India – Electric Vehicle Opportunity

August 29, 2022

The automobile industry in India is at the cusp of a revolution with adoption of cleaner vehicles (electric and plug-in hybrid) over petrol/diesel vehicles. While China, Europe and the US will be faster to adopt, we believe the Indian market will also embrace electric vehicles with reduction in battery costs. The burden of oil imports, rising pollution and as well as international commitments to combat global climate change are among the key factors in India to speed up the transition to e-mobility. India is among few countries that support the 'EV30@30' campaign, which targets at least 30% new vehicle sales be electric by 2030.

Opportunity size:

The Indian automotive industry is the fifth largest in the world and is expected to become the third largest by 2030

The complete transition to EVs requires a total investment of USD 267 billion (INR19.7trn) in EVs, battery infrastructure and charging infrastructure

The Government aims to achieve EV sales penetration of 70% for all commercial cars, 30% for private cars, 40% for buses and 80% for two and three-wheelers by 2030. This is in line with the goal to achieve net zero carbon emission by 2070

Experts believe two- and three-wheelers will be early adopters of EVs over the next five years as they already enjoy better cost economics compared with their internal combustion engine (ICE) counterparts

The following table shows the EV Penetration by FY24 across different vehicle segments:

Vehicle Segment	EV Penetration	
	FY19	FY24 P
	0.1% (~3,600)	3-5% (1,76,000)
	0.6% (~126,000)	12-17% (35,00,000)
	0.5% (~500)	2-4% (~4,500)
	0% (~100)	3-5% (~24,000)
E-auto 	0.01% (~700)	43-48% (3,70,000)
E-rickshaw 	(~4,50,000)	100% (8,75,000)

CRISIL Research; Note: Numbers in bracket are absolute volumes and % indicates penetration level; E-rickshaw are electric battery powered, four seater, low speed (speed limited to 25kmph), E-autos are higher speeds three seaters (typical maximum speed of ~60 kmph)

Policy support:

Following measures have been put in place by the Government to facilitate the faster adoption of electric mobility:

1. **Faster Adoption and Manufacturing of Electric Vehicles (FAME I & II) schemes**

   a. Fame I was launched in 2015 for promoting growth and early adoption of hybrid and electric vehicles where subsidies are being given to companies to set up charging facilities and its related infrastructure

   b. Fame II, launched in 2019 shifted from subsidizing upfront costs under FAME I to promoting a more holistic growth of the EV industry, including aggregating demand by encouraging EVs in public transport, providing for charging infrastructure and R&D on EV technologies, and also pushing for greater indigenization. The FAME-II scheme has a total outlay for ~USD 1.3bn as follows:

Vehicle category	# of vehicles	Approximate incentive (per vehicle)
2 wheelers	10,00,000	INR 20,000 (~USD 300)
3 wheelers	500,000	INR 50,000 (~USD 700)
Passenger cars	55000	INR 150,000 (~USD 2100)
Public transport buses	7000 e-buses	INR 5mn (~USD 70k)

2. **Production Linked Incentive Schemes (PLI)**

The Government approved a PLI scheme for automotive industry in September 2021 which has two components:

   a. Champion OEM Incentive Scheme – sales value linked scheme based on total sales of Battery Electric Vehicles and Hydrogen Fuel Cell vehicles and,

   b. Component Champion Incentive Scheme – sales value linked scheme based on total sales of components of 2Ws, 3Ws, passenger vehicles, commercial vehicles and tractors

   c. The scheme is active for a period of 5 years from FY2023-28 with an expected total outlay of INR 264bn (~USD 3.6bn), coming up to an average 13-18% incentive for manufacturers in this space

   The above is on top of the Government's another existing *PLI scheme for Advanced Chemistry Cell Battery Storage* worth INR 181bn (~USD 2.5bn) for achieving manufacturing capacity of 50 GWh of battery storage for electric vehicles.

3. **Battery Swapping Policy:**

   The Government has released a draft *Battery Swapping Policy* which will be valid till 31st March 2025. The policy is specifically designed for battery swapping systems to be used for two-wheelers and three-wheelers. It is expected to be implemented over the next two years.

