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## Tracing India's Green Growth: Budget Priority and Potential

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India's economy is the fifth largest in the world. However, India is severely depleting its mineral, water, and fossil fuel resources to achieve its growing needs. This ongoing depletion of natural resources can have severe negative effects on both the economy and the environment. Therefore, environmental sustainability is not just a growing need but is a must. India's Prime Minister Narendra Modi stated at the 2021 United Nations Climate Change Conference (COP26) that India needs US \$1 trillion in climate financing to support its goals. That's because it's an investment in the future of humanity as a whole, one that will pay off in more ways than climate-related progress.<sup>1</sup>

Keeping this goal in mind, Finance Minister Nirmala Sitharaman announced 'Green Growth' as one of the seven priorities, or *saptarishi* in this year's budget. She promised a spate of initiatives for "Green Growth" in an effort to lessen the country's reliance on fossil fuels, advance the country's clean energy goals, and create a significant number of green jobs. She said India is working toward net-zero carbon emissions by 2070 to start a green industrial and economic transition. Green fuel, green farming, green transportation, green buildings, and green equipment are all part of a set of initiatives.<sup>2</sup>

### **Budget-Promised Green Growth Initiatives**

As part of the green growth priority, six initiatives have been announced:

- National Green Hydrogen Mission with an outlay of ₹19,700 crore to help the country "take technical and market leadership in this new industry," lessen its reliance on imported fossil fuels, and speed up the transition to a low-carbon intensity economy.
- Energy transition will be accelerated with a capital investment of ₹35,000 crores.
- Sustainable development will be advanced by providing funds for a battery energy storage system of 4,000 MWh.
- Building an interstate transmission infrastructure for grid integration and renewable energy evacuation will cost ₹20,700 crores, of which ₹8,300 crores will come from central funding.
- Launch of PM Program for Restoration, Awareness, Nourishment and Amelioration of Mother Earth (PM-PRANAM) will incentivize states and UTs to advance their transition to a green economy.
- 'Green Credit Program' and scrapping of old vehicles.<sup>3</sup>

## Green Transportation in India

Among other aspects, special focus was given to improving green initiatives in the transportation sector. The 'Faster Adoption and Manufacturing of Electric Vehicles' (FAME) scheme has been allocated ₹5,700 crore in the current budget, which is a huge increase from its initial phase financing of ₹359 crore in 2015.<sup>4</sup>

Two factors have fuelled India's transition to electric vehicles (EVs): (1) the quantity of renewable energy sources and (2) the accessibility of skilled labour in the manufacturing and technological industries. The FAME scheme was launched in two phases: FAME-I in 2015 and FAME-II in 2019 as part of the National Electric Mobility Mission Plan (NEMMP), which the government announced in 2015.<sup>5</sup> Due to issues with technology, materials, and the market, FAME-I failed. However, FAME-II was soon put into place for a period of three years. It emphasised the building of EV production infrastructure and demand through incentives for buying EVs and hybrid cars. As part of FAME-II, in cities with a population of ten lakh, charging stations will be put in place every 25 kilometres. To assist the NEMMP, about 14 states have been pushing EVs. The Indian government introduced the 'Charging Infrastructure for EVs' plan in 2018 with reference to the updated Electricity Act, 2003, which took effect on January 14, 2022. The infrastructure regulation aims to ensure dependable and economical charging infrastructure and an associated ecosystem to speed up EV adoption.<sup>6</sup>

The Central Electricity Regulation, which was adopted in 2019 for the distribution and generation of resources, has helped make the plan for an EV infrastructure more feasible. According to the Centre for Energy Finance figures, EV sales are anticipated to surpass 15 million by 2030.

At the COP26 meeting, India unveiled the e-Accelerated E-Mobility Revolution for India's Transportation portal, or the e-AMRIT portal, as a one-stop resource for all information on EVs. According to the webpage, EV regulations have helped India reduce 191.5 kg of CO<sub>2</sub> and have resulted in 7.96 lakh registered EVs, 25+ states with EV policies, 380 EV manufacturers, 1800 EV charging stations, and 380 EV manufacturers. The portal also credited Ola Electric Mobility, Mahindra Electric, Tata Motors, and Ather Energy as the top EV manufacturers in India.<sup>7</sup>

## India's Green Growth Potential

India's renewable energy and green growth ambitions have been guided by the four Cs: commitment, co-benefits, cost, and capital.<sup>8</sup> Nevertheless, the factors that can sustain its green growth and complement the 'four key Cs' are:

