

INTELLIGENT INVESTMENT

# Electric Vehicles in India - The New Wheels on the Roads

INFOGRAPHIC

INDIA

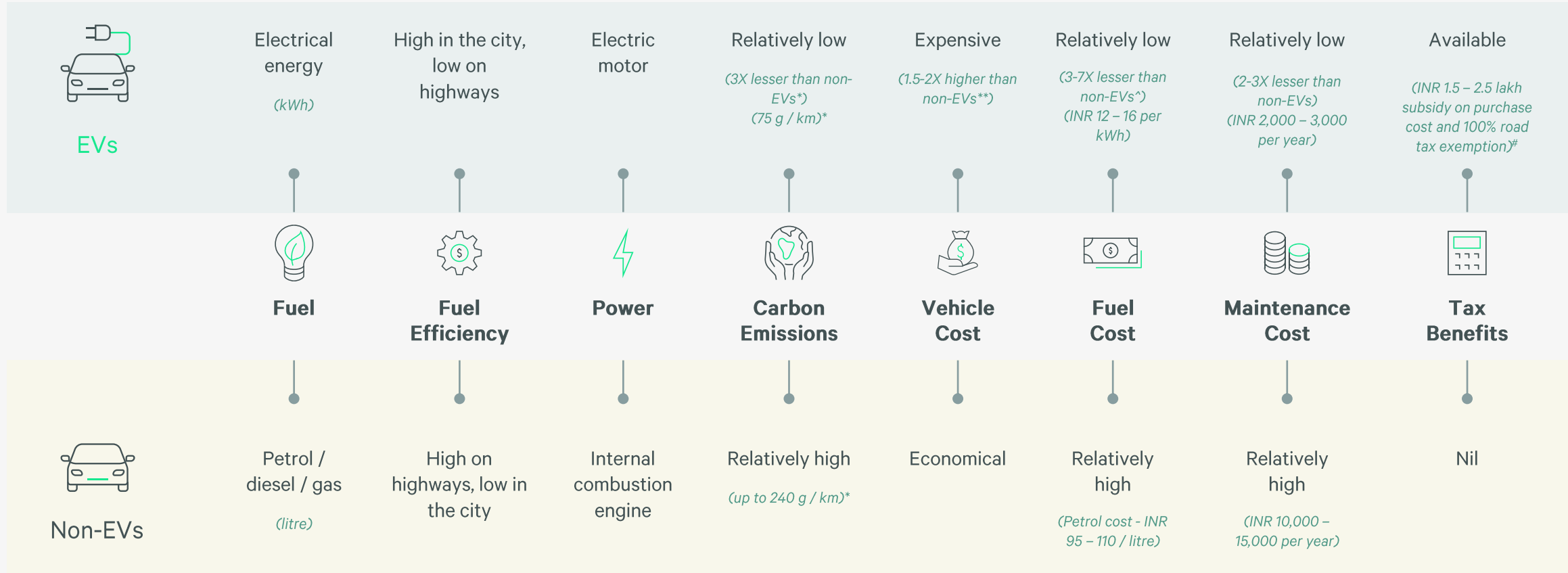
REAL ESTATE

CBRE RESEARCH  
JUNE 2023



# What Makes Electric Vehicles (EVs) Different from Non-EVs?

Figure 1. EVs vs non-EVs - A comparison



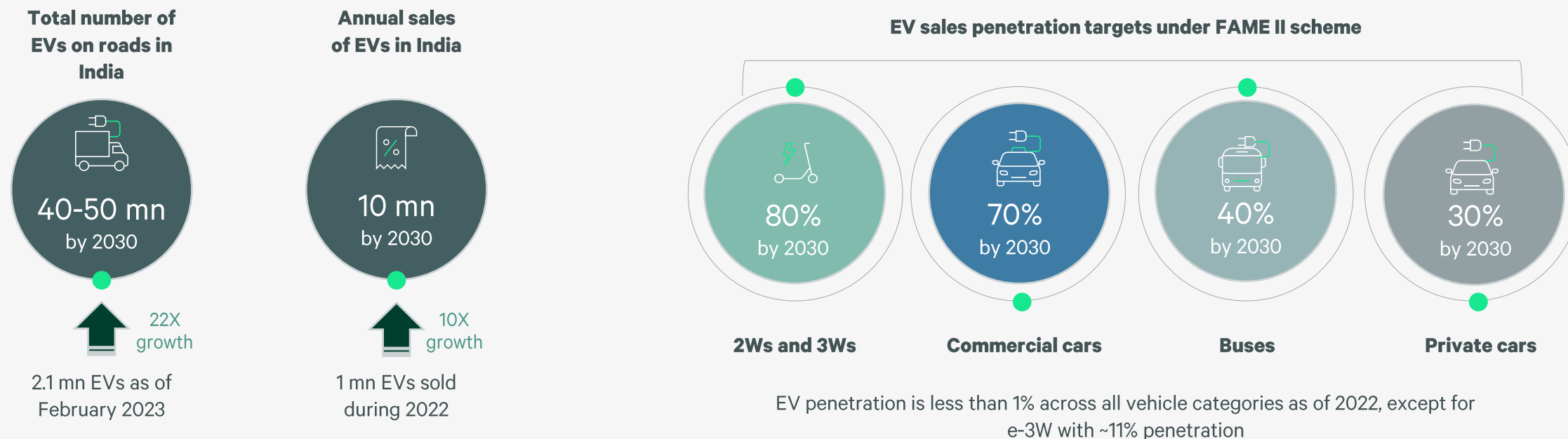
Source: CBRE Research, Q2 2023

Note: Non-EVs include all conventional vehicles using an internal combustion engine fuelled by gasoline or diesel to power the wheels; \*As per a study by Transport & Environment - electric cars in Europe emit, on an average, more than 3 times less CO<sub>2</sub> than equivalent petrol cars; \*\*e.g. Purchase cost of Tata Tiago petrol car is INR 6-7 lakh while Tata Tiago electric car costs INR 9 – 10 lakh; ^e-vehicleinfo.com; #varies state-wise

