



# **ELECTRIC VEHICLES: DRIVING INDIA TOWARDS SUSTAINABILITY**

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## 要約 | 電気自動車: インドをサステナビリティに導く

この記事は電気自動車（EV）に関するインドの現政権の政策と枠組みを説明するものである。インドは産業や電力発電所、自動車の稼働を再生不可能なエネルギー源や汚染をもたらす炭化水素による各種のエネルギーに大きく依存している。したがって気候変動の懸念の高まりを受けて、環境に配慮した代替エネルギー源の導入を実現する必要に迫られている。この記事では従来の化石燃料自動車から EV への転換を実現するため、インド政府とその他の産業の関係者が講じている措置を主に紹介していく。

政府は複数の政治主導イニシアティブを介して原油の輸出とインド都市部の汚染レベルに歯止めをかけるため、電動モビリティの利用を促す試みを行ってきた。ここでは自動車ミッションプラン（Automobile Mission Plans）や電動モビリティにおける国家ミッション（National Mission on Electric Mobility）、電動モビリティミッションプラン（Electricity Mobility Mission Plan）、インド電気自動車のより早い導入および製造計画（FAME 計画）、車両廃棄政策（Vehicle Scrappage policy）をはじめとする、一般市民による EV の大幅な導入を確実に進めるために政府が実行してきたイニシアティブの一部を振り返っていく。FAME 計画の実施は、円滑な導入プロセスを実現し、電気自動車購入の刺激策を提供するため段階的に行われている。FAME 計画では主に消費者に対する需要の創出（インセンティブ）やテクノロジープラットフォームの構築（研究開発の承認）、EV 用の充電スタンドのインフラ開発等に力を入れている。また政府は先日「メイク・イン・インド」政策の一環として自動車および自動車部品、高度化学電池（ACC）、バッテリーストレージのメーカーを対象に生産連動型インセンティブ（PLI）計画を立ち上げた。PLI 計画は一定の選考基準で選ばれた投資家に対して現金（電信送金）またはその他の調整メカニズムのいずれかを介してインセンティブを与えるものである。こういった PLI は EV の生産を促すことを意図している。中央政府の政策介入に加えて、複数の州政府もまた EV の利用と生産を促すことを意図して政策を策定している。たとえば電動スクーターと電気自動車の需要を促進する州もあれば、代わりに EV 生産を推進する州もある。

今回の記事ではインドの電力省が EV の利用への円滑な転換を行うために実施してきた特定の措置をさらに取り上げていく。電力省は通達や既存の法律の改正を通して、充電インフラの開発、充電ステーションでの電気販売免許の撤廃、関税の制限等を実施している。

しかし EV の導入に関しては問題も生じている。たとえば(1) インドの EV メーカーはリチウムイオン電池に依存しているが、リチウムイオン電池メーカーは輸入品に大きく依存している、(2) インドでは現在充電用のインフラが不足している、(3) 化石燃料自動車の有効な代替手段として電気自動車を消費者が受け入れるまでに時間がかかる、(4) 一部の分野では研究開発が十分に行われていない等の問題がある。

ただし政府や産業の関係者はこれらの問題を解決するためにさまざまな対策を講じている。政府は手頃な価格の EV 充電インフラ（軽量 EV 向けの低コスト AC 充電（LAC）ポイント等）の研究開発を促進し、EV の充電をスピードアップするための方策も講じてきた（この方針は充電に関する問題を解決し、電池自動車の需要を押し上げることができる可能性を秘めている）。またテスラをはじめとする海外の EV の成功はインドの消費者の考え方に影響を与えている。その上、(1) 充電スタンドの設置に対する免許の撤廃、(2) 各種の政策や計画を介した EV メーカーへの金銭面でのインセンティブの提供、(3) 積極的な権限移譲と政策および計画の全国的な実施、(4) 研究開発の促進等、EV に関する法律および政策の枠組みを進展させるために政府が行ってきた措置に加えて、消費者行動の変化もまたもんだいの解決に大きく貢献してきた。

EV は事実上インドの市場に浸透しているものの、ガソリン/ディーゼル車の車種と比べて EV の車種は少なく、その結果 EV の需要は伸びていない。そのため政府は市民に対して EV の周知を徹底し、EV に関連する法的な枠組みを正式に決定することで、消費者による EV の導入の円滑化とスピードアップ、そして、サステナビリティの促進を実現しなければならない。

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## **SUMMARY | ELECTRIC VEHICLES: DRIVING INDIA TOWARDS SUSTAINABILITY**

The objective of this article is to furnish the current policy regime and legal framework around electric vehicles (“EVs”) in India. India is highly dependent on non-renewable sources of energy, various forms of polluting hydrocarbons for energy to run its industries, power plants and vehicles. In light of the growing concerns of climate change, there is a need to ensure adoption of other eco-friendly alternatives for energy. The article focuses on the steps being taken by the Indian Government and other industry stakeholders to shift to EVs from the traditional fossil fuel run automobiles.

The Government has been trying to encourage adoption of electric mobility through several policy initiatives to curb crude imports and high level of pollution in Indian cities. This article reviews some of the initiatives of the Government to ensure significant adaptability of the public towards EVs, such as the Automobile Mission Plans, the National Mission on Electric Mobility, the Electricity Mobility Mission Plan, the Scheme of Faster Adoption and Manufacturing of Electric Vehicles in India (“**FAME Scheme**”), Vehicle Scrappage policy, etc. The FAME Scheme has been implemented in phases to ensure smoother implementation process and to provide a fillip to EVs. The FAME Scheme primarily focusses on creation of demand amongst the consumers (by way of incentives), building of a technology platform (by way of sanctioning grants for research and development), and development of infrastructure of charging stations for EVs, etc. Additionally, the Government has also recently launched the ‘Production Linked Incentive’ (PLI) schemes for manufacture of automobiles and auto-components and advanced chemistry cell (ACC) and battery storage as part of its ‘Make in India’ initiative. The PLI schemes provide incentives either in form of cash incentive (disbursed through direct bank transfer) or by way of any other adjustment mechanism to the selected investors, based upon certain eligibility criteria of the investors. These PLI schemes are intended to promote the manufacturing of EVs. In addition to the policy interventions by the Central Government, several states have also enacted policies for promoting the use and manufacture of EVs. While some states intend to boost demand for electric scooters and cars, others have chosen to promote EV manufacturing instead.

