

REF:NS:SEC:

16<sup>th</sup> August, 2019

**National Stock Exchange of India Limited**  
"Exchange Plaza", 5<sup>th</sup> Floor,  
Plot No.C/1, G Block  
Bandra-Kurla Complex  
Bandra (East), Mumbai 400051.

**BSE Limited**  
**Phiroze Jeejeebhoy Towers,**  
Dalal Street, Fort,  
Mumbai 400001.

**Bourse de Luxembourg**  
**Societe de la Bourse de Luxembourg**  
**Societe Anonyme/R.C.B. 6222,**  
B.P. 165, L-2011 Luxembourg.

**London Stock Exchange Plc**  
**10 Paternoster Square**  
London EC4M 7LS.

**Sub: SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 - Presentation made to the Analyst/Institutional Investor**


This is further to our letter bearing REF:NS:SEC dated 16<sup>th</sup> August, 2019 wherein we had given you an advance intimation of the upcoming Analyst or Institutional Investor Interactions in terms of Regulation 30(6) of the Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015.

We wish to inform that the Company today participated in Kotak EV Forum with Several Funds/Investors in Mumbai and the Presentation which was made to them is attached herewith for your records.

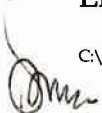
Kindly take the same on record and acknowledge receipt.

Yours faithfully,  
For MAHINDRA & MAHINDRA LIMITED



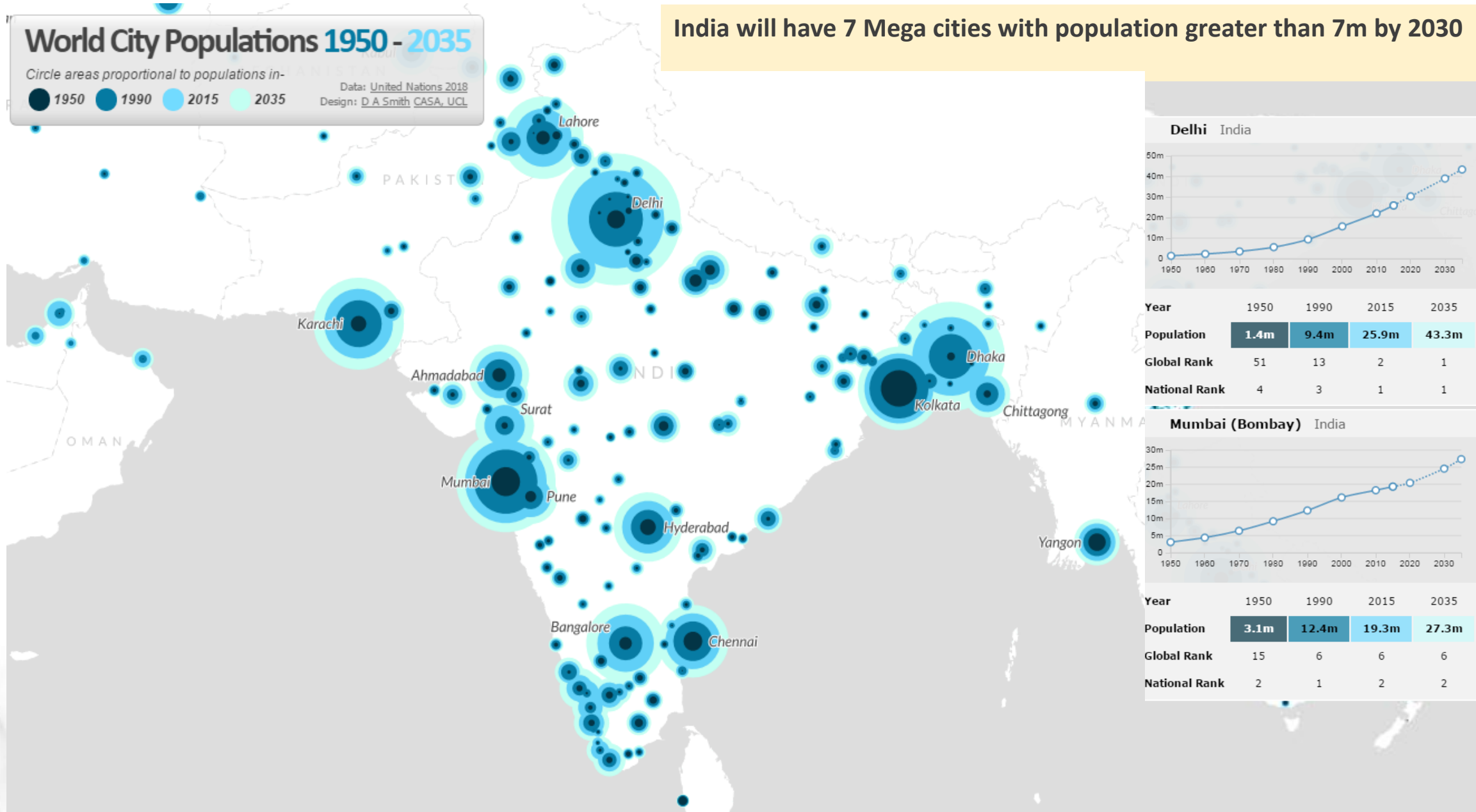
 NARAYAN SHANKAR  
COMPANY SECRETARY

Encl: a/a.

