

# REPORT ON ELECTRIC MOBILITY

**Charging the Ecosystemic EV-olution** 

24 January 2025



			Complete Investment Banking Solution
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# **EXECUTIVE SUMMARY (1/2)**



#### 'EV'olution of the auto industry – will the first vehicle of most Indians be an EV in the next decade?

The EV revolution is in full throttle—1 in 4 vehicles sold globally in CY24 was electric, a leap from 1 in 40 just five years ago. Lower operating costs, cushioned by tax breaks and subsidies, have made EVs more accessible despite higher upfront prices. Add to those technological improvements leading to improving range, reliability, and safety, and the shift from fossil fuels feels unstoppable.

India is catching the EV wave, with penetration rising from <1% in CY19 to ~7.4% in CY24. With low vehicle ownership and unique growth drivers, India has a chance to leapfrog, making EVs the first car for many, just as it skipped 3G for 4G. By FY30, EVs could hit 30-35% of annual sales, though ICE vehicles will still dominate the roads, coexisting with EVs for years to come.

#### Is the road from ecology to economics paved with too many incentives? Or is India's auto industry approaching a green light?

India's EV boom rides on a web of incentives: 5% GST vs. ~28% for most ICEs, lower road taxes in many states, FAME and PM E-DRIVE subsidies, and cheaper operating cost when using electricity compared to petroleum products thanks to a favourable tax structure. Add import duty rebates (SPMEPCI) for global EV giants setting up locally, and the ecosystem thrives. So, is the ecosystem being too dependent on incentives?

Not really. India's EV incentive game is smartly targeted—PM E-DRIVE boosts specific vehicle classes and expands support for charging infrastructure. SPMEPCI zeroes in on cars, where penetration lags. Plus, with global tech breakthroughs already paving the way, India can readily adopt mature solutions without reinventing the wheel.

#### All roads do not lead to Rome – each vehicle class will electrify its own way, and personal cars represent the final frontier for electrification

EV adoption varies widely by category, with 2W and 3W leading the pack. The reasons? Commercial use cases with high mileage benefit from lower running costs, shortening the payback period for cost-sensitive buyers. Smaller batteries reduce charging time, and in many cases, are even removable for home charging. These advantages drive higher penetration in 2W (especially in lower-income states), 3W, and e-buses, leaving 4W trailing behind.

Private cars are a unique EV segment, where performance, design, comfort, and safety often outweigh cost. With lower lifetime mileage, TCO savings matter less, slowing the shift to BEVs. PHEVs, offering both ICE and EV capabilities, are gaining traction, especially in markets like China. Auto giants retrofitting popular ICE models into EVs to cut costs and ease adoption may remain a trend. However, mass EV adoption hinges on advancing battery technology and charging infrastructure.

# **EXECUTIVE SUMMARY (2/2)**



#### Will incumbents upend global trends to electrify the Indian auto sector? Or will pure-play EV makers rule the highway?

In global EV hubs like China, the US, and Europe, specialists like Tesla and BYD dominate, leveraging their tech-first approach while ICE giants play catch-up. In India, however, incumbents lead the charge. Why the regional contrast?

In India, cost matters as much as tech, favoring incumbents who can simply retrofit ICE models into EVs, backed by cash-rich parents and minimal brownfield capex. Pure-play EV startups, needing hefty greenfield investments, face steeper challenges. With global R&D already perfecting EV designs and batteries commodified, India's late-market entry leaves little room for innovation or first-mover advantage once demand scales up.

#### EVs as a sum of auto parts: battery and charging infrastructure development critical for staying on track

Batteries and electronic drive units, making up ~50% of an EV's cost, are key differentiators from ICEs. With China dominating cell production and critical minerals, localising the battery ecosystem is vital. India's PLI for ACC aims to address this. Currently, OEMs outsource ~75% of their battery needs, but backward integration is set to push this to ~50% by FY30, driven by alliances and JVs rather than purely organic efforts.

India's charger density lags global standards. Of 25,000+ chargers, only a fraction are fast. Currently, CPOs enjoy high margins due to favorable demand-supply dynamics, but a race for prime charging hotspots looms, with margins hinging on land costs and utilization. OMCs, leveraging petrol pump locations, are partnering with auto majors to hedge ESG risks. While BaaS faces standardization hurdles, it holds potential for e-truck fleets.

#### Financing opportunities lie along the highway, not on it. Innovation in the funding ecosystem the need of the hour

Major OEMs have announced over Rs 1 trn in capex to transition to EVs, primarily driven by incumbents leveraging strong cash reserves. However, the real investment opportunities lie within the EV ecosystem. Approximately Rs. 500-600 bn in capex is expected to achieve ~100 GWh of EV battery capacity by 2030, while another Rs. 200 bn will be required to expand public charging infrastructure to 90,000 chargers by FY30. On the financing front, EV consumer lending remains underdeveloped, with limited participation from banks due to high LTVs and the lack of a robust secondary market. Developing comprehensive lending policies across the EV value chain remains work in progress.

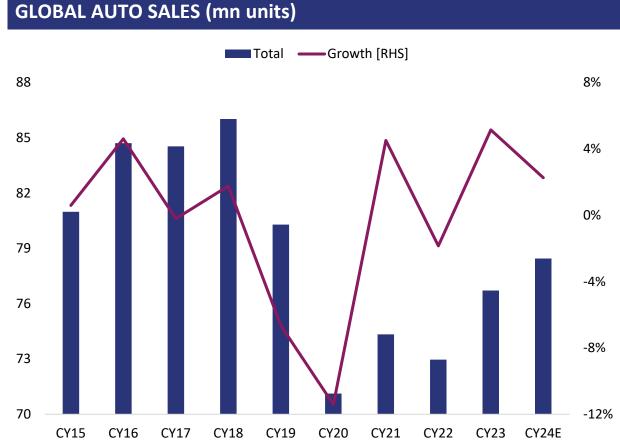
The Indian EV market is unlike any other—a blend of cutting-edge tech and cost-efficiency brilliance will drive success. The winning formula? A holistic ecosystem: robust raw material sourcing, strong battery supply chains, extensive EVCI, and seamless after-sales service. Growth will hinge on collaboration between legacy players, startups, financiers, governments, and savvy consumers. Together, they'll electrify the future.



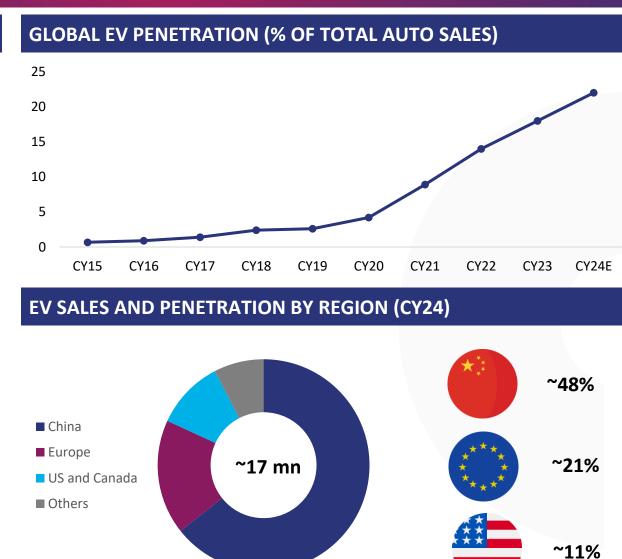
# AUTO SECTOR RIDES AHEAD: A CASE FOR EV

# EV OUTPACE GLOBAL AUTO SECTOR GROWTH ENSURING AN ELECTRIC FUTURE





- EV sales zoomed 25% y/y in CY24, faster than global auto sales. Almost one in every four vehicles sold in CY24 was an EV. Sales were led by China, where PHEV stole the show
- Most markets remain dominated by specialised EV players such as Tesla and BYD, with traditional ICE OEMs playing a catching-up role



# GLOBAL POLICY SUPPORT FOR EV BOOSTS PENETRATION, BECOMING TARGETTED

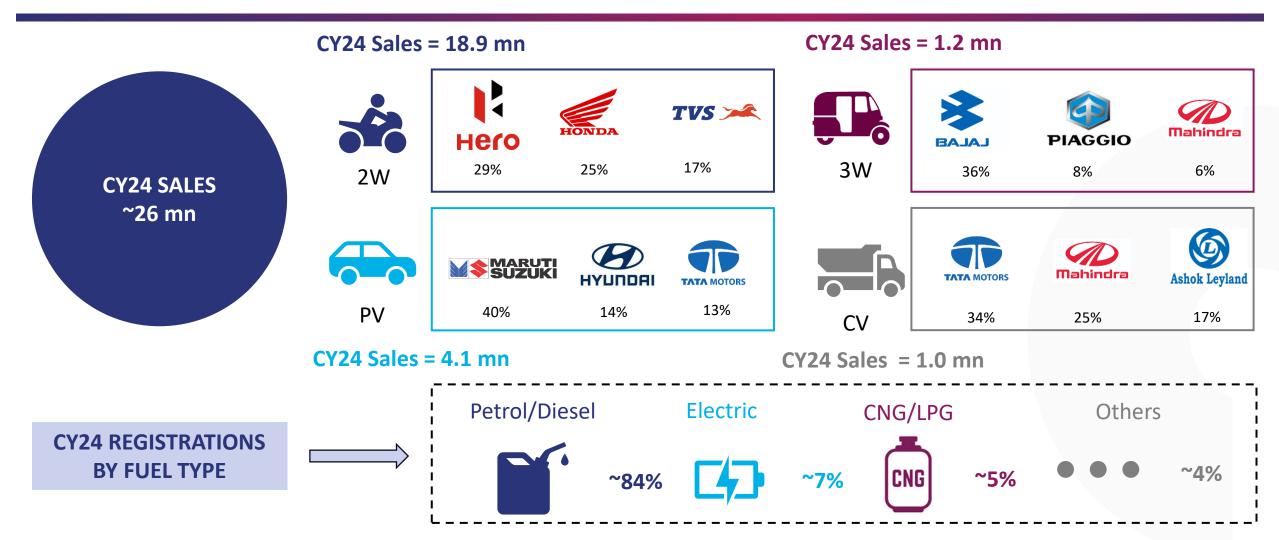


	DEMAND		BATTERY		EVCI		OTHERS
	TAX EXEMPTION	SUBSIDIES	FISCAL INCENTIVES	SPECIFICATION STANDARDS	FISCAL INCENTIVES	SPECIFICATION STANDARDS	SOCIAL AND OTHER INCENTIVES
HINA	NEVs are <b>EXEMPT</b> from vehicle and vessels tax.	Provides <b>CNY 20k</b> to consumers replacing ICE	Range based TAX CREDITS. GRANTS for battery and component R&D	GB standards promotes <b>R&amp;D</b> and <b>RECYCLING</b> over capacity addition	Electricity SUBSIDIES for usage. TAX CREDIT for manufacturers	GB standards for CONDUCTIVE and WIRELESS charging	Up to 2 hours of free parking for EVs and driving privileges in bus lanes
*** ROPE	Incentives vary from France has proposed		EU lacks a coherent battery manufacturing strategy.	EU New Battery Regulation outlines sourcing & recycling	ALTERNATE FUELS regulations specify I every 60 km with sta	requirement of EVCI	Most member countries offer free parking. Promote fast payment cards for improved user experience at charging stations
SA	Tax exemptions and state level. No fede	subsidies present at eral level incentives	Performance based tax credits for manufacturers and grants for R&D	SAE standards for manufacturing, testing and recycling batteries	Over 70% of US is covered by state- level EVCI rebates and incentives	Standards on charger levels, ports and equipment	Few states offer high occupancy vehicle lane exemptions to qualifying EVs
•		LEGEND:	Comprehensive Le	gislations	Decentralized Polic	cies or Proposals	I Inadequate Policy Action