# The EV Decade in India: Segment to Witness Further Traction by 2030

The EV segment in India is expected to grow exponentially over the coming years, led by central government initiatives that are being formulated to meet targets such as the Paris Agreement, 2015, 2nd Automotive Mission Plan (AMP), 2016, and Faster Adoption and Manufacturing of Electric Vehicles-II (FAME-II) Scheme, 2022. While the Paris Agreement focuses on reducing emission intensities, AMP aims to elevate the Indian automobile industry to global standards; FAME-II targets to increase EV penetration in automobile sales by 2030.

Figure 2. Indian automobile sector and the EV segment market forecasts for 2030



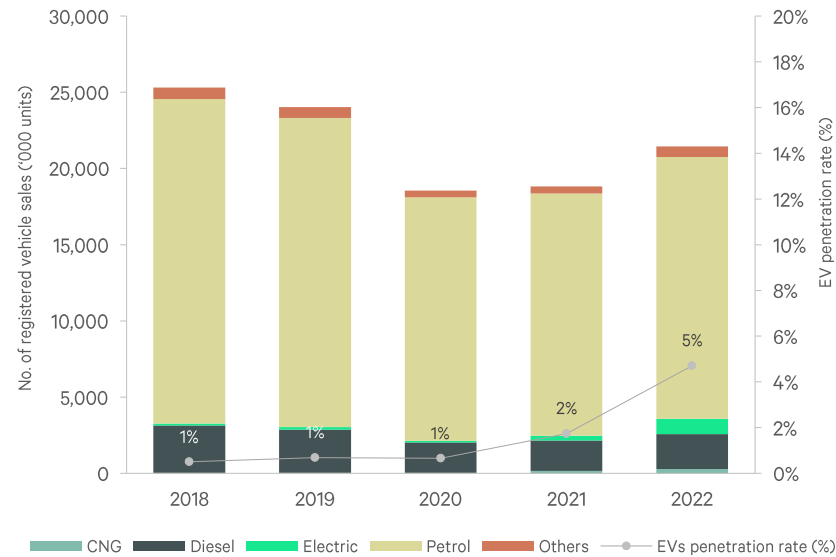
Source: Invest India, GoI, 2022; Vahan Dashboard, MoRTH, GoI (data as of Feb 2023); FAME-II, GoI, 2022; CBRE Research, Q2 2023.