 C:\Users\ahirsu-cont\Desktop\Stock Exchange\SE - Presentation Analyst Meet - 16.08.2019.docx

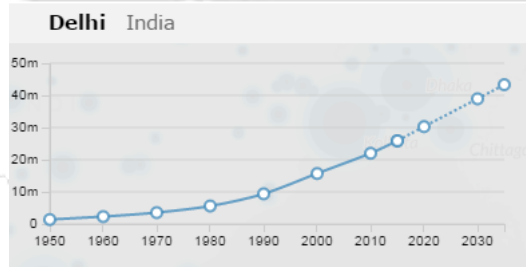
# EVs – The India Opportunity

Mahesh Babu, CEO – Mahindra Electric

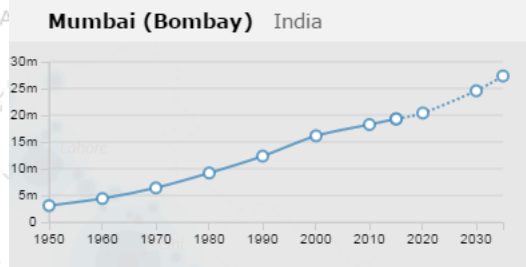


**World City Populations 1950 - 2035**  
 Circle areas proportional to populations in-  
 ● 1950 ● 1990 ● 2015 ● 2035  
 Data: United Nations 2018  
 Design: D.A Smith CASA, UCL

**India will have 7 Mega cities with population greater than 7m by 2030**



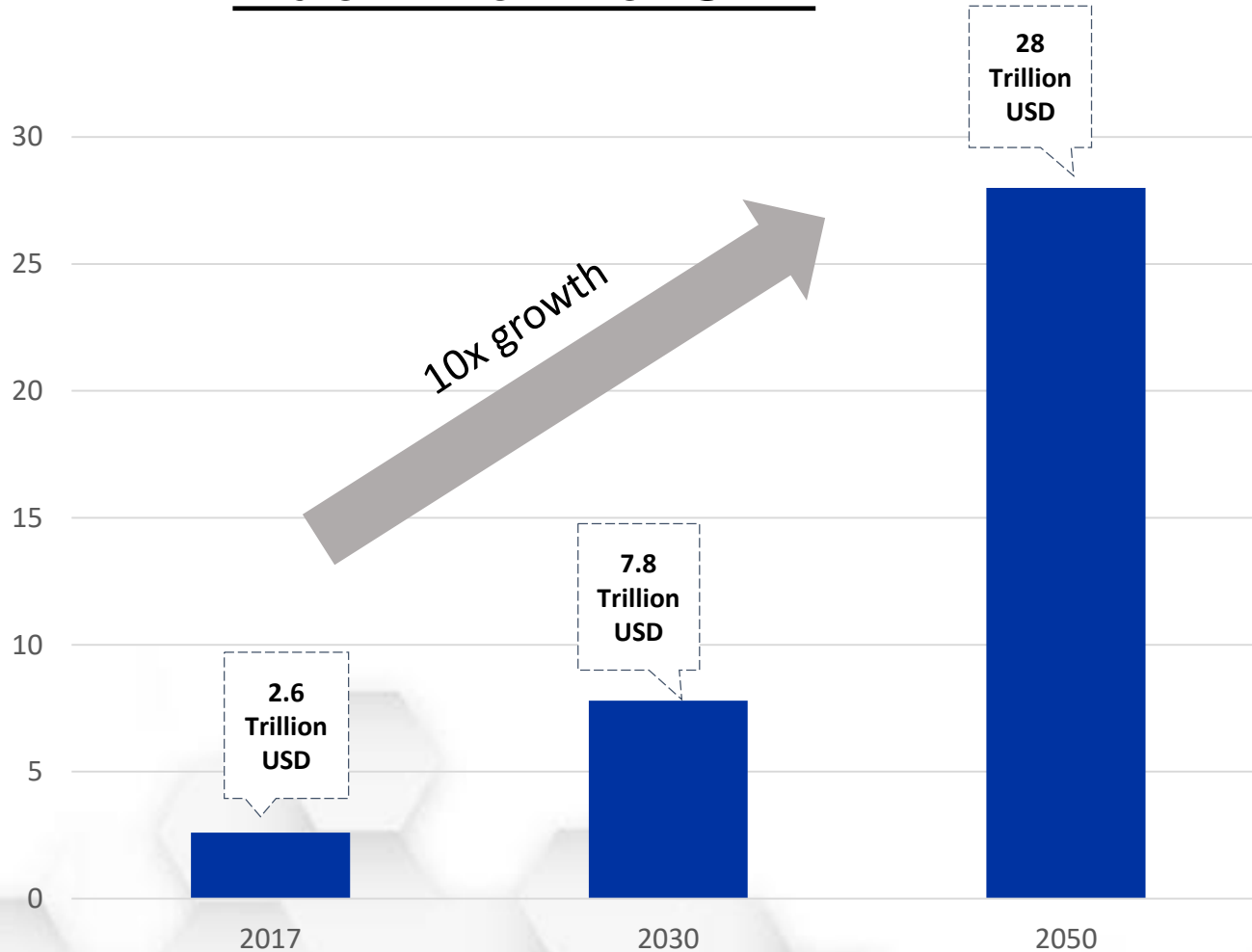
Year	1950	1990	2015	2035
<b>Population</b>	1.4m	9.4m	25.9m	43.3m
<b>Global Rank</b>	51	13	2	1
<b>National Rank</b>	4	3	1	1



