Future Visions of Indian Automotive Sector

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Rajiv Bajaj
CEO & Managing Partner
Nomura Research Institute (NRI) India Pvt Ltd
Global Marketplace

We are living in VUCA times. The fast pace of change and turbulent times are placing increasing demands on corporates and their management teams.
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Global growth outlook is moderate. India & China will be key growth drivers into the future

Real GDP Growth Forecast (%)

Source: Nomura Analysis, IHS
**India Outlook Year Beginning**

Most analysts believe India is now economically stable and on the path of sustainable, multi-year economic recovery to reach its growth potential of 8%.

**India (7.8% in 2016 and 8% in 2017)**

**Consumption**
- + Low commodity prices, + Low inflation
- + Rising salaries, good job market for educated/skilled
- + Higher disposable incomes
- + Bank rate cuts 1.25% → lower borrowing costs
- + Pay commission → govt employees 40% + workforce → T2 T3 cities
  --- Inflation minor increase

**Investment (first public, then private)**
- + Faster implementation of stalled projects, buying non perf. loans
- + Infra growth Road, Railways, Renewable Energy, Smart Cities
- + Push on FDI
  --- Private sector spare capacity, high debt in some Cos

**Risks Internal (Govt ability to push reforms smoothly, Execution challenges)**

**Risks External (Global headwinds, terror, security)**

Source: Govt of India, CSO. CRISIL, RBI, HIS, Nomura NRI Analysis
Automotive Growth

Globally overall automotive sales outlook in China, US & Europe is moderate

Annual Sales & Demand Forecast Outlook (Million Nos)
Automotive Growth

India is the shining automotive market amongst BRICS and expected to reach closer to 5 million PV sales number by 2020

Annual Sales & Demand Forecast Outlook (Million Nos)
Indian Auto Industry

Indian automotive industry achieved an excellent performance from 2006 to 2016. AMP Automotive mission plan 2016-2026 has bold vision

Achievement against AMP 2006-16 Targets:

**Contribution to GDP:**
- Base: 5%
- Target: 10%
- Achievement (P): 7.5%

**Employment:**
- Base: 10 Mn
- Target: 25 Mn
- Achievement (P): 24 Mn

**Revenue (USD):**
- Base: 35 Bn
- Target: 145 Bn
- Achievement (P): 110 Bn

Targets for Draft AMP 2026

**Top 3**
- Position in Global Automobile Market

13%
- Contribution to Indian GDP

100 Mn
- Additional Employment

300 Bn
- Revenue in USD

Source: AMP 2026 Curtain Raiser
Automotive Mission Plan

AMP 2016-2026 has set out Bold Vision & Goal of achieving 3X to 5X growth across automotive industry segments – **PV & CV** are big part of the vision

### Category wise Production Projection (Million Nos.)

<table>
<thead>
<tr>
<th>Category</th>
<th>FY 15</th>
<th>FY 26 Base</th>
<th>FY 26 Optimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV</td>
<td>3.2</td>
<td>9.4</td>
<td>13.4</td>
</tr>
<tr>
<td>CV</td>
<td>0.7</td>
<td>2.0</td>
<td>3.9</td>
</tr>
<tr>
<td>2W</td>
<td>18.5</td>
<td>50.6</td>
<td>55.5</td>
</tr>
</tbody>
</table>

### Growth Rates Anticipation

<table>
<thead>
<tr>
<th></th>
<th>Base</th>
<th>Optimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV</td>
<td>3.0x</td>
<td>4.2x</td>
</tr>
<tr>
<td>CV</td>
<td>2.8x</td>
<td>5.5x</td>
</tr>
<tr>
<td>2W</td>
<td>2.7x</td>
<td>3.0x</td>
</tr>
</tbody>
</table>

Source: SIAM Conference AMP 2026 Release
Automotive Mission Plan

AMP 2016-2026 has set out Bold Vision & Goal of achieving 3X to 5X growth across automotive industry segments – **Exports is big part of the vision**

### Category wise Revenue Projections (Billion ‘000 USD)

<table>
<thead>
<tr>
<th>Unit</th>
<th>FY15</th>
<th>FY26 Base</th>
<th>FY26 Optimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEM Domestic</td>
<td>11</td>
<td>120</td>
<td>291</td>
</tr>
<tr>
<td>OEM Export</td>
<td>10</td>
<td>45</td>
<td>143</td>
</tr>
<tr>
<td>Parts Exports</td>
<td>71</td>
<td>31</td>
<td>71</td>
</tr>
<tr>
<td>Parts Aftermarket</td>
<td>27</td>
<td>67</td>
<td>45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>249</td>
<td>291</td>
<td>291</td>
</tr>
</tbody>
</table>

