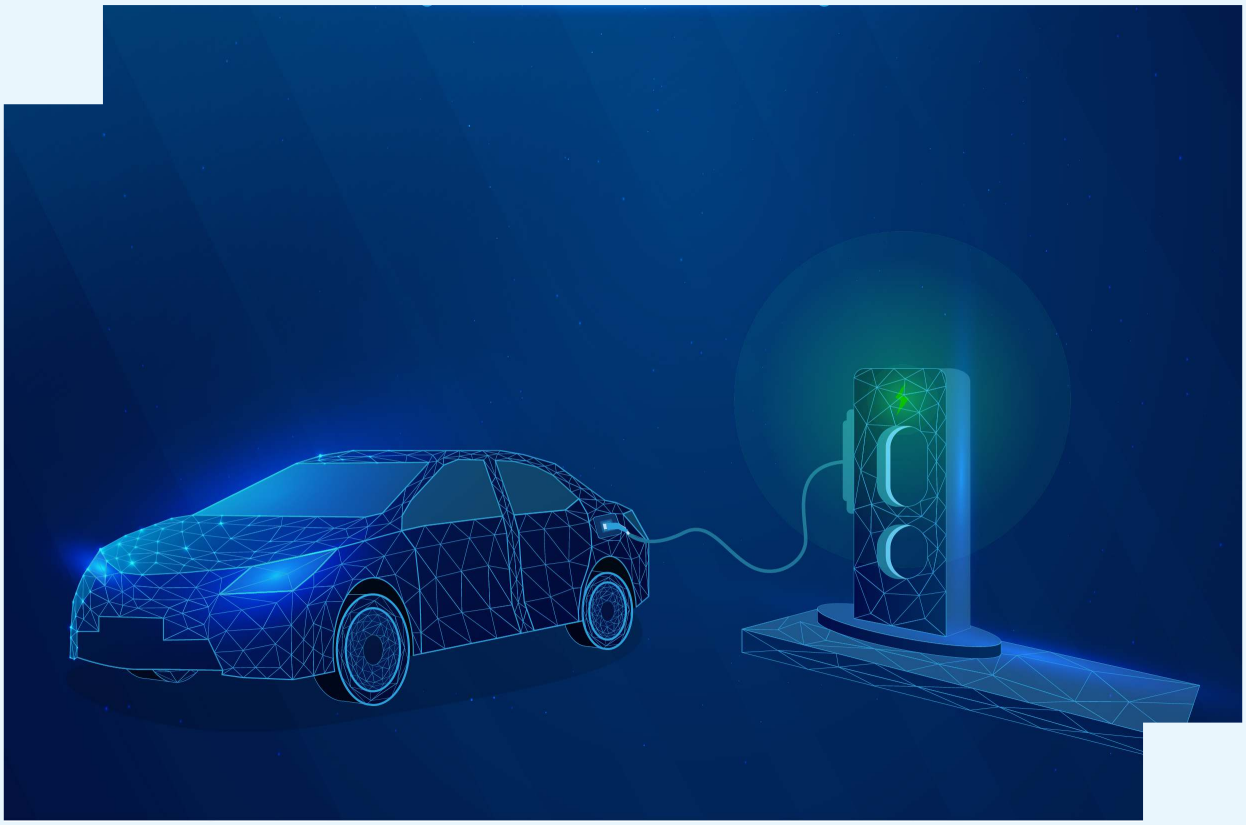
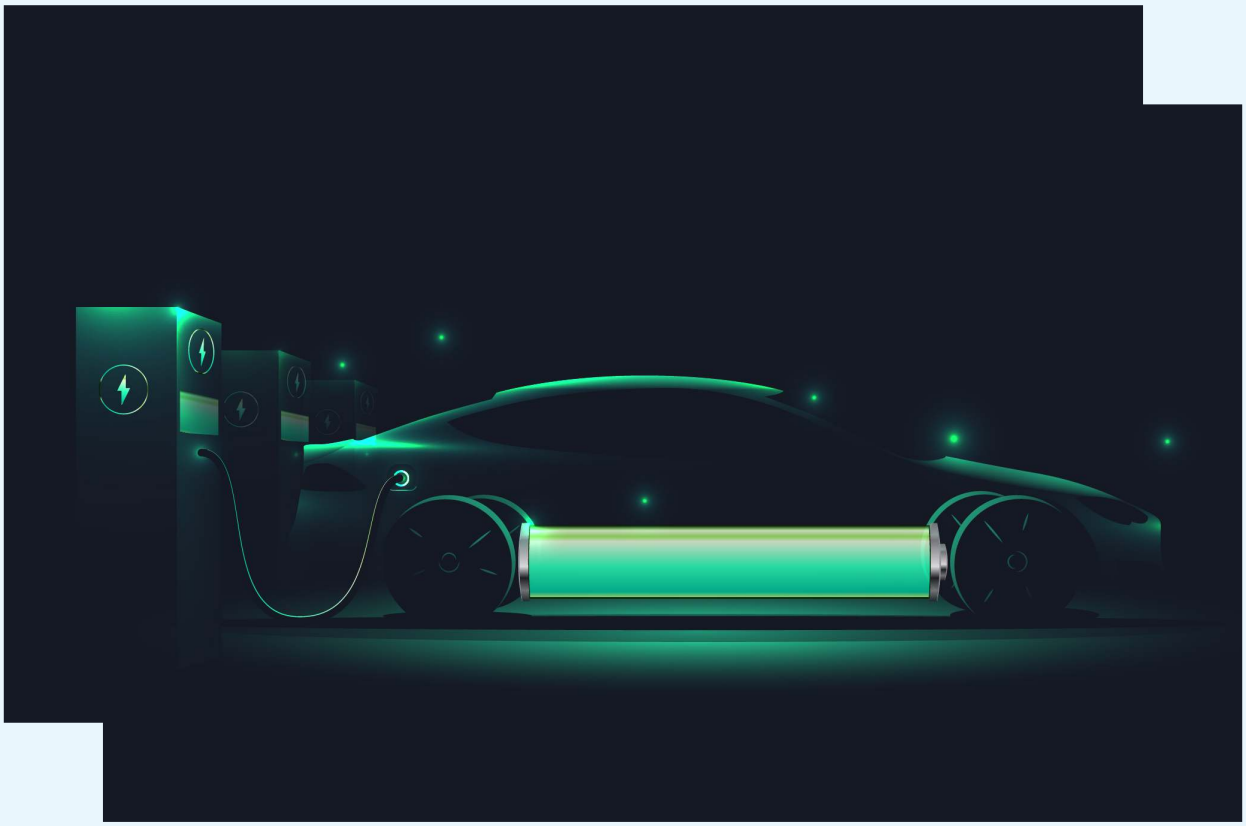
UP GLOBAL INVESTORS SUMMIT