Year	1950	1990	2015	2035
<b>Population</b>	3.1m	12.4m	19.3m	27.3m
<b>Global Rank</b>	15	6	6	6
<b>National Rank</b>	2	1	2	2

# Factors driving urbanization

## India - Nominal GDP



### India by the numbers

- India's GDP growth at the rate of **7%**
- India is now the world's 7<sup>th</sup> largest economy(Nominal GDP terms) – **Will be 3<sup>rd</sup> largest in 2050**
- **850mn** of the 1.35bn people in India are under the **age of 35**
- Per capita income of around USD 1950 – **Will be USD 13,660 by 2040**

# India – A unique market

## 2 wheelers



- ~80% of all automotive sales in India are two wheelers – **21m in FY19**
- Close to **2m** are involved in courier services – huge market

## 3 wheelers



- India is one of the largest markets in the world for 3w – **0.7m sales in FY19**
- 3w address one of the most important challenges of urban transportation – Last mile connectivity

## Fleet



- Routes are defined and they operate in a limited geography
- Utilization of vehicle is close to **25-30%**

## Commercial



- **60%** of the overall goods transportation in the country happens on road – Huge market
- High vehicle utilization in the sector

## Personal



Penetration of private passenger cars is still low compared to other developed markets



# Mobility needs a reset

## 'India can be a market leader in electric vehicles'

Experts, however, believe that India will face several challenges regarding infrastructure, clean energy generation and availability of rare earth metals.

## Govt. amends rules to bring in battery-driven vehicles

Incentives offered to taxi operators, especially Ola, Uber

## SC issues final deadline for Bharat Stage IV cars, clock begins ticking for India's carmakers

NEW DELHI: The Supreme Court Wednesday said that no Bharat Stage IV vehicle shall be sold across the country with effect from April 1, 2020.

The Bharat stage emission standards are standards instituted by the government to regulate output of air pollutants from motor vehicles.

The Bharat Stage VI (or BS-VI) emission norm would come into force from April 1, 2020 across the country.

A three judge bench headed by Justice Madan B Lokur made it clear that only BS VI compliant vehicle shall be sold in the country from April 1st, 2020.

The bench said the need of the hour was to move to a cleaner fuel.

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## Auto Cos Step on Gas to Hit the Road with E-vehicles

Look to bring out e-variants soon as the govt is pushing for an all-electric car fleet by the end of next decade

Ketan.Thakkar@timesgroup.com  
Mumbai: Signalling a major change in stance, car makers are advancing plans to electric cars in India by giving them preference over hybrid versions. Automakers such as Hyundai, Tata Motors and Mahindra & Mahindra are leading the race to roll out electric cars soon.

Hyundai Motor, South Korea's largest carmaker, is considering the assembly of electric vehicles in India as early as 2019 and has dropped hybrid car plans for the market. Tata Motors is readying an electric version of its Tingo, which is expected to be showcased in the upcoming Auto Expo. That's not all. Its ambitious small car Nano too is in the process of being revived, powered by an electric motor.

Some 1,000 electric vehicles were sold in India in the past eight years. The potential of electric vehicles in this segment is massive, say industry executives, given that more than 17 million two-wheelers are sold annually in the country. "It will take some time for electric cars to be sold en masse. But sales of electric two-wheelers can take off quickly," said Shashidhar Gill, director, Society of Manufacturers of Electric Vehicles. "With cost of lithium batteries coming down, performance of products has improved and more and more manufacturers have started work in the segment, which will give momentum to the sector."

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## Union Budget 2019 brings cheer to Electric Vehicle Startups

Majority of electric vehicle startups who were struggling to find new customers as well as the government announced tax rebates on electric vehicle loans.

## Ministry of Road Transport & Highways Tells States To Incentivise EV Adoption

Ministry of Road Transport & Highways Tells States To Incentivise EV Adoption

## NITI Aayog Proposes To Convert Two-Wheelers Below 150 cc To Electric By 2025

The NITI Aayog aims to make these vehicles to be fully electric by 2025 and then extend them to an engine capacity less than 150 cc.

## For electric cars, 2 new charging stations in Lower Parel and Kurla

For electric cars, 2 new charging stations in Lower Parel and Kurla

## CITY TAKES A GREEN STEP

Time taken to charge car battery fully. It takes a Mahindra e2o around 7 hours from zero battery to full charge on a slow-charge point. It takes 1.5 hours on a fast-charge point.

EXISTING CHARGING STATIONS  
The first electric charging station was launched in Kurla and Lower Parel and the other in Kurla.

FUTURE PLAN  
Two more charging points coming up at Bandra-Kurla Complex and at Borivli (West).

## Cash-Strapped Utility Junks Earlier Plan of Buying Buses

Cash-Strapped Utility Junks Earlier Plan of Buying Buses

FIRST AGENCY TO RUN EV'S  
Mumbai: The BMC has been looking for the best of the best to run the city's first electric bus fleet. The agency will be selected by the end of the month.

'PURCHASING FROM INDIAN FIRMS WILL COST LESS'  
Mumbai: The BMC has been looking for the best of the best to run the city's first electric bus fleet. The agency will be selected by the end of the month.

## M&M To Invest up to ₹4,000 crore to Boost EV Business

M&M To Invest up to ₹4,000 crore to Boost EV Business

Co aims to localise battery making entirely, says MD Pawan Goenka

FIRMS' EV PLANS  
Mahindra & Mahindra is looking at three different buckets. The affordable EV market with Mahindra 2 vehicles, at the price range of ₹7 lakh to ₹10 lakh, a slightly expensive vehicles around ₹12 lakh and that will be shared with personal and commercial use - which includes three-wheelers, buses, which company intends to participate in government tenders soon, Goenka says. His aspiration is, in India other than cities, nothing should be imported.