The article further emphasizes on certain measures that the Ministry of Power, Government of India, has undertaken enable smooth shift to adoption of EVs. The Ministry of Power has issued notifications and amended existing legal statutes to facilitate development of charging infrastructure, delicensing of sale of electricity at charging stations, capping of tariff, etc.

However, there are certain issues with regards to adoption of EVs. The article highlights some of these issues, which include inter alia (i) the dependence of EVs on lithium-ion batteries, the manufacture of which, in India, is in turn largely dependent on imports; (ii) lack of charging infrastructure in India at present; (iii) the consumer mindset which may take some time to accept EVs as a viable alternative to the fuel run automobiles; and (iv) insufficient research and development in the specific sector.

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Having said that, various steps have been taken by the Government and other industry stakeholders to resolve these hurdles. The Government has promoted research to develop affordable EV charging infrastructure (such as the low-cost AC charging (LAC) point for light EVs) and measures for ensuring faster charging of EVs (which would potentially address the issue of charging and boost demand for the battery vehicles). Global successes like Tesla have also positively impacted the mindset of Indian consumers. In addition to the measures undertaken by the Government to evolve the legal and policy framework around EVs, such as (i) de-licensing the activity of setting up of charging infrastructure; (ii) provision of fiscal incentives to the manufacturers of EVs through various policies and schemes; (iii) active delegation and state wise implementation of the policies and schemes; (iv) promotion of research and development; etc., a major contribution has been made on account of the changing consumer behaviour.

It is evident that although EVs have in essence penetrated the Indian market, there is a limitation in the number of EV models as compared to the petrol/ diesel fuelled vehicles, available in the market, as a result of which, the demand side of EV is rather conservative. It would be imperative for the Government to increase awareness amongst the public and formalise the legal regime surrounding EVs to ensure smoother and faster adaptability of the EVs amongst the consumers and promote sustainability.

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India is a country that heavily relies upon various forms of polluting hydrocarbons for energy to run its industries, power plants and vehicles. With the increasing industrialization and population, it is challenging to even fathom the consequences of depletion of non-renewable energy sources. However, in light of the growing concern of climate change, India is on an upward trajectory to ensure the adoption of other eco-friendly alternatives for energy. In this regard, electronic vehicles (“EVs”) are currently being perceived as a lucrative alternative to the customary petrol/ diesel vehicles.

India’s e-mobility initiatives for pollution-free commercial and private transportation have prompted many established vehicle manufacturers and new entrants to begin manufacturing of EVs in the last mile connectivity and bulk short/long distance transportation space.<sup>1</sup> Mahindra & Mahindra is a leading vehicle manufacturer in the country and is expected to launch eight EVs by 2027. It is expected that four of these EVs will be derived from the company’s range of petrol and diesel products and by 2025, the company may launch four new SUVs that will be underpinned by a “born-electric” platform and designed for electrification from the ground up. The executive director of Mahindra & Mahindra, at a recent press conference indicated that the company has earmarked a substantial outlay, of approximately INR 3,000 crore (approx. US \$ 400 million) for auto electric products, in order to aggressively expand its all-electric range. He also mentioned that the company was open to funding coming in from outside that will help in a faster growth, not just for capital, but also in respect of any expertise which the future investors/ private equity firms or other strategic partners may provide.<sup>2</sup> We understand that TVS Motor, India's third largest two-wheeler maker, is in talks with a clutch of global private equity investors to raise INR 2,220-3,700 crore (approx. US \$ 300-500 million) for its new EV subsidiary with the aim to expand its EV business.<sup>3</sup>

The rise in the prices of petrol and diesel across the World has been a contributing factor in initiating the shift to EVs. While a part of the population takes pride in opting for an environmentally safe alternative, another part has started looking at EVs in light of the hike in prices of conventional fuel sources which has led to sharp escalation of overall running cost of petrol/diesel vehicles.

The Government has been trying to encourage adoption of electric mobility through several policy initiatives as it wants to curb crude imports and high level of pollution in Indian cities. In this article, we look at some of the initiatives of the Government to ensure significant adaptability of the public towards EVs, including an overview of the laws applicable in this sector.

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<sup>1</sup> Singhal, Neeraj Kumar, ‘Electric Vehicle Policy Framework in India’, Medium, available online at <https://medium.com/batterybits/electric-vehicle-policy-framework-in-india-6bdc3ed64ed7>, last accessed on November 20, 2021.

<sup>2</sup> Gandhi, Shirish, ‘Mahindra plans to launch 8 EVs by 2027 under new sub brand’, Autocar India, available online at <https://www.autocarindia.com/car-news/mahindra-electric-sub-brand-likely-plans-for-8-ev-launches-by-2027-422580>, last accessed on November 28, 2021.

<sup>3</sup> Thakkar, Ketan and Shyam, Ashutosh R, ‘TVS in talks to raise up to \$500 million for EV subsidiary’, Economic Times, available online at [https://economictimes.indiatimes.com/industry/renewables/tvs-in-talks-to-raise-up-to-500-million-for-ev-subsiadiary/articleshow/87595707.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/industry/renewables/tvs-in-talks-to-raise-up-to-500-million-for-ev-subsiadiary/articleshow/87595707.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst), last accessed on November 28, 2021.

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## Policy Initiatives by the Government

The Government of India has taken several initiatives in order to promote the adoption of EVs as a viable alternative. In this regard, we have provided below, a brief overview of such initiatives proposed by the Government.

(i) ***Automotive Mission Plan 2006-16 ("AMP-I")***

In January 2007, the AMP-I was launched in India with the vision of making India emerge as the prime destination in the globe for designing and manufacturing automobiles and auto components and providing additional employment to people<sup>4</sup>. Although, the AMP-I did not extensively deal with the nuances relating to EVs in India, there were certain incentives such as provision of investment incentives, exemptions from payment of duties, that were proposed to be offered under the AMP-I for development of infrastructure including for EVs.

(ii) ***National Mission on Electric Mobility***

In the year 2011, the National Mission on Electric Mobility was announced. In terms of the mission, an ambitious target was set to completely cease the sale of petrol/diesel run vehicles by 2030 in India and solely have EVs to replace such vehicles. To initiate the roadmap to achieve this target, the Union Cabinet approved the setting up of a National Council for Electric Mobility ("**NCEM**"), to act as the apex body in the Government for making any recommendations in such matters. The National Board for Electric Mobility ("**NBEM**") was also set up to assist the NCEM at a secretary level, by the Department of Heavy Industry ("**DHI**")<sup>5</sup>. However, there was no substantive plan that was drawn to commence the implementation of the mission until 2013 i.e., until the Electricity Mobility Mission Plan 2020 was launched.

