EV INDUSTRY

Powering the Future: A Comprehensive Industry Report

RESEARCH ABSTRACT

This research explores the dynamic landscape of the Electric Vehicle (EV) industry, examining its rapid growth, key market players, technological advancements, and policy drivers. It highlights the global push towards sustainability, the competitive strategies of major companies, and the evolving consumer demand patterns. Through strategic insights and data analysis, the study sheds light on opportunities and challenges shaping the future of mobility, with a focus on the Indian market and its alignment with global EV trends.

The electric vehicle (EV) industry is undergoing a radical transformation, driven by innovation in battery technology, increasing environmental consciousness, and strong government incentives worldwide. With major players like Tesla, BYD, and Hyundai scaling production and investing heavily in R&D, the global EV market is projected to reach $1.08 trillion by 2029. This surge is not just about cars—it's about creating a sustainable mobility ecosystem backed by robust infrastructure, cutting-edge energy solutions, and evolving consumer behavior.

In the Indian context, initiatives like FAME II and the National Mission on Transformative Mobility have played a pivotal role in accelerating EV adoption. While challenges such as inadequate charging infrastructure, recycling inefficiencies, and high battery costs persist, emerging technologies and models like Battery-as-a-Service (BaaS) offer viable solutions. The report provides a comprehensive look at how India can capitalize on these trends to become a global hub for electric mobility.

ABOUT US

Synergy, established in 2009, is driven by a singular mission: to bridge the gap between academia and corporate life. As a member-centric society, we aim to nurture future leaders and foster professional growth by providing unique opportunities for learning and development across various fields, including Consulting, Finance, and Marketing. Through our programs, we offer a head start to our members by engaging them in real projects with professional organizations and startups, exposing them to diverse experiences, and expanding their skill sets

In addition to hands-on projects, we organize member-only sessions with executives from different industries and conduct workshops to enhance their skills. Annually, our management conclave serves as a platform to impart business learning and test the corporate acumen of participants from across the country, fostering healthy competition among India's brightest minds.

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ONEPLUS

MUFTI

Panasonic

motorola

SAMSUNG

CENTURYPLY

IBM

HDFC BANK

Utkarsh Small Finance Bank
Aapki Ummeed Ka Khaata

Live Projects

METEOR VENTURE

SLP Sustain Labs Paris

Medulance

ZYPP ELECTRIC

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ACKNOWLEDGEMENT

AUTHORS

Harshveer Singh
Advisory Committee

Kush Gupta
President

Manya Bassi
Vice President

Sreshta R.
Advisory Committee

Utkarsh Kumar
Advisory Committee

CO-AUTHORS

Akshat Soni

Kamya Gulyani

Daksh Jain

Mannat Sagar

Dhruv Gupta

EVOLUTION OF ELECTRIC VEHICLES

History

Industry Overview

Market Overview

HISTORY

Tracing the evolution of the electric vehicle (EV) industry, from early inventions to India's national schemes. Key milestones include the first EVs, policy initiatives, and the surge in adoption of electric mobility solutions

1890
First Successful Electric Car

Debut in the U.S. by William Morrison, marking the beginning of EV technology

1914
First Low-Cost EV by Ford & Edison

Henry Ford and Thomas Edison collaborated to make EVs more affordable

1970s
Oil Crisis Revives EV Interest

Soaring gasoline prices and shortages renewed global interest in electric alternatives

2010
Government Push: EV Subsidy Scheme

India’s Ministry of New and Renewable Energy initiates support for EV adoption

2015
Launch of FAME India Scheme

Financial incentives rolled out under the FAME scheme to boost EV usage

2018-19
Surge in Electric 2 & 3 Wheelers

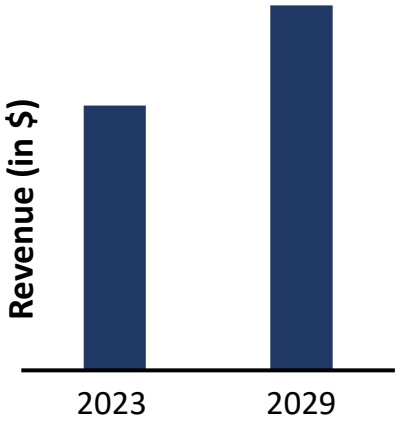
Mass adoption of electric rickshaws and two-wheelers for short-distance travel

Source: History of EV Industry - Chargemod

GLOBAL EV MARKET OVERVIEW

A detailed breakdown of the evolving electric vehicle (EV) consumer in India, highlighting key demographic traits like age, gender, income, and education, along with psychographic factors such as values, lifestyle preferences, and attitudes driving sustainable mobility choices.

WORLDWIDE MARKET OVERVIEW



*Revenue projections are expected to rise from **$786.2 billion in 2023** to **$1,084 billion by 2029**, with a **CAGR** of **6.8%.***

The growth is driven by:

- Increasing **Consumer Adoption**
- **Technological Advancements** in Battery
- **Supportive** Regulatory **Frameworks**

LEADING MARKET PLAYERS

Tesla:
Tesla has the leading Global Market Share

MG, BYD, Mercedes Benz:
Strong presence in emerging and developed markets

Geographical Market Insights

Asia is the **fastest-growing** EV market by **Adoption Rate** and **Policy Initiatives**

Public Charging Infrastructure is rapidly expanding.

