Techno-Commercial Analysis of currently available EV cars

by
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services includes:

1. Feasibility Analysis, Detailed Project Report, Financial Analysis (IM).
2. Financial Closure through Debt or Private Equity for Project Finance.
3. On-site and Off-site Project Management and EPC-Management Services.
4. Documentation and Transaction Services for Sale of Project.
5. Project Development and Transfer of Rights at NTP.

They lead consultant have 10+ years of experience in energy sector in India, Philippines, UK, Cambodia and Thailand. They are specialist in Solar PV projects,They provide tailored made engineering and management solutions for the clients needs. The details of this previous clients and projects will be provided on request.

VCE have different business horizons and revenue sources such as;

1. Engineering and Management Consulting.
2. Importing and Branding Pearl Jewellery.
3. Stock Market and Cross-Currency Trading.
4. Insurance and Investment Advisory.

From past 3 years they saw a good growth in our all business and expecting a good returns to all our stakeholders.

Apart from the businesses mentioned above, VCE also believe in give back to the society for building a greater future of our country. The various initiatives on VCE Society Pay Back are;

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In this initiative, they pay scholarship to poor under-privileged girls and pay their entire educational expense till class 12th. So that, financial burden never be the reason for them to drop out from schools. It also encourages the kids to study with more focus. Currently, we grant Rs. 50,000 (Fifty Thousand Rupees) per year for this. We believe, this amount is going to increase in future. (Amount Spent so far, Rs. 3.00 Lakhs+).

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In this initiative, they select students from various engineering and management colleges and provide them internship and training. Their internships and training are very unique in nature and its specially for the students of Core Engineering Sector (Electrical, Mechanical, Civil and Energy Engineering) and Finance Management for preparing them to corporate / industry ready. We provide them mentor from the industry. All this is done without taking any fee / favor from the students.

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Introduction

An EV also known as a Electric vehicle which runs through electricity by means of a battery or solar panels or an electric generator connected to it which are rechargeable .The electric vehicle can be of any transport like rail, road, water or air ways. Mostly EV is commonly preferred to an Electric car. Electric cars may be the future, but they're still critically flawed in a key area.

An electric vehicle is same as fuel vehicle but with small changes in its internal structure. As fuel vehicles have an internal combustion engine whereas for an electric vehicle it has an electric motor with a controller connected to it. It uses a large battery which is fixed in it to power the electric motor and when the battery is low it is plugged to a charging point station . As it runs on electricity, the vehicle doesn't contain any tailpipe or a fuel tank. The electric motor in the vehicle gives the acceleration to the vehicle. The battery inside the vehicle powers all the electronic devices in the car same as the fuel vehicles. However electric vehicles uses electric motor the driver has an advantage of motors momentum when pressure is applied on the brakes also as fuel vehicles converts all the potential energy in the motor into heat electric vehicle uses the forward momentum of electric motor to recharge the battery

source: internet

Fig: Image of an Electric car

Working Principle and its Types

The electric vehicle power source is the battery which acts as a "gas tank" and supplies the electric motor with the energy necessary to move the vehicle. This gives the car acceleration. When the vehicle is idle there is no electrical current being processed, so energy is not being used up. The controller acts as a regulator, and controls the amount of power received from the batteries so the motor does not burn out. This battery powers all of the electronic devices in the car, just like the battery in a gas-powered car. Everything else in the electric car is basically the same as its gas-powered equivalent: transmission, brakes, air conditioning, and airbags. Since electric vehicles use an electric motor, the driver can take advantage of the motor's momentum when pressure is applied on the brakes. Instead of converting all the potential energy in the motor into heat like a fossil fuel-powered car does, an electric car uses the forward momentum of the motor to recharge the battery.

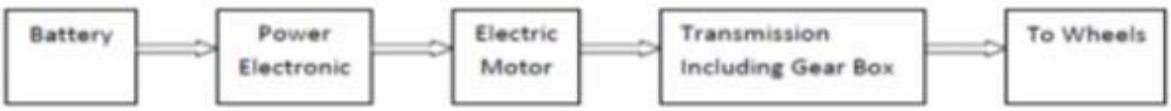


Fig: Flow of Electric vehicle

image source: internet

The main components of an electric vehicle are :

- **Onboard Battery charger:** This is mainly used to convert power from AC to DC and supply this power to charge battery. It helps in preventing over heating of battery by limiting power supply to the battery.
- **Battery:** This is a key component for energy storage. Lithium ion batteries are the most widely used batteries. Earlier, lead acid batteries and nickel metal hydride batteries were used, which are obsolete now.