(iii) ***Electricity Mobility Mission Plan 2020 ("EMP")***

In 2013, the EMP was launched which provided the vision and the roadmap for the faster adoption of EVs and their manufacturing in India. The agenda of EMP was designed in a manner to enhance national fuel security, to provide affordable and environmentally friendly transportation and to enable the Indian automotive industry to achieve global manufacturing leadership<sup>6</sup>. The EMP had also set a target to achieve 6-7 million sales of hybrid and EVs by the year 2020.

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<sup>4</sup> Automotive Mission Plan 2006-2016 issued by Ministry of Heavy Industries & Public Enterprise, available online at [https://dhi.nic.in/writereaddata/Content/Automotive%20Mission%20Plan%20\(2006-2016\).pdf](https://dhi.nic.in/writereaddata/Content/Automotive%20Mission%20Plan%20(2006-2016).pdf).

<sup>5</sup> Press Release available at <https://pib.gov.in/newsite/PrintRelease.aspx?relid=71401>.

<sup>6</sup> Electricity Mobility Mission Plan 2020, issued by DHI, available online at <https://dhi.nic.in/writereaddata/Content/NEMMP2020.pdf>

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(iv) ***Phase I of the Scheme of Faster Adoption and Manufacturing of Electric Vehicles in India ("FAME – I")***

In 2015, pursuant to the EMP, the DHI came up with a FAME-I scheme in order to provide a fillip to EVs by primarily working on four focus areas, namely,

- (a) Demand Creation – where, the purchasers of EVs and hybrid vehicles were sought to be given an incentive by way of upfront reduction of the cost of such vehicles;
- (b) Technology Platform – where, several grants were sought to be sanctioned by the Government for research and development ("R&D") of EVs and components of EVs;
- (c) Pilot Project – where, certain grants were proposed to be sanctioned for building awareness and increasing utilisation of eco-friendly vehicles;
- (d) Charging Infrastructure – where, grants were proposed to be provided for public charging infrastructure components, changes to the legal framework for facilitating infrastructure roll-out were assessed and strategies for designing optimal charging infrastructure was evaluated.

The FAME scheme was divided into two phases to ensure smoother implementation process. Accordingly, Phase – I of this scheme was initially launched for a period of 2 years, which commenced from April 1, 2015. The National Automotive Board ("NAB") was also set up by the Government with a panel of experts in the field to assist the NBEM and act as the main operating agency to implement FAME-I.

(v) ***Phase II of the Scheme of Faster Adoption and Manufacturing of Electric Vehicles in India ("FAME – II")***<sup>8</sup>

FAME- II scheme has been launched for a period of 3 years commencing from April 1, 2019 with an outlay of INR 10,000 crore (approx. US \$ 1.33 billion). The main objective of FAME - II is to encourage faster adoption of electric and hybrid vehicles by way of offering upfront incentive on purchase of electric vehicles and also by establishing the necessary charging infrastructure for electric vehicles. Based on the experience gained in the FAME - I, it was observed that sufficient number of charging infrastructure was required to achieve expected outcome of the plan, which is being addressed presently in FAME- II. In this regard, the Government has floated certain proposals<sup>9</sup> offering subsidy to states for deployment of 5,000 electric charging stations in cities and highways. Recently, the DHI issued a notification announcing amendments to the scheme in order to increase the subsidy for electric two-wheelers. It increased the demand incentive for electric two-wheelers from INR 10,000 to INR 15,000 (approx. US \$ 132 -200) per KWh. Moreover, it has also increased the maximum

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<sup>7</sup> Please refer <https://www.fame-india.gov.in/ViewNotificationDetails.aspx?RowId=5>

<sup>8</sup> Please refer <https://fame-india.gov.in/WriteReadData/userfiles/file/FAME-II%20Notification.pdf>

<sup>9</sup> The Department of Heavy Industries has issued an Expression of Interest Inviting Proposals for availing incentives under Fame India Scheme Phase II for deployment of EV charging infrastructure on Highways/ Expressways dated October 12, 2020 (F.No. 1(06)/2019-NAB-II (Auto) (21349)).

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incentive per vehicle, which was capped at 20% earlier to 40% of the cost of vehicles, for electric two wheelers. Further, the FAME – II has been extended for a period of two years after March 31, 2022.<sup>10</sup>

(vi) ***Paris Agreement***<sup>11</sup>

In 2016, the Paris Agreement was signed with the United Nations Framework Convention on Climate Change (“UNFCCC”), which deals with concerns relating to mitigation of greenhouse gas emissions. The eventual goal sought to be achieved through the Paris Agreement was to limit the increase in global average temperature, in order to diminish the risks and effects of climate change. India, as a signatory to the Paris Agreement, acceded to the same and the agreement came into effect from November 04, 2016. In terms of the Paris Agreement, signatory countries are required to determine, plan, and regularly report details pertaining to the contribution that it undertakes to mitigate global warming. India has been reiterating its commitment to the Paris Agreement by undertaking various efforts including moving to power sources that are non-fossil fuel based through shifting the automobile industry towards EVs. Moreover, recently, the Prime Minister of India, Shri Narendra Modi, while addressing that nation specified that India was well on track to achieve its Paris Agreement targets well before 2030. During the COP26 climate summit held in Glasgow, the Prime Minister committed to achieving net zero carbon emissions by 2070 and increasing its non-fossil energy capacity to 500 GW by 2030. He also committed that India will fulfil 50% of its energy requirements through renewable energy and also reduce its total carbon emission by one billion times by the year 2030.<sup>12</sup>

(vii) ***Automotive Mission Plan 2016-26 (“AMP- II”)***<sup>13</sup>

AMP-II aims to make the Indian automotive industry a significant contributor to the “Skill India” program and make it one of the largest employments creating engines of the country. Under the AMP-II it has been decided that adequate incentives will be given for speedy development of an indigenous component design and manufacturing base for the electric and hybrid vehicle industry to take off in India.

(viii) ***Production Linked Incentive (“PLI”) schemes***

To further the objective of attracting investments in the manufacturing sector and to create large scale manufacturing ecosystem in the country, the Government has launched PLI schemes as part of Make in India. The PLI schemes provide incentives either in form of cash incentive (disbursed through direct bank transfer) or by way of any other adjustment mechanism to the selected investors. The incentives offered are based upon the eligibility criteria of the investors which includes factors such as incremental sales/ turnover (which

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<sup>10</sup> Press release available at <https://pib.gov.in/PressReleasePage.aspx?PRID=1744394>.