New India's Growth Engine

10-12 FEBRUARY, 2023 | LUCKNOW

ELECTRIC VEHICLE ECOSYSTEM





GLOBAL SCENARIO

Electric Vehicles (EVs) are widely gaining market across the globe. The automotive industry is rapidly shifting from traditional fuel-based technology to eco-friendly technologies. Owing to high pressure and fast depleting fossil fuels, electric mobility has become necessary to reduce the impact of transportation on the environment and climate change.

Globally most nations are now approaching the challenge of decarbonization more meticulously. The year 2021 was a game changer in the history of EV sales and it is expected that 6.4 million EVs and PHEVs combined, will be sold globally in 2022. The global electric vehicle market was valued at $163.01 billion in 2020 and is projected to reach $823.75 billion by 2030, registering a CAGR of 18.2% from 2021 to 2030[1].

The current global EV market holds almost 20 million passenger EVs on the road, 1.3 million commercial EVs, including buses, delivery vans and trucks, and over 280 million electric mopeds, scooters, motorcycles and three-wheelers.

INDIA SCENARIO

The Indian automobile industry is the 5th largest in the world and is expected to become the third largest by 2030, with a total of 8.7 lakh active EVs on Indian roads (December 2021). As the population rises and demand for vehicles grows, dependence on conventional energy resources is not a sustainable option as India imports close to 80% of its crude oil requirements.