<sup>•</sup> Countries leading in the EV transition have implemented long-term incentive policies and provided visibility into the policy outlook. However, they are gradually sharpening their policies to include only focus vehicle classes (such as trucks and buses) and ecosystem (especially charging infrastructure) to reduce the fiscal burden as markets acquire critical mass

# INDIAN AUTO SECTOR CHARGING AHEAD AND GRADUALLY ELECTRIFYING

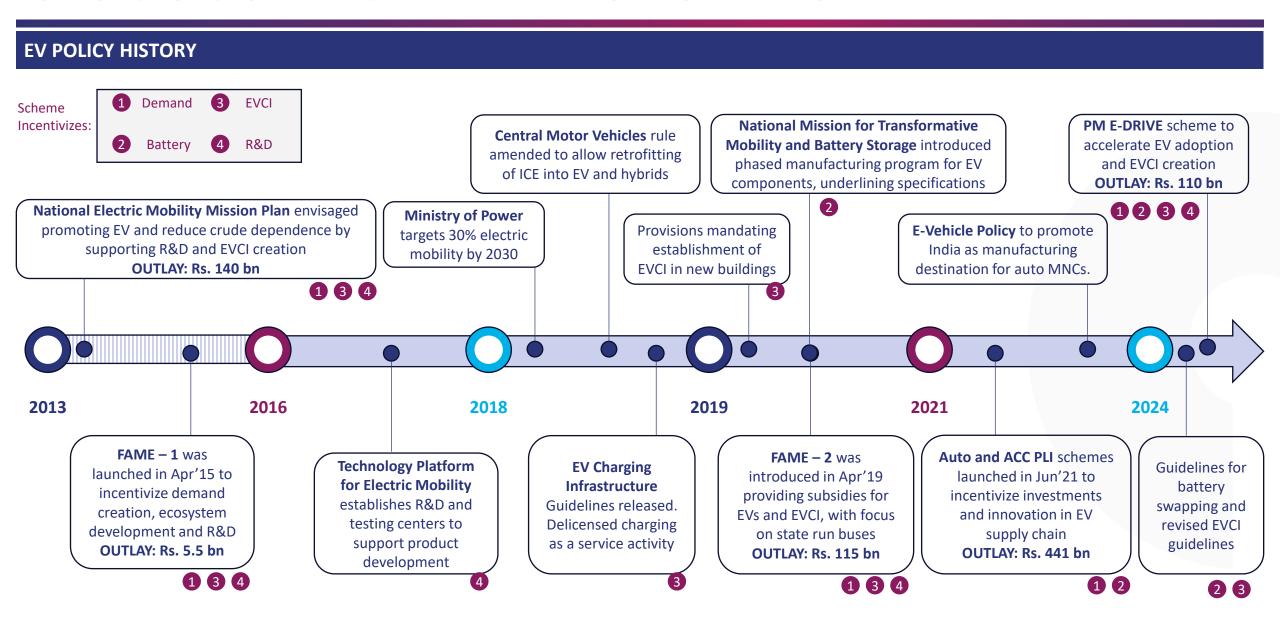




- At under 30%, vehicle penetration in India remains lower than global levels, with 4W being the laggard segment, and penetration being fairly high in 2W
- Electrification in the Indian context has been going on at a moderate pace. Most EV sold in India are BEV, and PHEVs are quite rare. EV 4W space is dominated by traditional OEMs in most segments, with some upstarts present in the 2W segment

# DOMESTIC POLICIES KEEP PACE WITH INTERNATIONAL STANDARDS





# EV VS ICE: A PERSPECTIVE FOR GOVERNMENTS, AUTO PLAYERS, AND CONSUMERS



#### **COMBUSTION ENGINE VEHICLES**



**Combustion Engine** 



**Complex Transmission** 



**Fuel Delivery System** 



#### **GOVT. PLEDGES**

In accordance with various international treaties, India has vowed to reduce carbon emissions by 50% and achieve 30% EV penetration by 2030

#### **ELECTRIC VEHICLES**



**Electric Motor** 



**Electronics Controller** 



**Battery Pack and Inverter** 

Road travel contributed ~16% of global GHG EMISSIONS in CY23. A petrol car emits ~54 tCO<sub>2</sub>e in its lifetime



**GHG EMISSIONS** 

Life-cycle **GHG EMISSIONS** of EVs in India are ~20% less than that of ICE, with potential of ~90% reduction with carbon neutral supply chain

Transport sector has high dependence on **CRUDE OIL** which is non-renewable and scarce. ~42% of total oil consumption is by transport sector. India had USD 96 bn worth net imports in FY24







**IMPORT DEPENDENCE** 

EVs make use of **CRITICAL MINERALS** like nickel, cobalt etc. which are mainly imported. However, high quantity of these materials are salvageable and profitably recyclable

>2,000 moving parts increases MAINTENANCE COSTS Low efficiency ~20% raises FUEL COSTS Requires complex gearing to achieve desired power output

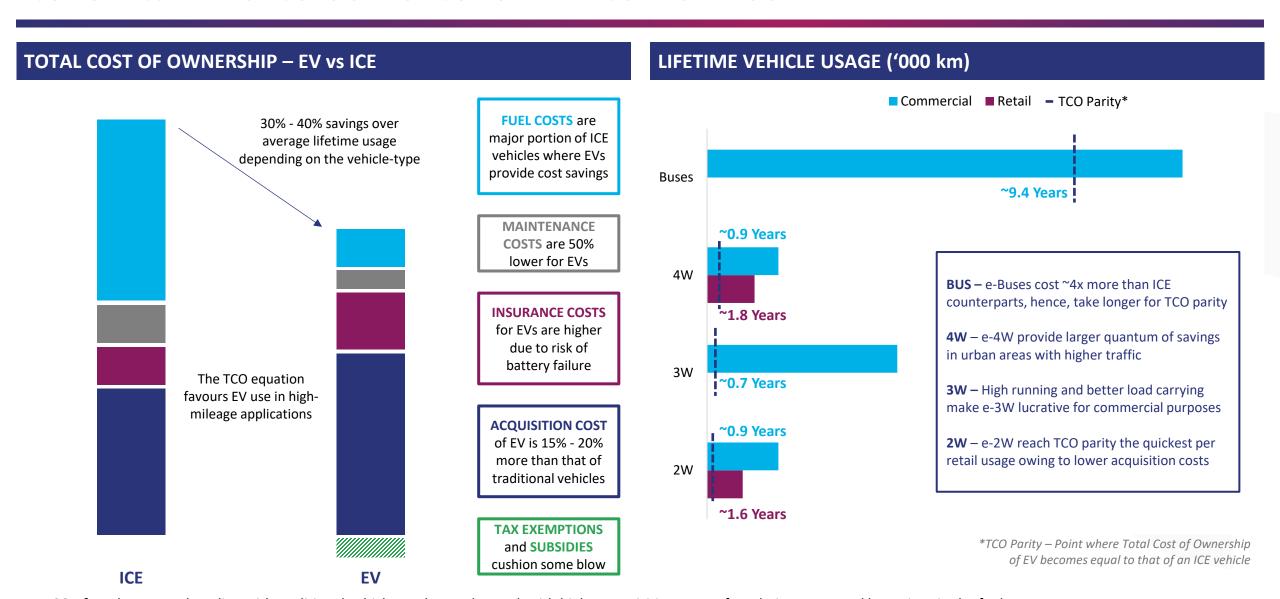


Only ~20 moving parts leads to lower MAINTENANCE COSTS ~90% fuel efficiency saves FUEL COSTS Consistent, electronic power output without gearing - APT FOR

Easy integration with technology

# **ECONOMICS MEETS ECOLOGY AS TCO FOR EV BECOMES FAVOURABLE**





• TCO of EVs has started to align with traditional vehicles and move beyond, with higher acquisition costs of EVs being recovered by savings in the fuel costs