<sup>11</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>12</sup> Available at [https://www.mea.gov.in/Speeches-](https://www.mea.gov.in/Speeches-Statements.htm?dt/34466/National+Statement+by+Prime+Minister+Shri+Narendra+Modi+at+COP26+Summit+in+Glasgow)

[Statements.htm?dt/34466/National+Statement+by+Prime+Minister+Shri+Narendra+Modi+at+COP26+Summit+in+Glasgow](https://www.mea.gov.in/Speeches-Statements.htm?dt/34466/National+Statement+by+Prime+Minister+Shri+Narendra+Modi+at+COP26+Summit+in+Glasgow), last accessed on November 25, 2021

<sup>13</sup> Please refer <http://www.siamindia.com/uploads/filemanager/47AUTOMOTIVEMISSIONPLAN.pdf>

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means sales of manufactured goods over a given period minus sales of manufactured goods in the base year), incremental investments (which means investment made after the end of the base year) and investment commitment. The type of investment depends on the sector in which an applicant falls. For the purposes of promoting the manufacture of EVs, PLI schemes for the following sectors become relevant:

(a) Advanced Chemistry Cell (ACC) Battery Storage<sup>14</sup>

With the increasing promotion of EV industry in India, the need for offering incentives to battery manufacturer has become prominent. The national programme on advanced chemistry cell (“**ACC**”) battery storage was therefore notified on June 09, 2021 by the DHI, with a view to incentivize both domestic and foreign investors to set up giga scale ACC manufacturing facilities. The following are certain key aspects of the scheme:

- **Tenure:** Financial year 2024-2025 to financial year 2028-2029 and allows 2 (two) years to establish manufacturing facilities.
- **Target segment:** Setting up cumulative ACC manufacturing facility of 50 (fifty) GWh and an additional facility of 5 (five) GWh for niche ACC technologies.
- **Incentives offered:** The overall incentive outlay for the tenure of the scheme is INR 18,100 crore (approx. US \$ 2.45 billion).
- **Incentive slab/ eligibility criterion:** The scheme does not specify the incentive slabs or the eligibility criterion and the detailed guideline on the said aspects is awaited.

(b) Automobiles and auto components<sup>15</sup>

The PLI scheme for the automobile and auto component industry was notified by the Ministry of Heavy Industries on September 23, 2021. The scheme was launched to enhance India’s manufacturing capabilities for advanced automotive products and attract investments in the automotive manufacturing value chain. The applications are being invited under the scheme and the application window will be open for a period of 60 (sixty) days from November 9, 2021, unless extended. The key aspects of the scheme are as follows:

- **Tenure:** 5 (five) years.
- **Target Segment:** The scheme has 2 (two) components i.e., champion original equipment manufacturer (“**OEM**”) incentive scheme and component champion incentive scheme. Under the champion OEM incentive scheme, (a) automotive OEM companies or its group companies, and (b) new non-automotive investor

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<sup>14</sup> Please refer <https://dhi.nic.in/writereaddata/UploadFile/ACC%20Scheme%20Notification%209June21.pdf>.

<sup>15</sup> Please refer <https://dhi.nic.in/writereaddata/UploadFile/PLI%20Auto%20Scheme.pdf>.

company or its group companies (who are not currently in automobile or auto component manufacturing), manufacturing advanced automotive technology vehicles including battery electric vehicles, hydrogen fuel cell vehicles etc, are eligible to claim incentive. The component champion incentive scheme covers (a) auto component manufacturing company or its group companies, (b) automotive OEM companies or its group companies, and (c) new non-automotive investor company or its group companies, manufacturing advanced automotive technology components as notified by the Ministry of Heavy Industries.

- **Incentive period:** Financial year 2023-2024 to financial year 2027-2028. Incentive under the scheme will be applicable starting from the financial year 2022-2023 which will be disbursed in the following financial year.
- **Incentive offered:** Under the champion OEM incentive scheme, the incentives are offered in the range of 13% to 16% of the determined sales value (which means total sales for eligible vehicles/ components minus total sales for eligible/ components in the base year i.e., financial year 2019-2020). Under the component champion incentive scheme, the incentives are offered in the range of 8% to 11% of the determined sales value. The overall incentive outlay for the tenure of the scheme is INR 25,938 crore (approx. US \$ 3.46 billion).
- **Incentive ceiling:** No applicant selected for a segment shall be entitled to receive incentive more than 25% of the total incentive under this scheme.
- **Eligibility:** A company or its group companies involves in automotive vehicle and components manufacturing business should meet the threshold criteria, as specified in the table below. Further, a new non-automotive investor company or its group companies are required to have a global net worth of INR 1,000 crore (approx. US \$ 135 million) as on March 31, 2021 and a minimum cumulative new domestic investment of INR 2000 crore (approx. US \$ 270 million) in case of OEM and of INR 500 crore (approx. US \$ 67.40 million) for components manufacturing.

Eligibility Criteria	Automotive OEM	Automotive Components
Global revenue (including revenue of group companies)	INR 10,000 crore (approx. US \$ 1.35 billion)	INR 500 crore (approx. US \$ 67.40 million)
Investment in fixed assets (including investment of group companies)	INR 3,000 crore (approx. US \$ 405 million)	INR 150 crore (approx. US \$ 20 million)

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Furthermore, eligible companies are required to ensure determined sales value of INR 125 crore (approx. US \$ 16.83 million) under the champion OEM incentive scheme and of INR 25 crore (approx. US \$ 3.35 million) under the component champion incentive scheme for the first year. The eligible companies are also required to ensure a growth of 10% in determined sales value on year-to-year basis going forward.

