Special Report
India’s Electric Vehicle Transition Roadmap
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Electric vehicles (EVs) have recently gained remarkable traction as an efficient alternative to traditional ICE\(^1\) cars. Advances in battery technology, growing charging infrastructure, and increasing consumer demand have made EVs a feasible option for many globally.

**Need for Transition**

- As India is the world’s third largest importer of oil by volume, the transition from oil would aid the country both environmentally and economically.
- By 2030, the government is targeting 30% EV penetration, with the segment’s volumes set to cross annual sales of 10 mn units.
- As per CEEW\(^2\), on achieving this target, India could save up to $14 bn on its oil import bill.

**Growth in EV Space**

- From 2018 to 2023, the share of petrol and diesel vehicles reduced from 96.4% to 86.4%. This has been partly replaced by EVs (BOVs\(^3\)), which increased from ~0.5% to 6.3%.
- The share of hybrid vehicles went up from 0.3% to 1.4%. These vehicles burn gasoline (fossil fuel) and thus emit some gases.
- EVs have no tailpipe emissions and are completely environment friendly.

**Investment Opportunities**

- The automobile industry contributes >7% to India’s GDP and ~49% to manufacturing GDP.
- With growing EV awareness and demand, deals worth $2.5 bn were announced in the EV ecosystem during January to October 2023 vis-a-vis $1.8 bn in CY 2022 (up 42%). This includes funding for OEMs\(^4\), battery tech, and EV charging infrastructure.
- This is also supported by 100% FDI through the automatic route in the EV space.

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\(^{1}\) Internal-Combustion Engine \(^{2}\) Council on Energy, Environment and Water \(^{3}\) Battery Operated Vehicle \(^{4}\) Original Equipment Manufacturers

**Source:** vahan.parivahan.gov.in, Aranca Research
Electric Four-Wheeler Market

Industry Overview

- The **share of electric four-wheelers (E4Ws)** in India has grown in last five years from **0 to ~2%**. As per McKinsey, 70% of tier I car consumers are willing to opt for an electric car as their next vehicle compared to the global average of 52%.

- Though the ICE vehicle market has seen growth in recent years, the rapid transition to electrification indicates a conclusive inflection point for India.

- **E4W registrations have almost doubled** to 75,238 in 2023 from 38,254 in 2022.

**E4W Share**

- 47% Petrol
- 32% Diesel
- 11% CNG
- 7% Hybrid
- 1% Electric
- 2% Others

**4.3mn 4Ws sold in CY23**

**E4W Players**

- **Tata Motors** dominates the E4W segment with a **market share of ~75%**.

- Unlike the E2W industry, where startups have been the biggest players, **Tata Motors, being a legacy brand, has bucked the trend** and remains unchallenged in the E4W market.

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**Note:** (1) Data for CY 2023 is up to 6th Dec’23; Source: vahan.parivahan.gov.in, McKinsey Report, Aranca Research
Since the introduction of the EV concept to the Indian public, Tata Motors has pioneered in establishing itself as the most reliable and accessible entry point for consumers.

### Tata Motors EV – Registrations and Market Share

<table>
<thead>
<tr>
<th>Year</th>
<th>Units</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2019</td>
<td>417</td>
<td>24.4%</td>
</tr>
<tr>
<td>CY 2020</td>
<td>2,710</td>
<td>64.5%</td>
</tr>
<tr>
<td>CY 2021</td>
<td>10,035</td>
<td>76.9%</td>
</tr>
<tr>
<td>CY 2022</td>
<td>31,972</td>
<td>83.6%</td>
</tr>
<tr>
<td>CY 2023</td>
<td>55,081</td>
<td>73.2%</td>
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### Strategy
- While many manufacturers were creating EV models from scratch, Tata Motors took the cost-effective step of converting an existing ICE model into an EV.
- EVs were priced only 20–25% higher than conventional cars.
- The Nexon EV model starts at ~INR1.5 mn. In many states, the EV was launched at a lower rate than the automatic diesel variant owing to various government incentives.

### Positive Feedback
- Word of mouth seeded early success for Tata Motors’ E4Ws.

### Government Incentives
- The government’s policy on GST reduction (5% on EV vs 28% on ICE) and tax deduction on interest on EV loans boosted sales.

Note: (1) Data for CY 2023 is up to 6th Dec’23; Source: vahan.parivahan.gov.in, McKinsey Report, Aranca Research
Electric Two-Wheeler Market
Industry Overview

- India is one of the world’s fastest-growing markets for E2Ws. E2W registrations have **gained traction in the last three years**, with 0.2% of total E2W registrations in 2020 to **5% in 2023**.
- The spike is attributed to the need for **personal mobility**, increased **environmental awareness**, rise in gasoline **prices**, and **FAME incentives** by the government.
- According to a report by IBEF, **E2W sales penetration in India might surpass 80% by 2030**. However, concerns about battery life, vehicle safety, and lack of charging infrastructure could pose a challenge in achieving this goal.