4. **Other Initiatives:**

   a. 100% Foreign Direct Investment (FDI) allowed through the automatic route in the Electric Vehicle space in India

   b. Tax exemption of up to INR 150,000 (USD 1,960) under section 80EEB of income tax while purchasing an EV (2W or 4W) on loan

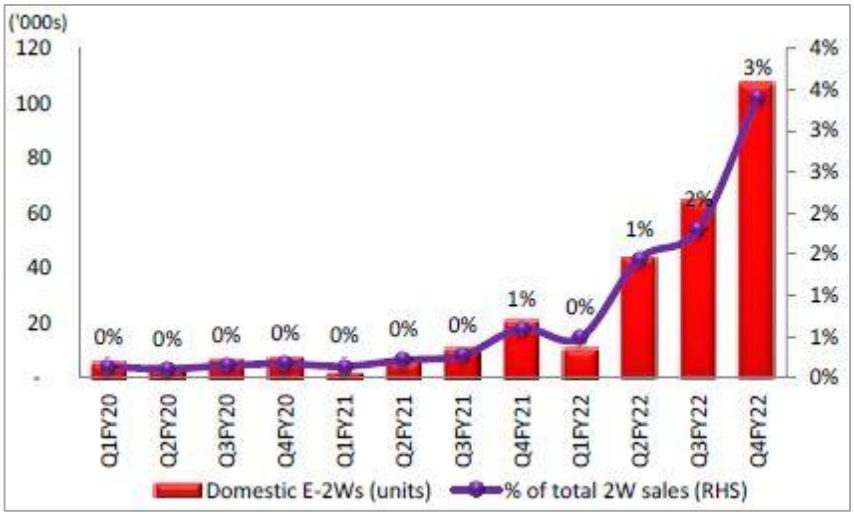
   c. State- wise reduction of road tax and other incentives

   d. Concessional Goods and services tax (GST) of 5% on electric vehicles compared to 28% GST on personal cars

Existing landscape of electric vehicle adoption in India:

Two wheelers and three wheelers to spearhead electric vehicle adoption:

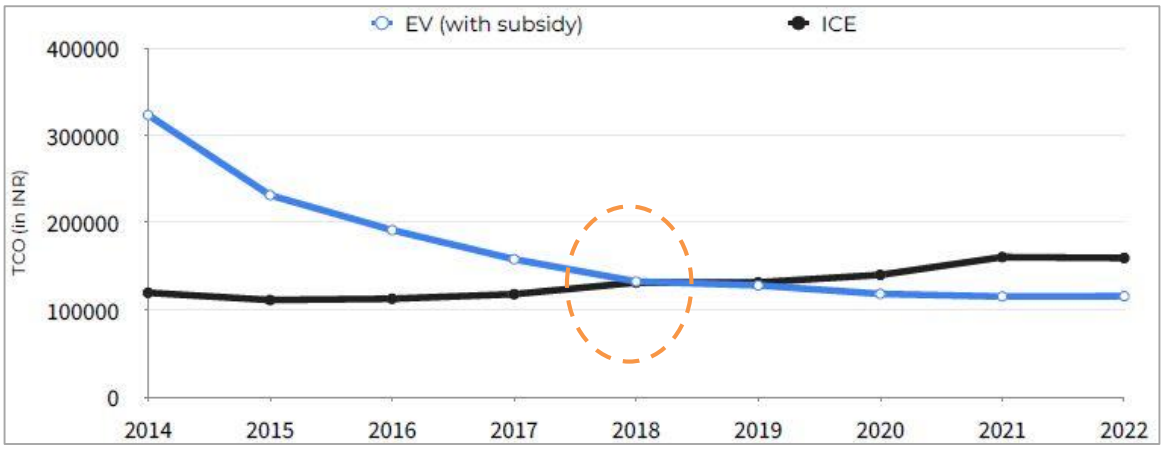
The penetration of E-2Ws in overall two-wheeler sales in India has reached ~3% as of FY22, with the penetration being at just 0.1% as of only two years ago!



Source: Vahan – Government's vehicle registration data portal

Similarly the share of electric three-wheelers (3Ws) has increased to almost 5% in FY22 from less than 1% in FY18.

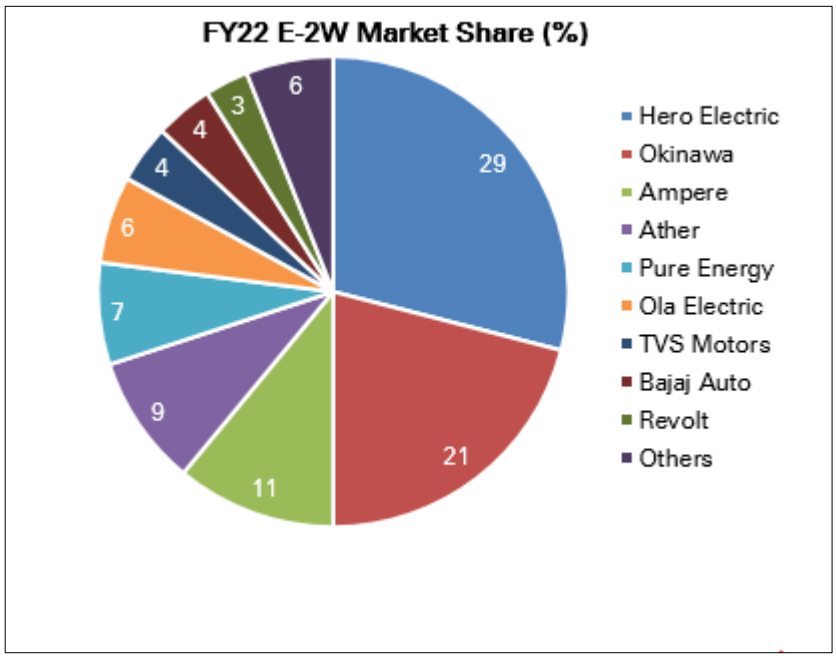
The surge in penetration can be attributed to falling battery prices and Government subsidies. Also, the Total Cost of Ownership (TCO) for an Internal Combustion Engine (ICE) two-wheeler has risen by 30-40% due to regulations, high fuel prices and commodity inflation over the past three years. This has led to a favorable outcome for E-2W's in terms of sales volumes. Currently many large selling models have a waiting period.