China is the largest EV market, and holds **76% of Global Market Share**

It reflects domestic policy support and price competitiveness

Future growth will likely be influenced by:

- *Battery Innovation*
- *Standardization in Charging Networks*
- *Price parity with ICE vehicles*

KEY MARKET INDICATORS (2024)

- Total EV Units Sold: **14 million**
- Total Public Charging Stations: **2.54 million**
- Global Revenue Generated: **$786.2 Billion**

Source: Market Overview - EY

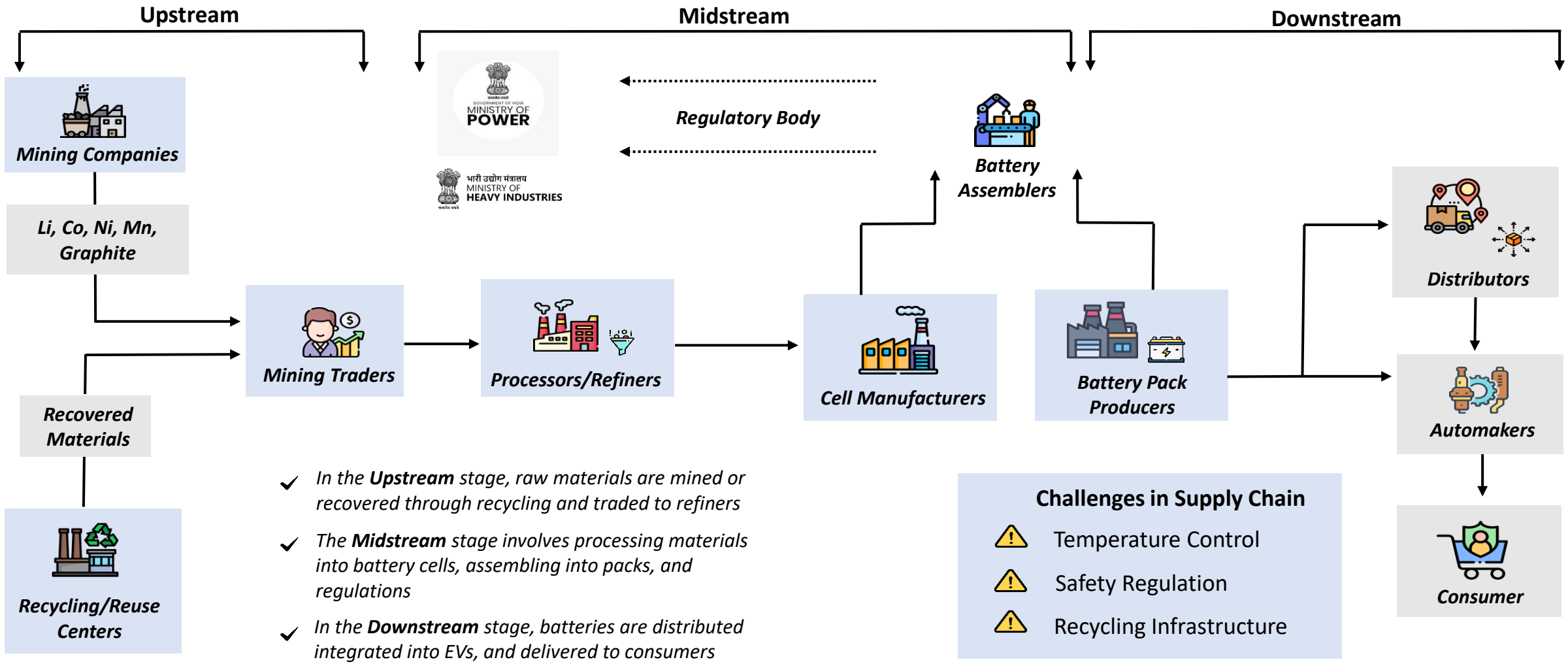
DELIVERING VALUE

Supply Chain

Customer Segmentation

SUPPLY CHAIN: FROM RAW MATERIALS TO CONSUMERS

An end-to-end view of the EV supply chain from raw material extraction and recycling to battery production, vehicle assembly, and final consumer delivery highlighting key challenges like safety, temperature control, and recycling infrastructure.



- ✓ *In the **Upstream** stage, raw materials are mined or recovered through recycling and traded to refiners*
- ✓ *The **Midstream** stage involves processing materials into battery cells, assembling into packs, and regulations*
- ✓ *In the **Downstream** stage, batteries are distributed integrated into EVs, and delivered to consumers*

Challenges in Supply Chain

- ⚠ Temperature Control
- ⚠ Safety Regulation
- ⚠ Recycling Infrastructure

Source: AFDC Energy

UNVEILING CONSUMER PROFILE

A snapshot of evolving EV consumers highlighting their demographics like age, income, and education, along with psychographics such as eco-conscious values, tech-savvy lifestyles, and openness to sustainable mobility solutions.

Consumer Profile

DEMOGRAPHICS

AGE:	35 to 54 Years (25 to 34 years)- Growing Segment
GENDER:	Male Dominated, Female Ownership Constantly Increasing
INCOME:	Higher Income Level, a wide range of income levels are shifting to EVs
LOCATION:	Urban and Suburban Areas with Established Charging Infrastructure
EDUCATION:	Higher level of education, Generally STEM Backgrounds

PSYCHOGRAPHICS

VALUE:	Environmentally Conscious, Innovation-Oriented, and Future-Focused Individuals
LIFESTYLE:	Urban, Minimalist, Tech-Integrated Living with Preference for Sustainable Mobility
INTERESTS:	Green Technology, Smart Transportation, and Renewable Energy Solutions
TRAITS:	Early Adopters, Ethical Consumers, and Forward Thinkers
ATTITUDE:	Open to Change, and High Concern for Carbon Footprint