**E2W Share**

- **15.7 mn 2Ws sold in CY23**
- **93%** Petrol
- **5%** Electric
- **2%** Petrol/Ethanol

**E2W Players**

- **Unit ‘000s**
- **CAGR 126%**
- **791**
- **631**
- **156**
- **29**
- **30**

- **Total E2W registrations in 2022 jumped by 3x YoY** to 631,462.
- The E2W market is dominated by three key players: Ola Electric with ~**30% share** in 2023, followed by TVS Motors (~**20%**) and Ather Energy (~**13%**).
- Despite being the first major entrant in India’s EV market without an automotive manufacturing background, **Ola was quick to usurp the market share of players such as Okinawa and Hero Electric.**

Note: (1) India Brand Equity Foundation, (2) Data for CY 2023 is up to 6th Dec’23; Source: vahan.parivahan.gov.in, Aranca Research
Electric Two-Wheeler Market
Case Study: Ola Electric

Ola Electric sparked a revolution in the E2W Industry with the launch of Ola S1.

### Ola Electric – Registrations and Market Share

<table>
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<tr>
<th>Year</th>
<th>Units</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2021</td>
<td>240</td>
<td>0.2%</td>
</tr>
<tr>
<td>CY 2022</td>
<td>109,395</td>
<td>17.3%</td>
</tr>
<tr>
<td>CY 2023</td>
<td>238,482</td>
<td>30.2%</td>
</tr>
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**Company Overview**

- Ola, originally known for its ride-hailing services, **pivoted toward electric mobility** with a strong focus on 2Ws and **created a subsidiary Ola Electric** to achieve its E2W ambition.

- Leveraging its brand identity, **Ola captured ~17% market share in 2022**, its year of launch, with 109,395 registrations.

**Business Strategy**

- Ola has amped up its R&D spending to **pursue a vertical integration** strategy.
- It intends to **develop competencies** in cell and motor technology, and **autonomous driving**, thereby controlling technology and manufacturing cost.
- Ola is working on **enhancing customer experience** by providing top-notch service and maintenance.

**Scaling Up**

- With the aim of sustaining its market leader position and catering to rising demand, Ola has **set up a factory in Tamil Nadu** that has an **annual capacity of 10 mn E2Ws** across 10 assembly lines.
- It is dubbed the **“future factory”** as the plant is highly automated with **3,000 robots** deployed for production.

**Road Ahead**

- Over the next 2–3 years, Ola plans to roll out a **multi-faceted strategy**.
- It is looking to launch a series of EV products, including **more scooters**, **motorcycles** (by 2024), **sedans**, and **SUVs** (by 2025).
- Next, it wants to launch a **Robotaxi** with autonomous capabilities to complete the product range.

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Note: (1) Data for CY 2023 is up to 6th Dec’23; Source: vahan.parivahan.gov.in, Aranca Research
Charging Electric Vehicle Industry with Policy Reforms
Supportive Government Policies and Increasing Consumer Awareness Drive EV Movement

<table>
<thead>
<tr>
<th>Scheme Name</th>
<th>Particulars</th>
<th>Aftermath</th>
</tr>
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<tbody>
<tr>
<td><strong>FAME India Scheme – Phase II</strong></td>
<td>Encourages faster EV adoption by offering upfront incentive on purchase</td>
<td>Outlay of INR 100bn - 86% for creating demand - 10% for charging stations</td>
</tr>
<tr>
<td><strong>PLI(^1) for the Automotive Sector</strong></td>
<td>Boosts domestic production and attracts investment in AAT(^2) products</td>
<td>Part 1: Champion OEM, which would make EVs or hydrogen-powered vehicles</td>
</tr>
<tr>
<td><strong>PLI for ACC(^3) Battery Storage</strong></td>
<td>Launched in 2021 to expand India’s ACC manufacturing capabilities</td>
<td>Incentivizes setup of giga scale ACC manufacturing facilities of 50 GWh</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Reduction in GST on EVs from 12% to 5%</td>
<td>Customs duty exemption on import of raw material for EVs</td>
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**2030 Quest in Numbers**

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Aftermath</th>
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<tbody>
<tr>
<td><strong>EV Market CAGR (2022–30)</strong></td>
<td>49%</td>
</tr>
<tr>
<td><strong>Annual EV Sales</strong></td>
<td>10 million</td>
</tr>
<tr>
<td><strong>Job Creation</strong></td>
<td>50 million</td>
</tr>
<tr>
<td><strong>2W and 3W Penetration</strong></td>
<td>80%</td>
</tr>
<tr>
<td><strong>Private Electric Car Penetration</strong></td>
<td>30%</td>
</tr>
<tr>
<td><strong>Commercial Electric Car Penetration</strong></td>
<td>70%</td>
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India's rigorous efforts in promoting EVs, manufacturing proficiency, expanding market, and focus on charging infrastructure and renewable energy make it as the next center of EV production.

Note: (1) **PLI** - Production-linked incentive; (2) **AAT** - Advanced automotive technology; (3) **ACC** - Advanced chemistry cells are new-generation advance energy storage technologies that can store electric energy as electrochemical or chemical energy and convert it back to electric energy when required; (4) **GWh** – Giga Watt hour

Source: Government guidelines, Aranca Research
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Strong, professional team across multi-disciplinary domains

2500+
Global clients

120+
Sectors and sub-sectors researched by our analysts

80+
Countries where we have delivered projects

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