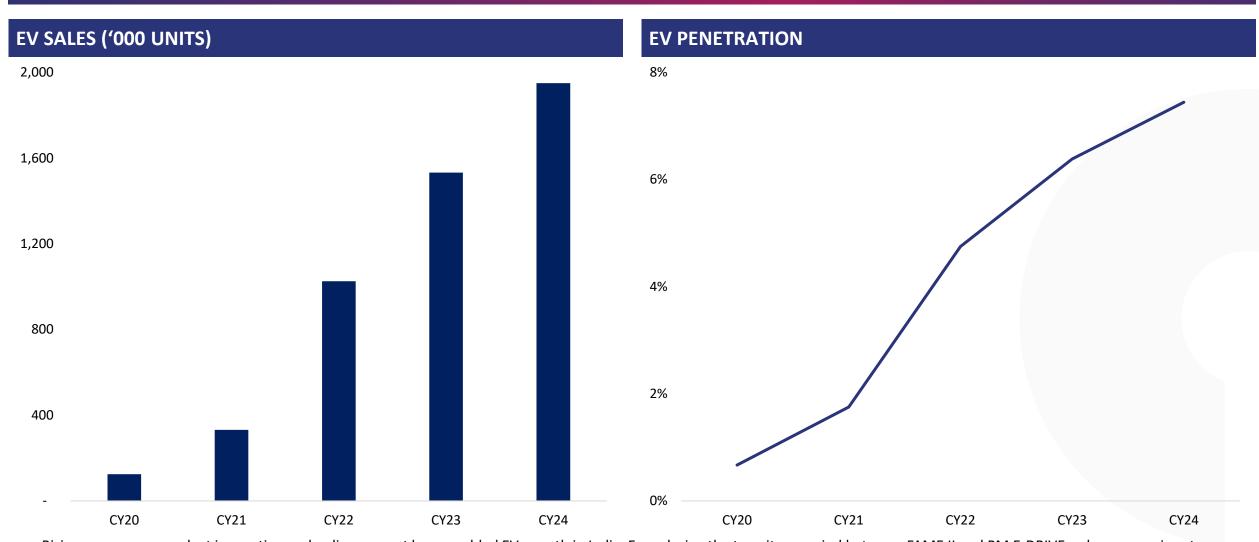


# EV PENETRATION IN INDIA TO SHIFT TO NEXT GEAR



# **EV SALES CONTINUE RISING DESPITE POLICY GAPS**

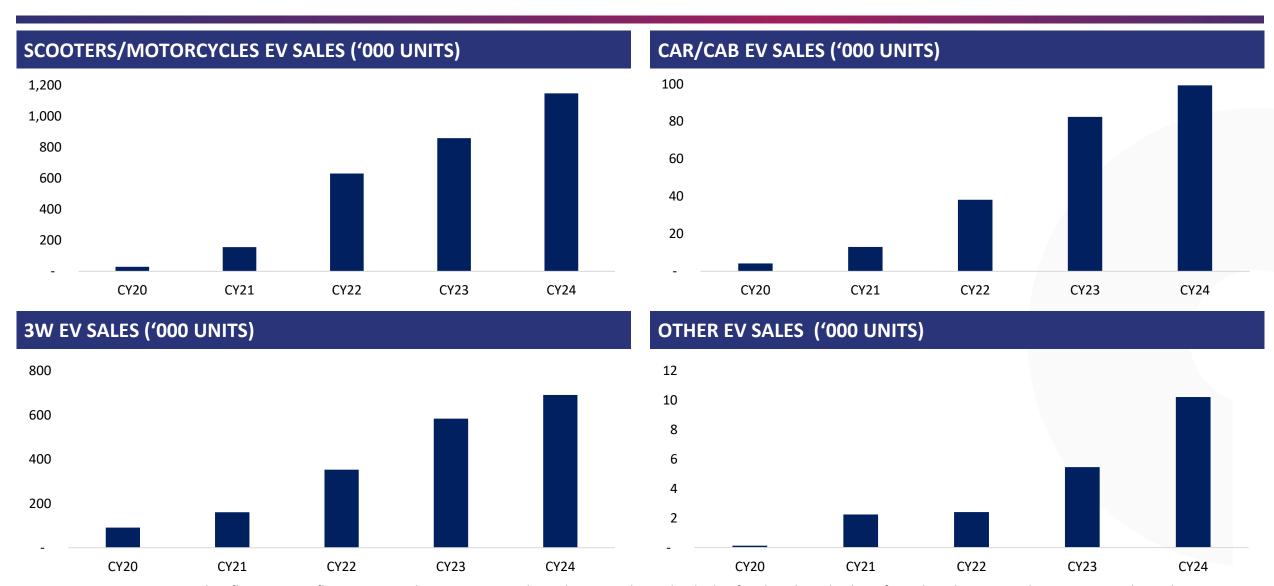




- Rising awareness, product innovation and policy support have enabled EV growth in India. Even during the transitory period between FAME II and PM E-DRIVE, sales were going strong
- While vehicle registrations grew 9% y/y overall, for EV the growth chimed in at 27%. The hybrid category in cars/cabs got established firmly in CY24

# **EV PENETRATION INCREASING ACROSS ALL CATEGORIES**





• e-3W penetration surged, reflecting an inflexion point wherein EVs are adopted over traditional vehicles for their broader benefits other than just policy support. India is the top e-3W maker, surpassing even China. E-bus sales have also risen based on government incentives and demand from state transport corporations

### **EV AT AN INFLECTION POINT TOWARDS A BRIGHT FUTURE**



#### PROJECTION – TOTAL VEHICLE MARKET AND % EV

**4W** –Adoption is expected ~20%, led initially by mobility service providers, followed by private

**2W** – e-2W are geared to take off to ~40% driven

by product innovation in scooter segment

**3W** – The segment is driven by better economics and fleet electrification mandates, while facing challenges from CNG and alternate fuels.

**BUS** – Electrification of the bus category will be

30% vehicles as charging infrastructure is deployed led by government push in state transport buses 12% 10% 5% FY22 FY23 FY24 FY26E FY30E

■ Global experience shows that ~10 years of continuous policy support (EU, China) is needed to reach the inflection point. India, at ~9 years is approaching this critical juncture

#### **FACTORS FOR EV GROWTH**

#### **DEMAND DRIVERS**



35%





**AFFORDABLE MOBILITY NEEDS**  **ASPIRATION FOR CLEAN MOBILITY** 

**URBANIZING POPULATION** 

#### **ECOSYSTEMIC SUPPORTS**







**BATTERY TECHNOLOGY**  **GOVERNMENT POLICIES** 

**CHARGING INFRASTRUCTURE** 

#### **SUPPLY OPPORTUNITIES**





**SUPPLY-CHAIN LOCALIZATION** 

**EXPORT POTENTIAL** 

# OEM WELL POSITIONED WITH THEIR CASH MOUNDS FOR THIS TRANSITION



OEM PLANS FOR EV CAPEX					
COMPANY NAME PLANNED CAPEX FOR EVS		CURRENT PRODUCT MIX	INVESTMENTS STATEGY		
TATA MOTORS	Rs. 180 bn by FY30	e-4W: 5 available models, 3 announced; 3 e-BUSES, 3 e-CV models	New EV plant in Tamil Nadu; Retooled Ford's plant in Gujarat for flexible production of EV/ICE		
MAHINDRA AND MAHINDRA	Rs. 160 bn by FY27	3 e-4W and 3 e-CV models	Inaugurated new pure-play EV plant in Maharashtra		
MARUTI SUZUKI	Rs. 100 bn by FY31	Launched first EV; 6 HYBRID models available	Plans brownfield expansion for EVs in Gujarat plant		
HYUNDAI MOTORS	Rs. 320 bn by FY32	1 premium EV SUV available; Launched EV variant of popular SUV	Brownfield expansion in Chennai plant. Retooling of GM's plant in Maharashtra		
MG MOTORS	Rs. 50 bn by FY28	6 e-4W available, 2 new launches	Greenfield investment for new EV plant in Gujarat, near existing plant.		
TOYOTA KIRLOSKAR MOTORS	Rs. 210 bn by FY26	4 STRONG HYBRID variants	Greenfield investment in new EV facility in Maharashtra		
ASHOK LEYLAND	Rs. 15 bn by FY26	5 e-BUSES and 7 e-LCVs	EV subsidiary Switch Mobility plans in-housing of key components		
FORCE MOTORS	Rs. 20 bn by FY27 - FY28	2 e-CVs	Proceeds earmarked for R&D and capacity additions		
OLA ELECTRIC	Rs. 20 bn in FY25	Pure-play EV Player with 6+ models	Plan for 1 <sup>st</sup> phase of Gigafactory, with plans for further expansion		
ATHER	Rs. 22 bn by FY26	Pure-play EV Player with 4+ models	Greenfield investment for new factory in Maharashtra		

**DRIVERS FOR CAPEX** 



**CAPACITY ADDITION** 



**PRODUCT LINE EXPANSION** 



**R&D AND SOFTWARE** 

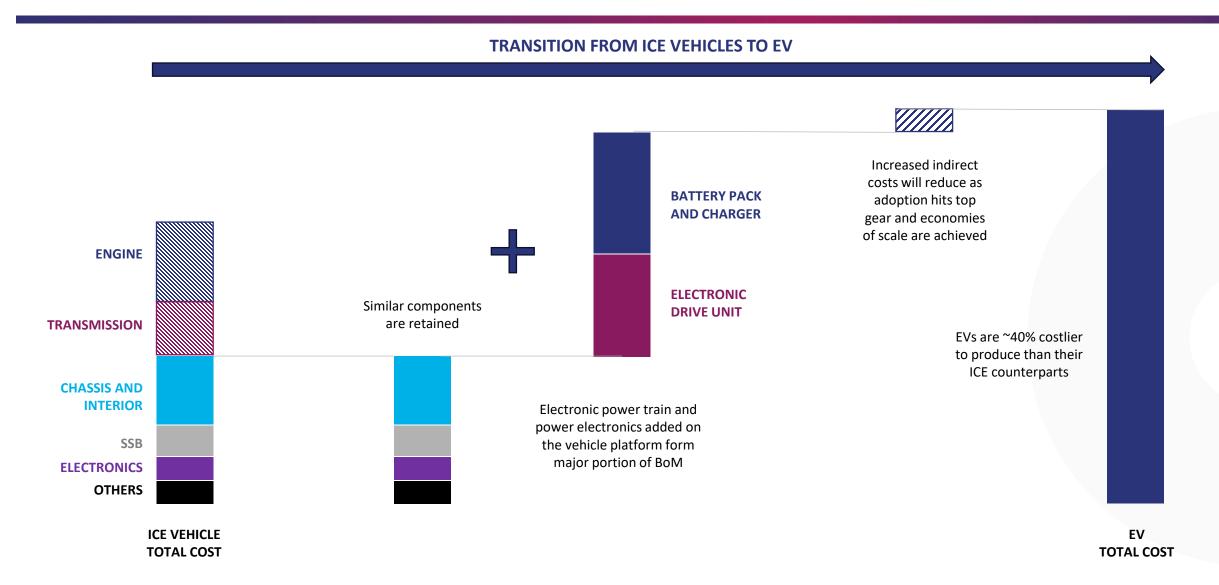




# ENABLING ELECTRIFICATION THROUGH THE ECOSYSTEM

# **EV CARS CURRENTLY COST MORE THAN ICE**



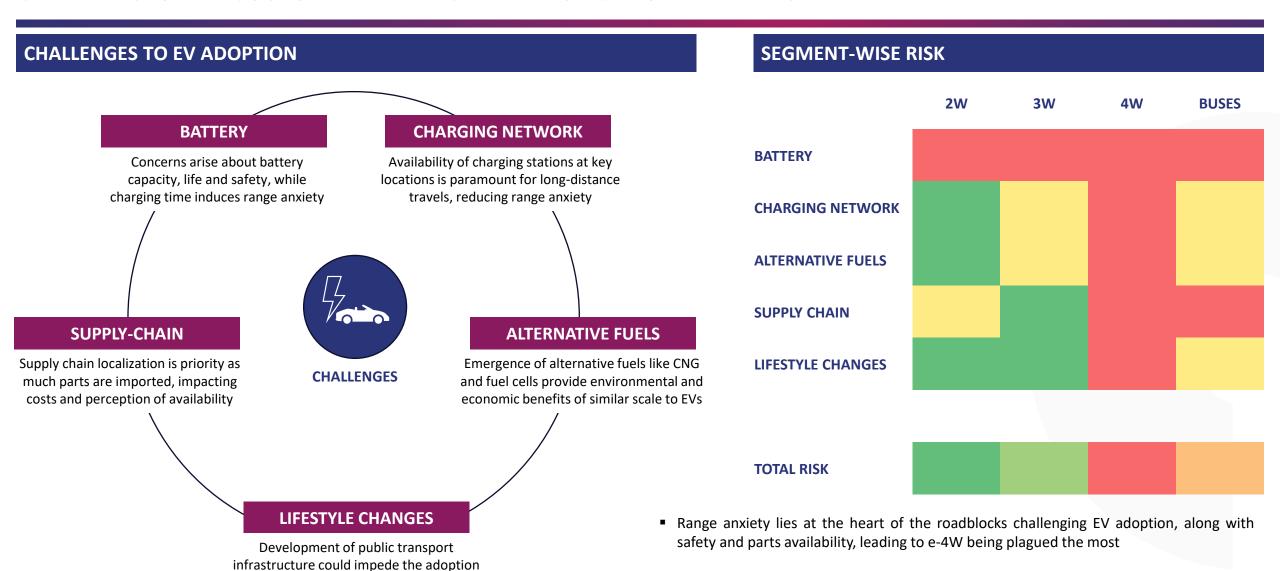


Despite having fewer parts, EVs are more expensive to produce currently due to high cost of batteries, power electronics and complex assembly process requiring niche capabilities