(ix) ***Vehicle Scrappage Policy***

The Vehicle Scrappage Policy, launched on August 13, 2021, is a government-funded programme to replace old vehicles with modern & new vehicles on Indian roads. The policy is expected to reduce pollution, create job opportunities, and boost demand for new vehicles. It aims to reduce India's oil imports through greater deployment of new fuel-efficient vehicles; to reduce environmental and noise pollution; to improve road and vehicular safety by removing old, unsafe and unreliable vehicles; to boost the availability of low-cost recycled inputs like plastic, steel, aluminum, steel, rubber, and electronics for the OEMs. According to the policy, commercial vehicles aged more than 15 years and passenger vehicles aged more than 20 years will have to be mandatorily scrapped if they do not pass the fitness and emission tests. The policy does not treat a vehicle as scrap just because of its age, but considers other factors such as quality of brakes, engine performance and others. The objective is to phase out old cars, reduce urban pollution levels and stimulate automotive sales, which continues to record slowdown amid India's post-COVID recovery phase. Additionally, the vehicle scrappage policy is also said to be a part of a larger stimulus package majorly requested by original equipment manufacturers (OEMs) to stir their demand.<sup>16</sup> The policy also supports India's 'Green India' mission, as it creates space for a cleaner fleet of vehicles. The policy will be a major demand driver, with implementation focused on discounts for eligible users, infrastructure development for fitness testing of old vehicles, and a well-connected network of scrapping centers. Tata Motors has already planned the establishment of four scrapping centers in Howrah, Karnal, Hyderabad, and Greater Mumbai.<sup>17</sup> The policy addresses the intent of all stakeholders from exporters, importers, car dealers, micro, small & medium enterprises (MSMEs), OEMs and end consumers. The Indian Prime Minister, Shri. Narendra Modi, while introducing the policy stated that the policy is an important link to achieve the circular economy of waste to wealth. It will energise India's auto sector and metal sector under the principles of reuse, recycle and recover.

(x) ***State-level policies and schemes***

In addition to the abovementioned interventions by the Central Government, several states have also enacted policies for promoting the use and manufacture of EVs. Individual state policies, however, have some difference too. While some states intend to boost demand for electric scooters and cars, others have chosen to promote EV manufacturing instead, at least for now.

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<sup>16</sup> Available at <https://www.ibef.org/blogs/vehicle-scrappage-policy>, last accessed on December 2, 2021.

<sup>17</sup> Please refer <https://medium.com/batterybits/electric-vehicle-policy-framework-in-india-6bdc3ed64ed7>

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For instance, the policies formulated by Maharashtra, Delhi and Gujarat are demand focussed and provide for substantial incentives to EV buyers, even making the upfront cost of EVs competitive with their internal combustion engine (“ICE”) counterparts in certain cases. Notably, these state subsidies are over and above those granted by the central government under FAME - II. On the other hand, southern states, among others, are primarily supply focussed and are targeting EV production instead. For instance, the policies formulated by Tamil Nadu, Andhra Pradesh, Telangana and Karnataka are each aiming to attract thousands of crores of investment from EV makers in the next few years by providing them subsidies on capital investment, taxes, power tariff and so on.

A blend of all of the above enacted policies coupled with improved infrastructure and a transition in market outlook towards EVs will certainly push India towards successful EV adoption and environmental sustainability.

## Legal Framework

### (i) *Charging infrastructure for EVs*

The Ministry of Power, Government of India (“MoP”), had issued a regulation regarding delicensing the sale of electricity at charging stations vide notification dated April 13, 2018. Under this regulation it was clarified that during the activity of charging of battery for use in EVs, the charging station does not perform transmission, distribution or trading of electricity, hence the charging of batteries of EVs through charging stations does not require any license under the provisions of the Electricity Act, 2003.

Subsequently, in December 2018, the MoP announced a policy for the rollout of EV charging infrastructure where it outlined a plan to support the expansion of EVs in the country. This had been further revised and examined in order to adopt some new suggestions and the MoP subsequently issued the ‘Charging Infrastructure for Electric Vehicles-Revised guidelines and standards’ vide notification dated October 10, 2019.<sup>18</sup> As per the revised guidelines, private charging at residences/offices has been permitted. Further, charging station/chain of charging stations have been allowed to obtain electricity from any generation company through open access. The MoP has clarified that setting up of public charging stations would be a de-licensed activity and any individual/entity is free to set up public charging stations, provided that, such stations meet the specified technical as well as performance standards and protocols as well as any further norms/standards/specifications laid down by MoP and Central Electricity Authority from time to time.<sup>19</sup>

Thereafter, the MoP had issued a notification dated June 8, 2020 for amending the ‘Charging Infrastructure for Electric Vehicles-Revised guidelines and standards’. The notification provided that the tariff for supply of electricity to the EV charging stations would be determined by the appropriate electricity commissions in accordance with the tariff policy issued under the Electricity Act, 2003. The amendment capped the upper limit for the tariff

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<sup>18</sup> Please refer [https://powermin.gov.in/sites/default/files/uploads/Revised\\_MoP\\_Guidelines\\_01\\_10\\_2019.pdf](https://powermin.gov.in/sites/default/files/uploads/Revised_MoP_Guidelines_01_10_2019.pdf)

<sup>19</sup> Please refer [https://powermin.gov.in/sites/default/files/webform/notices/OM\\_merged.pdf](https://powermin.gov.in/sites/default/files/webform/notices/OM_merged.pdf)

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for supply to the EV charging stations as the average cost of supply plus 15% unless otherwise specified in the tariff policy.<sup>20</sup>

In addition, the Ministry of Housing and Urban Affairs, Government of India, amended the Model Building Bye-Laws, 2016 (“**MBBL 2016**”) for adding the enabling provisions for installing charging infrastructure in the building premises and core urban areas of the cities. The MBBL 2016 was amended to implement the long-term vision of electric mobility during the next 30 (Thirty) years. The MBBL 2016 also includes an explanatory note for introducing the amendments, clarifying the rationale for establishing the EV charging infrastructure and delving into greater detail as regards the EV charging technology and available options.<sup>21</sup>

(ii) ***Measures for safety and supply of electricity***

The Central Electricity Authority had introduced the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010 to provide for the measures for ensuring safety and protection while supply of electricity. Pursuant to a notification dated June 28, 2019, the Regulations were amended to recognise EVs and extended its ambit to regulate the supply of electricity through charging stations.<sup>22</sup> The amendment primarily laid down the general safety requirements and earth protection system for the EV charging stations along with provisions for testing of charging stations. The amendment regulations also specify the international safety standards for charging stations.

(iii) ***Road transport and other traffic regulation***

Currently, the Motor Vehicles Act, 1988 and the rules framed thereunder is the statute which governs the functioning and manner of usage of motor vehicles in India, including the requirement of obtaining licenses, registration of the motor vehicles, insurance of the motor vehicles and obtaining of permits for transport vehicles and other traffic regulations. Since EVs also qualify as ‘motor vehicles’ under the Motor Vehicle Act, 1988, EVs are also governed by the provisions of the statute. It is pertinent to note that currently, there is no specific central legislation which deals solely with the governance of EVs. In order to incentivize the purchase of EVs by consumers, recently, the Ministry of Road Transport and Highway has issued a draft notification under the Central Motor Vehicles Rules, 1989 to the effect that EVs shall be exempted from the payment of fees for the purpose of issue or renewal of registration certificate and assignment of new registration mark<sup>23</sup>. However, this exemption has not been notified as of date.