TATA MOTORS  
Rolls out electric Tigor sedan for a government tender, testing electric buses

HERO MOTORCORP  
Invests ₹205 crore in electric two-wheeler start-up After Energy, working on projects at its R&D centre

## Electric shock for automobile makers

Electric shock for automobile makers

HYUNDAI  
Shelves hybrid vehicle plan, says it will work on electric cars

HERO MOTORCORP  
Invests ₹205 crore in electric two-wheeler start-up After Energy, working on projects at its R&D centre

TATA MOTORS  
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M&M  
First mover, now ready to expand volume and invest in EV batteries; partners Uber & Ola to sell electric cars; ties up with Ford to make e-cars

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To curb emissions and accelerate towards zero emissions, the government skipped BSVI and is directly enforcing BS-VI norms



# India Policy Snapshot

## Vision

NITI Aayog's report on Transformative Mobility with BEVs



Auto makers pushed to make EV plans



Ban on fossil fuel-powered 2-, 3-wheelers: Govt plan on track despite automakers' pushback

Automakers say the government's plan to ban fossil fuel two- and three-wheelers in a few years is rushed.

India's switch to electric vehicles will be rapid; 31m EVs by 2040

FAME 1.0 extended to 30<sup>th</sup> Sep' 2018  
FAME 2.0 announced in March' 2019

## Policy

Karnataka first released state EV policy



### FOLLOWING THE LINE

<b>KARNATAKA</b> , the first state to roll-out an e-vehicle policy to encourage manufacturing	<b>TELANGANA</b> , another state with an automobile manufacturing base, is learnt to be working on a policy	<b>GUJARAT</b> , a prominent state for auto manufacturing, has already attracted investments worth over ₹5,000 crore	<b>HARYANA, MAHARASHTRA and TAMIL NADU</b> have not spelt out electric vehicle policy as of now
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Few other states have released/drafting EV policy

Custom duty exemption on EV parts  
Incentives for local manufacturing of EV parts

## Implementation



5% GST for BEVs



Tax exemption for EV owners

Various states running EV bus pilots



- Utilities setting up charging infra.
- NTPC seeks pan India license to setup charging stations