# CHALLENGES AT ECOSYSTEM LEVEL CREATE PURCHASE BARRIERS

of private vehicles

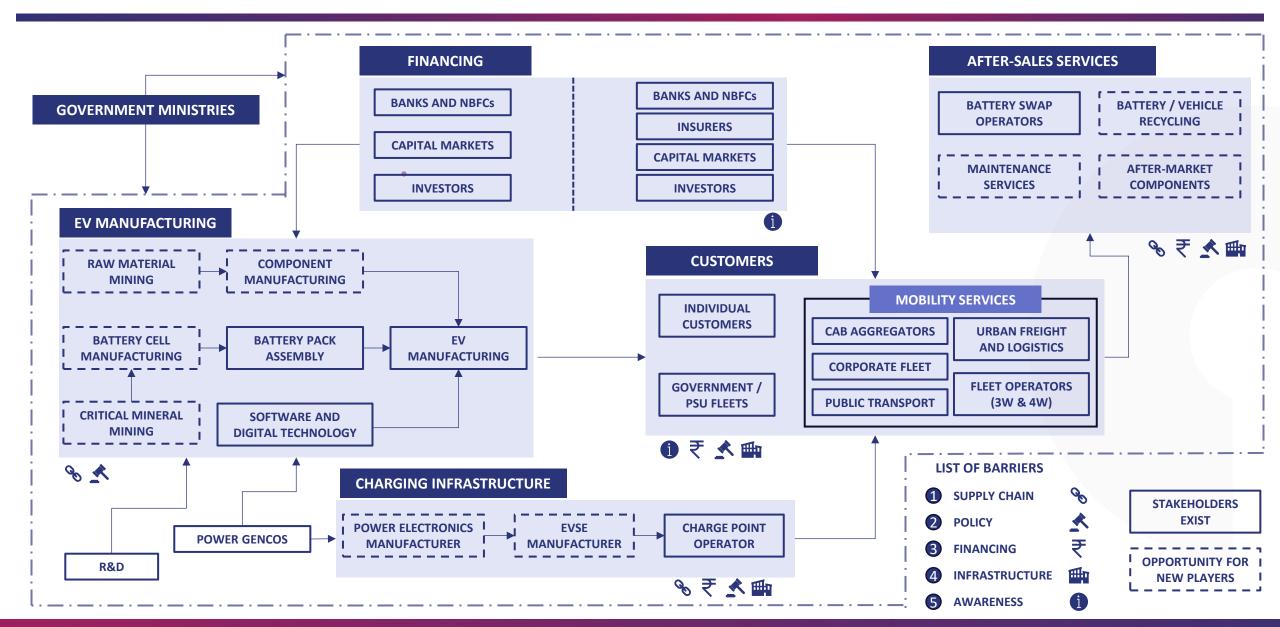




 Alleviating concerns over battery, accessibility of charging and availability of newer models of EVs at varying price ranges could lead to a snowballing effect in EV adoption

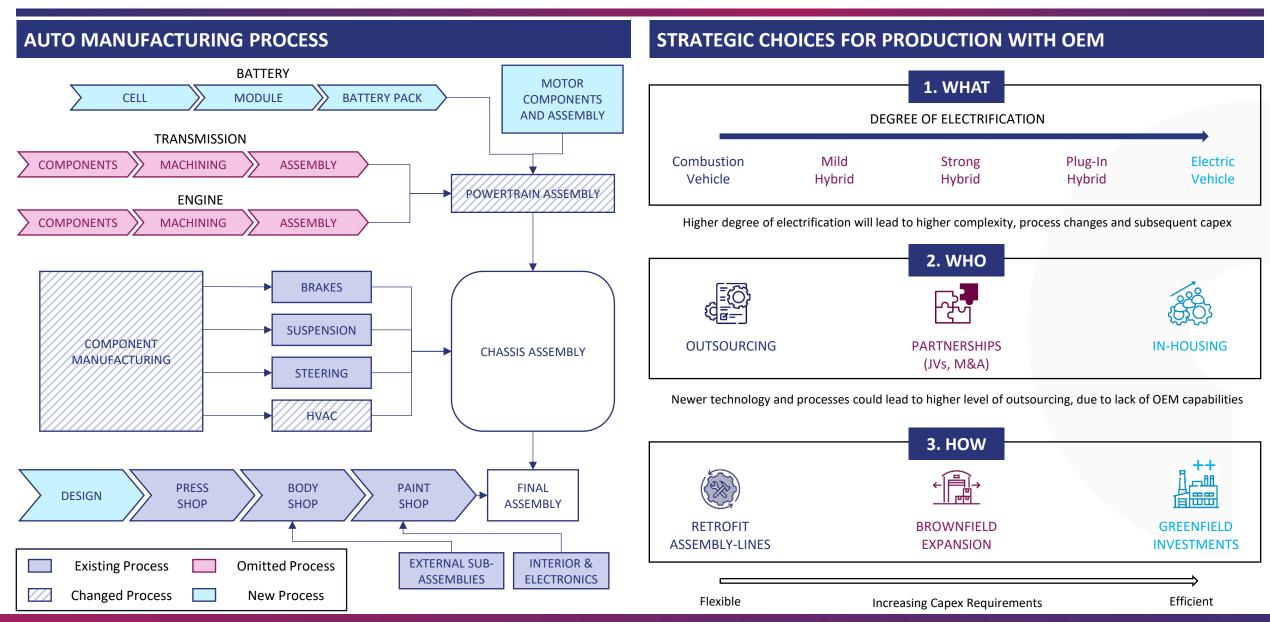
# AN 'EV'COSYSTEM APPROACH IS NEEDED TO SOLVE CHALLENGES





# **OEM FACE CRITICAL CHOICES ON IMPLEMENTING ELECTRIFICATION**







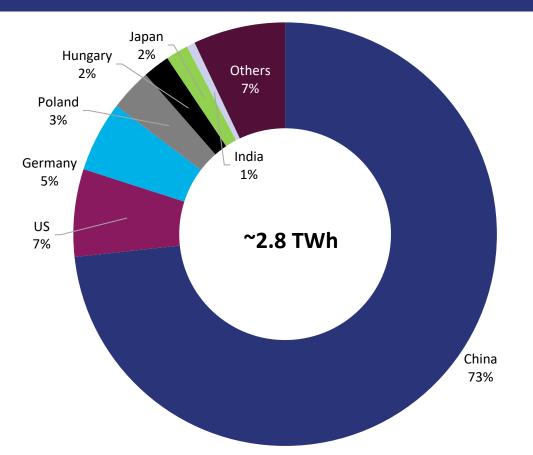
# BATTERY DOMESTICATION WILL CHARGE GROWTH



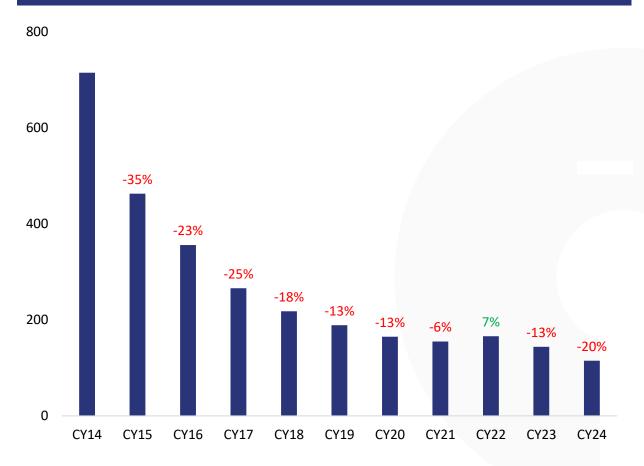
# REDUCING BATTERY PRICES BODE WELL, BUT INDIA LACKS IN CAPACITIES



#### LI-ION BATTERY MANUFACTURING CAPACITY - CY23



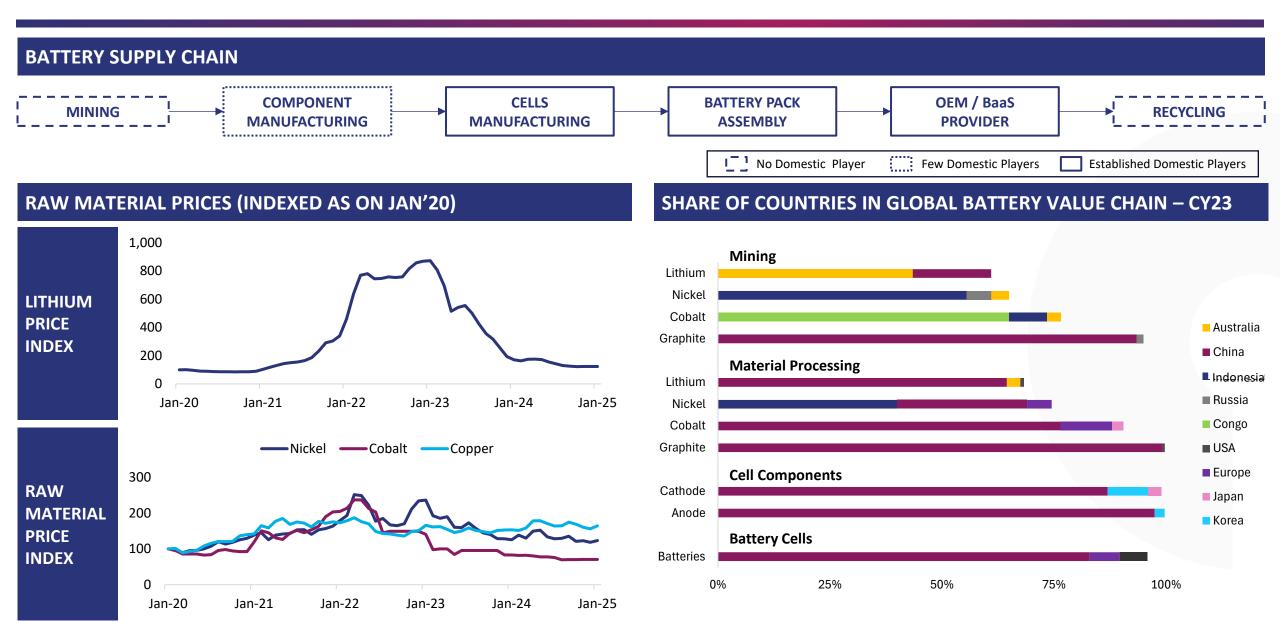
#### GLOBAL LI – ION BATTERY PRICES (USD/kWh)