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<sup>20</sup> Please refer [https://powermin.gov.in/sites/default/files/Amendment\\_in\\_Revised\\_Guidelines\\_EV.pdf](https://powermin.gov.in/sites/default/files/Amendment_in_Revised_Guidelines_EV.pdf)

<sup>21</sup> Please refer [https://mohua.gov.in/upload/whatsnew/5c6e472b20d0aGuidelines%20\(EVCI\).pdf](https://mohua.gov.in/upload/whatsnew/5c6e472b20d0aGuidelines%20(EVCI).pdf)

<sup>22</sup> Please refer [https://cea.nic.in/wp-content/uploads/2020/02/measures\\_safety\\_2019-1.pdf](https://cea.nic.in/wp-content/uploads/2020/02/measures_safety_2019-1.pdf)

<sup>23</sup> Please refer notification dated May 27, 2021 vide GSR 352 (E).

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(iv) ***Other interventions by the Government of India***

Other key interventions by the Government to promote EVs include reduction of goods and services tax on EVs from 12% to 5%, deduction of income tax on the interest paid on loans taken to purchase EVs, introducing green license plates for EVs etc.

Apart from the above, certain legislations such as the Bureau of Indian Standards Act, 2016 and the rules and regulations framed thereunder and various other regulations that have been formulated under the Environment Protection Act, 1986, such as the Batteries (Management and Handling) Rules, 2011, the E-Waste (Management) Rules, 2016, the Dangerous Goods (Classification, Packaging, Labelling) Rules, 2013 and Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016, etc. also become applicable to manufacturers of EVs/ EV components.

## Inherent issues with EVs

Like two sides to a coin, every technological advancement, comes with challenges in its implementation. Some of the major issues with respect to the adoption of EVs are discussed below.

(i) ***Dependence on lithium-ion batteries***

Primarily, the batteries which are utilised in the EVs are made out of lithium-ion cells that essentially involve the usage of metals such as lithium, cobalt, nickel and manganese. This essentially implies that we need plentiful reserves of lithium and such other metals in order to ensure the smooth transition of fuel run vehicles to EVs. Therefore, adequate reserves of such metals are necessary for competitive manufacturing of the batteries, as a result of which procurement of such metals and consequently the manufacturing of EV batteries is largely dependent on imports. India imported around 450 million units of lithium batteries valued at INR 6,600 crore (approx. US \$ 929.26 million) in the financial year 2019-20, Union Minister of Science and Technology and Earth Sciences Harsh Vardhan informed Lok Sabha on February 7, 2020.<sup>24</sup> Nevertheless, there has been progress in developing alternatives to lithium-ion batteries and major players of the automobile industries such as Panasonic, Tesla, Toyota, etc. are at the lead of the research to finding such alternative to lithium-ion batteries<sup>25</sup>.

There have also been developments with regards to a dual carbon battery which could challenge the extant lithium-ion batteries. These are expected to be cheaper and comparatively less toxic in nature. A research team of Indian Institute of Technology, Hyderabad is currently working on intensifying the battery's energy density.<sup>26</sup> As another alternative, Indian Oil Corporation, along with an Israel based company, Phinergy Ltd., is

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<sup>24</sup> Please refer <http://164.100.24.220/loksabhaquestions/annex/173/AU1018.pdf>.

<sup>25</sup> Dream or nightmare: Why India should postpone its electric vehicle plans for ten years, available at: [http://economictimes.indiatimes.com/articleshow/69766788.cms?from=mdr&utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://economictimes.indiatimes.com/articleshow/69766788.cms?from=mdr&utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

<sup>26</sup> <https://www.thehindu.com/news/cities/Hyderabad/iit-hyderabad-research-team-develops-an-alternative-to-lithium-ion-batteries/article34248169.ece>

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attempting to develop the aluminium-air battery (developed by Phinergy Ltd.), since availability of lithium in the country is limited as compared to bauxite which is used to make aluminium.

(ii) ***Lack of infrastructure***

The charging infrastructure is the backbone of electric mobility but is also perceived to be one of the key barriers to EV adoption in India given its limited availability and long charging times. India had about 1800 charging stations as of March 2021<sup>27</sup> spread across various cities. While India is picking up the pace in setting up the charging infrastructure, the development is not as much as is there in other regions like European Union (EU), USA or China. Clearly, it is evident that there is a huge dearth in this area and urgent need for setting up the infrastructure for boosting the sale of EVs in India. High operating cost, load on the electricity distribution companies (DISCOMs), and the uncertainty related to utilization rates of charging stations are holding back the charge operators from expanding their current reach.

However, policymakers and various automobile players are taking notice of the matter and, as a consequence, quite a few developments have been made to the legal and regulatory regime, as already highlighted in the previous section. In addition, the Department of Science and Technology, Government of India and the Office of the Principal Scientific Advisor (PSA) to the Government of India, working in close co-ordination with NITI Aayog, have developed a smart low-cost AC charge point (LAC), particularly for use by light EVs, such as e-scooter and e-autorickshaws that can be operated with a smartphone. This is a global breakthrough in affordable EV charging infrastructure. The low-cost investment for LACs in turn reduce the need for subsidies and concessions to the manufacturers by Government. The LAC device is intended to be highly scalable and deployed in places such as parking lots of metro and railway stations, shopping malls, hospitals, office complexes, apartments and even grocery and other shops.<sup>28</sup>

(iii) ***Consumer mindset***

In today's era, a consumer is driven by mainstream choices that are marketed through television and social media. EVs are clearly not marketed thoroughly in India leading to very limited awareness amongst the public, as a result of which, only a limited population has accepted EVs as a suitable alternative to the petrol/ diesel driven vehicles. Further, an Indian consumer is typically value conscious and desires the optimum utilization of his vehicle vis-à-vis its cost. In the current scenario, a consumer will only purchase an EV if it proves to be a good bargain in terms of both cost of purchase and maintenance cost. With the Government offering various incentives to boost the market for EVs, the aspect of cost of purchase gets addressed to an extent. However, with the appertaining issues including the dearth of charging facilities, the limitation of range and speed, frequency of battery replacement required, it appears that investing in an EV does not seem like a very profitable/ viable option.