### Push To Electric Mobility



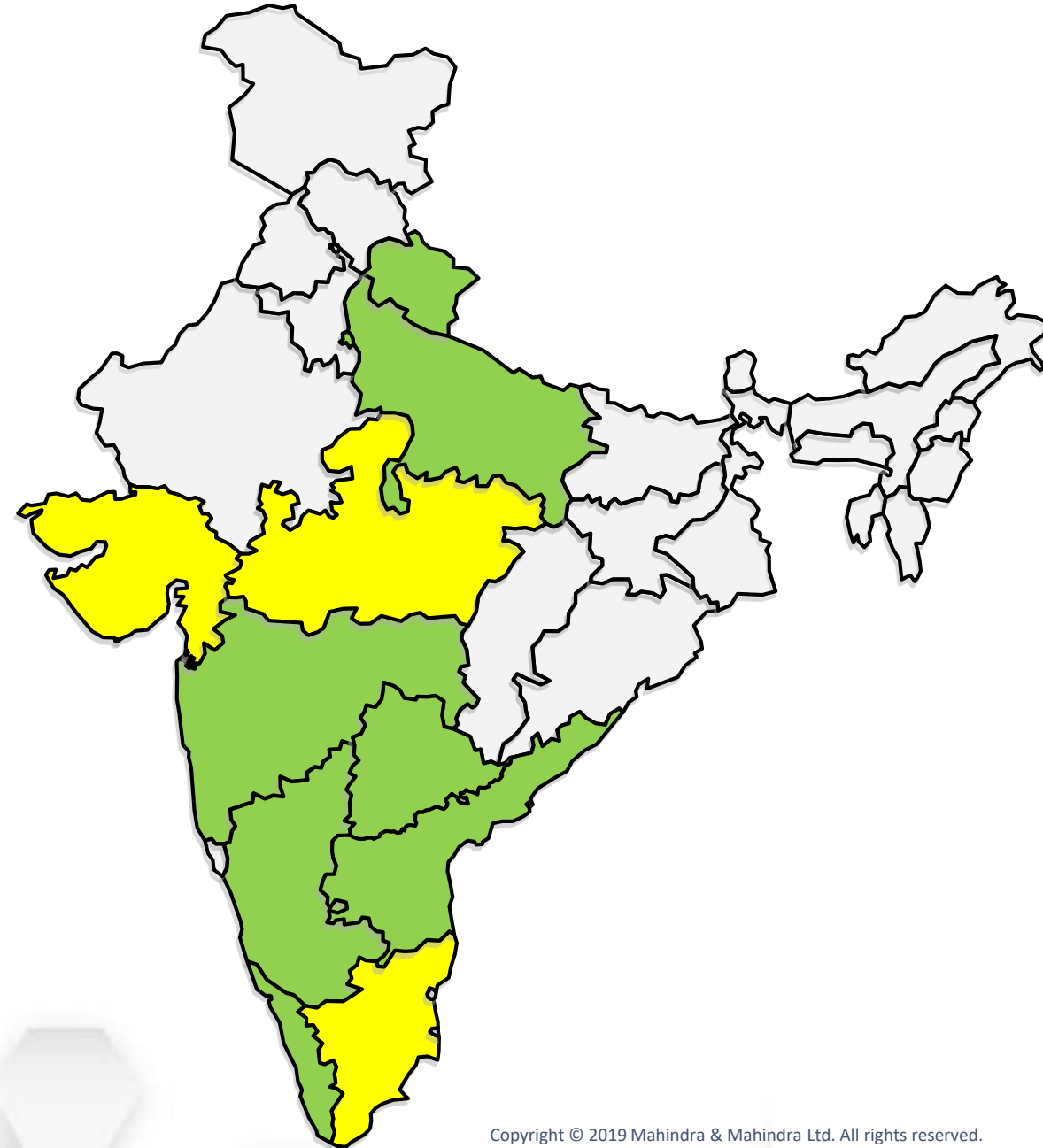
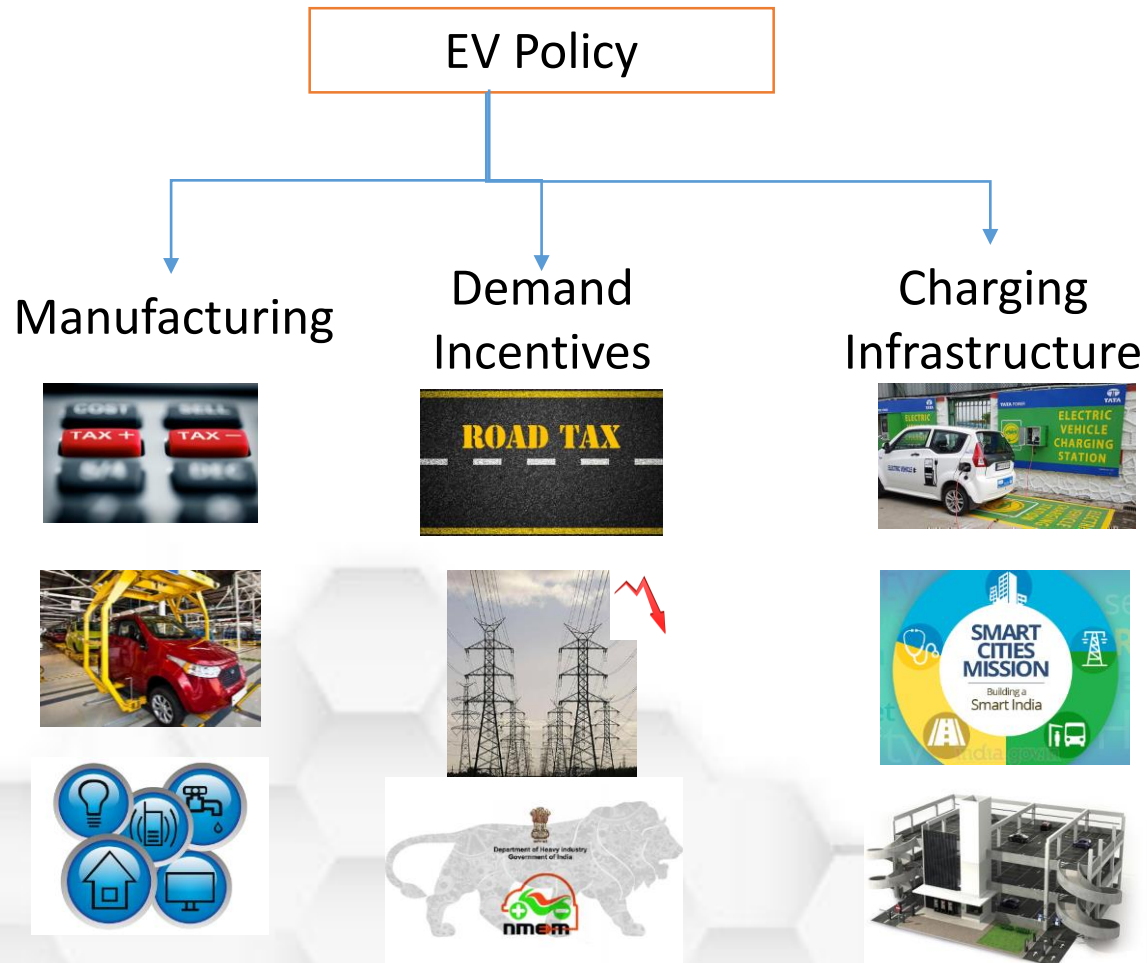
Order for **50,000 ELECTRIC** three-wheelers by year-end  
Aim is to put **1 MILLION** electric three-wheelers on roads in 18 months  
Plans also afoot to bring in 10,000 electric city buses in **15 MONTHS**  
EESL has invited global bids for **10,000 e-sedans** and **4,000 charging points**  
**LED-LIKE** revolution in e-vehicles market, says EESL's Saurabh Kumar