According to information aggregated by India Energy Storage Alliance (IESA), the consumption of batteries is expected to be more than 36 GWh by 2025. During the 2020-2027 period, the EV sector is assessed to consume around 250 GWh of batteries.

Over the last three years, 0.52 million EVs were registered in India[2]. NITI Aayog further 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[3]. This is in line to achieve net zero carbon emission by 2070. As per IESA, the Indian EV industry is expected to expand at a CAGR of 36%[4]. The electric vehicle market is estimated to be INR 50,000 crores (US$ 7.09 billion) opportunity in India by 2025. Total charging stations in India increased by 285% YoY in FY22.

Number of EVs operating in the medium and heavy passenger vehicle category increased from 124 in 2018 to 1,356 as of 6 August 2021. With battery costs declining faster than anticipated, EV economics become favorable. Total charging stations in India increased by 285% YoY in FY22[5]. NITI Aayog 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[6].

The EV industry in India is likely to create 5-crore jobs by 2030. Investment flow into EV start-ups in 2021 touched an all-time high, increasing nearly 255% to reach INR 3,307 crore (US$ 444 million). In 2021, spending on electrical architecture development, such as battery development, electrification, e-motors and power electronics, came up to INR 48,215 crores (US$ 6.39 billion).

[1]Source: Global electric vehicle sales doubled; US made EV comeback in 2021 | S&P Global Market Intelligence (spglobal.com)
[2]Source: IBEF Presentation
[3]Source: Electric Vehicles Market in India | IBEF
[4]Source: Medium, heavy passenger EVs increase from 124 in 2018 to 1,356 as on date: Nitin Gadkari - The Economic Times (indiatimes.com)
[5]Source: Invest in Indian Electric Mobility Industry | FDI & Companies (investindia.gov.in
[6]Source: Electric Vehicles Market in India | IBEF

RECENT MARKET TRENDS

- Investment flow into EV start-ups in 2021 touched an all-time high, increasing nearly 255% to reach INR 3,307 crore (US$ 444 million).
- EV startups that attracted the maximum funding in 2021 were Ola Electric (US$ 253 million), Blu-smart (US$ 25 million), Simple Energy (US$ 21 million), Revolt (US$ 20 million) and Detel (US$ 20 million).
- In 2021, spending on electrical architecture development, such as battery development, electrification, e-motors and power electronics, came up to INR 48,215 crores (US$ 6.39 billion).
- In December 2021, Hyundai announced plans to invest Rs. 4,000 crores (US$ 530.25 million) in R&D in India, with the goal of launching six EVs by 2028.
- In February 2022, a memorandum of understanding (MoU) was signed between electric two-wheeler company Ather Energy and Electric Supply Companies (ESCOMs) of Karnataka for setting up 1,000 fast charging stations across the state.

Estimated annual market size of EVs in different segments in India				
Segment/year	**EV Motorcycles and Scooter**	**EV Auto rickshaw**	**EV Cars & Jeeps**	**Total**
2025	1,40,35,000	23,64,000	15,92,000	1,79,91,000
2030	2,65,14,000	40,72,000	1,59,11,000	4,64,97,000

(This table was last updated in November 2017)

KEY GOVERNMENT INITIATIVES

The Government of India has taken multiple steps to tap the potential in the EV Industry. NITI Aayog 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. Several schemes/ measures have been taken to promote faster EV adoption, creation of charging infrastructure and manufacturing ecosystem. The key schemes/ initiatives of the Union Government include -

1) FAME India Scheme :

Faster Adoption & Manufacturing of (Hybrid &) Electric Vehicles (FAME) India was launched in 2015 for promoting growth and early adoption of hybrid and electric vehicles in the country. Govt of India for EV is Faster Adoption & Manufacturing of (Hybrid &) Electric Vehicles (FAME) in 2015 for promoting growth and early adoption of hybrid and electric vehicles in the country.

- FAME-II scheme was launched with a budget outlay of US$ 1.3 billion (INR 10,000 crore) to support 1 million e-two-wheelers, 0.5 million e-three -wheelers, 55,000 e-passenger vehicles and 7,000 e-buses. The government extended the scheme until 2024, as announced in Union Budget 2022-23.