- Global battery prices have been on a downtrend, as raw material supply outpaces ever-growing battery demand, augmented by technological evolution. Notably, CY22 bucked the trend owing to volatility in raw material prices caused due to geopolitical tensions. Despite receding prices, concerns persist over the concentration of much of the battery supply chain in China
- LFP and NMC batteries remain ubiquitous in the EV world. Newer battery technologies are emerging such as sodium-ion which improve energy density, charging speed, and overall performance. Sodium ion batteries have the potential to be 20-30% cheaper than Lithium Iron Phosphate batteries. Besides this, there is R&D going in solid state batteries as well

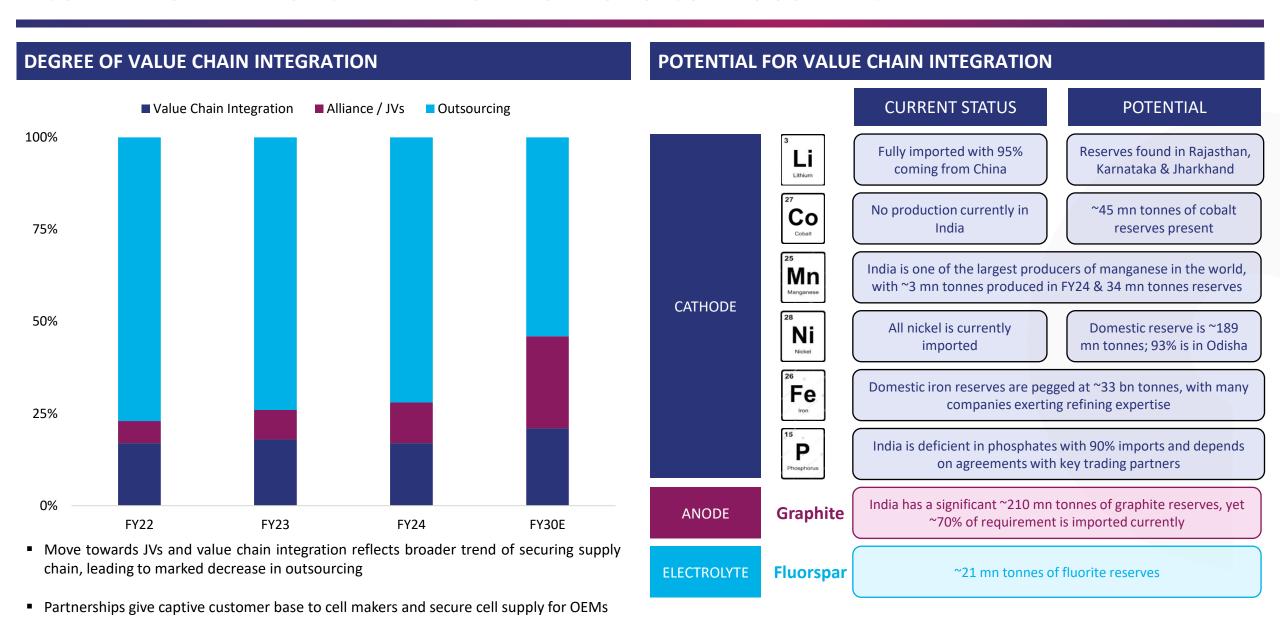
# DOMESTICATION IS NEEDED ACROSS THE BATTERY SUPPLY CHAIN





# INCUMBENTS EYE VALUE CHAIN INTEGRATION FOR SECURING SUPPLY CHAIN

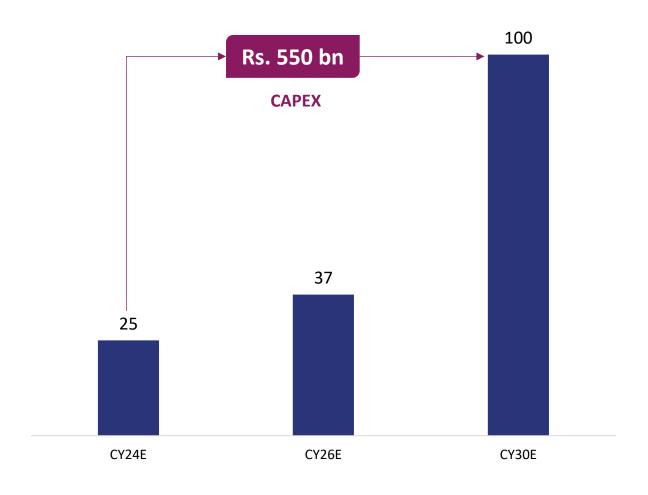




# DEMAND FOR EV BATTERIES TO BOOST FUNDING REQUIREMENTS



### **DEMAND FOR EV BATTERIES (GWh)**



#### **PROMISED CAPACITY ADDITIONS**



50 GWh LiB capacity by FY30 for majorly EVs



30 GWh of LFP capacity by FY26 for EVs ans BESS both



20 GWh of LFP and NMC by FY27 for captive EVs



20 GWh LFP capacity for EVs



16 GWh of additions for NMC and LFP by FY28



Rs. 80 bn capex for 12.5 **GWh** factory



Rs. 60 bn capex for 12 GWh; secured Rs. 20 bn line of credit

Promised capacity addition far exceeds demand, however, path to completion matters. Offtaker agreements with OEMs can be an indicator to gauge the follow through on commitments