# The Indian EV Market in 2022

In 2022, India’s EV sales exceeded one million units, a growth of more than 200% on an annual basis (refer to figure 3). E-2Ws continued to dominate Indian EV sales with a share of about 62%, followed by e-3Ws (34%). The Indian EV market is expected to grow at a Compounded Annual Growth Rate (CAGR) of about 49% between 2021 and 2030, with annual sales crossing 17 million units by 2030\*.

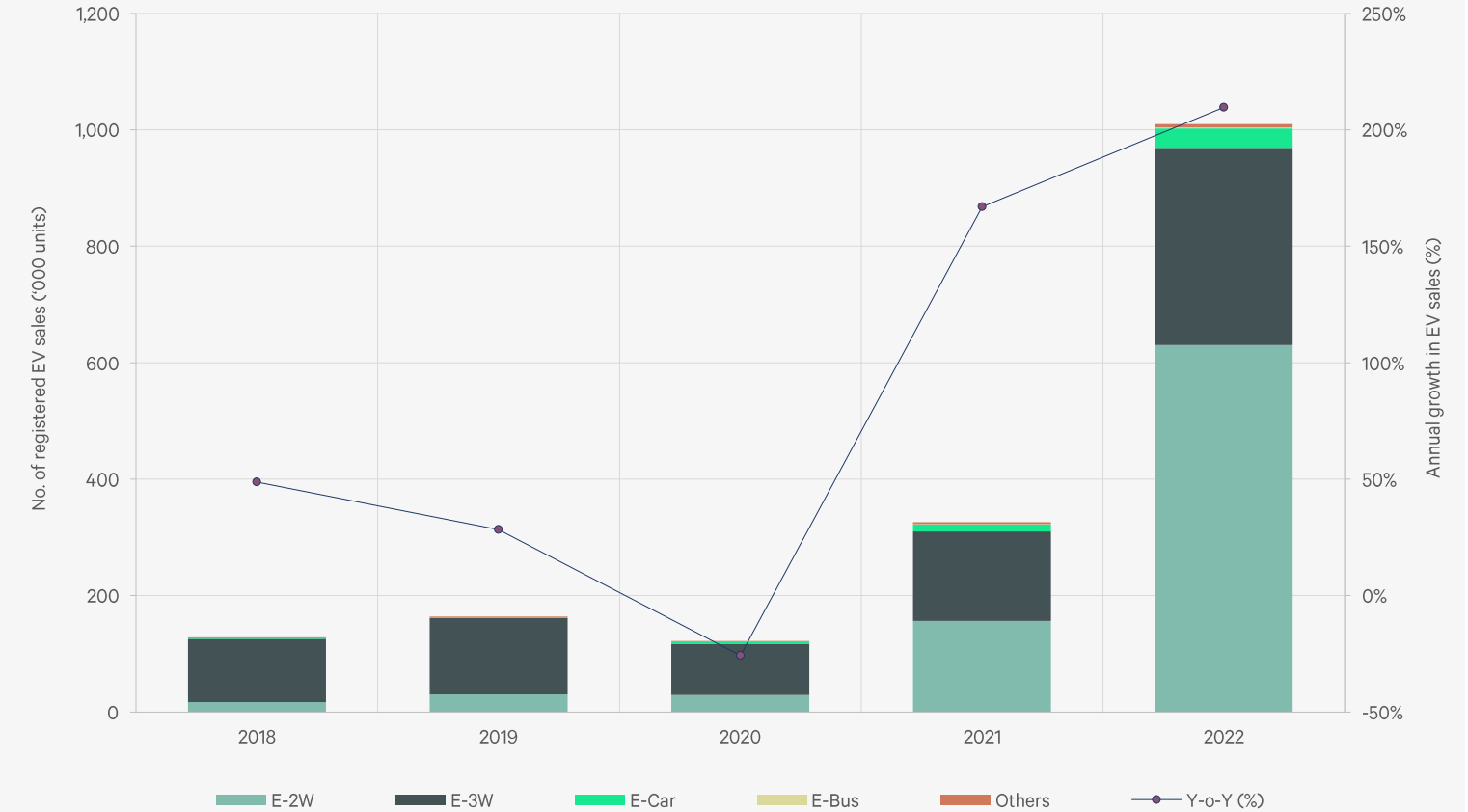
\*Invest India, Gol, 2022

Figure 3. Fuel-wise sales trends (2018-2022)