- As of June 2021, US$ 117 million (INR 871 crore) has been spent under FAME-II. 87,659 electric vehicles have been supported through incentives and 6,265 electric buses have been sanctioned for various state/city transportation undertakings[7].

2) PLI Scheme:

a) Production Linked Scheme for Advanced Chemistry Cell Battery Storage (PLI-ACC)

Government introduced PLI for Advanced Chemistry Cell Battery Storage (PLI-ACC) in 2021. The scheme is expected to bring down the prices of batteries in the country, which will reduce the cost of EVs as well.

- The total outlay for the scheme is US$ 2.45 billion (INR 18,100 crore), which is disbursed to beneficiaries over five years once the manufacturing facility is set up[8].
- This scheme was oversubscribed by 2.6 times (130 gwh). After final evaluation, a total of 4 companies were selected under the scheme - Reliance New Energy Solar Limited, Ola Electric Mobility Private Limited, Hyundai Global Motors Company Limited, and Rajesh Exports Limited. The scheme was thus closed in January 2022[9].

b) Production Linked Incentive (PLI) Scheme for Automobile & Auto Components

Government launched Production Linked Incentive (PLI) Scheme for Automobile & Auto Components was launched in September 2021 which includes promotion of indigenize manufacturing of Battery Electric Vehicle & Hydrogen Fuel Cell Vehicle Components. The scheme provides incentive on sales to Original Equipment Manufacturers (OEMs). In phase-1, 115 applications have been filed and by March 2022, 95-applicants have been approved.

3) Battery Swapping Policy :

In April 2022, NITI Aayog released a draft battery swapping policy which will be valid until March 31, 2025. The policy will allow drained batteries to be swapped with charged ones at designated charging stations, thus making EV's more viable for potential customers.

The policy will be implemented over a period of 1-2 years from the date of launch of the policy and will cover all metropolitan cities with a population greater than four million. The second phase will be implemented over 2-3 years from date of launch of the policy and will cover all UT's and major cities with a population greater than 5,00,000[10].

4) E-Amrit Portal :

India launched 'E-Amrit', a web portal on EVs in November 2021. E-Amrit is a one-stop destination for all information on EVs-purchase, investment opportunities, policies, subsidies, etc. E-Amrit intends to complement the initiatives of the Government on raising awareness of EVs and sensitizing consumers on the benefits of switching to electric vehicles[11].

5) Other initiatives :

- Tax exemption of up to INR 1,50,000 (US$ 1,960) under section 80EEB of income tax while purchasing an EV (2W or 4W) on loan.
- Reduction of customs duty on nickel ore (key component of lithium-ion battery) from 5% to 0%.
- Charging stations do not need a separate license under the Electricity Act of 2003
- Other govt. programmes such as the National Electric Mobility Mission Plan (NEMMP) 2020, and National Mission on Transformative Mobility & Battery Storage

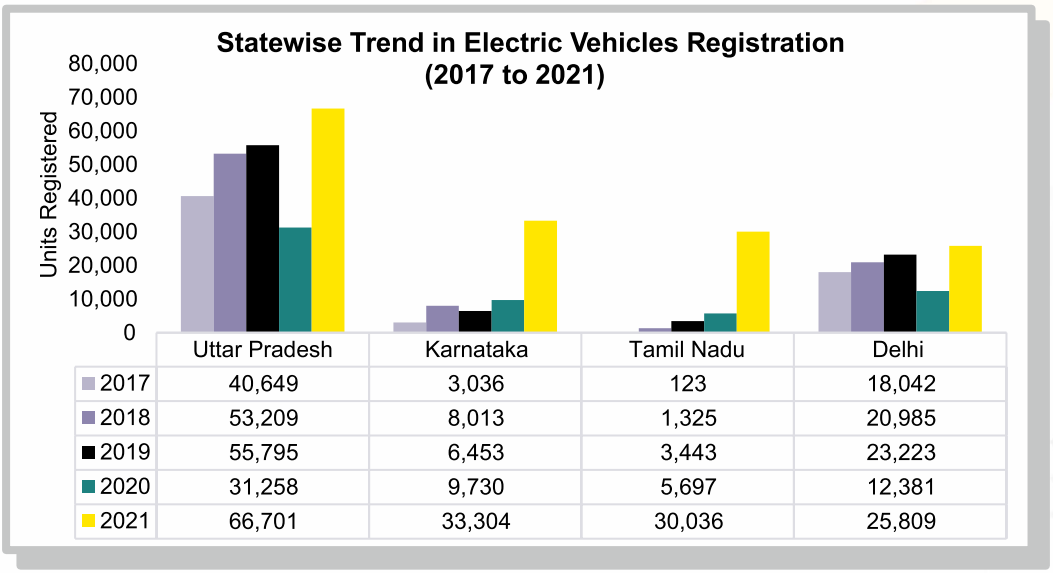
[7]Source: Electric Vehicles Market in India | IBEF
[8]Source: Electric Vehicles Market in India | IBEF
[9]Source: Invest in Indian Electric Mobility Industry | FDI & Companies (investindia.gov.in)
[10]Source: Electric Vehicles Market in India | IBEF
[11]Source: e-AMRIT (niti.gov.in)