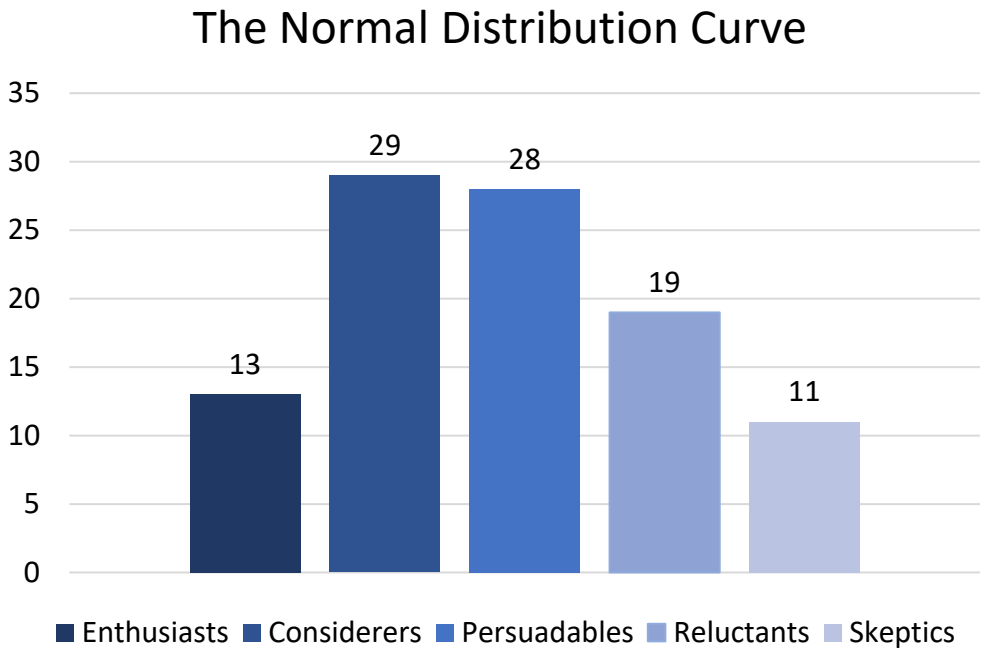
Source: Mckinsey

SEGMENTATION BASED ON MINDSET TOWARDS EV

Mapping the evolution of consumer attitudes in the electric vehicle (EV) landscape from early eco-committed adopters to cautious skeptics highlighting psychological drivers risk profiles and the growing potential for mass adoption through strategic targeting and education

ENTHUSIASTS	CONSIDERERS	PERSUADABLES	RELUCTANTS	SKEPTICS
Eco-Committed	*Eco-Centric*	*Eco-Aware*	*Eco-Cautious*	*Eco-Doubters*
Performance-Oriented	*Value Oriented*	*Budget Minded*	*Budget Minded*	*Cost-conscious*
Well Informed	*Expert Consultation*	*Guidance Seeker*	*Evidence Seekers*	*Misinformed*
Passionate	*Curious*	*Prudent*	*Interrogative*	*Conservative*
Risk Seekers	*Risk Takers*	*Cautious*	*Risk Averse*	*Risk Averse*

Premium Segments | **Budget Segments**



How the segments have evolved:

- The share of EV Enthusiasts has consistently increased from 6% in 2021 to 11% in 2022 to 13% in 2023.
- However, the proportion of Skeptics and Reluctants registered a 2% increase in 2023, highlighting that many remain unconvinced of the benefits of EVs.

Source: EY Report

WHAT DRIVES EV ADOPTION

EV Purchase Drivers

Political Landscape

Legal Environment

FINANCIAL CONSIDERATIONS

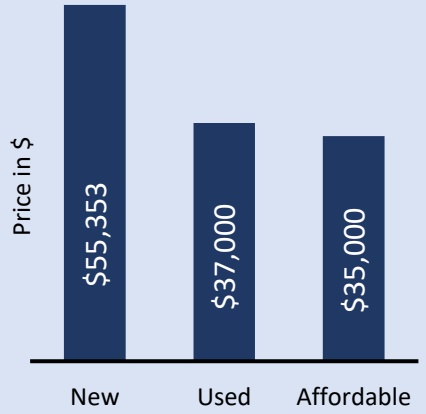
Understanding the cost dynamics of EV ownership, from average purchase prices and market trends to the role of federal tax credits in making electric vehicles more affordable for consumers in 2024

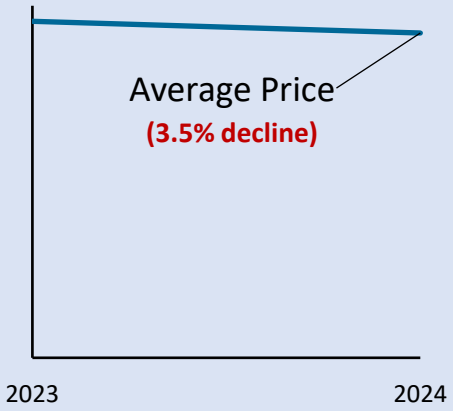
AVERAGE PURCHASE PRICES

Average Purchase Prices (2024)

New EVs **$55,353**
Affordable Range **$30,000 – $40,000**
Used EVs **$37,000**

*These price points are **key financial considerations** that influence consumers' decisions when purchasing an electric vehicle.*





Market Trends (2023-2024)

EV prices declined **3.5%** from 2023 to 2024. Drops driven by high inventory and major brands like Tesla & GM cutting prices.

*This **downward trend** reflects rising competition and inventory pressure, making EVs more affordable for buyers.*

TAX CREDITS & INCENTIVES

Federal EV Tax Credit

Up to **$7,500** for new EVs

Up to **$4,000** for used EVs

Not All EVs Qualify!

Not all EVs qualify for the credit, and those that do may not get the maximum amount. The 2024 EV tax credit depends on:

- Purchase Price (MSRP)
- Final Assembly Location
- Battery Type
- Source of Critical Minerals
- Pre-Tax Income

*While federal tax credits can **enhance EV affordability**, eligibility depends on many factors. Buyers should research carefully to **ensure qualification** and **maximize savings***

Source: IEA Report

OWNERSHIP COST ANALYSIS

Examining the complete financial picture of ownership, from substantial fuel and maintenance savings that can reduce monthly expenses by $90-200, to potential cost challenges including higher insurance premiums, expensive battery replacements, and various hidden expenses that impact long-term economics

UPSIDES

Fuel Savings

Average **EV charging cost:** $60/month (Feb 2024)

Gasoline cost (typical household): $150–$200/month

Lower Maintenance Costs

Fewer moving Parts = **fewer repairs**

No need for **oil changes**, transmission fluid, or spark plugs

DOWNSIDES

Higher Insurance Costs

- ✓ EVs generally **cost more to insure** than gas-powered cars
- ✓ **Higher replacement value** increases premium

Expensive Major Repairs

- ✓ EV parts **harder to source**
- ✓ **Battery replacements** range from **$5,000–$20,000**

Hidden Costs

- ✓ **Home charging setup**
- ✓ **Software & firmware updates** (some manufacturers charge for these)

While electric vehicles offer significant savings in fuel and routine maintenance, prospective owners must also consider higher insurance premiums, potential repair costs, and various hidden expenses that can influence the total cost of ownership.

Source: IEA Report

PRACTICAL CONSIDERATIONS

Evaluating the real-world usability factors of electric vehicle ownership, from battery range capabilities and charging infrastructure accessibility to climate impacts on performance, helping consumers understand how EVs fit into their daily driving needs and environmental conditions

BATTERY RANGE

How Far Can EVs Go in 2024?