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<sup>27</sup> India to require 400,000 charging stations for 2 mn EVs by 2026, available at: [https://www.business-standard.com/article/automobile/india-to-require-400-000-charging-stations-for-2-mn-evs-by-2026-report-121061200880\\_1.html](https://www.business-standard.com/article/automobile/india-to-require-400-000-charging-stations-for-2-mn-evs-by-2026-report-121061200880_1.html), last accessed on December 2, 2021.

<sup>28</sup> Please refer <https://pib.gov.in/PressReleasePage.aspx?PRID=1717977>.

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But the upcoming shift in consumer preference can also not be neglected. Considering the incentives being offered, and fuel efficiency along with technology that an EV provides over a petrol/diesel vehicle, many consumers globally are preferring EVs.

Global successes like Tesla have positively impacted the Indian consumers as well. Tesla is a world-renowned manufacturer of electric cars that aims for the world's transition to sustainable energy, and has recorded a hike in its sale worldwide by manufacturing energy efficient and low-cost EVs. Tesla has also announced its plan to launch in India along with a research and development centre. The brand value that Tesla holds can be a factor that may help the Indian consumers gain confidence in EVs. Thus, with evolving consumer attitude, it is safe to say that the market and purchaser preference toward EVs may eventually prompt sound development for the EVs.

E-rickshaws are one such area that can be used to understand the consumer perspective towards EVs. Among all forms of motor transport, e-rickshaw is the most efficient. Due to the expanding population, people are preferring e-rickshaws due to the interest in cost efficient first-and last-mile transportation. These battery-operated rickshaws have largely replaced the autos that run on conventional fuels, since they are cheaper and also low maintenance.

The demand for electric two-wheelers has also increased, especially since the announcement of the launch of e-scooters by Ola Electric. Companies like TVS, Bajaj Auto, Ampere Electric, Ather Energy, Hero Electric, etc. have also rolled out plans to invest in the development, manufacture and launch of new models of electric two wheelers.<sup>29</sup> Several startups have come up in this space to leverage the opportunity, for instance, the EV fleet startup BluSmart began working with both Tata Motors and Jio-BP. According to a report by McKinsey & Company, the demand for e-two-wheelers in India is expected to be around 4.5 to 5 million by financial year 2025 (accounting for approximately 25%-30% of the total EV market) and further increase to around 9 million by financial year 2030.<sup>30</sup>

(iv) ***Unaddressed issue of pollution***

The major misconception with respect to EVs is that the paradigm shift to EVs will resolve the issue of air pollution, although the pertinent issue to ponder upon is whether it is true or not. This is essentially because of the fact that coal is still the primary fuel that is used by the infrastructure industry. This in turn implies that the setting up and running of charging stations will ultimately depend on the highly polluting coal utilizing thermal power plants. Further, recycling of batteries is still a concern in India. A significant chunk of discarded batteries eventually ends up in garbage disposals/ backyard smelters, that use extremely polluting techniques to extract metal. India has formulated the Batteries (Management and Handling) Rules, 2001, for having a mechanism for disposal and handling of batteries, however, it is to be noted that the aforesaid rules only deal with lead-acid batteries and do not cover lithium-ion

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<sup>29</sup> Please refer <https://jmkresearch.com/electric-vehicles-published-reports/electric-two-wheeler-india-market-outlook-2/>

<sup>30</sup> Please refer <https://www.mckinsey.com/~media/McKinsey/Industries/Automotive%20and%20Assembly/Our%20Insights/The%20unexpected%20trip%20The%20future%20of%20mobility%20in%20India%20beyond%20COVID%2019/The-unexpected-trip-The-future-of-mobility-in-India-beyond-COVID-19-Final.pdf>

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recycling and as stated earlier, EVs typically use only lithium-ion batteries<sup>31</sup>. However, the Battery Waste Management Rules, 2020<sup>32</sup> are in the offing, which although are being still discussed upon, include a wide range of batteries, from disposable alkaline and mercury batteries to rechargeable ones such as lithium-ion and nickel-cadmium ones. The new draft explains in detail the responsibility of the battery manufacturer which range from setting up battery-waste collection centres and take-back systems to affixing targets for battery-waste collection from two to seven years after the rules come into effect.<sup>33</sup>

(v) ***Low R&D***

The in-depth study undertaken by DHI indicates that high priority R&D areas for India include battery cell technologies which will drive affordability and adoption. The electrodes and electrolyte within cells constitute one of the highest cost segments for lithium-ion batteries leading to considerable research in these areas. Indian component manufacturers do not have any patents as yet and the technology for such components are heavily borrowed from foreign equipment manufacturers.

However, automotive research and development body, the Automotive Research Association of India (ARAI), has been undertaking various research and development activities to ensure faster charging of EVs. It became public knowledge that the prototype of a model for fast charging has already been developed and the product is proposed to be available by December 2022. During a conversation with ARAI at the recent round table conference organised by the Ministry of Heavy Industries, it was highlighted that the launch of fast chargers will address the issue of charging and boost demand for the battery vehicles.

In order to resolve these barriers and for electric mobility to take off, it is essential that continued government intervention/support, high level ownership, adoption of mission mode approach for fast decision making, collaboration amongst various stakeholders, long term commitment with clearly defined short term and long term objectives and a synergized - holistic approach is essential.

## Solving the hurdles

Having realised the major setbacks that was being faced by the automobile industry with respect to adoption of EVs, certain steps have been taken by the Government in consultation with the MoP and DHI to solve these hurdles, as briefly described below.

(i) ***Delegation***

The first rule of management is delegation. It is not practical for the Government or the DHI to single-handedly implement all policies and regulations for ensuring adoption of EVs.

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<sup>31</sup> A Twist in the Tale: Electric Vehicles Will Worsen India's Pollution Crisis, available at <https://thewire.in/environment/electric-vehicles-lithium-ion-batteries-coal-power>

<sup>32</sup> Please refer <http://moef.gov.in/wp-content/uploads/2020/02/BATTERY-RULE.pdf>

<sup>33</sup> Please refer <https://scroll.in/article/992703/india-faces-two-major-challenges-in-its-transition-to-electric-vehicles>

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Accordingly, under the National Mission on Electric Mobility, the NCEM was constituted at the apex level with the NBEM at the secretary level. The NAB with a panel of experts was constituted under the NBEM to assist the NBEM. Further, several working groups and sub-groups/ task forces have been constituted under the NAB comprising of stakeholders to assist in micro detailing and rolling out the initiatives. Each facet of the initiative, such as R&D, demand side incentivization, infrastructure etc. have been allocated to various working groups and sub-working groups. All concerned ministries, industry representatives, R&D centres and experts from the academia are being adequately represented in these working groups and sub-working groups, thereby ensuring that plausible issues at various levels get addressed appropriately.