- **Power electronic component:** An inverter is used to convert DC power from lithium ion battery to AC power, which is used to run the motor. The speed at which motor runs can be changed using this inverter.
- **Motor:** Many types of motors are available for use in electric vehicle such as DC motor, DC brushless motor, induction motor, permanent magnetic synchronous motor etc.
- **AC-DC converter:** Since the voltage required by various devices is different from the voltage supplied by the battery, dc-dc converter is used to bridge this gap.
- **Regenerative Braking:** As the electric car moves, the electric motor generates a forward momentum and it can be used to charge the batteries when you apply the brakes, which is commonly referred to as regenerative braking. It can recover up to about fifteen percent of used energy for acceleration. Though this component is indeed effective, it cannot generate enough to fully recharge an electric car.
- **Drive System:** The function of the drive system is to transfer mechanical energy to the traction wheels, generating motion. An electric car does not require a conventional transmission. However, it has several internal configurations depending on the components in use. For example, there are some designs which use multiple smaller motors that power each wheel individually. Large electric motors, on the other hand, may be coupled to the rear wheels using a differential housing.

The components of an electric powered car are much simpler compared to the components of a gasoline-powered car engine. However, electric cars cannot go as fast as gasoline-powered cars can. Electric vehicles, on the other hand, can reduce energy consumption in different ways like automatically turning the engine off when the car is idle.

There are three main types of EV's, classified by the degree that electricity is used as their energy source.

Hybrid Electric Vehicle (HEV's):

HEVs are powered by both petrol and electricity. The electricity energy is generated by the car's own braking system to recharge the battery. HEVs start off using the electric motor, then the petrol engine cuts in as load or speed rises. The two motors are controlled by an internal computer which ensures the best economy for the driving conditions.

Plug-in Hybrid Electric Vehicles (PHEVs):

This type of EV is powered by both petrol and electricity. They can recharge the battery through both regenerative braking and recharge of battery and also on petrol engine when the battery is low.

Battery Electric Vehicles (BEVs):

These type of vehicles run only by electricity and do not have a petrol engine, fuel tank or exhaust pipe. They use an external charging outlet to charge the battery.