EESL's initiative to create viability through scale

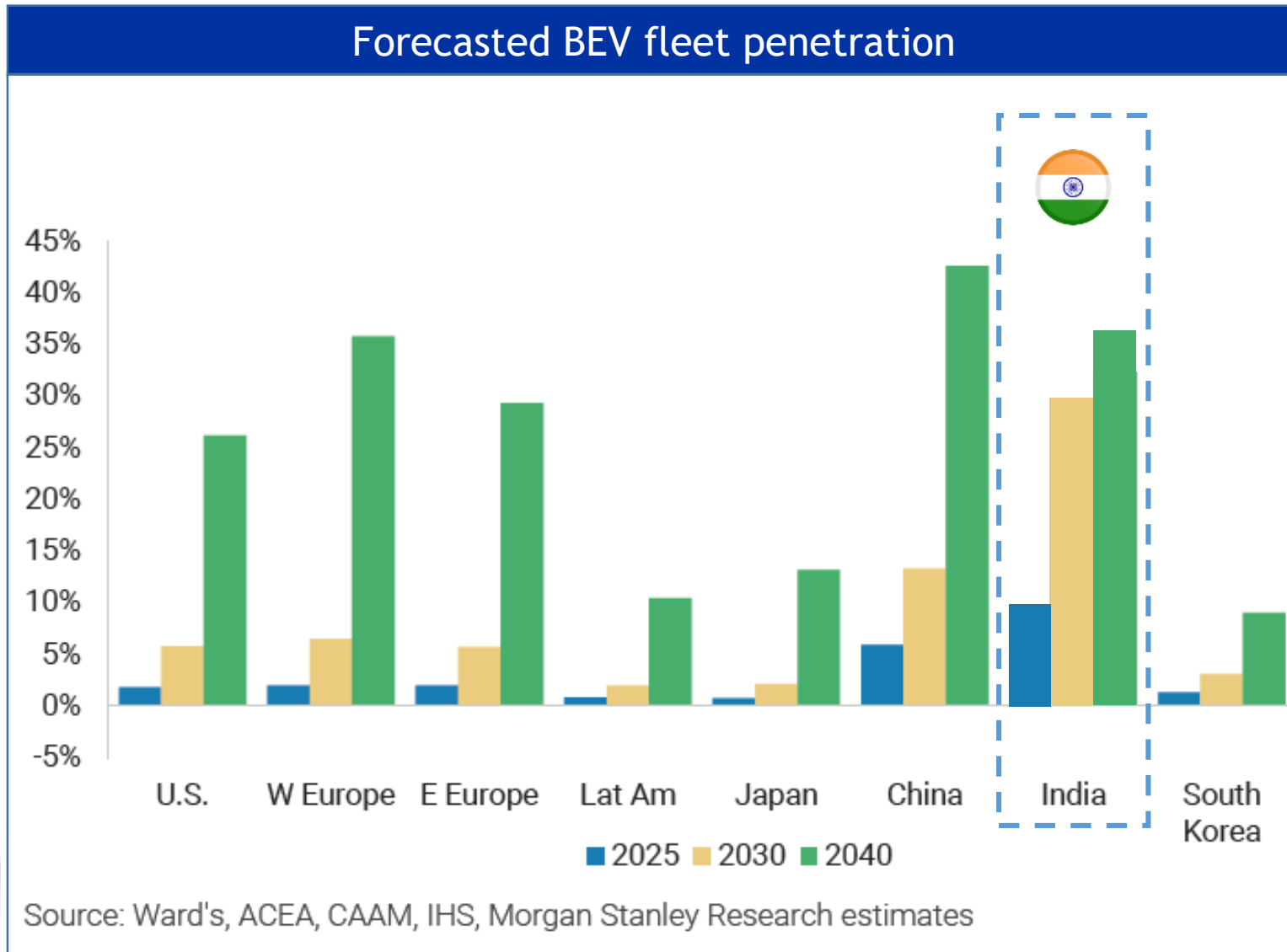
# India EV Policy Landscape

- 7 states and 1 UT have released their EV Policies
- 3 states have draft plans ready