### Growth Rates Anticipation

<table>
<thead>
<tr>
<th>Unit</th>
<th>Base</th>
<th>Optimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEM Domestic</td>
<td>2.7x</td>
<td>3.2x</td>
</tr>
<tr>
<td>OEM Export</td>
<td>3.6x</td>
<td>4.7x</td>
</tr>
<tr>
<td>Parts Exports</td>
<td>6.3x</td>
<td>6.7x</td>
</tr>
<tr>
<td>Parts Aftermarket</td>
<td>4.5x</td>
<td>5.0x</td>
</tr>
</tbody>
</table>

USD = 65 INR: Source: SIAM Conference AMP 2026 Release
Indian Automotive Industry is being impacted by various factors in the short term:

1. Regulatory changes
   - Emissions
   - Safety
   - GST

2. Macroeconomic factors
   - Motorization
   - Increasing Household income
   - Urbanization
   - Infrastructure development

3. Evolving value chain
   - India - small car & low cost R&D hub
   - Increasing Supplier collaboration
   - Increasing Dealer collaboration
   - Digital customer connect

4. De-risking
   - Business continuity planning
   - Self reliance of Indian operations

5. New market opportunities
   - Growing Used Car Demand

Source: NRI
## Indian Automotive Industry

### Qualitative focus in Automotive Mission Plan 2026 is evolving

<table>
<thead>
<tr>
<th>AMP I 2006-2016</th>
<th>Country</th>
<th>Society</th>
<th>OEM</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Economic Growth ✓ Employment</td>
<td>✓ Mobility &amp; Connectivity ✓ Choice &amp; Comfort ✓ Pollution control</td>
<td>✓ Product Development Capability ✓ World class Quality</td>
<td>✓ World class Quality</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AMP II 2016-2026</th>
<th>Country</th>
<th>Society</th>
<th>OEM</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Make in India ✓ Exports ✓ Energy Security</td>
<td>✓ Urban Congestion ✓ Safety</td>
<td>✓ Globalization ✓ R&amp;D in India ✓ Brand</td>
<td>✓ Technology, IPR, Scale</td>
<td></td>
</tr>
</tbody>
</table>

Source: SIAM, Dun & Bradstreet
1. Regulatory

Key Issues that are influencing Indian Automotive Industry

<table>
<thead>
<tr>
<th>Major Issues</th>
<th>Actions Taken</th>
<th>Policy/Reg.</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution</td>
<td>Emissions Control</td>
<td>BS Norms</td>
<td>✓ BS V skipped</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ BS VI from 2020 with OBD in all vehicle types</td>
</tr>
<tr>
<td></td>
<td>Vehicle Scrap</td>
<td>ELV Policy, V-VMP</td>
<td>✓ Dedicated policy being framed for Scrapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ Incentives for Customers</td>
</tr>
<tr>
<td>Energy Security</td>
<td>Alternate Fuel</td>
<td>CNG*</td>
<td>✓ Infra &amp; Supply issue</td>
</tr>
<tr>
<td></td>
<td>Fuel Economy</td>
<td>Electric/Hybrid</td>
<td>✓ NEMMP/ FAME launch</td>
</tr>
<tr>
<td>Road Accidents</td>
<td>Safety</td>
<td>CAFÉ Norms</td>
<td>✓ From April 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ No Penalty or credit mechanism</td>
</tr>
<tr>
<td></td>
<td>ITS**</td>
<td>BNVSAP/ BNCAP</td>
<td>✓ Crash Test Mandatory, Child/ Pedestrian safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ Other - Air Bag, Speed Warning, ABS, Rear sensor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NRTP/ NUTP</td>
<td>✓ Electronic Toll collection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ RFID, Parking mgmt.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ Smart Tracking device</td>
</tr>
</tbody>
</table>

*No Regulation/ Enforcement

**Intelligent Transport System

Source: MoRTH, WHO, IIT Kanpur, SIAM, DHI, Niti Aayog
Global 4W xEV Market

xEV sales worldwide: 2 Million+ with 20% growth - majorly JP OEM dominated. Overall penetration will increase

xEV Market Worldwide

[Unit: ‘000 vehicles]