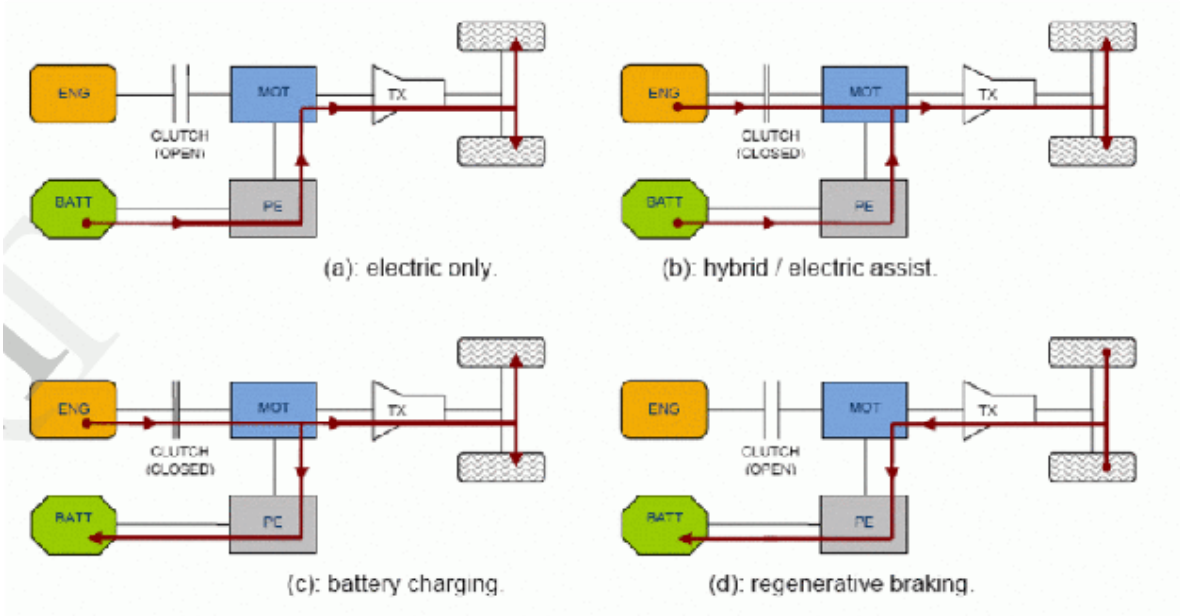


Fig: Types of cars

image source: internet

Environmental Impact

Electric cars also have impacts arising from the manufacturing of the vehicle. Since battery packs are heavy, manufacturers work to lighten the rest of the vehicle. As a result, electric car components contain many lightweight materials that require a lot of energy to produce and process, such as aluminium and carbon-fiber-reinforced polymers and the mining and processing of metals such as lithium, copper, and nickel requires much energy and it can release toxic compounds. In developing countries with weak legislation and/or enforcement thereof, mineral exploitation can increase risks further.

Benefits that takes place on environment:

There is no doubt in any way that electric vehicle saves environment when compared with the fuel vehicles. Firstly as there is no internal combustion of fuel there is no exhaust pipe no greenhouse gases are exhausted into the environment. Due no emission of gases into air airpollution can be decreased. As per the convenient of the user the vehicle can be charged and most of the electric vehicles can travel upto 150 to 200 kilometres before they need to be charged. Due to long lasting battery these are cost effective than regular cars. With silent engine these vehicles less noise pollution. Moreover as electric vehicle have fewer moving parts it is cheaper to maintain than fuel based vehicles. As there is no useage of fuel like fuel vehicles fossil fuels in the environment is not disturbed. All the above points clearly justifies electric vehicle saves environment.

Marketing

Technical research	Grid management	Live testing	Go-to-market
• Pre-competition infra-structure research – DTE, Southern California Edison • Smart metering research – BC Hydro, PG&E, SCE, SCL • Advanced battery storage research – AEP, Xcel • Environmental impact assessment – DTE	• Evaluation of grid integration • Partnership with smart grid technology partners – Duke and Xcel with GridPoint • Vehicle-to-grid research and proof of concept – PG&E – Manitoba Hydro	• Owned PHEV fleet testing – Many • Third-party fleet testing and support – Duke Energy and Coke – Con Edison and the *New York Times*	• Live vehicle charging station – Portland General Electric, PG&E, Xcel – TEPCO (Japan), EDF (France) testing rapid charging stations • Rebate stimulus to drive uptake – Austin Energy

Figure explains the market participation of EV

image source: internet

Marketing of a economic EV is a big deal. When a new thing getting launched every desires to have something different than the previous versions and expect much than last one. At first the electric vehicle is compared with the past models of the same type. Later the cons of the past models were discussed. Also the features that we were introduced to the new economic model were explained. Mostly the consumers requires user friendly manual. So the features of the newly launched should be user friendly and that will be added to it. Moreover the speed, mailage of the product its interior design and distance it can travel per one charge matters and are explained. Also the price that it ranges when compared to the past launched vehicles also matters.

Many utility and non-utility executives, encouraged by increased government interest and public awareness, have begun developing some key market enablers. To achieve a state where individual transportation is powered more and more by electricity, these key building blocks are critical, and many of them fall squarely in the domain of electric utilities.