# Growth paths of global markets



#### Growth in China

**Already largest EV market by volume**

**Mass vehicle route thro' subsidy**  
→ Government led – People supported

#### Growth in Norway

**Largest EV market by Market share**

**Premium vehicle route thro' mix of incentives and fees**  
→ Government led – People supported

#### Growth in US

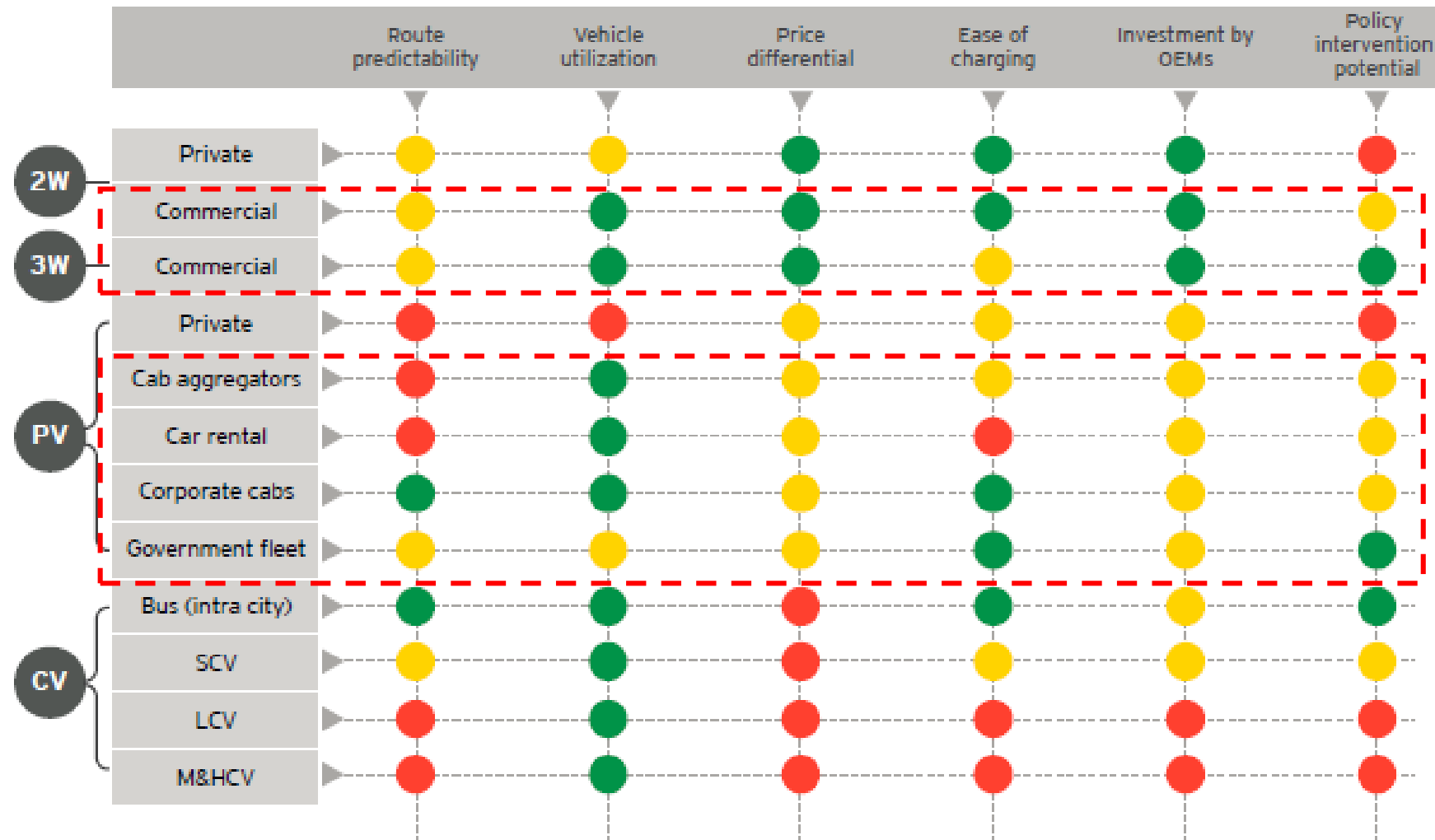
**Premium vehicle route**

→ People Led – Govt. supported

#### EV growth in India

**Mass vehicle route – with improving total cost of operations of EVs**  
**(Government led – People supported)**

# Factors driving electric mobility in India



3W: Three-wheeler; CV: Commercial vehicle; SCV: Small commercial vehicle; LCV: Light commercial vehicle.

● Favorable     
 ● Neutral     
 ● Unfavorable

# Mahindra's Electric journey

1990                      2010                      2012                      2013                      2014                      2015                      2016                      2017                      2018



**1999**  
Mahindra launches first electric vehicle 8 seater Bijlee



**2001**  
Reva-i launched



**2010**  
Mahindra acquires majority stake in REVA.



**2012**  
Mahindra Reva manufacturing facility inaugurated. IGBC platinum rating



**2013**  
Top 50 innovative companies



**2013**  
e2o launched



**2014**  
Halo Sports car concept showcased



**2014**  
Quick2charge fast charging launched



**2015**  
Only Indian team in Formula E



**2015**  
Successful deployment of Fleet business



**2015**  
Launch of GenZe



**2016**  
4 new launches  
- e2o UK  
- e-Verito  
- e2o Plus  
- e-Supro



**2017**  
NITI Aayog Report, vision 2030 announced



Mahindra delivers first cars of EESL tender for 10,000 vehicles



**2018**  
Launch of TREO Auto Showcase - eKUV, eBus MESMA, +NEMO



Announced entry into EV supercars



Inaugurated Facility expansion



# Current R&D Capaility

## CAPABILITY

### R&D talent pool

300+

Engineers

80+

Researchers

10+

Scientists  
(PhDs)

### Patent Activity

13

Patents  
granted

52

Ongoing  
patents

>150

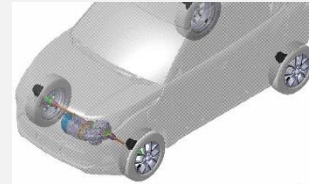
Target for  
FY 20 for  
patents

## KEY ACHIEVEMENTS



### DESIGNED FOR INDIAN MANUFACTURING AND ENVIRONMENT

- High strength steel space frame



### COST EFFECTIVE DRIVE TRAINS

- 7 patent applications
- Hill hold and Regenerative braking

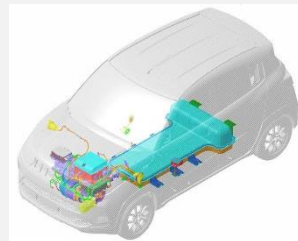


### EXTENSIVE USE OF PLASTICS & COMPOSITES

- High impact ABS Plastic Sheets
- No painting and reduces investment in production

### IN-HOUSE EXPERTISE ON LI-ION BATTERY PACK & BATTERY MANAGEMENT SYSTEM (BMS) DEVELOPMENT

- 22 patents on battery and BMS technologies
- Platform can support multiple batteries & capacities<sup>11</sup>