Source: Vahan Dashboard, MoRTH, Gol, CBRE Research, Q2 2023

Figure 4. Indian EV market trends (2018 - 2022)



Note: E-3W includes goods and passenger vehicles; E-Car includes Light Motor Vehicles; E-Bus: includes Heavy Motor & Passenger Vehicles; Others include Four Wheeler (Invalid Carriage), Heavy Goods Vehicles, Light Goods & Passenger Vehicles and Medium Motor, Goods & Passenger Vehicles; EV registered sales data during Jan-Dec 2022, collected from RTOs across 34 out of 36 states & UTs in India

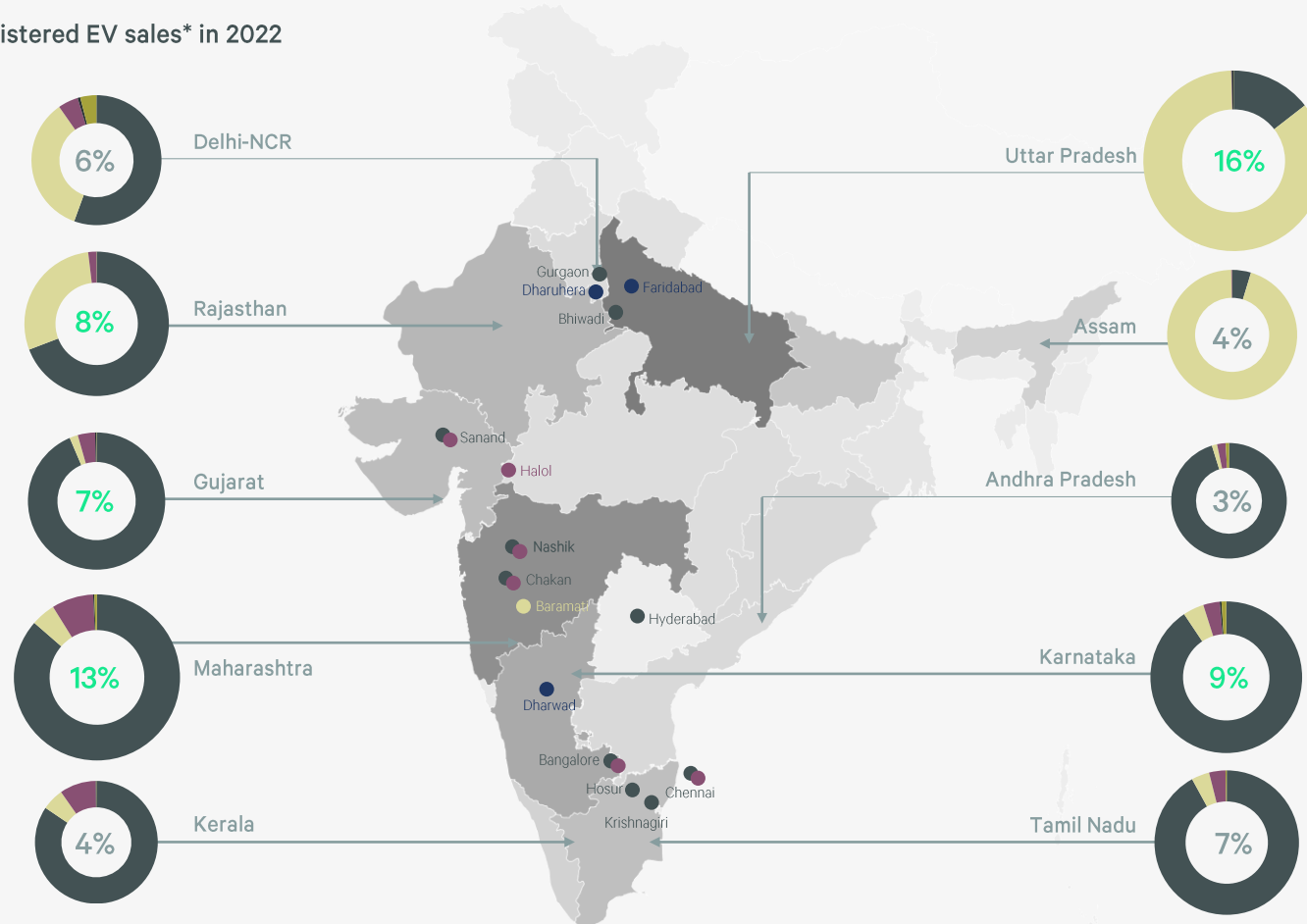
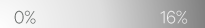
Source: Vahan Dashboard, MoRTH, Gol, 2022; CBRE Research, Q2 2023