6) Several guidelines and strategy documents have been notified by the Union Government which includes, the National Electric Mobility Mission Plan (NEMMP) 2020, Model Building Bylaws 2016 (Amended in 2018) & Urban Regional Development Plans, Guidelines and Standards for Charging infrastructure for EVs, National Mission on Transformative Mobility & Battery Storage, Scrapping Policy, etc.

UTTAR PRADESH SCENARIO

Uttar Pradesh leads with most electric vehicles in India as the state joins the nation's effort to curb pollution to transition away from fossil fuel-powered vehicles. Uttar Pradesh, the most populous state in the country, accounts for the most bulk of EVs registered in India. As of July 2022, the number of EVs being used on the roads of Uttar Pradesh were 3,37,180, while the total number of EVs in India were 13,34,385[12].

Uttar Pradesh has held the highest share in EV sales in 2021, with the number of units sold across all segments reaching 66,701, followed by Karnataka with 33,304 units and Tamil Nadu with 30,036 units. Uttar Pradesh dominated the three-wheeler segment, while Karnataka and Maharashtra led the two-wheeler segment and four-wheeler segment, respectively[13].



	Uttar Pradesh	Karnataka	Tamil Nadu	Delhi
2017	40,649	3,036	123	18,042
2018	53,209	8,013	1,325	20,985
2019	55,795	6,453	3,443	23,223
2020	31,258	9,730	5,697	12,381
2021	66,701	33,304	30,036	25,809

Source: Vahan Dashboard

The State has been one of the largest beneficiaries under FAME 1 & 2 schemes of Government of India. With regards to creation of charging infrastructure, Uttar Pradesh has been sanctioned 207 charging stations under FAME II which are being installed in 9-cities of the State, viz. Noida, Lucknow, Varanasi, Prayagraj, Kanpur, Aligarh, Saharanpur, Bareilly & Jhansi through REIL & EESL. More charging stations are expected along the Expressways in the State.

[12]Source: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1842704

[13]Source: State-wise Number of Electric and Non-Electric Vehicles on Roads of India (As on 14.07.2022) (indiastat.com)

GROWTH DRIVERS AND OPPORTUNITIES

Uttar Pradesh has largest railway network in India spanning over 8,949kms. The Western Dedicated Freight Corridor (WDFC) that stretches from Dadri in Ghaziabad to Jawaharlal Nehru Port at Mumbai, is set to boost the economic activities in the state by reducing the transportation time to ports. Similarly, 57% of the Eastern Dedicated Freight Corridor (EDFC) connect western region to the eastern part of the of the country passes through Uttar Pradesh.

The connectivity web of the state including expressways like Poorvanchal Expressway, Bundelkhand Expressway, Lucknow- Agra Expressway etc.; 4 lane and 6 lane state highways; national and international airports; NW 1 waterways connecting Allahabad, Varanasi and Haldia sea port etc., is expected to create a web of air, water, road and rail network that will help the state's industries and manufacturing units.

Factors such as an increase in demand for stringent government rules and regulations toward vehicle emission along with a reduction in the cost of electric vehicle batteries, fuel-efficient, high-performance and low-emission vehicles and increasing fuel costs has been supplementing the growth of the electric vehicle market in the State. Therefore, the growing footprints of the EV industry provide infinite opportunities for Uttar Pradesh.