<table>
<thead>
<tr>
<th>Year</th>
<th>EV</th>
<th>PHEV</th>
<th>HEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>890</td>
<td>1,476</td>
<td>844</td>
</tr>
<tr>
<td>2012</td>
<td>1,592</td>
<td>1,478</td>
<td>1,476</td>
</tr>
<tr>
<td>2013</td>
<td>1,654</td>
<td>1,606</td>
<td>1,478</td>
</tr>
<tr>
<td>2014</td>
<td>1,842</td>
<td>1,606</td>
<td>1,606</td>
</tr>
<tr>
<td>2015</td>
<td>2,145</td>
<td>1,703</td>
<td>1,703</td>
</tr>
</tbody>
</table>

20% growth

OEM Market Share

- Nissan: 45%
- Tesla: 21%
- GM: 39%
- Toyota: 25%
- Ford: 19%
- BYD/Volvo/Honda: 1%
- Others: 13%

Country xEV Penetration (2015)

<table>
<thead>
<tr>
<th>Country</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>1%</td>
</tr>
<tr>
<td>China</td>
<td>0.6%</td>
</tr>
<tr>
<td>Europe</td>
<td>0.6%</td>
</tr>
<tr>
<td>Japan</td>
<td>0.2%</td>
</tr>
<tr>
<td>India</td>
<td>0.04%</td>
</tr>
</tbody>
</table>

| USA     | 0.6%          |
| China   | 0.3%          |
| Europe  | 0.7%          |
| Japan   | 0.3%          |
| India   | 0.04%         |

<table>
<thead>
<tr>
<th>Total Car Sales (2015) in ‘000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA: 7,696, China: 21,146, Europe: 13,714, Japan: 4,216, India: 2,790</td>
</tr>
</tbody>
</table>

Source: Marklines, Evolita, JAMA
1. Regulatory – xEV Actions

Considering the scale of impact of xEVs, Govt. created a dedicated National Mission Plan on xEVs (NEMMP)

**Energy Security**
- Targets Set
  - ✓ No target (Till budget lasts)
  - ✓ Lower CO2 emissions (Kyoto Protocol)

- INR 100 Cr (Spent)

**MNRE Scheme (EV Incentives)**
- [National Hybrid Propulsion Program]
- Targets Set
  - ✓ No target (Till budget lasts)
  - ✓ Lower CO2 emissions (Kyoto Protocol)

- INR 100 Cr (Spent)

**NEMMP 2020 (xEV Mission)**
- [National xEV Mission Plan]
- Targets Set*
  - ✓ 7.5 MT fuel savings
  - ✓ 1.5% CO2 reduction
  - ✓ 6-7 Million xEVs/year

- INR 14,000 Cr ($2bn) (Budgeted)

**FAME Scheme (xEV Funding Support till 2020)**
- [Faster Adoption for Manufacturing of xEVs]
- Targets Set
  - ✓ Based on fund utilization (2 year Pilot for increasing Manufacturing of xEVs)
  - ✓ Form TAG** and Consortium for Joint R&D

- INR 795 Cr (Approved for 2015-17)
1. Regulatory – xEV Actions

With an ultimate vision of achieving all BEVs in future, the Policy Priorities are being set considering **Public Benefit**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>High-volume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>4W</td>
<td></td>
<td>1 Benefit to Mass Public</td>
</tr>
<tr>
<td>Mid</td>
<td>2W</td>
<td></td>
<td>2 Fuel Savings</td>
</tr>
<tr>
<td></td>
<td>Bus</td>
<td></td>
<td>3 Affordability for Personal use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 High Volume, Make in India</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public benefit</td>
<td>5 Technology Feasibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 Equal Opportunity</td>
</tr>
</tbody>
</table>

* Government Hypothesis for understanding

Source: NEMMP, Govt. & OEM Interviews, NRI Hypothesis
1. Regulatory – xEV Actions

Consortiums are currently formed for 4W and Bus segment by Indian OEMs with an objective to design xEVs with common technology and parts.

**Technology Platform for Electric Mobility (TPEM)**

- **2W / 3W**
  - Develop EV Kits – High / Low Speed
  - High end LiB, Advanced LAB
  - Cost Reduction

- **4W**
  - Tata Motors
  - Mahindra
  - Maruti Suzuki
  - Start with small 4W (1Ton) with Focus on PHV and BEV
  - Develop ~15 Prototypes
  - Battery/BMS, Motor, OBC, Inverter, Converter
  - FTG and NAB to lead

- **Bus**
  - Tata Motors
  - Mahindra
  - Ashok Leyland
  - Light Urban EV bus in 2 yrs
  - Modular Battery & Drivetrain
  - Studies on: Chg Infra, Traffic and duty cycle, safety

**Technology Advisory Group (TAG)**

- DST
- DHI
- OEM/Tier1
- ACAD

**Joint R&D (PPP Mode)**

- 4 Centres of Excellence
- 3 Testing Facilities
- Industry Technology Consortia (ITC)

