CAPS

Keywords: Global Warming, Climate Change, Nuclear Power, DAE



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]



This work is licensed under Creative Commons Attribution – Non-Commercial – No Derivatives 4.0 International License.

Introduction

A report recently released by *Deloitte Economics Institute* titled “India’s turning point: How climate action can drive our economic future” states that if the global average temperature increases by more than 3 percent by the year 2070, it would result in economic losses over \$6 trillion for India.¹ This places India in a challenging position as fossil fuels are the major source of electricity generation in the country. Apart from the obvious impact of air pollution caused due to the burning of fossil fuels on public health, it also has a dire impact on the country’s economy. Another report titled “Working on a Warmer Planet - The Impact of Heat Stress on Labour Productivity and Decent Work” by the *International Labour Organization*, which came out in 2019 revealed that India is estimated to lose about 5.8% of working hours in the year 2030 due to heat stress caused by global warming. The productivity loss is estimated to be equivalent to 34 million full-time jobs.² The economic impact of global warming is getting increasingly pronounced in India, as it not only reduces productivity but also affects vital economic sectors such as the service, manufacturing and tourism industries among the others which collectively contributes to 80% of India’s GDP.³

India’s Unhealthy Dependence on Fossil Fuels

The major component of India’s energy basket is made up of fossil fuels with coal contributing to 73%, natural gas contributing 5% and oil 0.5% to the total electricity generated.⁴ India’s reliance on fossil fuels is not economically prudent for several reasons. First, it leads to huge healthcare costs as a study on health and economic impact of air pollution on India assessed that disabilities and deaths caused because of air pollution resulted in a loss worth 1.36% of India’s GDP in 2019.⁵ Second, it has led to economic vulnerabilities such as import dependencies, since India has been importing large amount of fossil fuels to meet the rising demands. This has resulted in India becoming the world’s second largest importer of coal and the fourth largest importer of LNG.⁶ In extension, these dependencies also put India at risk to price volatility.⁷ These vulnerabilities are expected to intensify as India’s annual fossil fuel import bill is estimated to increase by 3 fold by the year 2040, as the country is anticipated to experience the largest energy demand in the world in the coming decades.⁸ The solution thus lies in making the right energy choices soon. In this regard, Atul Dhawan, the chairperson of Deloitte India states “We have a narrow window of time—the next 10 years—to make the decisions needed to alter the trajectory of climate change. No one is immune to the impact of climate change, but for India this is a window of opportunity to lead the way and show how climate action is not a narrative of cost but one of sustainable economic growth...”⁹

Nuclear Energy- Panacea to the Climate Change Crisis?

Recognising the importance of clean and sustainable development, the government of India has been focusing on pushing for the development of low-carbon energy technologies. In this regard, nuclear power has gained prominence as it offers several benefits. First, it has virtually no carbon footprint. It has been estimated that the use of nuclear power in electricity generation has resulted in reducing CO₂ emissions equivalent to taking out over 400 million cars from the road each year.¹⁰ In addition, it is more economical in the long run considering its high capacity factor.¹¹ While renewable energy holds great promise towards sustainable development, it faces several challenges of its own such as the problem of intermittency. For example, while solar power generation has immense potential in India, it does not however contribute significantly in the evenings, which is when most places in the country experience peak demand.¹² In addition, it also faces the associated problems of high integration costs. Nuclear power, in this regard can make up for the limitations of renewable sources of power, since it does not depend on external variables such as sunlight or wind. In addition, it is less water and land intensive than other sources of renewable power. These factors make nuclear power a vital tool in achieving the targets set by India under the Paris Agreement. KN Vyas, the Secretary of the Department of Atomic Energy in this regard has touted nuclear energy to be a “undeniable” option to fight global warming.”¹³

Conclusion

Considering the many benefits offered by nuclear technology, a mixed energy basket comprising of renewable power and nuclear energy holds the key to India’s challenges for sustainable growth. Dr. Anil Kakodkar, the Former Chairman of Atomic Energy Commission, in this regard says that to achieve decarbonisation of energy consumption, India will need a 30-fold increase in renewable power, 30-fold increase in nuclear energy and doubling of thermal power.¹⁴ India is presently the third largest emitter of CO₂ in the world. Recognising the economic and public health implications of this development, the government of India has been focusing on bolstering nuclear power production in the country. Currently, the Indian government has set a goal to increase nuclear power’s contribution to 9% of the total electricity generated by the year 2032 and 25% by 2050.¹⁵ While political support for nuclear power has been strong across party lines, and ambitious targets have been set several times in the past, deadlines have repeatedly been missed over the years. The growth of the nuclear sector is slow marked with time and cost overruns. Despite being over 7 decades old, the nuclear power sector in India contributes to just 3% of the total electricity generated in the country¹⁶ While the international sanctions were the primary reason for the delayed growth in the sector, the nuclear industry in India is saddled with other challenges such as public opposition, shortages in financing,

time overruns etc. There is, thus, a need for a robust nuclear strategy followed by thorough implementation so that the next wave of electricity demand can be met by clean sources of energy. The report by Deloitte also states that effective action on climate change can help India benefit by earning \$11 trillion worth economic value in the next 50 years.¹⁷ The future of India's economy thus depends on how authorities respond to the climate change crisis.

