



Photo by: Ather Energy

TRACKING INDIA'S INDUSTRIAL EVOLUTION WITH ELECTRIC MOBILITY

An Executive Summary

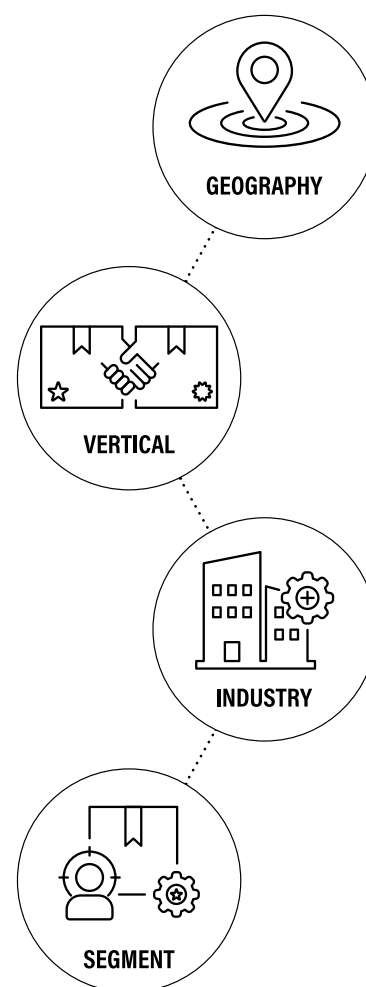
NEHA YADAV & PAWAN MULUKUTLA

CONTEXT

The rapid advancement of electric mobility is causing ripples of change in the industrial landscape of India – from automotive and power to renewables and the material industries. Product development and manufacturing practices are evolving, new players are making a foray into vehicle assembly and allied products, and organizations are being re-structured.

WRI India has identified more than 100 strategic moves that have taken place, in the Electric Vehicle (EV) industry, between 2017-2020. Using a multi-case research methodology, we further analyzed 31 of these strategic moves using a **Four-Dimensional Framework of Competitive Advantage**. Our goal was to observe how firms are choosing to become more *competitive* as they race to enter the global value chain of EVs.

We posit that policymakers can play a noteworthy role in driving competition, and thereby reap the rewards of economic development – including technological leadership, active participation in the global value chain and developing human capital and resource efficiency.

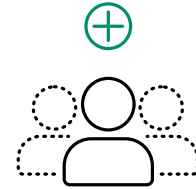


Four Dimensions of Competitive Scope

KEY OBSERVATIONS

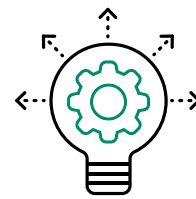
Welcoming New Players

- Majority of firms are collaborating with other players to outsource the manufacturing of products. Developing in-house assembly lines for the final products are of lesser interest while collaborations and partnerships seem more prevalent.



Expanding Industrial Capacities

- Majority of firms – in automotive, auto-component manufacturing, lead acid battery manufacturing – are adapting to electric powertrain technology.
- Non-automotive firms are venturing into new product lines – such as battery packs and their re-energizing systems (charging/swapping) – and are thereby expanding beyond their parent industries.



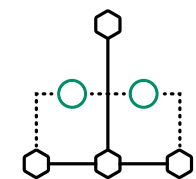
Creating New Business Opportunities

- The manufacturing and assembling of electric two-wheelers, and deployment of charging solutions, offer a low entry barrier. As a result, these domains are now attracting entrants from non-automotive domains as well



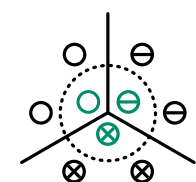
Restructuring Old Industrial Orders

- Firms hold much greater interest in forward integration. These firms are kicking-in a network effect which is essential, for instance, to sell vehicles, attract fleet owners to use charging and other infrastructure, and access a consumer base that enables the sourcing of waste batteries.
- There is much lesser interest in backward integration such as innovating in-house to design and manufacture products or finding cost-effective yet localized substitutes for equipment.
- International partnerships seem more prevalent than domestic partnerships at the moment.



Altering of Industrial Clusters

- Regional clusters which have been limited to the auto-industry so far, are now seeing an increased presence of non-automotive players.