High-End Models

Up to 500 miles per charge

Moderate Price Models

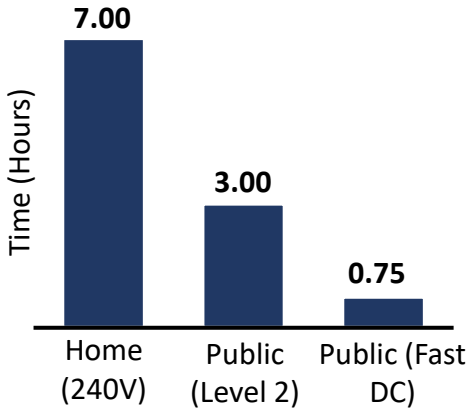
Average range of 300 miles

What This Means for Buyers:

- **More money = longer range**
- Best suited for **urban & suburban**
- Not ideal for frequent **long-distance**

CHARGING INFRASTRUCTURE

Average time to charge EV to 80%



HOME CHARGING

- **Installation Costs**: $1,150-$2,750 (Motor Trend, 2024)
- **Standard 240V Charger**: Takes 4-10 hours to reach 80%
- Faster Chargers Available

PUBLIC CHARGING

- **Electricity tariffs** increase monthly operating costs
- **Coverage is uneven**, especially in rural areas
- **Station availability**: Use DOE tools to check

Installation costs, electricity rates, and charging access remain key for prospective EV buyers.

WEATHER & CLIMATE

Freezing temperatures **affect EV performance**

Lower Reliability

Cold weather **makes long trips harder**

Battery Efficiency Drops

Better suited for **extreme winters (for now)**

Gas Vehicles More Practical

Source: OWI Corporate

POLITICAL LANDSCAPE

To assist the acceptance of electric vehicles (EVs) the central government has announced a number of promotional measures including tax incentives for electric vehicle owners, public EV charging infrastructure development, and so on

Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles (FAME) – I and II

- India's **Flagship Scheme** for promoting Electric Mobility
- Launched by DHI in **2015,** currently in its **Second Phase**
- FAME II was Implemented for a **3 Years** (from 19 April 2019)
- Budget Allocation of **10,000 Crores**

INCENTIVES OFFERED

Total Approximate Incentives	Approximate Size of Battery
Two Wheeler: Rs 15000/- per kWh upto 40% of the cost of vehicles	2 kWh
Three Wheeler: Rs 10000/- per kWh	5 kWh
Four Wheeler : Rs 10000/- per kWh	15 kWh
E Buses: Rs 20000/- per kWh	250 kWh
E Trucks: Rs 20000/- per kWh	400–600 kWh

The Department of Heavy Industries has also **sanctioned 2636 charging stations** in 62 cities across **24 States/UTs under FAME** India scheme phase II.

National Mission on Transformative Mobility and Storage

- Strategies for **Transformative Mobility** and **Phased Manufacturing**
- Phased Manufacturing Program to **Localize Production** across Value Chain
- Finalization by the Mission with a clear **Make In India Strategy**
- Coordinate with **Key Stakeholders** in Ministries/ Departments/ states

ROADMAP

- Phased **Battery Manufacturing Roadmap** with initial focus on large-scale module and pack assembly plants by 2019-20 and Gigascale integrated cell manufacturing by 2021- 22
- Ensuring **Holistic and Comprehensive Growth of the Battery Manufacturing** industry in India through PMP
- Preparing roadmap for enabling India to **Leverage its Size and Scale** to produce competitive multi-modal mobility solutions to deploy globally in diverse contexts
- **Roadmap for transformative mobility** in "New India" by introducing a **Sustainable Mobility Ecosystem and Fostering Make-in-India**




Source: Business Standard

LEGAL LANDSCAPE

The Indian government is boosting EV adoption through key legal reforms lowering GST, enforcing battery recycling rules, investing in ACC battery production, and tightening safety norms with robust thermal and fire protection standards.

BATTERY REGULATIONS

Battery Waste Management Rules

EV battery makers must collect and recycle **70% of used batteries** by 2030 under **Extended Producer Responsibility (EPR)**, promoting circularity and reducing long-term environmental harm

PLI Scheme for ACC Batteries

₹18,100 crore has been allocated to boost domestic ACC battery manufacturing, strengthening India's EV production ecosystem

Objective

These policies ensure **sustainable battery usage** and support the development of a **self-reliant** and **eco-friendly** EV industry

GST REDUCTIONS

GST on Electric Vehicles

GST on electric vehicles has been reduced to **5% from 28%** on **ICE vehicles**, significantly improving affordability and encouraging wider consumer adoption

GST on Charging Stations

GST on **EV chargers** and **stations** has been cut to **5%**, lowering installation costs and accelerating investment in charging infrastructure

Objective

These reductions aim to make EVs and related infrastructure more **accessible**, **supporting** the shift toward clean and **sustainable** mobility

SAFETY STANDARDS

AIS 038 and AIS 156

These standards mandate **thermal management systems** in EV batteries to prevent overheating, reduce fire risks, and ensure stable operation in Indian conditions

Updated EV Safety Rules (2023)

The latest rules require **fire-resistant** materials and compulsory **short-circuit testing** to improve battery safety and avoid electrical failures

Objective

The focus is on enhancing **user safety**, building **public trust** in EVs, and ensuring **reliable performance** in everyday use

Source: The Government Of India

BATTERY DEVELOPMENT

Capital Investment

Economics & Funding

Lithium Ion Batteries

EV BATTERY DEVELOPMENT: CAPITAL INVESTMENT

Analyzing the massive financial requirements for EV battery industry growth, from multi-billion dollar gigafactory investments and R&D spending on next-generation technologies to ongoing operational expenses including raw materials, labor, and supply chain logistics that drive the transition to electric mobility

OPERATING EXPENSES (OPEX)

Raw Materials (~60%)
Lithium, cobalt, nickel are major cost drivers in battery production

Labor & Utilities (10–15%)
Covers workforce wages & energy consumption during production

Maintenance & Logistics (5–10%)
Includes equipment maintenance & transportation of materials

Waste Management ($5–10M/Yr.)
Waste disposal, environmental safety, and compliance costs