Uttar Pradesh is the most populous state in India with a population of nearly 200 million people. The Gross State Domestic Product (GSDP) of Uttar Pradesh grew at a CAGR of around 8.43% between 2015-16 and 2020-21 to reach Rs. 17.06 trillion (US$ 234.96 billion). The State has emerged has one of India's favorite investment destination. It is rapidly promoting ease of doing business (EoDB), ease of living (EoL) and aggressively reducing compliance burden for any industry. Through its progressive and proactive governance, the State Government has been actively attracting investments.

Following the principle of 'Reform-Perform-Transform' the New Uttar Pradesh is quickly translating opportunities into initiatives through 'Cooperative Federalism'. Leveraging its potential, the State Government aspires to make UP a trillion dollar economy soon. For this, the State Government is promoting rapid industrialization with inclusive & sustainable development as the core strategy. Therefore, the State Government has recognized 'EV' as a focus sector to unlock the opportunities in the industry for the State.

STATE INITIATIVES

The State Government has taken several steps to promote investments in the sector -

HIGHLIGHTS OF ELECTRIC VEHICLE MANUFACTURING & MOBILITY POLICY 2022

(A) For Creation of Charging Facilities

- **Capital Subsidy to Service providers:**
  - Charging Station (one time) investing minimum INR 25 lakh shall be provided capital subsidy @20% upto maximum INR 10 lakh per unit to 1st 2000 Charging Stations
  - Swapping Station (one time) investing minimum INR 15 lakh shall be provided capital subsidy @20% upto maximum INR 5 lakh per unit to 1st 1000 Swap Stations
- **Providing Govt Land to Govt/ Private Entities** on revenue sharing model @Re 1/ kwH for a period of 10years

(B) For Adoptio

- **Registration Fees & Road Tax exemption to buyers –**
  - @100% on any EV purchased & registered in UP over a period of 3years from policy notification
  - @100% on any EV manufactured, purchased & registered in UP in the 4th & 5th year of policy period
- **Purchase Subsidy Scheme** (one time) valid for 1 year from date of notification specifically done for this subsidy scheme at following rates in defined segments –
  - 2-Wheeler EV: @15% of ex-factory cost upto Rs 5000 per vehicle subject to max. budget outlay of Rs 100 Cr to maximum of 2lac EVs
  - 3-Wheeler EV: @15% of ex-factory cost upto Rs 12000 per vehicle subject to max. budget outlay of Rs 60 Cr to maximum of 50000 EVs
  - 4-Wheeler EV: @15% of ex-factory cost upto Rs 1 lakh per vehicle subject to max. budget outlay of Rs 250 Cr to maximum of 25000 EVs
  - E-Buses (Non-Govt, i.e. School buses, ambulances, etc.): @15% of ex-factory cost upto Rs 20 lakh per vehicle subject to max. budget outlay of Rs 80 Cr to max. of 400 E-Buses
  - E-Goods Carriers: @10% of ex-factory cost upto Rs 1,00,000 per vehicle subject to max. budget outlay of Rs 10 Cr to max. of 1000 E-Goods Carriers

(C) For Manufacturing

- Capital Subsidy: Base Capital Subsidy multiplied by Gross Capacity Utilisation Multiple (GCM), where base capital subsidy is as follows -

Sl	Category	Criteria	Capital Subsidy	Period of subsidy
1	Integrated EV Project	Investing Rs 3000 Cr or more; First 2 only	30% on eligible investment, subject to max Rs 1000 Cr per project	Over a period of 20 years
2	Ultra Mega Battery	Investing Rs 1500 Cr or more and minimum production capacity of 1 GwH; First 2 only	30% on eligible investment, subject to max Rs 1000 Cr per project	Over a period of 20 years
3	Mega EV project	Investing Rs 500 Cr or more; First 5 only	20% on eligible investment, subject to max Rs 500 Cr per project	Over a period of 10 years
4	Mega EV battery project	Investing Rs 300 Cr or more; First 5 only	20% on eligible investment, subject to max Rs 500 Cr per project	Over a period of 10 years
5	Large EV projects	Investment of more than MSME but less than Mega EV/ Battery category	18% on eligible investment, subject to max Rs 90 Cr per project	Over a period of 10 years
6	MSME projects	Investment as per GoI MSME Act 2020	10% on eligible investment, subject to max Rs 5 Cr per project	Over a period of 2 years

And, GCM shall be considered as 1 for first year provided the capacity utilization for the unit is 40% of the installed capacity. For subsequent years GCM shall be considered as 1, provided peak capacity utilisation of that year is 75% or more of the installed capacity.

