A Study of Electric Mobility for City of Hyderabad

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Context

Electric Cars:

Electric 2 Wheelers:
- China is the largest market and in 2016 nearly 26 million units sold

## Strong enabling policies in India

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Action/Target</th>
<th>Policy</th>
</tr>
</thead>
</table>
| Emission norms for cars     | Euro IV (2017)  
Euro V (2021)  
Euro VI (2024) | Auto Fuel Vision and Policy 2025                                              |
| Promoting Electric Vehicles | Subsidies for EV, infrastructure investments and R & D                        | National Electric Mobility Mission Plan, 2020                          |
| Vehicle Fuel Efficiency Program | Passenger vehicle fuel efficiency standards, labelling and penalties | In process of implementation (includes EVs)                            |

### Achievement

<table>
<thead>
<tr>
<th>Country</th>
<th>Stock</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>648,770</td>
<td>1.4 %</td>
</tr>
<tr>
<td>US</td>
<td>563,710</td>
<td>0.9 %</td>
</tr>
<tr>
<td>Norway</td>
<td>133,260</td>
<td>28.8 %</td>
</tr>
<tr>
<td>India</td>
<td>4,800</td>
<td>0.0 %</td>
</tr>
</tbody>
</table>


Share of EV 2 Wheelers

Share of EV 4 Wheelers

OBJECTIVES

- Undertaking a detailed study of the existing supply chain for electric vehicles including support infrastructure.
- Investigate the barriers current users face for electric vehicles (EVs)
- Identify the likely improvements that can improve demand for EVs
Methods

• **Market Mapping** using qualitative interviews of dealers, municipal officials, etc.
  – 20 stakeholders interviewed (including HMRL, TSRTC, GHMC & Industries and Commerce Ministry, Telangana State)

• Analysis of **consumer preferences**, a market study titled “Study on Electric Mobility in India” was conducted for the city of Hyderabad between May and September 2017
  – 1000 consumers surveyed and
• Awareness is low
• Automakers are also not pushing EVs
  – Hero has maintained a portfolio of 18 EVs since 2010 ♠
  – Maruti, Tata had showcased EVs as early as 2010 ♣
• Tender for 10,000 EV cars (ESSL)

Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership

*L. Philip, “How manufacturers are gearing up to seize the opportunity in electric vehicle space;” Economic Times, 29 August 2017*
Vehicle owners in Hyderabad do not prefer shared or public modes of travel.

- A mere ~12% take public/shared transport. (Compare with 18% reported in Dhaka)*
- This could be because of inconvenient/poor service, lack of access, non-availability etc.

*“Travel mode choice preferences of urban commuters in Dhaka: A pilot study” Minhaj Mahmud, Atonu Rabbani, March 2012

Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership
~ 100 km range will meet expectations of 3/4th of the consumers

~ 200 km range will meet expectations of 3/4th of the consumers

Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership
Current battery designs can satisfy 75% of customers expectations.


Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership
• Up to 70% of the consumers are willing to wait between 5 and 15 minutes at a public charging station for a booster charge
• DC super charging stations are capable of delivering to this need

Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership
Electric Vehicle Supply Equipment

Note: Private chargers in this figure are estimated assuming that each electric car is coupled with a private charger.

Results – Purchase Criteria

1. Availability of Charging stations
2. Initial purchase cost
3. Driving range per full charge
4. Top Speed / Acceleration / Performance
5. Maintenance cost / Servicing costs
6. Running cost
7. Look and feel / Styling
8. Re-sale value
9. Environmental benefits
10. Vehicle Variant and Segment (Hatchback/Sedan/SUV)

Source: Srinivas Cherla & Amit Garg, 2017, Study on Electric Mobility in India, UNEP DTU Partnership
Conclusions

• Consumers:
  – **Awareness** about EVs and government schemes/policies related to EVs needs to be improved
  – Adequate public charging **infrastructure** would give confidence to consumers that they won’t be stranded
  – Reducing initial **cost**, and offering financial incentives will nudge the consumers to take technical and operational risks associated with emerging technologies like EVs

• Industry:
  – **Indigenous** supply chain does not exist for EVs. EV component imports should be encouraged while pushing auto makers for technology transfer and development of local supply chain
  – **Standardization** will help reduce the cost; **Strict regulations** will help improve consumer safety.
  – Government should stay **consistent** with policies that have already been announced so that industry investments can be protected
  – Revise automobile engineering course curriculum & re-train existing workforce through automotive skill council
Thank You!