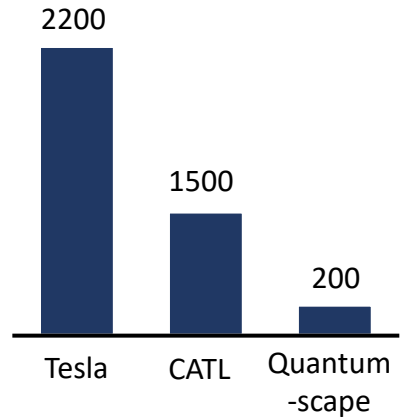
RESEARCH AND DEVELOPMENT

R&D Investment Landscape (2023)

Tesla: $2.2 billion (total R&D)

CATL: $1.5 billion

QuantumScape: $150-200 million



MAJOR CAPITAL EXPENDITURE (CAPEX)

Gigafactory Setup	Battery Cell Production Lines	Equipment & Machinery	Land, Infrastructure, Permits	Supply Chain/ Logistics Setup
Cost Range: $2-5 billion per plant	**Cost Range**: $50-100 million per GWh capacity	**Cost Proportion**: 30-40% of total plant cost	**Variable Costs**: Depending on region	**Cost Range**: $200-500 million for global integration
Purpose: Establishing large-scale manufacturing facilities to produce EV batteries	**Focus**: Establishing production lines for scalable battery cell manufacturing	**Role**: Essential for automated production, quality control, and efficiency	**Considerations**: Cost of land acquisition, infrastructure development, and securing necessary permits	**Focus**: Establishing efficient global logistics for sourcing materials and distributing products

Source: IEA Report

EV BATTERY ECONOMICS & FUNDING

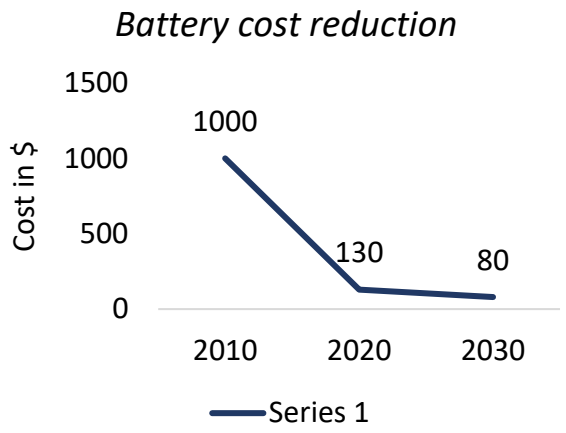
Analyzing the financial dynamics driving EV battery industry growth, from cost reduction targets and profitability metrics to diverse funding sources and risk mitigation strategies that shape investment decisions and market development

MARKET FINANCIAL OUTLOOK

1. Cost & Capacity Outlook
Battery costs expected to drop to $80/kWh by 2030

2. Market Growth
Battery market projected to exceed $400B; $250B+ investment anticipated

3. Supporting Sectors
Recycling and materials markets to reach $20B and $80B+



PROFITABILITY METRICS

1. Margin Overview
Gross margins: 15–25%, EBITDA margins: 10–15% average

2. Key Profit Drivers
Scale, integration, OEM contracts, and sourcing reduce costs

BATTERY COST ECONOMICS

Current cost (2023 average): ~$130/kWh

Industry breakeven target: ~$100/kWh

Solid-state batteries: ~$400-600/kWh (higher CapEx & R&D)

FINANCIAL RISKS AND MITIGATION STRATEGY

Financial Risk	*Mitigation Strategy*
1. Raw Material Price Volatility Fluctuating lithium, cobalt, and nickel prices increase production uncertainty	Establish long-term contracts, invest in recycling, and diversify material sourcing globally
2. Delayed Capital Recovery Delayed ROI stretches payback period, impacting investor confidence	Secure OEM agreements, leverage government incentives, and use scalable modular factory designs

FUNDING SOURCES & INVESTMENT TRENDS

Equity financing: IPOs (e.g., LG Energy Solution raised $10.8B in 2022)

Debt instruments: Green bonds, sustainability-linked loans

Venture capital: Focus on next-gen battery tech (over $8B invested)

Strategic Partnerships: Automakers invest directly in battery companies

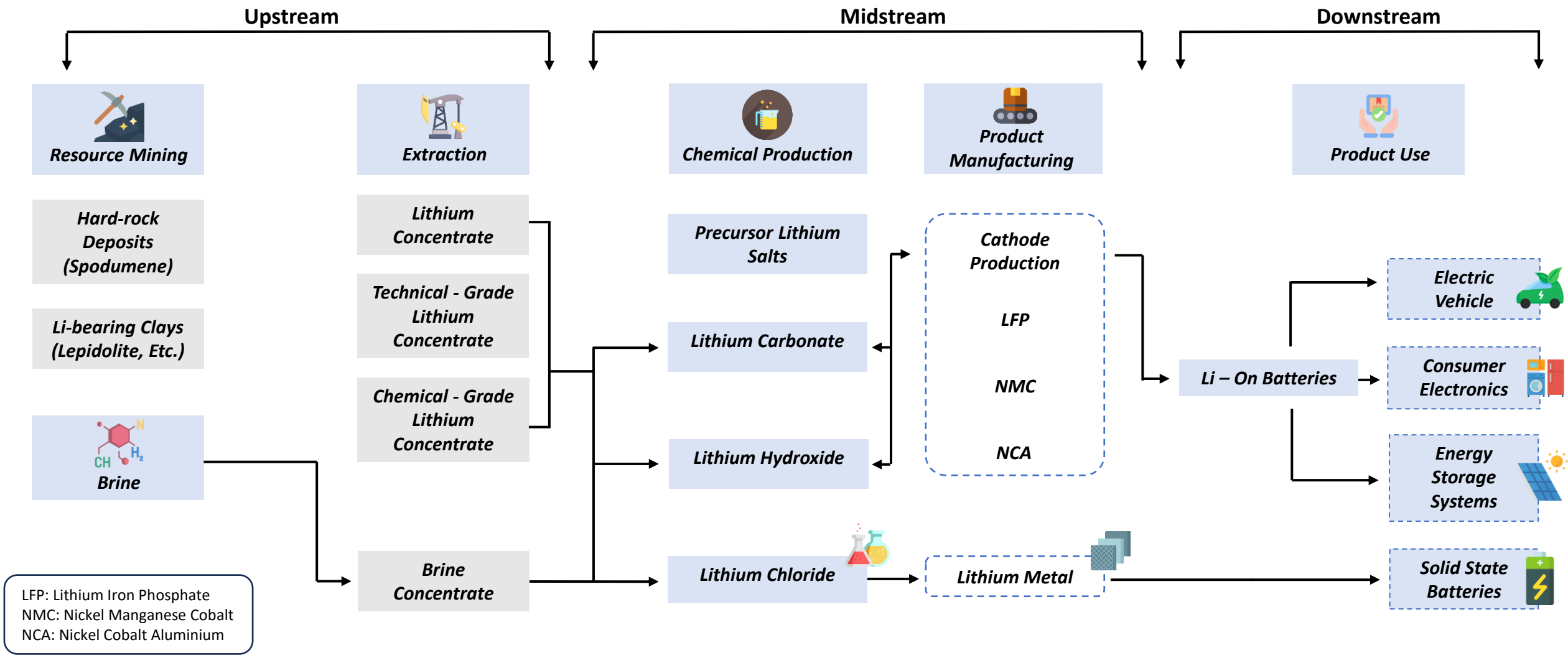
Joint Ventures: OEMs and battery makers share cost and risk