(ii) ***De-licensing the activity of setting up of charging infrastructure***

On December 14, 2018, the MoP issued a notification in relation to charging infrastructure for EVs and laid down certain basic guidelines and standards for regulation. In terms of the notification, the foremost roadblock created by virtue of dearth in charging stations (due to the fact that setting up public charging stations was a licensed activity under the Electricity Act) was done away with by de-licensing such activity and was made open to any individual/ entity to set up public charging stations, subject to complying with the performance standards and protocols laid down under the notification and any other norms/guidelines prescribed by the Ministry of Power and Central Electricity Authority from time to time. All companies will have the option of setting up stations in cities, however, only central utilities will be eligible to deploy such infrastructure on highways. The standards and guidelines have since then been further amended and revised to accommodate suggestions of various stakeholders.

(iii) ***Incentives***

The Government needs to function under the premise that a shift can happen only if the public at large believes it to be a viable option. But the cost of such vehicles stands as a barrier. Since the cost of EVs being manufactured at present stands on the higher edge, the Government should make sure that this additional cost is not being transferred to the customers. This can be ensured by way of subsidies to manufacturers or by added benefits in form of financial assistance, especially for the initial few years till there is a considerable amount of shift in perspective. The policy think tank of India, Niti Aayog has also recommended offering fiscal incentives to EV manufacturers, thereby discouraging privately owned petrol/ diesel fuelled vehicles. The Government also plans to order ride-hailing firms such as Uber and Ola, that are currently the pioneer in operating rented vehicles in the nation, to convert 40% of their fleets to electric by April 2026<sup>34</sup>. This scheme of incentivisation has been adopted by the Government under the PLI schemes and the scrappage policy recently adopted. Further, we note that various state specific incentives have also been offered by the respective state governments to boost manufacture and demand of EVs.

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<sup>34</sup> Govt plans to order Uber, Ola to convert 40% of their cars to electric by April 2026: report, available at <https://www.businesstoday.in/current/economy-politics/govt-plans-to-order-uber-ola-to-convert-40-of-their-cars-to-electric-by-april-2026-report/story/354244.html>

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(iv) ***State-wise implementation***

Amongst certain States, Delhi, Maharashtra, Karnataka, Uttar Pradesh, Kerala, Telangana, Andhra Pradesh and Uttarakhand are some of the major States that have come up with their policies and regulations for the upliftment of the EVs. The policies primarily aim to create a conducive environment for transition to EV environment from internal combustion engines. In this regard, certain States such as Delhi have waived off road tax, registration fees and MCD one-time parking fee for all electric two-wheelers with an advance battery and as regards Maharashtra, a 15% subsidy is sought to be provided to the first 1,00,000 owners of the EVs registered in the state.

(v) ***Increasing awareness of the consumers and participation by stakeholders in other industries***

While the Governmental Authorities are taking steps to resolve the hurdles and promote growth of manufacturing and adoption of EVs, a major contribution has been made on account of the changing consumer behaviour. With growing e-commerce where home delivery of various goods and services has become the new normal, delivery companies can play a paramount role in controlling the increased carbon footprint. The delivery ecosystem is a major contributor to the population of vehicles in India. It is thus remarkable that many such last mile delivery companies namely, Swiggy, Zomato, Bigbasket have shifted to use of EVs. Other e-commerce giants like Flipkart, Amazon have too shifted to EVs in their logistics network. This transition to EVs has reduced their operational costs by significant margins and as a consequence, their profitability is likely to increase. Besides financial incentives, the companies aim at reaching 100% electric operation in order to be more sustainable and environmentally aware.

Since speed is an essential factor for delivery companies, instead of charging stations, swapping stations would be a more convenient substitute. In light of this, several last mile delivery companies have set up swapping stations where the delivery personnel can exchange a fully charged battery with an exhausted one. Hence, a boost in awareness and effectiveness in one sector can encourage a shift to EVs overall.

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## Current Outlook and Way Forward

In the recent Express Mobility 2021 EV Conference: '*In-depth analysis of the Indian EV Ecosystem*', Mr. Nitin Gadkari, the Minister of Road, Transport and Highways, Government of India, in his speech highlighted that e-mobility is the future for India. He mentioned that the government intends to have EV sales penetration of 30% for private cars, 70% for commercial vehicles, 40% for buses, 80% for two and three-wheelers by 2030. In this context, he emphasised that the Government is supporting localisation of all EV components and INR 57,000 crore (approx. US \$ 7.56 billion) have been allotted for the same through the PLI scheme. He further mentioned that the Government has also allocated INR 18,100 crore (approx. US \$ 2.45 billion) for the manufacturing of advanced battery cells.<sup>35</sup>

Recently, the Ministry of Heavy Industries had also organized a round table conference to promote EVs in India. All relevant stakeholders from the Central and the State Governments as well as the Union Territories, along with industry leaders from automotive OEMs and automotive component manufacturers, battery storage entrepreneurs, start-ups and technical experts were a part of the conference to work out strategies to promote adoption of EVs in India and attract investments in manufacturing of EVs, batteries and high technology automotive components. During the conference, the Union Minister of Heavy Industries, Mr. Mahendra Nath Pandey emphasized that EVs have become a global phenomenon and that India should look to be on the centre stage of the global electric auto market. The conference placed reliance on three national schemes namely, FAME-II scheme, the National Programme on Advanced Chemistry Cell (ACC) and the PLI scheme for automobile and auto components.

It is noteworthy that currently, the focus of the Government is primarily towards addressing the issue of dependence of India on non-renewable energy sources and fossil fuels, in light of which various plans and incentive schemes have been floated to accelerate the market for EVs in India.

However, India is still on its way to formulate the laws and regulations that shall specifically govern the working of EVs. Having said so, it is also evident that although EVs have in essence penetrated the Indian market, but clearly there is a limitation in the number of EV models as compared to the petrol/ diesel fuelled vehicles, available in the market, as a result of which, the demand side of EV is rather conservative. However, a paradigm shift to EVs by 2030 as set by the Government appears to be a utopian target, unless there are more initiatives taken by the Government to increase awareness amongst the public and formalise the legal regime surrounding EVs to ensure smoother and faster adaptability of the EVs amongst the consumers.

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<sup>35</sup> Available at <https://www.financialexpress.com/auto/electric-vehicles/express-mobility-2021-ev-conference-in-depth-analysis-of-the-indian-ev-ecosystem/2378276/>, last accessed on November 28, 2021.

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