Invites Sent to all OEMs and Suppliers

* TPEM – Technology Platform for Electric Mobility
# India - Future of Powertrains

## Different Powertrain options: Views on their future in India

<table>
<thead>
<tr>
<th>Powertrain</th>
<th>Future Scenarios</th>
</tr>
</thead>
</table>
| Diesel     | ✓ Diesel will decline at a slow pace till 2020, as it will be easier to meet CAFÉ  
            | ✓ BS VI diesel engine will be very costly. Only SUVs/Big cars will remain on diesel |
| Petrol     | ✓ As BSVI is coming, Petrol Engine will be cheaper option.  
            | ✓ Petrol market will increase in most segments |
| CNG        | ✓ CNG will have large market share in taxi segment, but overall a small segment  
            | ✓ If CNG Supply and infrastructure issues are solved, it may take up |
| Mild HV    | ✓ Mild HV will dominate the market and also will be incentivized until OEMs have higher technology products.  
            | ✓ Mostly Work on Diesel versions |
| Strong HV  | ✓ Good potential after 2020, by that time OEMs would be ready with High Voltage System  
            | ✓ Mostly will work on Petrol versions  
            | ✓ But in case India has charging infra, it will leapfrog Strong HV to PHV/BEV |
| PHV/ BEV   | ✓ PHV/ BEV will be a viable option as India moves to Clean energy and ratifies Paris deal  
            | ✓ Also depends on readiness of Charging infrastructure, |
1. Regulatory Changes – Upcoming GST

Upcoming GST regulation could lead to supply chain optimisation for spares & CBU distribution; SCV, HCV segments will see growth after some time

Future supply chain configurations will focus on optimisation of efficiency and responsiveness as against taxes

CHALLENGE / OPPORTUNITY

1. Reduced need for vehicle stockyards in each state
2. Parts distribution through large warehouses i.e. hubs
3. Value additions / modifications closer to customers without and cascading tax effects

OEM RESPONSES - Examples

- Shift to Hub & Spoke for better reach

Source: NRI
2. Macroeconomic Factors - Urbanization

Rapid urbanisation with limited public transport infrastructure offer significant opportunities for Fleet vehicles, Automatcis & Mild hybrids

**Urbanisation and shift in Tier 1, 2, 3 and Rural cities**

**CHALLENGE / OPPORTUNITY**
1. Growth of PVs in cities
2. High growth in taxi segment
3. Growth of Automatic transmissions
4. Growth of micro hybrids and CNG vehicles

**OEM RESPONSES - Examples**
- MSIL Celerio - automatics within mass reach & Ciaz Smart hybrid - no restriction in the recent Delhi Odd-Even ruling

- 40% of the population is expected to be urbanised by 2025
- Rise of middle class will be conspicuous in Tier 3,4 cities with rising income levels

Source: NRI
2. Macroeconomic Factors – Infrastructure Development

Infrastructure development in India holds opportunities for CV players, CBU exports and CBU logistics through rails

### Development of Highways infrastructure, ports and railways

<table>
<thead>
<tr>
<th>Description</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHDP program (National Highway Development Program)</td>
<td>~ 49,000 km</td>
</tr>
<tr>
<td>Rail freight capacity</td>
<td>1.5 Bn tonne</td>
</tr>
<tr>
<td>Rail track network</td>
<td>1,38,000 km</td>
</tr>
<tr>
<td>Port traffic for commodities to increase by 2020 from current 1.6 Bn tonnes</td>
<td>2.2 Bn tonne</td>
</tr>
</tbody>
</table>

### CHALLENGE / OPPORTUNITY

1. Growth of HCVs to exploit higher efficiencies
   - SCVs to cater to last mile
2. Rail logistics of CBUs to help optimise transportation
3. Ports development to fuel exports

### OEM RESPONSES - Examples

- **Prima LX**
- **Ace family**
- **New SCV**
- **Omni Cargo**
- **Use of Flexi Deck Auto-Wagon rake**

Source: Planning commission, National Transport Development Policy Committee, Indian Railways, NRI
Closing Thoughts

Changes present all players, OEMs, Logistics Service Providers, 3PLs with challenges and opportunities

**Doing same things better**

**Doing newer things**

Source: NRI
Closing Thoughts

We look forward to working closely with your organization and helping it achieve more success in India

V  Volatility
U  Uncertainty
C  Complexity
A  Ambiguity

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Vision  V
Understanding  U
Clarity  C
Action  A

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