Private equity: Consolidation plays in component manufacturing

Source: IEA Report

LITHIUM SOURCING IN INDIA FOR BATTERIES

Mapping the complete lithium supply chain from upstream resource extraction and processing to downstream battery manufacturing, covering the transformation from raw materials through chemical refining to final applications in electric vehicles and energy storage systems.



Source: IISD Report

LITHIUM-ION BATTERIES IN EVS

Examining the current state of lithium-ion battery technology in electric vehicles, weighing key advantages like high energy density and fast charging capabilities against critical challenges including cost barriers, supply chain risks, and safety concerns

BENEFITS

Lithium-ion batteries have a high energy density of **150 - 250 Wh/kg**, allowing EVs to deliver around **500 km** per charge.

These batteries last **8 - 10 years** or up to **2,000 - 3,000 charge cycles**, making them reliable for long-term EV usage.

Lithium batteries can be charged up to **80% in 20 - 30 minutes** using fast chargers rated between **150 - 350 kW**

A 60-kWh lithium battery pack weighs around **400 kg**, significantly lighter than an equivalent **1,200 kg lead-acid pack**

BARRIERS

The cost of lithium batteries is still high, averaging around **$120 per kWh**, meaning a 60-kWh pack can cost up to **$7,200**

More than **60% of lithium** comes from just three countries **Australia, Chile, and China** creating supply chain and geopolitical risks.

Lithium batteries can experience **thermal runaway** and fires and such fires are difficult to extinguish.

Poor performance in **extreme temperatures** with cold weather **reducing** range and heat **accelerating** battery degradation

Source: Research Paper – CED Engineering

SODIUM-ION BATTERIES IN EVS

Evaluating sodium-ion technology as an affordable alternative to lithium-ion batteries, analyzing cost and sustainability advantages against performance limitations including lower energy density, slower charging speeds, and early-stage commercial development.

BENEFITS

Sodium is **widely available** and cheaper than lithium, reducing battery production costs and **improving supply chain stability**

Sodium-ion batteries are more **thermally stable** and **less** prone to fire, offering improved safety for EV applications.

They avoid **scarce metals** like cobalt or nickel, making them more **sustainable** and environmentally friendly to produce.

They perform **better in low temperatures**, maintaining **capacity** and **efficiency** in cold-weather conditions.

BARRIERS

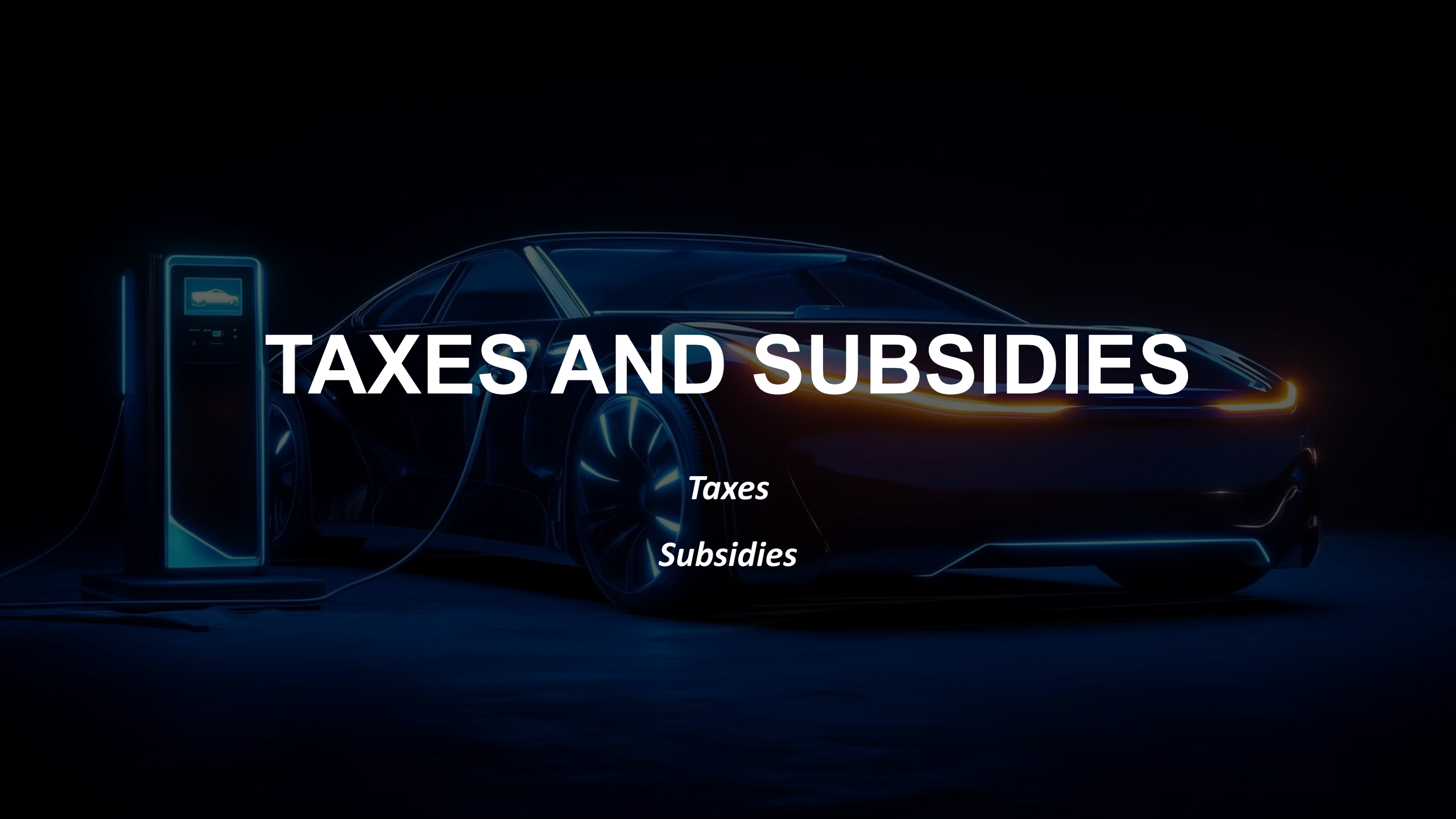
Sodium-ion batteries have **lower energy density** than lithium-ion, resulting in shorter EV driving range per charge.