Source: Blume Ventures Research

Current notable players in the 2-wheeler electric vehicle space in India:

The E-2W space is currently dominated by early movers like Hero Electric, Okinawa and Ampere, with the Indian ride hailing giant 'Ola' now gaining ground quickly since the launch of its electric scooter in November 2021. While the ICE - 2-wheeler players like TVS Motors, Honda Motorcycles and Bajaj Auto have recently launched their electric models, their manufacturing capacities and technological prowess might see them gaining market share in the coming period.



Source: Vahan – Government's vehicle registration data portal

Government's FAME-2 scheme website indicates there are around 50 models from 16 Original Equipment Manufacturers (OEM) currently eligible for FAME-2 incentives. The key companies being Ola Electric, Hero Electric, Okinawa, Ather, Pure Energy, Revolt and Ampere. There are also various other companies engaged in importing, assembling and selling cheaper, low performance scooters from overseas that do not fulfil FAME-2 requirements.

The key pure-play electric 2-wheeler startups currently have a total capacity of around 3.5mn, which is ~25% of total FY20 two-wheeler sales in the country suggesting a long runway for growth.

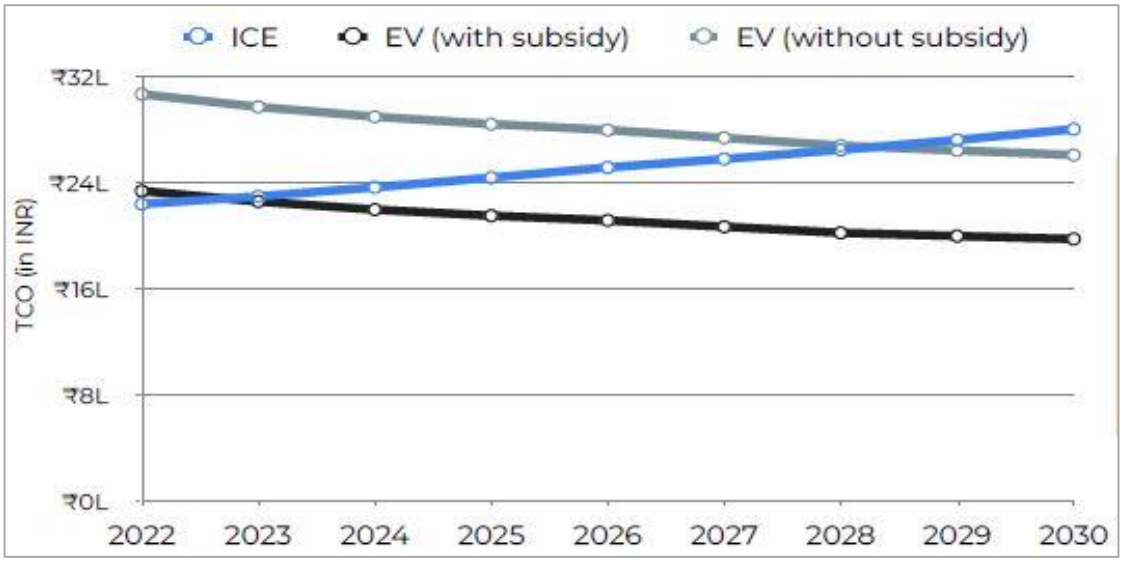
E-2W manufacturer	Capacity (in '000)
Hero	350
Okinawa	360
Ampere	250
Ather	250
Revolt	60
Pure	200
Ola	2,000
Total	**3,470**
FY22 total 2W domestic sales	14,000
New EV capacity as % of FY22 sales	25%

Source: Systematic Institutional Research

With capacity expansion underway for most existing E-2W players and new launches in the pipeline, the E-2W industry is expected to continue to see strong growth over the next few years and lead the overall penetration of electric vehicles in India

Passenger cars to remain in slow lane:

Unlike the E-2W market, the domestic electric passenger vehicle industry is yet to see traction. The cost of owning an EV car, the lack of adequate options for buyers and lower subsidies under Fame 2 has resulted in slow adoption. The segment could gain traction as many companies are working to line up multiple launches over the next 12-18 months.