# Leading the way in shared mobility

**LITHIUM- CORPORATE EMPLOYEE COMMUTING**



**OLA – PARTNERSHIP FOR SHARED MOBILITY IN NAGPUR**



**ZOOMCAR LAUNCHED IN MYSORE AND HYDERABAD**



**UBER AND M&M PARTNERSHIP ANNOUNCED**



**EESL TENDER DELIVERY IN PROGRESS, PHASE 1 COMPLETED**



**HRTC – CLEAN PUBLIC TRANSPORTATION**



**BAGHIRATHI ORDER RECEIVED IN BANGALORE**



**LAST MILE – MOU WITH TWU AND SMARTE FOR TREQ**







Our electric powertrain enabled cars have run more than **135 million electric kms** and counting

## REAL ON ROAD EXPERIENCE



6000+  
vehicles  
on road



90+  
cities in  
India



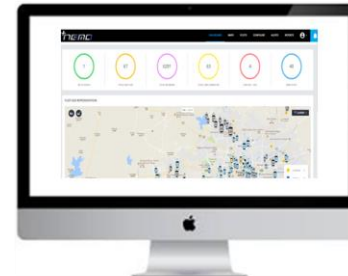
Across  
private and  
commercial  
segments



# Mobility solutions



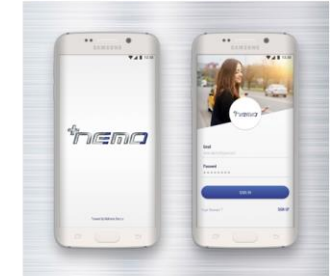
NEMO, which stands for "Next-Gen Mobility", is an e-mobility platform based on the cloud that enables a new generation of Electric, Connected and Shared mobility services



**NEMO Mobility Platform  
(Fleet Operations)**



**NEMO Driver App  
(Employee Transportation)**



**NEMO Passenger App  
(Employee Transportation)**

# Integrated sustainable mobility solutions (eg: Auroville community)

## Vehicle deployment

Offer our portfolio of EVs as suitable for the application



## Enable mobility models

Aims at enabling mobility models such as ride sharing, ride hailing and self-drive through **theMO**



## Enable eco-system

Work closely with partners in creating eco-system (parking, charging infra) and integrate on mobility platform **theMO**



## Energy storage

Support in End to End clean and green solutions – Mobility to Complete sustainable living



Partners:



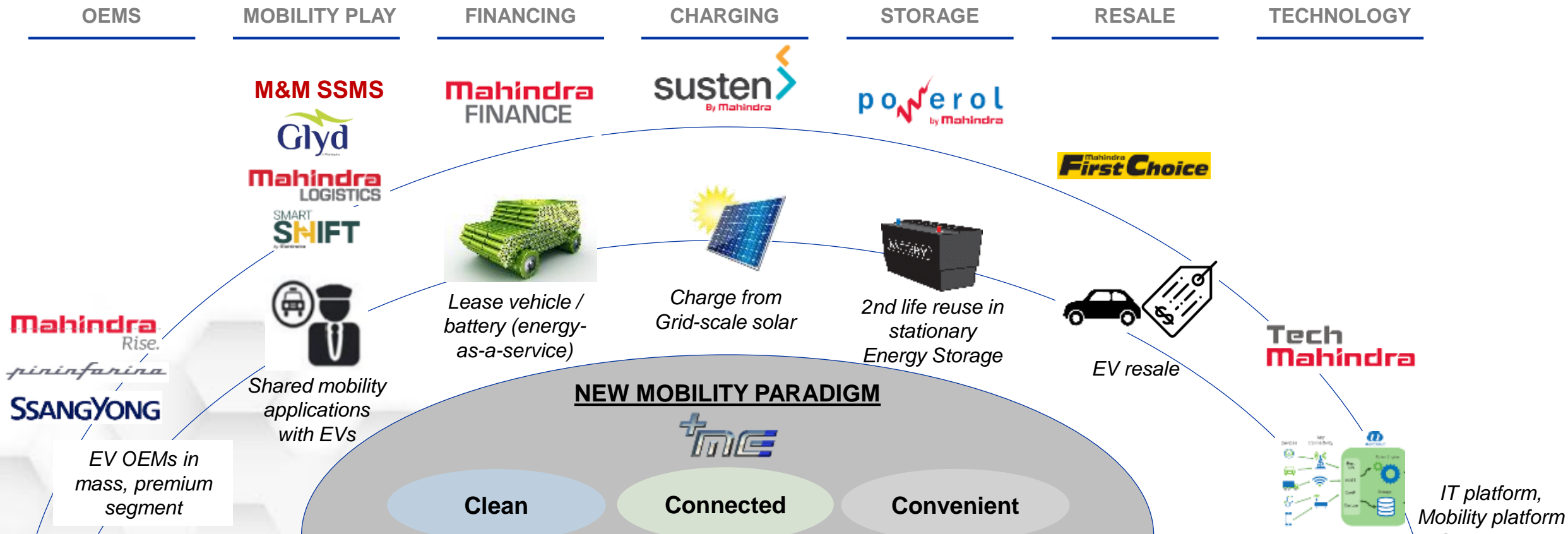
Indian Institute of Science, Bangalore



Puducherry Smart City Development Ltd. (PSCDL)

# Future of Mobility

THE NEW MOBILITY PARADIGM WOULD PRESENT OPPORTUNITIES FOR EXPLORING PARTNERSHIPS AND BUILDING ECOSYSTEMS WITH SYNERGIES ACROSS THE MAHINDRA GROUP





Thank you