They typically charge up to **80%** in **30 - 40** minutes using **100 - 150 kW** chargers, leading to longer downtime.

Due to larger sodium ions, these batteries are **heavier and bulkier**, affecting vehicle weight and design.

The technology is still in **early stages**, with limited **commercial deployment** and ongoing **R&D** for improvements.

Source: EASE Report



TAXES AND SUBSIDIES

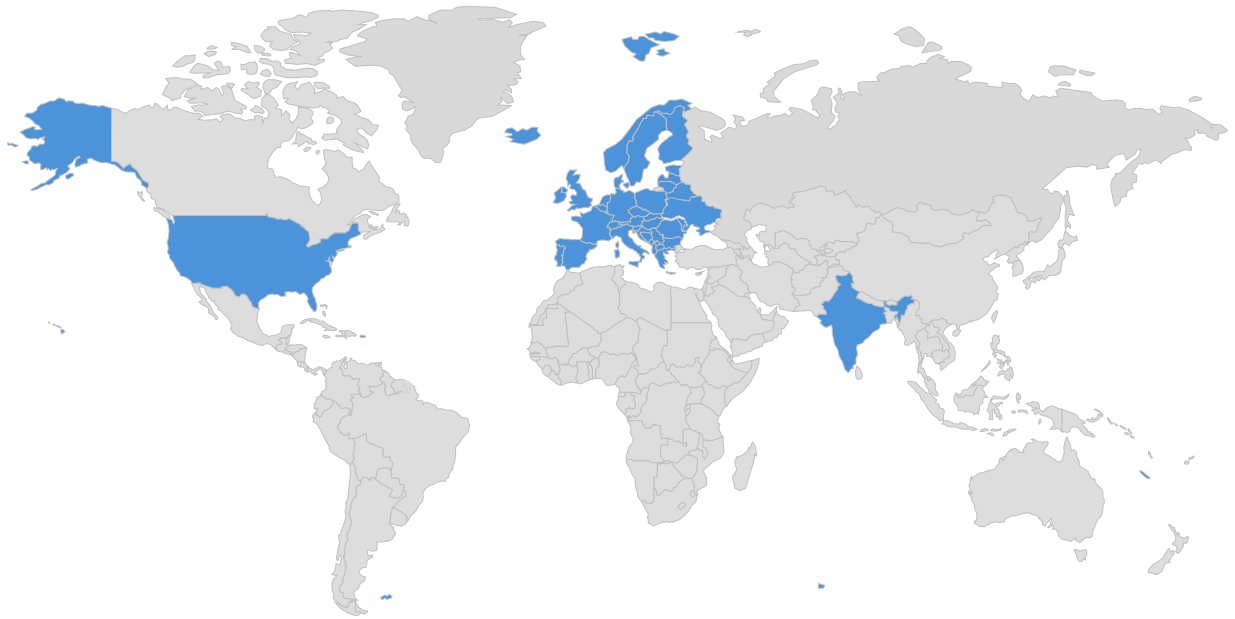
Taxes

Subsidies

THE EV TAX GAME: WHO'S ACTUALLY WINNING?

Analyzing EV tax incentives to uncover benefit distribution across stakeholders, highlighting disproportionate gains by high-income buyers versus limited access for low-income and rural adopters.

EV INCENTIVE LANDSCAPE



INDIA

- GST slashed to 5% on EVs from 18%
- FAME II subsidy up to ₹20,000/kWh
- ₹1.5L EV loan tax deduction (Sec 80EEB)

U.S.A

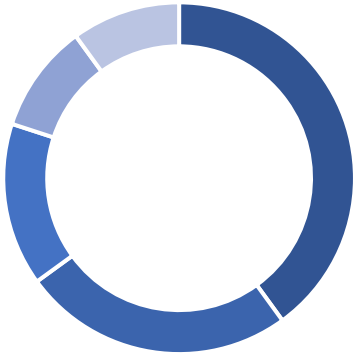
- Federal EV credit: $7,500 (new), $4,000 (used)
- Eligibility based on battery, assembly, and income
- Extra state rebates in places like California, Colorado

EUROPE

- EV incentives vary by country
- Germany & France offer purchase subsidies
- Norway exempts EVs from import and road taxes

WHO ACTUALLY BENEFITS MOST?

Stakeholders' Breakdown



- High-Income Urban Buyers
- OEMs & Battery Giants
- Fleet Operators
- Used EV Buyers
- Rural/Middle-Income Buyers

	Stakeholder	Explanation
	Urban Rich Buyers	Max credits, easy EV access
	OEMs & Battery Giants	Higher sales, govt R&D & CapEx support
	Fleet Operators	Bulk savings, tax benefits
	Used EV Buyers	Limited access, battery concerns
	Rural / Low-Income Buyers	Low awareness, poor infra, few 2W/3W subsidies

Sources: Taxation in India
Taxation in World

RETHINKING EV SUBSIDIES: FROM INCENTIVES TO IMPACT

Exploring how EV subsidies are evolving, examining the risks of over-reliance, and identifying smarter policy designs that enhance effectiveness, promote fairness, and support long-term sustainable growth in the EV market.