# Uttar Pradesh, Maharashtra and Karnataka led India’s EV sales in 2022

EV manufacturers and multiple e-mobility start-ups are clustering to occupy the most prominent auto clusters in India. According to the Vahan Dashboard of the Ministry of Road Transport and Highways (MoRTH), Uttar Pradesh followed by Maharashtra and Karnataka dominated India’s EV sales in 2022. As mentioned in figure 5, together these states accounted for about 40% of the overall sales.

Figure 5. State-wise annual registered EV sales\* in 2022

% share of states & UTs in pan-India registered EV annual sales



LEGEND

% Indicates % share of the top 5 states contributing to the pan-India registered EV annual sales

- E-2W
- E-3W
- E-Car
- E-Bus
- Others

EXISTING KEY EV MANUFACTURING CLUSTERS

- E-2W - Gurgaon - Sanand
- Bangalore - Bhiwadi
- Chennai - Nashik
- Hosur - Chakan
- Hyderabad - Krishnagiri
- E-3W - Baramati
- E-Car - Bangalore - Nashik
- Chennai - Sanand
- Chakan - Halol
- E-Bus - Hyderabad - Dharuhera
- Dharwad - Faridabad

Note: \*EV registered sales data during Jan-Dec 2022, collected from RTOs across 34 out of 36 states & UTs in India

Source: Vahan Dashboard, MoRTH, GoI, 2022; CBRE Research, Q2 2023

# Maharashtra and Tamil Nadu Preferred Destinations for EV Manufacturing

Enabling policy measures by state governments have created an indigenous EV manufacturing ecosystem by incentivizing fresh investments from global / domestic players. During 2020 - H1 2023, the EV investments were spread across key states such as Maharashtra, Tamil Nadu, Karnataka, Gujarat, Uttar Pradesh, Telangana etc. The top states that dominated the cumulative value are depicted in figure 6.

**Figure 6. State-wise spread of EV investments (2020 - H1 2023)**

~ USD 28,820 million

Cumulative investment value (2020 - H1 2023)

