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# India's Electric Mobility Leap: A Quest for Atmanirbhar Bharat by 2047

Putting Mobility Sector Energy Independence Within Reach as India's shift to electric... mobility is crucial for reducing energy demand and carbon emissions by 2047. Strengthening policies, infrastructure, and domestic EV manufacturing will drive this transition, while collaboration across sectors is key to achieving the vision of a self-reliant, sustainable future.



Shri Amitabh Kant, Akshima Ghate & Sujit Jena · ETEnergyWorld Updated On Oct 22, 2024 at 03:31 PM IST

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As India strides towards its centennial of independence in 2047, the vision of *Atmanirbhar Bharat* (self-reliant India) is not merely an aspiration but a bold blueprint for transformation. This vision goes beyond economic growth; it is about reshaping




the nation's energy landscape and steering it towards a sustainable future. At the heart of this groundbreaking journey for energy independence is the electric mobility revolution, and India is at a critical juncture. Transitioning the country's road transport sector to electric, shared, and independent of imported fossil fuels could cut the sector's energy demand by 57% and carbon emissions by 87% as 2047 approaches.

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India has picked up pace on the road to electric mobility. As of mid-2024, EVs accounted for 7.5% of the market — an impressive tenfold increase from 0.7% in 2020. This is a testament to the collective will and forward-thinking strategies in place. However, as we celebrate this progress, it is important to acknowledge the significant transition required to meet the country’s 2047 vision. A new report co-authored by RMI and G20 Secretariat, India indicates that ***nearly 100% of the vehicles sold by 2043 must be electric vehicles (EVs) if India is to meet its energy independence vision in the mobility sector.*** The shift to electric mobility is a transformative journey demanding more than just incremental change — it requires a bold, holistic approach.

### Navigating a High-Impact Mobility Transition

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Achieving high levels of EV adoption is possible if we continue to build on market momentum with strategic policy actions, targeted investments and strong collaboration. The country should double down on the following aspects to achieve the necessary mobility sector transition:

**Strengthening Supply-Side Policies and Incentives:** India’s policy framework must continue to support strong CAFE fuel efficiency and Bharat Stage emissions standards for all vehicle segments and align these policies with other ambitious global standards (e.g., aligning CAFE III and IV proposals with EU targets by 2032). To bolster the supply-side policy landscape, India should also incorporate new structures such as sales requirements for EVs. This will create conditions to technologically innovate and bring clean, low-emitting vehicles to consumers while reducing dependence on fossil fuels.

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**Expanding Demand-Side Policies and Incentives:** To make EVs more appealing to consumers, India should continue to provide demand-side incentives through policies such as the PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme. As EVs reach price-parity and/or high adoption levels, purchase incentives can be phased out. In parallel, we should consider implementing policies that disincentivise the use of high-emitting vehicles, such as higher road taxes for internal combustion engine vehicles than EVs. Finding the balance of offering fiscal purchase incentives to spur the market while disincentivising high-emitting vehicles will be key to indicating India’s priorities to the market.

**Developing Robust Charging and Battery Swapping Infrastructure:**

Public and private sector stakeholders need to continue installing public charging and battery swapping infrastructure to meet the increasing demand. Building on the Ministry of Power's "Charging Infrastructure for Electric Vehicles — Guidelines and Standards" by specifying charger and interoperability standards and setting national installation targets for public infrastructure will support the implementation and scaling of necessary EV infrastructure.

**Ensuring a Clean and Reliable Grid:** The backbone of a successful EV ecosystem will be a clean and reliably powered grid. As of July 2024, over 33% (150 GW) of India's total installed electricity generating capacity was sourced by renewable energy (RE). This is an important milestone as the country aims for 500 GW of RE by 2030, but India must continue to increase clean power generation and enhance grid infrastructure to efficiently manage spikes in demand. As per a study by Lawrence Berkeley National Laboratory, energy independence by 2047 will require installed solar capacity 14 times today's levels, onshore and offshore wind 20 times today's installed capacity, 500 GW capacity of storage, and ramped-up domestic production and use of green hydrogen for industrial activities.

**Facilitating EV Finance:** Making EV ownership accessible requires innovative financial solutions. RMI estimates that in an energy independent scenario, the financing need — or annual loan market size — for EVs, charging infrastructure and battery swapping facilities will be ₹17.13 lakh crore (US\$206 billion) in 2047. This presents India with a large opportunity to build on its existing financing programmes, such as the Priority Sector Lending programme, to include electric transport while designing new, innovative solutions for the Indian market. For example, India could work with financial institutions to offer low-interest loans and implement de-risking practices to reduce asset and business model risks. These will make consumer investment in EVs easier.

**Advancing EV Battery Circularity:** Battery technology is a critical component of the EV ecosystem. With EV adoption and battery replacements surging, India's demand for lithium-ion batteries (LiBs) is set to grow 89-fold, reaching 1,067 GWh by 2047. By implementing policies such as the Battery Waste Management Rules, 2022, India has taken the key initial steps to prepare the battery waste and recycling markets. Through the Advance Chemistry Cell Production Linked Incentive (PLI), 40 GWh of battery manufacturing capacity has been allocated as of September 2024, creating a domestic battery manufacturing market. To meet future EV demand and create a battery circular economy that is fundamentally different from a fossil-fuel extraction economy, continued investment in research and development for high-capacity, cost-effective batteries is vital. Simultaneously, it is important to increase the domestic manufacturing capacity. Additionally, developing sustainable recycling methods for used batteries and incentivising high mineral recovery rates will support a circular economy and mitigate the environmental impact. Estimates suggest that recycled EV LiBs could meet 5–20% of the domestic need for crucial minerals such as lithium, nickel and cobalt by 2030, further reducing import dependence and creating a circular battery supply chain.

**Promoting Local EV Manufacturing:** Building a robust domestic manufacturing base is essential for reducing import dependence and boosting economic growth. Policies such as the Automotive PLI

incentivise domestic production, but India needs to set its sights on becoming more ambitious and ultimately, a global leader in EV and component manufacturing. For this, the nation should develop a national strategy to position itself as a global manufacturing hub and EV exporter, especially in the two- and three-wheeler segments. Incentives to promote EV manufacturing and funding for research and innovation in the sector should be provided. This will lower production costs over time, drive technological advancements and ensure that India remains at the cutting edge of EV technology.

### Call to Action

As we set our sights on 2047, we should remember that our journey towards energy independence and sustainable mobility is a shared mission. Together, India has the opportunity to transform its energy landscape, set global benchmarks and lead sustainable mobility. By implementing these strategic recommendations and fostering collaboration across sectors, we can not only meet but exceed the vision set for a greener, self-reliant India.

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Updated On Oct 22, 2024 at 01:18 PM IST

New Delhi: At least 10



nuclear reactors are being installed in the country while two reactors in Gujarat's Kakrapar have started generating power commercially, the Parliamentary Standing Committee on Science and Technology was informed

on Monday. According to sources, the new nuclear reactors coming up in states like Gujarat, Rajasthan and Haryana are of 700 MW capacity and will start operating in the next few years.



The details of the new nuclear reactors were provided to the members of the Standing Committee of Parliament on Science and Technology,

Chairman P. Venkatesh Murthy, on Monday.