- Job creation: According to a study published by the World Economic Forum (WEF), India's transition to a net-zero economy may result in the creation of nearly 50 million new jobs and a US \$15 trillion contribution. In order to show its continuous commitment to solar energy harvesting and ecological sustainability, the Indian government had set goals for developing 175 gigawatts of renewable capacity by 2022, and 450 gigawatts by 2030. By October 2022, the reported renewable capacity was 165.94 gigawatts.<sup>9</sup> Renewable energy sources like wind, solar, and geothermal are ideally suited for an industrialising nation like India. Due to the steadily falling price of solar panels, solar power has appeared to be a promising choice in India for a number of years. According to research by the Council on Energy, Environment, and Water and the Natural Resources Defense Council, India's wind and solar energy sectors currently employ 111,400 people. The solar industry makes up around 77 per cent of these jobs, and those in the wind industry make up the remaining 23 per cent.<sup>10</sup>
- Focus on rare earth elements (REE) and increase the investment in it. Switching from non-renewable to renewable energy sources will increase the efficiency of EVs. REE enter the picture as a result of this shift's requirement. Different battery types, including Li-metal (V), Li-ion (Mn, Ni, and Co), NaNiCl, NiMH (AB2 and AB5), NiCd, and PbA, are used in EVs. These batteries use metals or combinations of metals that could be in short supply, including lithium, nickel, cobalt, vanadium, cadmium, lead, and mixed metals (rare earth elements). In addition to help improve clean and emission-free electricity generation, REEs can be used to make EVs. Neodymium magnets (NdFeB) are used for cars' motors, speakers, doors, and windows. Europium and Yttrium are used in fluorescent powders for lightning in EVs. Lanthanum and cerium are utilised as power sources in hybrid EVs and as battery electrodes in nickel-metal hybrid batteries.<sup>11</sup> In a nutshell, REEs can give EV technologies vital functionality and sustainable mobility.

The aforementioned issues should be addressed with the budget funds allotted in order to promote India's green growth and long-term economic viability.

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**NOTES:**

- <sup>1</sup> Mihir Swarup Sharma, "The Four Cs of India's Green Growth", *ORF*, January 26 2022, <https://www.orfonline.org/expert-speak/the-four-cs-of-indias-green-growth/>. Accessed on 1 February 2023.
- <sup>2</sup> "Budget 2023 | What are the Centre's initiatives for 'Green Growth' and energy transition? *The Hindu*, February 1 2023. <https://www.thehindu.com/news/national/budget-2023-energy-transition-carbon-reduction-policies/article66457760.ece>. Accessed on 1 February 2023.
- <sup>3</sup> Ibid.
- <sup>4</sup> Ministry of Heavy Industries, 'FAME I', (2019), [https://fame2.heavyindustries.gov.in/content/english/15\\_1\\_FAMEI.aspx](https://fame2.heavyindustries.gov.in/content/english/15_1_FAMEI.aspx). Accessed on 1 February 2023.
- <sup>5</sup> 'Electric Vehicle', *Ministry of Power*, <https://powermin.gov.in/en/content/electric-vehicle>. Accessed on 2 February 2023.
- <sup>6</sup> "Charging Infrastructure for Electric Vehicles (EV)- the revised consolidated guidelines & standards", *Ministry of Power*(2022), [https://powermin.gov.in/sites/default/files/webform/notices/Final\\_Consolidated\\_EVCI\\_Guidelines\\_January\\_2022\\_with\\_ANNEXURES.pdf](https://powermin.gov.in/sites/default/files/webform/notices/Final_Consolidated_EVCI_Guidelines_January_2022_with_ANNEXURES.pdf). Accessed on 2 February 2023.
- <sup>7</sup> "E-Mobility at a Glance", E-AMRIT Portal, <https://e-amrit.niti.gov.in/home>. Accessed on 2 February 2023.
- <sup>8</sup> Sharma, n.1
- <sup>9</sup> Economic Times, "India achieves 166GW of renewable energy capacity till October", December 8, 2022, <https://economictimes.indiatimes.com/industry/renewables/india-achieves-166gw-of-renewable-energy-capacity-till-october/articleshow/96086130.cms>. Accessed on 3 February 2023.
- <sup>10</sup> CEEW, NRDC, and SCGJ, India's Expanding Clean Energy Workforce: Opportunities in the Solar and Wind Energy Sectors, January 2022, <https://img.saurenergy.com/2022/01/ceew-green-jobs-report-2022.pdf>. Accessed on 3 February 2023.
- <sup>11</sup> Xiang Yang Li, Jian-Ping Ge, Wei-Qiang Chen, Peng Wang. 2019. "Scenarios of Rare Earth Elements demand driven by automotive electrification in China: 2018-2030." *Resources, Conservation and Recycling* Vol.145, 322-331. <https://doi.org/10.1016/j.resconrec.2019.02.003>. Accessed on 3 February 2023.