% share of states & UTs in pan-India EV investments\*



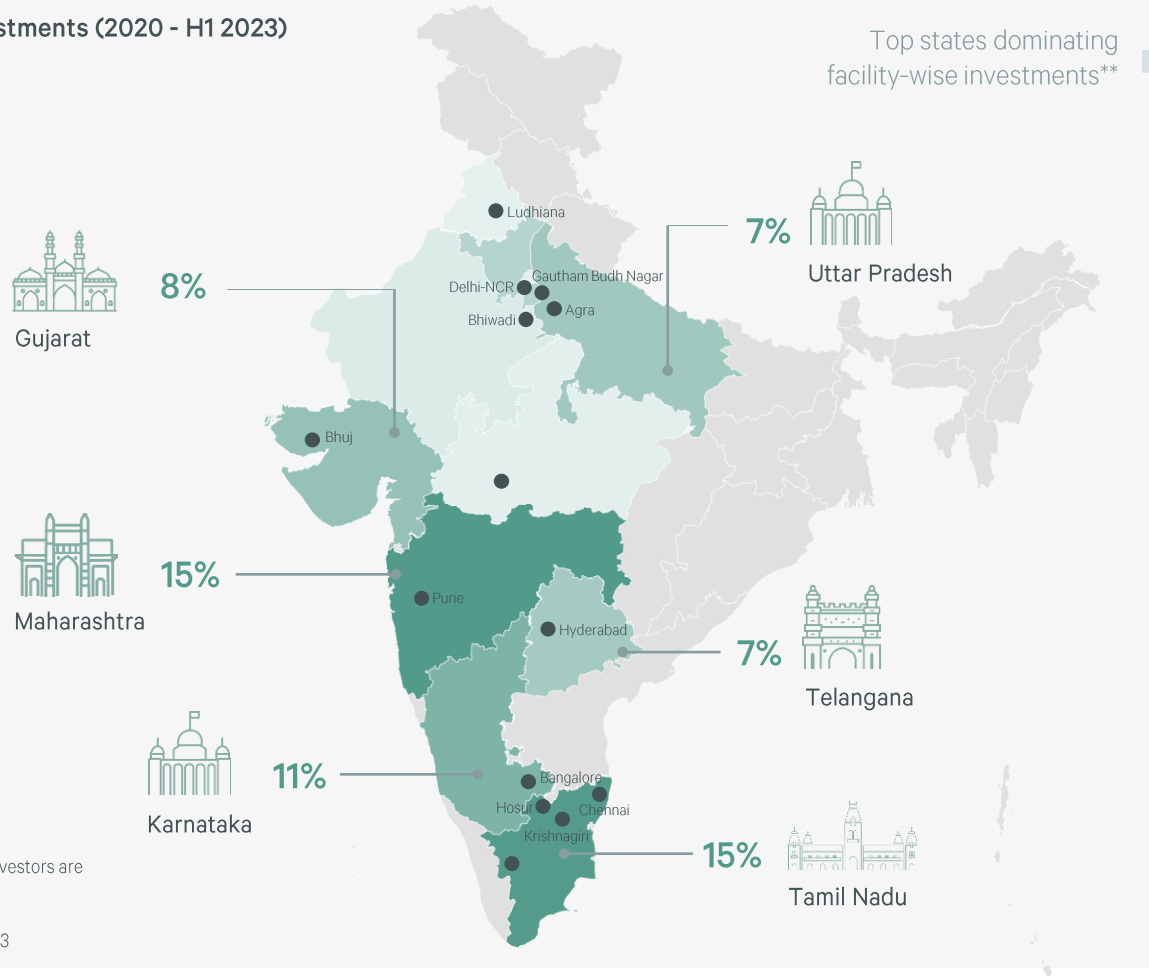
**LEGEND**

% Indicates % share of the top 6 states contributing to the pan-India EV investments; remaining share is contributed by Haryana, Rajasthan, Punjab and Madhya Pradesh

● Proposed key EV manufacturing clusters

Note: \*Derived from the cumulative investment value; \*\*The investors are classified basis their key focus area