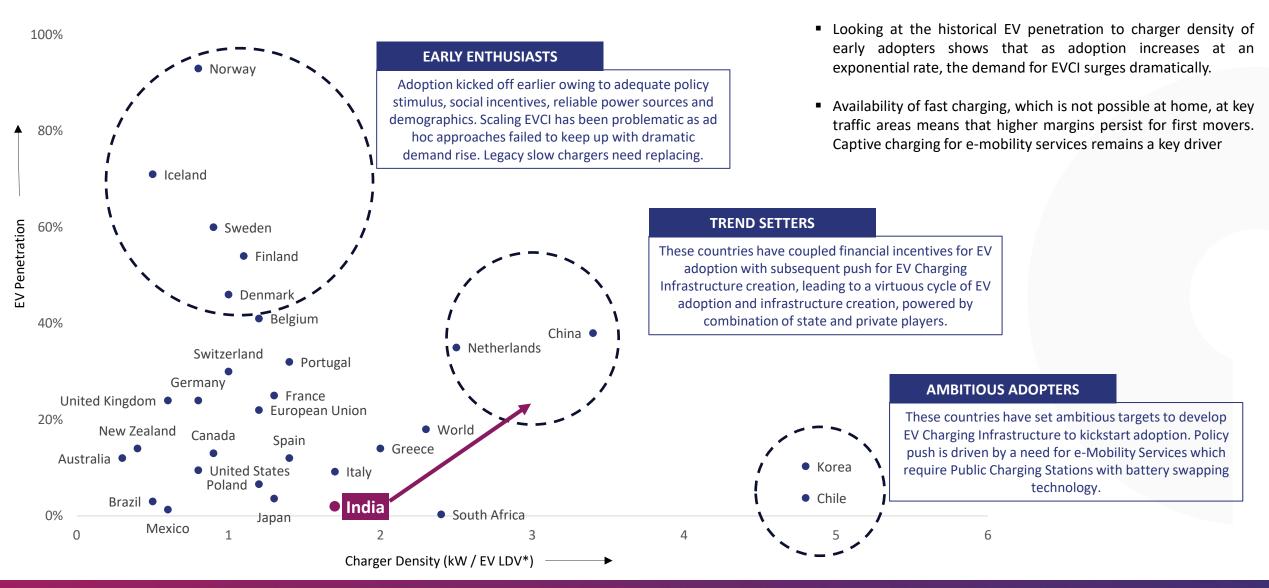


# CHARGING INFRASTRUCTURE COMPLETES THE CIRCUIT



### HISTORY PROVIDES CUES FOR INDIA'S EVCI EXPANSION

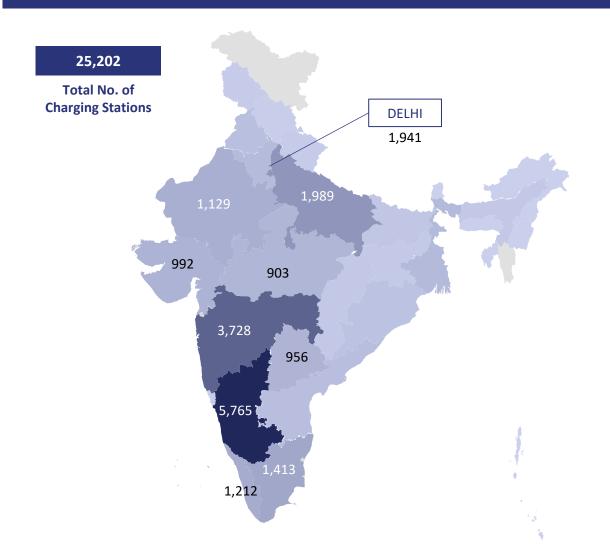




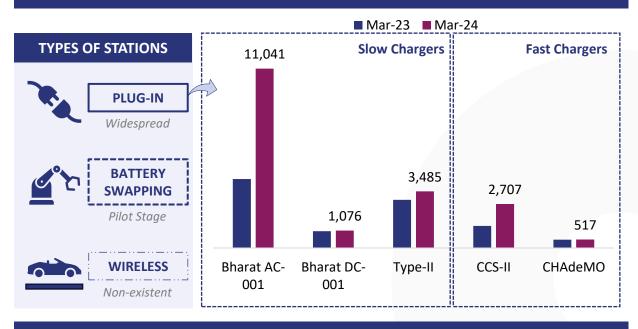
# **CHARGING STATIONS NETWORK SPREADS ITS WINGS**



#### **CURRENT EXPANSE – AS OF DEC'24**



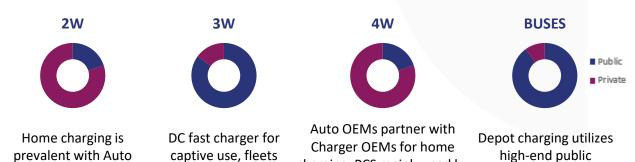
#### **TYPES OF CHARGING POINTS**



#### **SEGMENT-WISE POTENTIAL FOR EVCI**

**OEMs providing EVSE** 

partner with CPOs



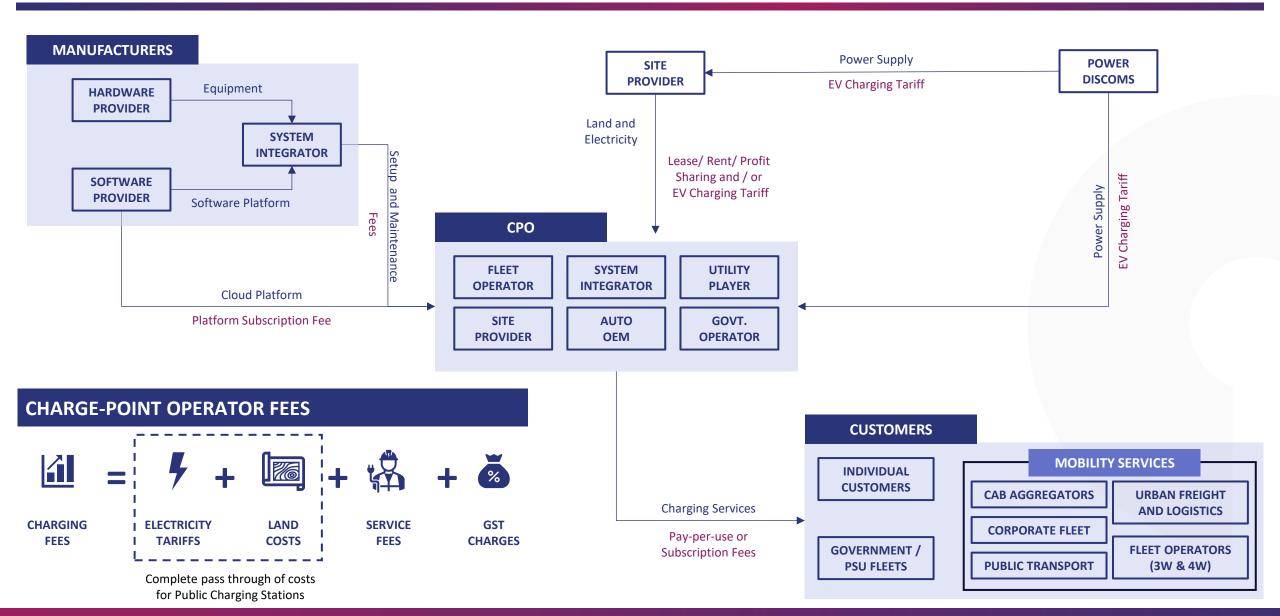
charging. PCS mainly used by

fleets, retail yet to pick up

chargers like CCS-II

# **CHARGING INFRASTRUCTURE VALUE CHAIN**





# **EVCI PROFITS A FUNCTION OF LAND COST AND CAPACITY UTILISATION**



#### **CHARGING STATION REQUIREMENTS**

#### **LAND**

Owned / Rented / Leased / **Profit-Sharing Model** 

#### **ELECTRICITY**

Provided by DISCOMs to landowner / CPOs straightaway

#### **APPROVALS**

Approvals from MoP, BEE and CEA abiding BIS standards

#### **HARDWARE**

Hardware is based on BIS standards. Government striving for interoperability

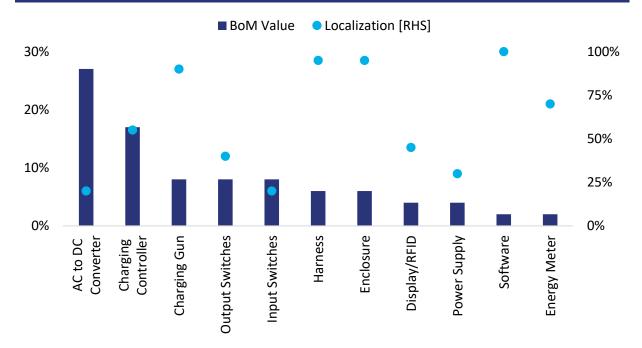
#### **SOFTWARE**

Value add through enhanced user experience

#### **OPERATOR**

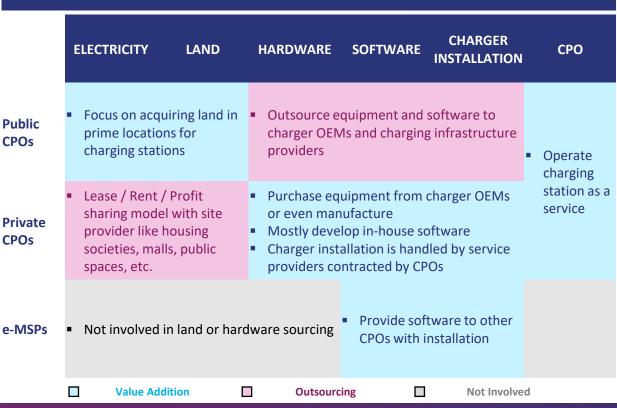
Handles daily operations of charging station

#### **CHARGING STATION BOM AND LOCALIZATION**



 Although high volume of components are indigenously sourced, significant import dependency persists for key components, amidst technological pressures from China

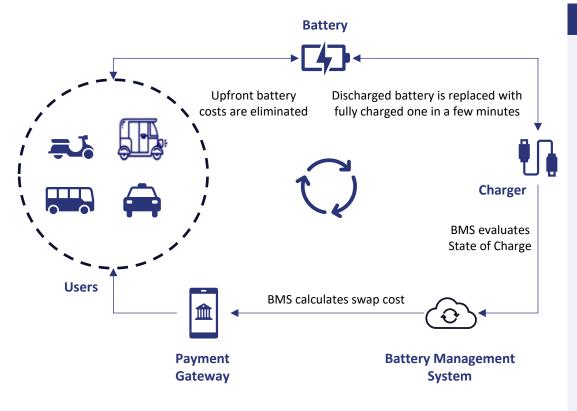
#### **TYPES OF CHARGING STATION OPERATORS**



# **BAAS MODEL LIKELY TO REMAIN MARGINAL FOR NOW**



#### **BaaS FRAMEWORK**



#### **DRIVERS**

#### **AFFORDABILITY**

Spread out battery costs make acquisition attractive

#### **CHARGING SPEED**

Charging downtime is reduced to a few minutes

#### **MAINTENANCE**

Battery maintenance onus is on BaaS provider

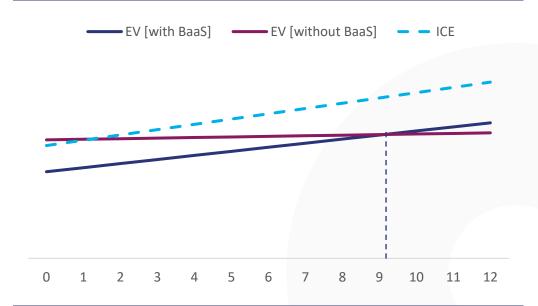
#### **RANGE ANXIETY**

Widespread network would reduce anxiety

#### **FLEET CHARGING**

Optimized charging management for fleets

#### **TCO VS YEARS USED\***



#### **STARTUPS IN THIS SPACE**



- Inks deal with Indian Oil to set-up 10k swapping stations across 40+ cities by 2030;
- 100 stations across Bengaluru Metro.



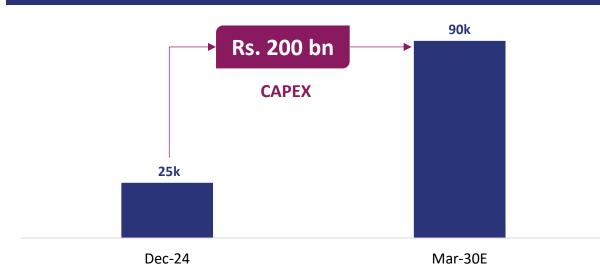
Achieving 50mn+ swaps in 1,400+ swapping stations across 25 cities led to USD 65 mn in Series B funding in Jun'24



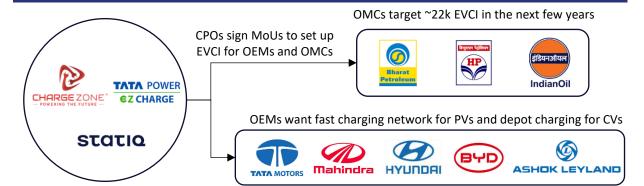
# **NETWORK EFFECTS TO DOMINATE PCS EXPANSION**



# **CAPEX REQUIREMENT FOR PCS**

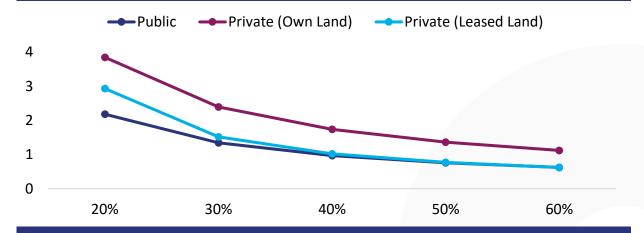


#### PLANS FOR PCS EXPANSION

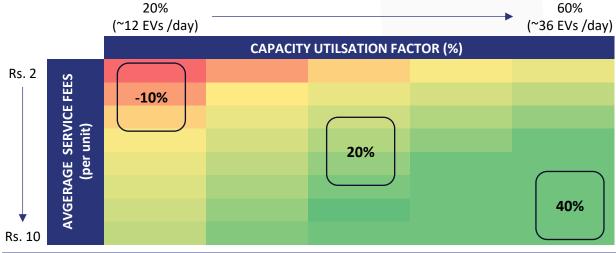


CPOs leverage operating efficiencies to collaborate with other stakeholders.