EV SUBSIDY SCHEMES IN INDIA

Budget: ₹10,000 Cr

FAME II

April 2019 – March 2024

₹15,000/kWh – Two-Wheelers	₹10,000/kWh – 3W & 4W	₹20,000/kWh –Buses & Trucks

Budget: ₹500 Cr

EMPS

April 2024 – September 2024

Support for 2W & 3W commercial EVs	Bridge scheme after FAME II, before FAME III

SMARTER WAYS TO OFFER EV BENEFITS

Tiered or income-linked subsidies

Scrappage-linked bonuses

BaaS + Tax Relief

Incentives For 2W/3W EVs

RISKS IN THE CURRENT SYSTEM

Governments give big subsidies, but they can sometimes backfire….

Some automakers **increase the price** of their EVs, knowing buyers will get a subsidy — so the benefit is lost

Companies **can't survive without subsidies** — so if the government pulls support, sales crash

Rich people in cities get **tax benefits**. Poor or rural users **don't** even though they may need **affordable transport** more

CHANGING SUBSIDY TRENDS

Supporting **mass-market electric two-wheelers and three-wheelers**

Funding charging **stations**, **battery recycling** plants, and **infrastructure**

Limiting or removing benefits for **premium/luxury EVs**

Source: Ministry Of Heavy Industries

CASE STUDY

MG Windsor

MG WINDSOR IS REVOLUTIONIZING EV OWNERSHIP WITH BaaS

MG Windsor debuts a first-of-its-kind BaaS model in India, separating the EV's ₹9.99 lakh ex-showroom price from the battery. Owners lease the battery at ₹3.5/km with a 1,500 km/month plan (₹5,250), lowering upfront costs and enhancing flexibility. The model offers a lifetime battery warranty for first owners

KEY COMPONENTS OF BaaS

Subscription-Based Battery Packs
Users **subscribe to battery packs** based on monthly usage (e.g., ₹5,250 for 1,500 km), offering predictable expenses and scalability

Battery Leasing
Battery **rented at ₹3.5/km instead of being purchased**, Removes large capital expense, shifting to a usage-based model

Fast Charging or Swapping
Batteries can be quickly swapped or charged at BaaS network stations, reducing downtime and enhancing convenience

Limited Warranty Transferability
While first owners enjoy **unlimited warranty**, second owners get only **8 year limited battery warranty** pro-rated from initial sale date

IMPORTANCE OF BaaS

Lower Upfront Cost

Flexibility in Ownership

Better Battery Life Cycle

FUTURE IMPLICATIONS

Promotes EV Adoption

Lower Entry Cost + *Convenient Battery Rental Model* = *Increased EV Affordability And Adoption*

Aligns with **average city travel (1,500 km/month),** promoting practical, affordable, and sustainable electric commuting

Source: Business Today

MG WINDSOR EV VS MARUTI GRAND VITARA

Contrasting the pricing, range, fuel/charge economics, and running costs of an electric SUV and a petrol-powered SUV. This comparison reveals how EV and ICE models cater to different usage priorities and cost dynamics

BASIS	MG WINDSOR EV (EXCITE)	MARUTI GRANDA VITARA (SIGMA)
Price	**₹9.99 lakh ex-showroom**, offering lower upfront cost for an EV	**₹10.99 lakh ex-showroom**, slightly higher due to traditional ICE setup
Charge Cost	**₹380 per full charge** (38 kWh), extremely cost-effective for city usage	**₹4,500 per full tank** (45 litres petrol), reflecting higher recurring fuel expense
Mileage	**331 km** claimed, suitable for urban and short intercity runs	**872 km** (19.38 kmpl × 45L), ideal for long highway drives
BaaS Cost	**₹3.50/km**, applicable under battery subscription models	**Nil**, as there is no separate battery subscription model
Running cost/Km	**₹4.64/km**, more economical over shorter distances	**₹5.16/km**, slightly costlier in ongoing usage
Target Segment	**Eco-conscious urban commuters** seeking sustainability and low running cost	**Traditional users prioritizing range**, fuel familiarity, and long-distance comfort

Maintenance and other factors

EVs: No engine oil or gear oil change needed; lower service costs

ICE Vehicles: Require regular oil changes and servicing

***Note**: Road tax, registration, and insurance not included in calculations (EVs often get waivers)*

Source: Business Today

MG WINDSOR EV vs TATA NEXON EV

Both vehicles are fully electric, yet they differ in pricing structure, battery management model, and long-term running costs. These differences significantly influence the overall value proposition for buyers

BASIS	MG WINDSOR EV (Excite)	TATA NEXON EV (Creative +)
Price	**Rs 9.99 lakh** - Offers a lower upfront investment, ideal for budget-conscious buyers	**Rs 12.49 lakh -** Higher purchase cost, but includes key features like BaaS for long-term savings
Charge Cost	**Rs 380 per full charge (38 kWh**) – Slightly higher due to larger battery capacity	**Rs 300 per full charge (30 kWh) -** More economical per charge due to smaller battery
Mileage	**Claimed range of 331 km per full charge** – Suitable for daily commutes and occasional long drives	**Claimed range of 325 km per full charge** – Comparable to MG, offering similar travel efficiency
BaaS Cost	**Rs 3.50/km -** Battery-as-a-service is billed separately, adding to running costs	**Included in vehicle price -** No additional BaaS charges, making it simpler for the owner.
Running cost/Km	**Rs 4.64/km -** Higher running cost mainly due to separate battery rental	**Rs 0.92/km -** Much more economical in the long run, thanks to integrated BaaS

Breakeven Analysis

- ✓ A MG Windsor EV owner would need to drive **53,879 kilometers** to match the overall ownership cost of a Tata Nexon EV
- ✓ **Insight:** Although the MG Windsor offers a cheaper entry point, the **Tata Nexon EV proves more cost-effective** over extended use due to its lower per-kilometer running cost and included battery service

Source: Business Today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