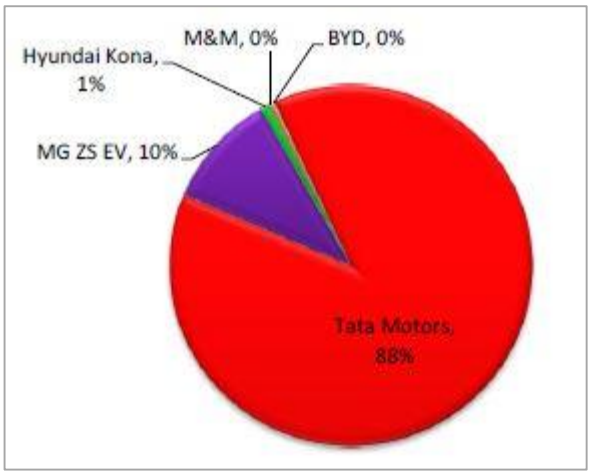


Source: Blume Ventures Research

Current notable players in the electric passenger vehicle space in India

Currently, Tata Motors accounts for 88% of total volume of sales of passenger electric vehicles. However, major OEMs are now planning to launch Battery Electric Vehicles (BEV) platforms/ models in the coming years.

Domestic electric passenger vehicle market share in FY22:



Source: Society of Indian Automobile Manufacturers

Conclusion

The Government has been rolling out incentives to boost market demand in priority segments like electric two-wheelers, localizing production of key components like Advanced Chemistry Cell (ACC) battery storage and auto components through PLI schemes. Besides, several Indian states have now passed EV policies intending to attract industry investments and make EV adoption a more viable proposition for the consumer market.

According to the Ministry of Skill Development and Entrepreneurship (MSDE), the EV industry could add 10 million direct jobs by 2030 which would create 50 million indirect jobs in the sector. India's electric mobility transformation target, if achieved, could lead to a net reduction of 846mn tons of CO2 emissions over the deployed vehicles' lifetime and electric vehicles sold until 2030 can cumulatively save 474mn tons of crude oil equivalent over their lifetime, worth over USD 200bn.

This will help India fulfil its global commitments to lower carbon emissions and increase use of cleaner sources of energy and transportation as required by the nationally determined contributions under the United Nations Climate Change Conference (COP26).

Annexures:

Original Equipment Manufacturers (OEM)	Electric passenger vehicle product pipeline
TATA Motors	- Early mover with currently 3 models; - To further introduce 10 new models by 2025 on all new electric native platform; - Total potential investment of USD 1bn+ - Tata Motors bags an order worth USD678 million (Rs 5,000 crore) order from the government for electric buses
MG	- MG Motors India has partnered with Bharat petroleum for expanding the EV charging infrastructure
Hyundai, KIA	- Early mover with currently 1 model 'Kona' launched in 2019 - Hyundai plans to launch IONIQ 5 EV in India by the second half of 2022 - Announced USD 530mn investment to launch 6 EV models for mass market segment in India by 2028
Mercedes Benz	- Plans to bring its locally assembled all-electric sedan 'EQS' to India by Q4FY23
Maruti Suzuki	- Market leader in ICE passenger vehicle segment - To launch its first EV in partnership with Toyota by 2025 - To launch its first Hybrid UV in September 2022
Ola	- To launch new electric cars by 2024
Mahindra & Mahindra	- To launch 16 electric models in India in partnership with Volkswagen by 2027 - Total potential investment of USD 400mn+
Hopcharge	Hopcharge, a Gurgaon- based start-up has created the world's first on-demand doorstep fast charge service.

Government Policy support:

Fame I

- Effective 01 April 2015
- Deadline extended till 31 March 2019
- Proposed outlay INR 8.95bn (USD 113mn)

Fame II

- Effective 01 April 2019
- Deadline extended till 31 March 2024
- Proposed outlay INR 100bn (USD 1.3bn)
- Two wheeler subsidy increased in June 2021 to INR 15000 from INR 10000 per kWh

PLI

- Effective 01 April 2022
- Deadline extended till 31 March 2027
- Applicable for both vehicle & component segments for EV's and hydrogen fuel cell vehicles
- Incentives basis sales value

Existing EV models popular in India:

2 Wheeler

Hero Lectro

Ather 450x

Yulu Miracle

3 Wheeler

Euler HiLoad

E-Rickshaw

4 Wheeler

TATA Ultra T.7

TATA Ultra Bus

TATA Nexon

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