# PCS PAYBACK PERIOD (YEARS) VS CAPACITY UTILISATION (%)



#### **PCD IRR SENSITIVITY**



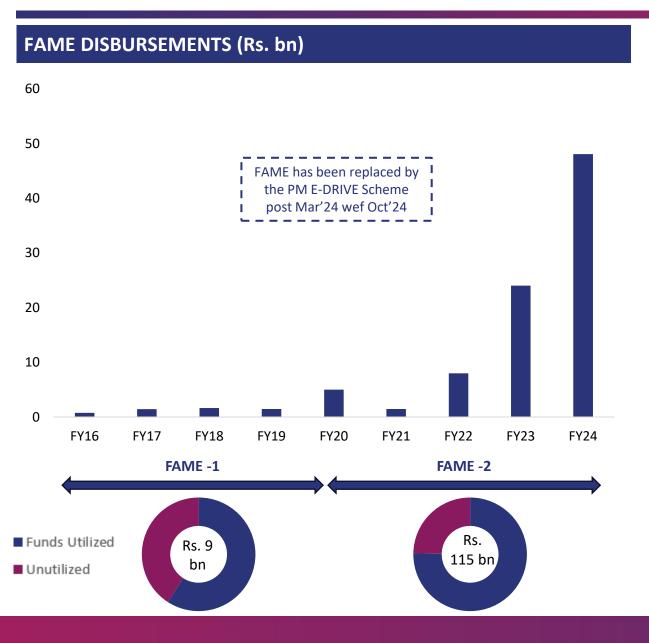
First-mover advantage exists as capturing location with high traffic increases IRR



# POLICY PUSH TO KICKSTART THE EV ECOSYSTEM

### DEMAND INCENTIVES DROVE THE GROWTH TILL NOW





#### **FAME – 2 CRITERIA**

**FOCUS AREAS OF FAME** 









50%

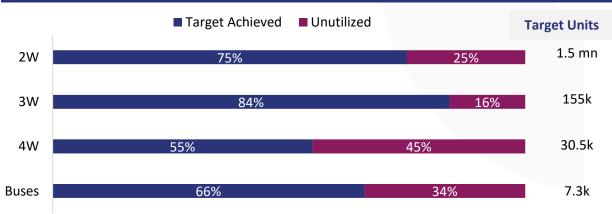
**TECHNOLOGY PILOT DEVELOPMENT PROJECTS** 

**CHARGING INFRASTRUCTURE** 

**DOMESTIC VALUE ADDITION** 

	2W	3W	4W	BUSES
Max ex. Factory Price	150k	500k	1.5 mn	20 mn
Incentive (Rs. per kWh)	15k	10k	10k	20k
Avg. Battery Size (kWh)	2	5	15	250
Probable Incentive	30k	50k	150k	2.5 mn

#### **FAME – 2 UNIT-WISE TARGET ACHIEVEMENT**

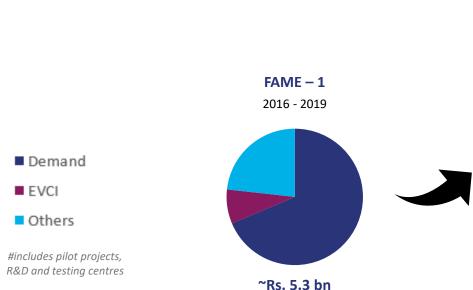


Underutilization of e-4W target could be due to lack of options in the price range until recently

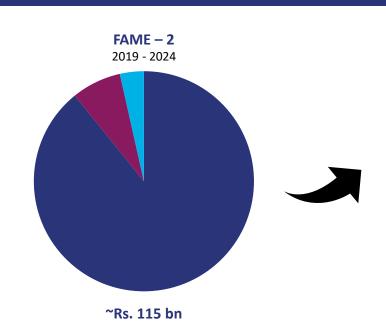
# POLICIES GET MORE TARGETTED AS INDUSTRY EVOLVES

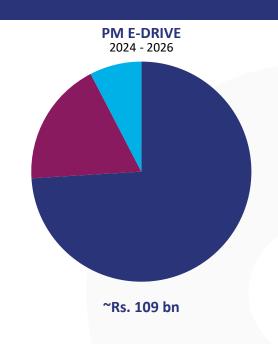


#### **EVOLUTION OF DEMAND INCENTIVISING POLICIES**









#### **FOCUS**

#### **DEMAND INCENTIVES**

**INFRASTRUCTURE** &TECHNOLOGY

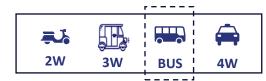
Early market creation through technology development and infrastructure setup

#### **DEMAND AND TECHNOLOGY**



Focused on scaling up reliable charging network across major cities and highways

#### **DEMAND AND ECOSYSTEM**



Special attention on state-run public transport

#### **DEMAND, TECHNOLOGY AND ECOSYSTEM**



Special focus on CVs

Envisages expansion of fast chargers. Focus on battery research and testing centres

# FOCUS ON THE ECOSYSTEM INCREASING AT POLICY LEVEL



#### **EV CHARGING INFRASTRUCTURE POLICIES**



**GST REDUCTION** 

Reduced GST of 5% from 18% for EVSE (EV Supply Equipment – Chargers)



**GOVT. SUBSIDIES** 

Under FAME and PM E-DRIVE Schemes, upfront subsidy for EVSE is provided



NO **LICENSING** 

EV Charging Station is delicensed activity – any entity is free to establish EVCI



**EXPEDITED APPROVALS** 

Union has expedited the establishment of EVCI, with CPOs given priority by **DISCOMs for connections** 



**ELECTRICITY TARIFFS** 

Electricity tariffs capped at notably cheaper rates than commercial tariffs



**LAND SUBSIDIES** 

Public land available at minimum Rs. 1/kWh revenue sharing model, basis bidding



**CHARGER DENSITY** 

Land allocation to ensure charger density of 1 in 1 sq km urban areas; 1 in 20km on highways; 1 HDV EVCI per 100 km on highways

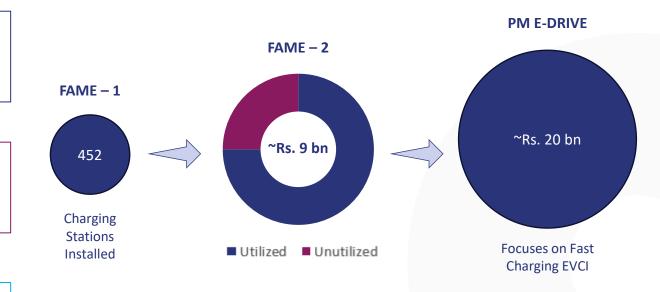


**STATE** 

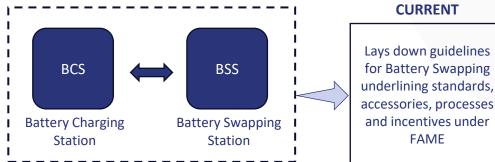
State directives and Urban Development Authorities may further incentivize EV adoption – EV as a Service Program

# **INCENTIVES**

# FAME ACHIEVEMENTS AND PM E-DRIVE COMMITMENTS FOR EVCI



### **BATTERY SWAPPING GUIDELINES**



accessories, processes and incentives under **FAME** 

Can be integrated / separate

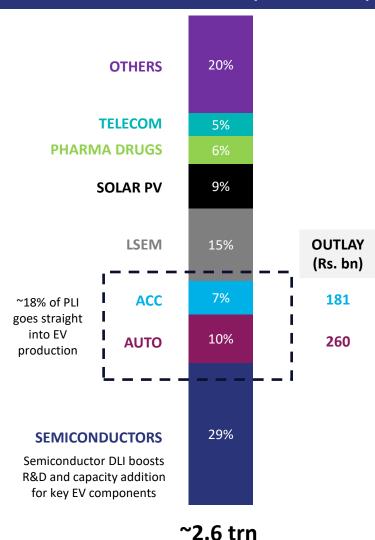
Latest news suggests focus is on more on EVCI than battery swapping

**CURRENT** 

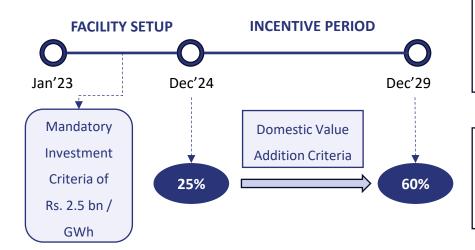
# POLICIES PUSH FOR DOMESTIC VALUE ADDITION