Source: Media articles, 2020-H1 2023; CBRE Research, Q2 2023



Top states dominating facility-wise investments\*\*



**EV manufacturing**

Tamil Nadu, Maharashtra & Haryana



**Battery manufacturing**

Karnataka, Tamil Nadu & Telangana



**Charging infrastructure manufacturing**

Maharashtra & Uttar Pradesh



**R&D**

Karnataka & Tamil Nadu



**Other equipment manufacturing**

Karnataka, Maharashtra & Madhya Pradesh



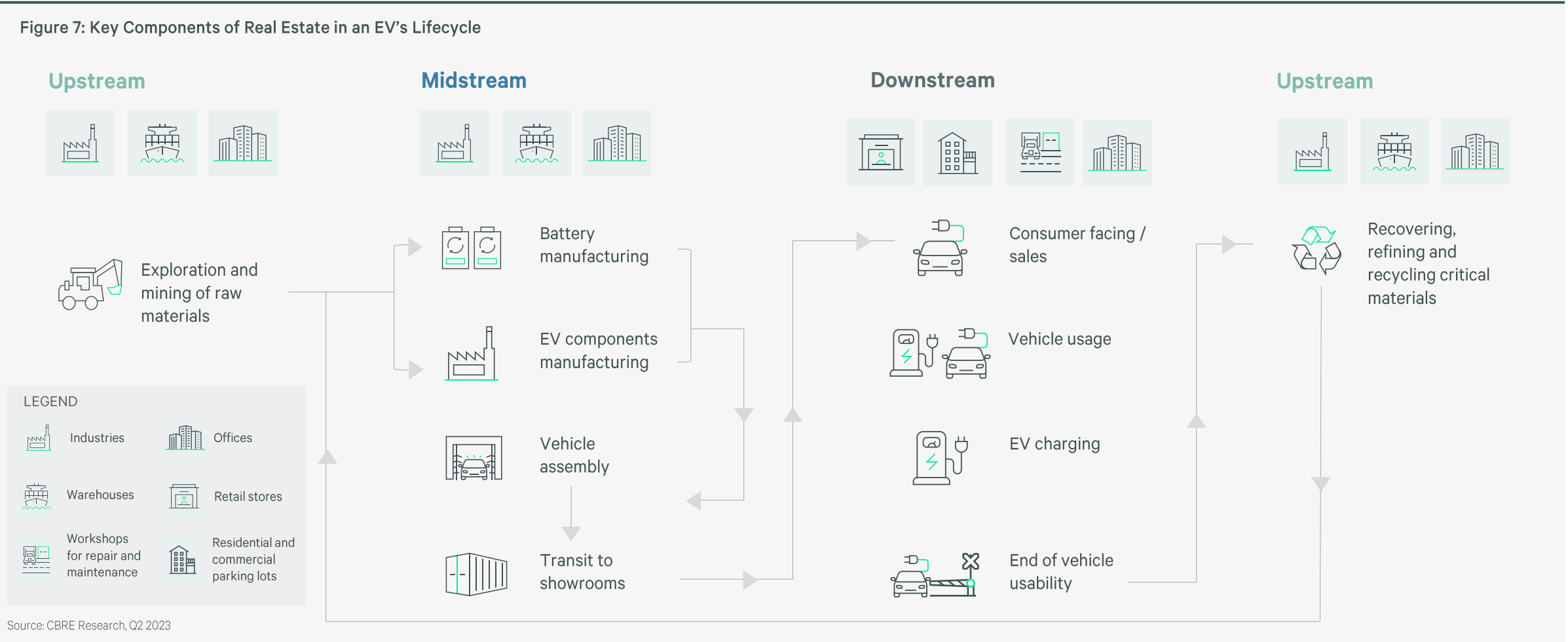
**EV fleet as service (EFaS) operations**

Uttar Pradesh

# Role of Real Estate Assets in an EV's Lifecycle

As EVs gain popularity, they are springing up several real estate opportunities throughout their life cycle. The key real estate components in an EV's lifecycle starts from manufacturing and extends to logistics, retail space requirements and installation of EV charging infrastructure in residential and commercial properties.

Figure 7: Key Components of Real Estate in an EV's Lifecycle



Source: CBRE Research, Q2 2023

# Real Estate Requirements for EVs in India by 2030

With the government aiming to widen EV adoption, we expect that the real estate requirements of EV and battery manufacturing facilities would also increase exponentially over the coming years as highlighted below.



## E-4Ws

(manufacturing facilities)

Cumulative sales  
(2023-30): 4 mn  
units

Area required for  
manufacturing facility  
by 2030 – 11 mn sq. ft.



## E-2Ws

(manufacturing facilities)

Cumulative sales  
(2023-30): 23 mn  
units

Area required for  
manufacturing facility  
by 2030 – 2 mn sq. ft.



## EV batteries

(manufacturing facilities)

Requirement by  
2030: 200 GWh

Area required for  
manufacturing facility  
by 2030 – 2,400 acres

### Assumptions:


E-4W: ~10 mn sq. ft. of manufacturing space required on an average for annual production capacity of 1 million units

E-2W: ~0.4 mn sq. ft. of manufacturing space required on an average for annual production capacity of 1 million units

E-batteries: ~1,200 acres of land required for production of 100 GWh battery production


Source: Ministry of Heavy Vehicles, GoI; Niti Aayog, 2023; CBRE Research, Q2 2023