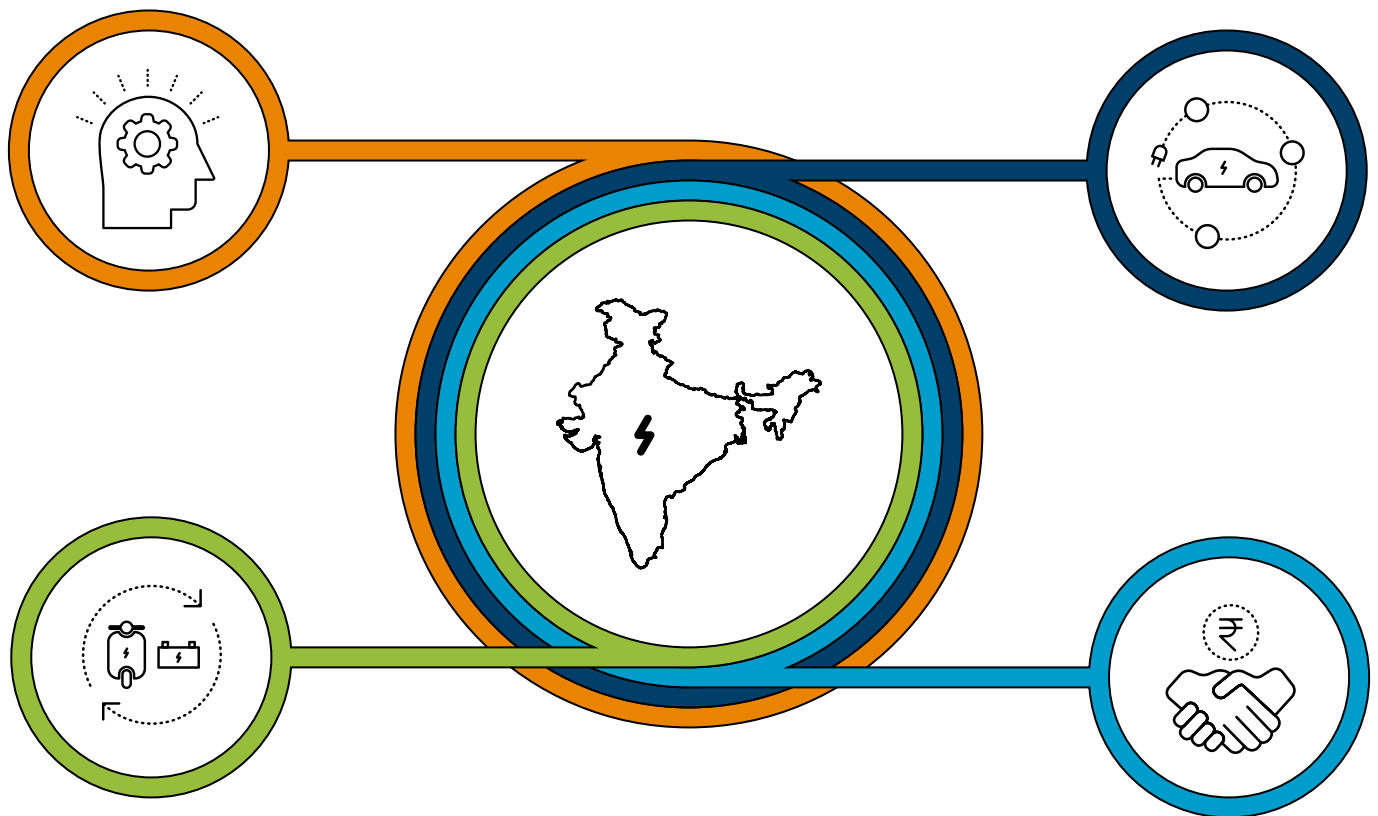
RECOMMENDED POLICY PATHWAYS

Heavily Invest in India's Knowledge Economy

- Define a skilling strategy to incentivize talented workforce to work in the EV value chain.
- Ensure that formal and informal 'Human Capital' have social security measures at par with established industries.

Emphasize on Innovation in India's EV Ecosystem

- Encourage state universities to create live-project based learning, tie-up with industry, create re/up skilling centers, and fund experimental projects related to EVs and allied products.



Incentivize Firms Creating Cyclical Value Chains

- The State Governments could devise an additional incentive for closed loop business models, and firms working on recycling and repurposing batteries.

Tap into Incoming Businesses for Opportunities

- Invite international corporates and institutions to set up Overseas Development Centers (ODC) – for R&D units in states.
- States without auto-clusters could invite industries 'related' to electric mobility.

For more information on
WRI India's EV work, contact:

pawan.mulukutla@wri.org



FIRMS STUDIED IN THIS PAPER

- RR Global
- Hindustan Petroleum Corporation Ltd. (HPCL)
- Ather Energy
- National Thermal Power Corporation (NTPC)
- Khanji Bidesh Private Ltd. (KABIL)
- Greaves Cotton
- L&T Technology Services
- eChargeBays
- Ion Energy
- Acme Cleantech
- Indian Oil Corporation Ltd (IOCL)
- Log9 Materials
- Bharat Petroleum
- Ola Electric Mobility
- Innolia Energy
- Exide Industries
- Hitachi ABB Power Grids
- Exicom Power Solutions
- Bharat Forge
- Force Motors
- Bajaj Auto
- Manikaran Power Ltd
- Varroc Engineering
- Amara Raja Batteries
- Bharat Heavy Electricals Ltd. (BHEL)
- Hyundai Motors
- Tata Power
- Tata AutoComp Systems
- Bosch India

ABOUT WRI INDIA

WRI India, an independent charity legally registered as the India Resources Trust, provides objective information and practical proposals to foster environmentally sound and socially equitable development. WRI India's mission is to move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations. Through research, analysis, and recommendations, WRI India puts ideas into action to build transformative solutions to protect the earth, promote livelihoods, and enhance human well-being.

We are inspired by and associated with World Resources Institute (WRI), a global research organization. Currently over 150 researchers are working with WRI India in our offices in Delhi, Mumbai and Bengaluru.



Photo by: Ather Energy