# PLI COMMITMENTS FOR EV (% OF TOTAL)

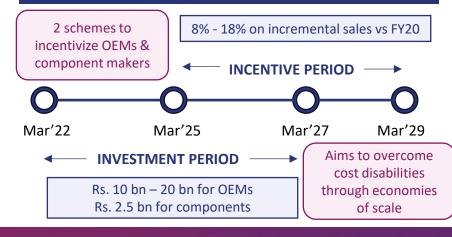


# **PLI FOR ACC**



Incentives are calculated based on DVA Criteria

# PLI FOR AUTO AND AUTO COMPONENTS



# **ACC PLI BENEFICIARIES**





10 GWh





5 GWh

20 GWh

5 GWh

# **KEY AUTO PLI BENEFICIARIES**

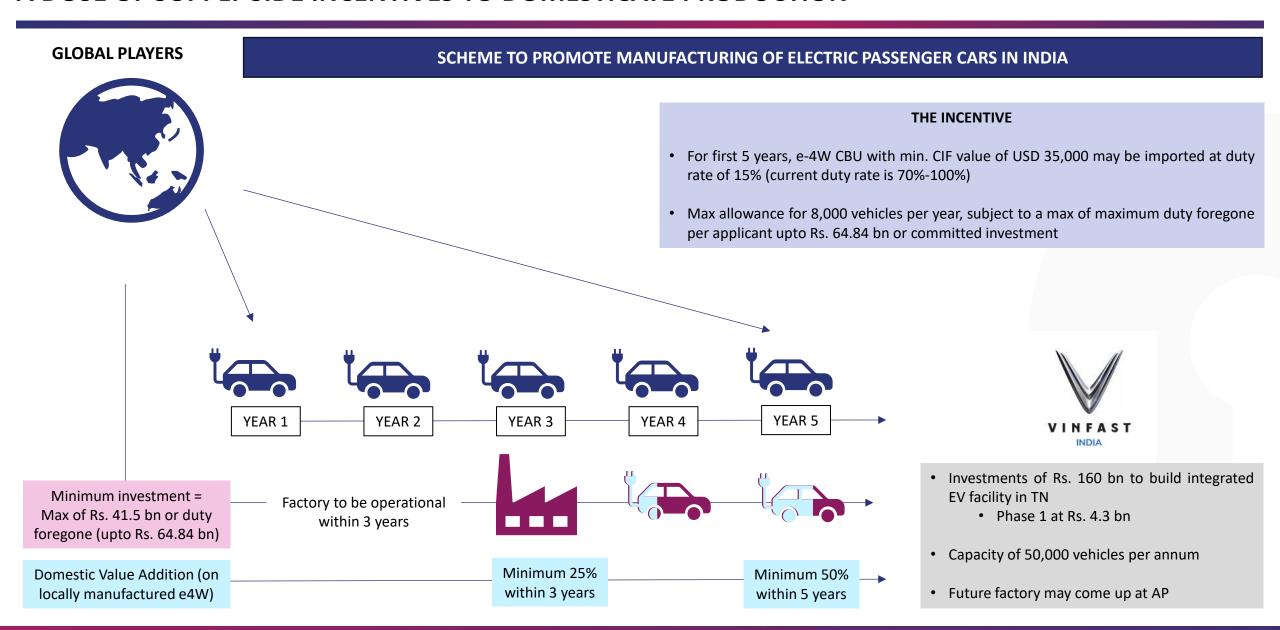




**OLA** ELECTRIC

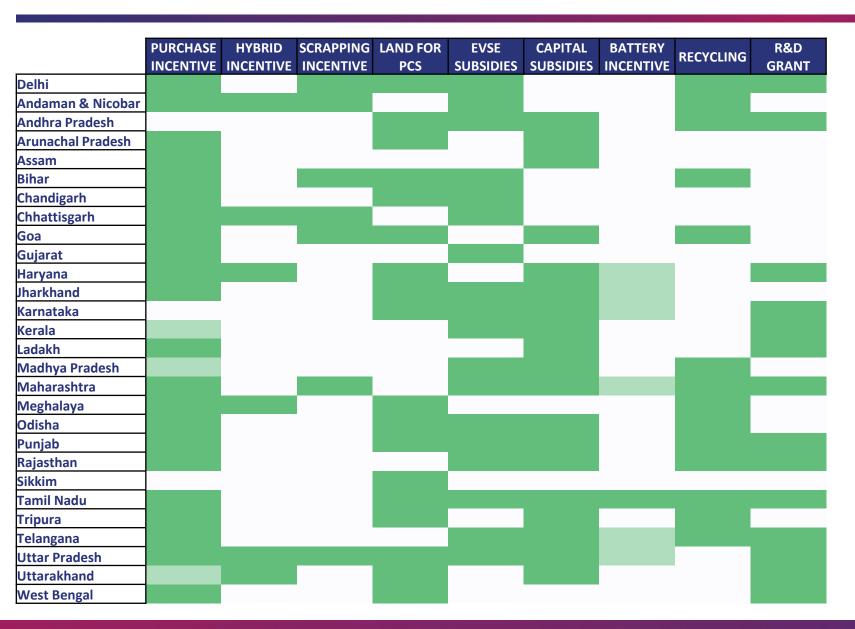
# A DOSE OF SUPPLY SIDE INCENTIVES TO DOMESTICATE PRODUCTION



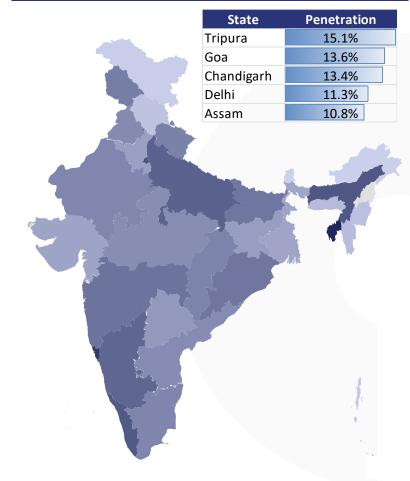


# STATES SUPPORT THE UNION'S INITIATIVES





# **STATE-WISE EV PENETRATION – 9MFY25**



 Top EV selling states are those where EVCI penetration is high, have significant state-level demand incentives and are hub for EV manufacturing



# FINE TUNING THE FINANCING ENGINE

# FINANCING ECOSYSTEM YET TO CATCH UP





#### **UTILISATION RISK**

Low capacity-utilisation due to insufficient demand



Uncertainty in operations and surprise maintenance



#### **VIABILITY RISK**

Lack of clarity on profitability of projects



Technological obsolescence rendering project useless

#### **TECHNOLOGY RISK**



Lack of secondary market to assess valuation of inventory

**RESALE RISK** 



Lack of credit history of newer players

**MANUFACTURER RISK** 



ASSET RISK

#### **POLICY RISK**

Lack of internal policy by banks for EV funding



**LOW FUNDING CONFIDENCE** 





#### **SUBSTITUTION RISK**

Emergence of alternative fuels for mobility

#### **ADOPTION RISK**

Lower adoption due to lack of awareness or quality product

#### **ISSUES**



#### **HIGH INTEREST RATES**

Lack of clarity on profitability of projects



#### **SHORT LOAN TENORS**

High financial burden on smaller cos in the short term



#### **LOW LTV RATIOS**

Higher equity contribution due to low loan-to-value



#### LIMITED OPTIONS

Limited sources of financing raises cost of borrowing

#### **MITIGATION MEASURES**



#### **INCLUSION IN PSL**

Boosts MSME financing and retail financing for EVs



#### STANDARDS FOR RESALE

Emergence of guarantors, and certifiers raises trust



#### **PRODUCT WARRANTY**

Extended warranties and maintenance by OEMs



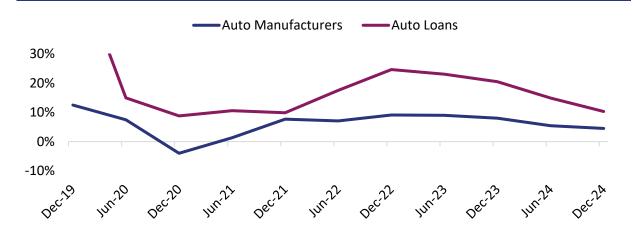
#### **SECONDARY MARKET**

Development of resale market, led by OEMs and fleets

# BROAD-BASED LENDING ECOSYSTEM NEEDED TO FULFIL NEEDS



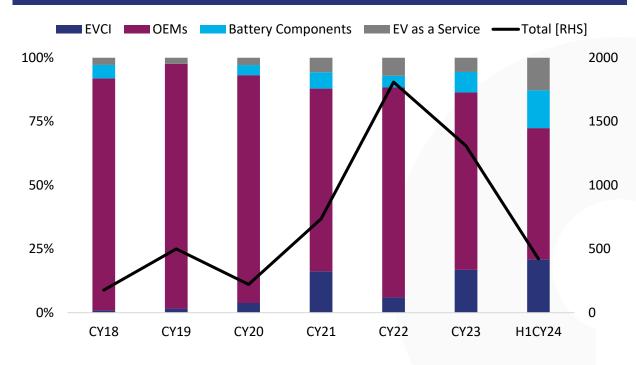
# CREDIT GROWTH TO AUTO SECTOR (Y/Y)



# NUMBER OF FINANCIAL INSTITUTIONS FINANCING EVs\*

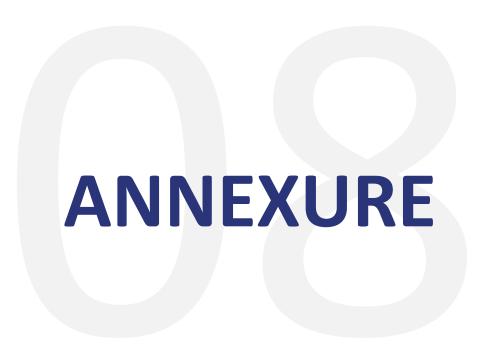


# PE/VC FUNDING TO EV ECOSYSTEM (TOTAL IN USD mn)



- Majorly, NBFCs have been funding EVs at retail level, as banks have been slow to understand the risks of the EV endeavour. Most banks don't have any policies regarding EVs.
- Majority of EV sales are 2W and 3W, which are bought by low-income groups with dodgy credit history. Currently, most of such financing for end-user is done by captive financiers of auto OEMs, which are very product specific.
- Significant funding for EV sector has come from private investors in early-stage companies. Notably, PE/VC investments have been moving towards EVCI from OEMs, as OEMs mature, while EVCI find their footing in terms of business models.







# **GLOSSARY OF KEY TERMS**



Term	Explanation
2G	Second Generation
2W	Two Wheeler
3G	Third Generation
3W	Three Wheeler
4G	Fourth Generation
4W	Four Wheeler
AC	Alternating Current
ACC	Advanced Cell Chemistry
AP	Andhra Pradesh
Auto	Automobile
BaaS	Battery as a Service
BCS	Battery Charging Station
BEE	Bureau of Energy Efficiency
BEV	Battery Electric Vehicle
BIS	Bureau of Indian Standards
BMS	Battery Management System
bn	billion
BoM	Bill of Materials
BSS	Battery Swapping Station
сарех	Capital Expenditure
CBU	Completely Built-in Unit
CCS	Combined Charging System
CEA	Central Electricity Authority
CHAdeMO	CHArge de MOve
CIF	Cost, Insurance & Freight
CNG	Compressed Natural Gas
CNY	Chinese Yuan
Со	Cobalt
CO2e	Carbon Dioxide Equivalent
СРО	Charge Point Operator
1	· · · · · · · · · · · · · · · · · · ·

Term	Explanation
CV	Commercial Vehicle
CY	Calendar Year
DC	Direct Current
DISCOM	Distribution Company
DLI	Design-linked Incentive
DVA	Domestic Value Addition
ESG	Environment, Social, Governance
EU	European Union
EV	Electric Vehicle
EVCI	EV Charging Infrastructure
EVSE	EV Supply Equipment
FADA	Federation of Automobile Dealers
IADA	Associations
FAME	Faster Adoption and Manufacturing of
1 7 (1 IL	(Hybrid &) Electric Vehicles in India
Fe	Iron
FY	Financial Year
GB	Guo Biao
GENCO	Generating Company
GHG	Greenhouse Gas
Govt.	Government
GST	Goods and Services Taxes
GWh	Giga Watt-hour
HDV	Heavy Duty Vehicle
HVAC	Heating, Ventilation and Air-Conditioning
ICE	Internal Combustion Engine
IEA	International Energy Agency

Term	Explanation
JV	Joint Venture
k	kilo/thousand
km	kilometre
kW	kilo Watt
kWh	kilo Watt-hour
LDV	Light Duty Vehicle
Li	Lithium
LPG	Liquefied Petroleum Gas
LTV	Loan to Value
M&A	Mergers and Acquisitions
min.	minimum
mn	million
Mn	Manganese
MNC	Multi-national Corporation
MoP	Ministry of Power
MoU	Memorandum of Understanding
MSP	Mobility Service Provider
NBFC	Non-banking Financial Company
NEV	New Energy Vehicle
Ni	Nickel
NITI	National Institution for Transforming India
Aayog	Aayog
OEM	Original Equipment Manufacturer
OMC	Oil Marketing Company
Р	Phosphorous
PCS	Public Charging Stations
PE	Private Equity
PHEV	Plug-in Hybrid Vehicle

Term	Explanation
PIB	Press Information Bureau
PLI	Production-linked Incentive
PM E-	PM Electric Drive Revolution in
DRIVE	Innovative Vehicle Enhancement
PSU	Public Sector Undertaking
PV	Passenger Vehicle
PV	Photovoltaic
R&D	Research and Development
RBI	Reserve Bank of India
RFID	Radio Frequency Identification
SAE	Society of Automotive Engineers
SFB	Small Finance Banks
SPMEPC	Scheme to Promote Manufacturing
I	of Electric Passenger Cars in India
sq	square
SSB	Suspension, Steering, and Brakes
t	tonne
TCO	Total Cost of Operations
TN	Tamil Nadu
trn	trillion
TWh	Tera Watt-hour
USA/US	United States of America
USD	US Dollar
VC	Venture Capital
-	

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