# Real Estate Strategies for Various Stakeholders

 <b>Industrial Parks &amp; Stand-alone Manufacturing Facilities</b>	Investors	Manufacturers	Developers / landlords
<ul style="list-style-type: none"> <li>Focus on <b>speed-to-market</b> to meet the rising demand</li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li>Focus on <b>multi-sourcing and near-shoring / friend shoring strategies</b> to improve supply chain efficiencies.</li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li><b>Partner with 3PL players</b> to improve supply chain networks</li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li>Set up facilities near <b>consumption hubs / transportation nodes</b></li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li>Target <b>suitable facilities or partner with landlords</b> to enhance assets</li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li>Leverage <b>government incentives</b> to strengthen EV manufacturing capabilities</li> </ul>	✔	✔	✔
<ul style="list-style-type: none"> <li>Install <b>new-age technologies</b> to improve operational efficiencies</li> </ul>	✔	✔	✔

Note: The above strategies are largely applicable for BTS spaces; however, can be considered for leased facilities on a case-to-case basis

Source: CBRE Research, Q2 2023

 Direct impact

 Indirect impact



# Real Estate Strategies for Various Stakeholders



## Warehouses

### Investors

### Manufacturers

### Developers / landlords

- Set up EV warehouses **closer to auto clusters / manufacturing hubs**
- Set up **high-specification Grade A warehouses** to store LiBs which would require controlled environments
- **Upgrade modern warehouses** to enhance storage efficiencies
- Enhance last-mile efficiencies by **establishing distribution centres** near consumption hubs; partner with 3PL players
- **Use technologies** such as warehouse managing system, thermal monitoring system for batteries, Automated Guided Vehicles (AGVs) to improve operational efficiencies in warehouses

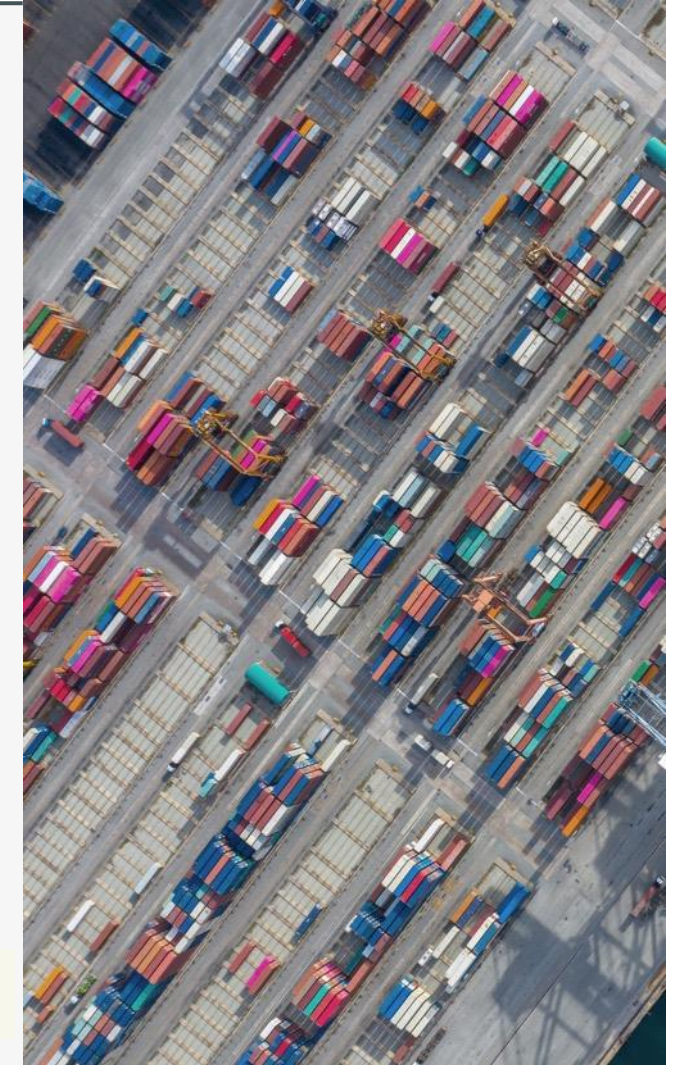


Note: The above strategies are largely applicable for BTS spaces; however, can be considered for leased facilities on a case-to-case basis

Source: CBRE Research, Q2 2023

 Direct impact

 Indirect impact



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