Notes

¹ "Climate Change: India may see loss of \$6 trillion by 2050; top 5 sectors to be most hit account for over 80% of GDP". *Financial Express*. September 05, 2021. <https://www.financialexpress.com/economy/climate-change-india-may-see-loss-of-6-trillion-by-2050-top-5-sectors-to-be-most-hit-account-for-over-80-of-gdp/2323918/>. Accessed on September 27, 2021.

² "India could lose the equivalent of 34 million jobs in 2030 due to global warming, says ILO". *Business Line*. July 02, 2019. <https://www.thehindubusinessline.com/news/india-could-lose-the-equivalent-of-34-million-jobs-in-2030-due-to-global-warming-says-ilo/article28259436.ece>. Accessed on September 28, 2021.

³ n.1.

⁴ "Nuclear Power in India", *World Nuclear Association*, <https://world-nuclear.org/information-library/country-profiles/countries-g-n/india.aspx>. Accessed on September 26, 2021.

⁵ Disha Shetty. "Air Pollution Cost India \$36.8 Billion In 2019", *Forbes*, <https://www.forbes.com/sites/dishashetty/2020/12/22/air-pollution-cost-india-368-billion-in-2019/?sh=1d9d38335c70> December 22, 2020. Accessed on September 25, 2021.

⁶ M. Rajshshkar. "India Is One of the Last Big Markets for Fossil Fuels – and It Is Cashing In". *The Wire*. July 07, 2021. <https://science.thewire.in/environment/india-fossil-fuels-demand-greenhouse-gas-emissions/>. Accessed on May 12, 2021.

⁷ Manpreet Sethi, "Future of Nuclear Power in Asia", *CLAWS Summer Journal*, 2012. p.152.

⁸ Ragini Bhuyan, "Five charts that show how India's dependence on fossil fuels will increase", *Livemint*, <https://www.livemint.com/Opinion/Lc6lOXOiSwzSWPWF1yTvTI/Five-charts-that-show-how-Indias-dependence-on-fossil-fuels.html>. November 13, 2015. Accessed on September 26, 2021.

⁹ n.1.

¹⁰ "Nuclear Technology for Climate: Mitigation, Monitoring and Adaptation", *IAEA*, September 18, 2018. <https://www.iaea.org/newscenter/statements/nuclear-technology-for-climate-mitigation-monitoring-and-adaptation>. Accessed on September 27, 2021.

¹¹ Richard Rhodes, "Why Nuclear Power Must Be Part of the Energy Solution", *Yale Environment 360*, July 19, 2018. <https://e360.yale.edu/features/why-nuclear-power-must-be-part-of-the-energy-solution-environmentalists-climate>. Accessed on September 26, 2021.

¹² Rahul Tongia, "Why Renewable Energy Is Harder in India than in Other Countries

Wednesday", *Brookings Institute*, May 21, 2014, <https://www.brookings.edu/blog/planetpolicy/2014/05/21/why-renewable-energy-is-harder-in-india-than-in-other-countries/>, accessed on September 28, 2021.

¹³ Myths linked to nuclear energy should be busted: MoS Jitendra Singh, " *Financial Express*, October 19, 2013. <https://www.financialexpress.com/industry/myths-linked-to-nuclear-energy-should-be-busted-mos-jitendra-singh/1740042/>. Accessed on September 27, 2021.

¹⁴ *Pib.gov.in*, May 12, 2020. <https://pib.gov.in/PressReleasePage.aspx?PRID=1623194> . accessed on September 28, 2021.

¹⁵ Dr. H.N Sethna. "India's Atomic Energy Programme: Past and Future". *IAEA Bulletin*. v.21.n.5

¹⁶ "India's nuclear power capacity is expected to reach 22,480 MW by 2031 from current 6,780 MW: Jitendra Singh". *Newsonair.com*, August 04, 2021. <https://newsonair.com/2021/08/04/indias-nuclear-power-capacity-is-expected-to-reach-22480-mw-by-2031-from-current-6780-mw-jitendra-singh/>. Accessed on September 28, 2021.

¹⁷ n.1.