- **Stamp duty reimbursement**
  - 100% to Integrated EV Project & Ultra Mega Battery project
  - 100% in Poorvanchal & Bundelkhand region, 75% in Madhyanchal & Paschimanchal (except GHZ & GBN district) and 50% in GBN & GHZ district to Mega/ Large/ MSME projects
- **Other incentives**
  - Quality certification charges reimbursement (one time) @ 50% of fees paid for obtaining certification upto max INR 10 lakhs per unit to Large and MSME EV/ Battery projects
  - Patent registration fees reimbursement (one time) @75% of cost/expenditure incurred upto maximum INR 50000 for acquiring domestic patent and upto INR 2 lakh for acquiring international patent to Large and MSME EV/ Battery projects
  - Skill development incentive as reimbursement of stipend (one time) @INR 5,000 per employee per year to a maximum of first 50 employees

OTHER INITIATIVES

1) The State Govt is actively promoting EVs in public transportation. EV Public Buses on prominent routes in select cities are being rolled out on PPP mode which includes development of charging stations on these routes as well.

2) Special Tariff order for EV charging has been notified the UP Electricity Regulatory Commission.

3) The State Government has adopted the Guidelines and Standards prescribed by the Union Government for creation of Charging Infrastructure and has prepared its Model Bye-laws which is rapidly being adopted by State Industrial Development Authorities and Development Authorities.

4) The State Transport Department has implemented the Scrapping Policy of Government of India to phase out the ICE combustion vehicles older than 15years running on road.

KEY INVESTMENT ZONES IN UTTAR PRADESH

A large density of manufacturing plants are operating from these regions across the automobile value chain –

OEMs	Engines and parts	Suspension, brakes and tyres	Electricals	Others
• Tata Motors • New Holland Agriculture • Scooters India Ltd. • Veto Auto Co. • Logistics Auto Components India	• Shriram Pistons • Benara Bearings and Pistons Ltd. • Anand Pistons International • Deltronix India Ltd. • Autometres Alliance	• Raunaq Automotive Components Ltd. • Carrier Wheels Pvt. Ltd. • Brakewel	• Halonix Ltd. • Deltronix India Ltd. • Minda Corporation Ltd. • Elcomponics Sales Pvt. Ltd. • Pee aar Exim Pvt. Ltd. • MVD Auto Components Pvt Ltd (FUSI AUTOMOTIVE) • Motherson	• Graziano Transmission • Injectoplast Pvt. Ltd. • Makino Auto Industries

Other zones involved in manufacturing batteries in the State are located across Greater Noida, Ghaziabad, Fatehpur, Kanpur, Lucknow, Gorakhpur, etc.

KEY PLAYERS

J.S. AUTO PVT. LTD.
JSA THREE WHEELERS

AMPERE
By GREAVES

TATA
TATA MOTORS

Scooters India Limited

ele
Battery Operated Rikshaw

MAJOR LEADS

EDISON MOTORS

REVOLT

OLA
ELECTRIC

KEY OPPORTUNITIES

- Hybrid Electric, Plug-in Electric Vehicle, Electric Vehicle Manufacturing & Components such as motors, power electronic kits, etc.
- Battery Manufacturing Including R&D
- Fast charging Station
- Slow charging Station
- Battery swapping station

POWERING NEW INDIA

INVEST UP

Address :

4th Floor Block A PICUP Bhawan,
Lucknow, Uttar Pradesh 226010
Phone No.: +91-522-2720236, 2720238
E-mail: upgis2023@investup.org.in
advantageup@investup.org.in
Website - https://invest.up.gov.in/

Information and Public Relations Department, U.P.