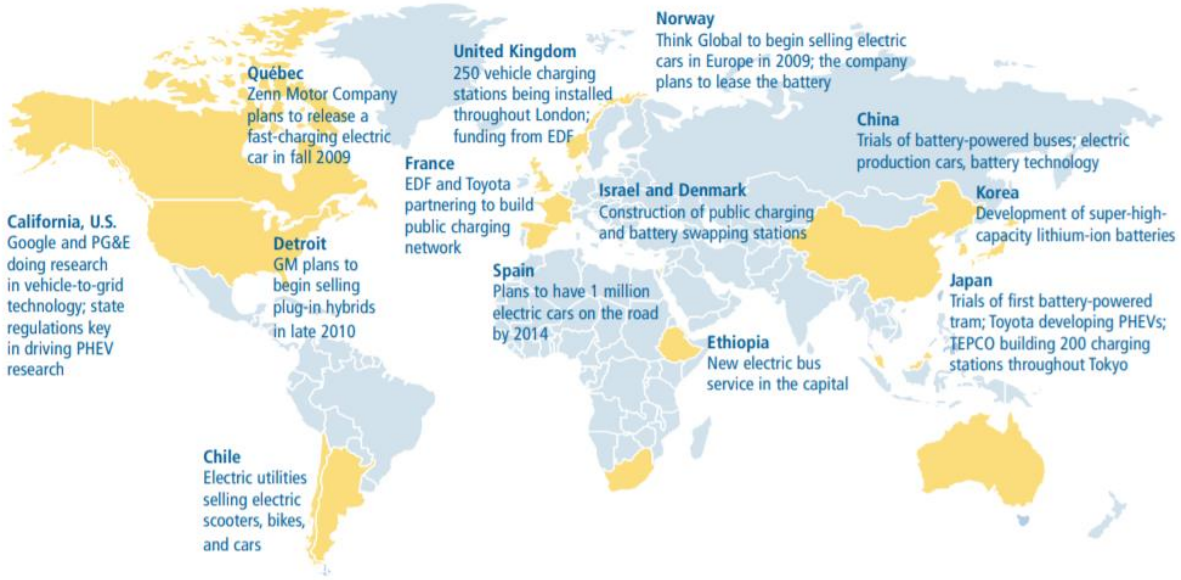


Figure explains the Electric vehicle market highlights worldwide image source: internet

Non-utility participants are emerging that could possibly impact utility business models. One example is Better Place. This start-up has landed a major joint development deal in the U.S. with aggressive plans to expand the electric vehicle marketplace one service area at a time. Another start-up, Envision Solar, plans on building wind- and solar-powered garages capable of charging vehicles primarily through renewable energy. Market developers like these can either become partners or disruptors of a utility's business model.

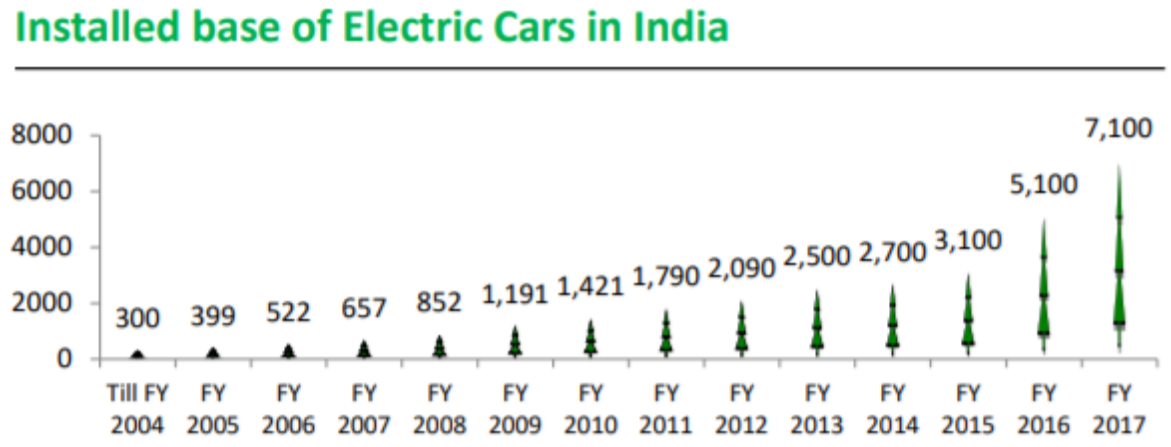


image source: internet

Strategies

Growing concerns over environmental pollution

ICE vehicles emit a high volume of GHG into the atmosphere. To curb this, the governments of several countries have taken initiatives for the deployment of EVs. These initiatives would help in improving air quality. The use of EVs will reduce the dependence on fossil fuels. Further, electric vehicles require lesser maintenance and operating costs than ICE vehicles.

Favourable government policies and subsidies

The governments of various countries have formulated stringent CO2 emission norms that have increased the demand for electric vehicles. Also, the governments are providing incentives and subsidies to encourage EV sales..

Heavy investments from automakers in EVs

Heavy investments from automakers are expected to cater to the growing demand for EVs and play a major role in the evolution of the electric vehicle market. OEMs offer electric vehicles in different segments ranging from small hatchbacks such as Nissan Leaf to high-end sedans like Tesla Model 3. The wide product offering has attracted many consumers and resulted in a growing market for electric vehicles.

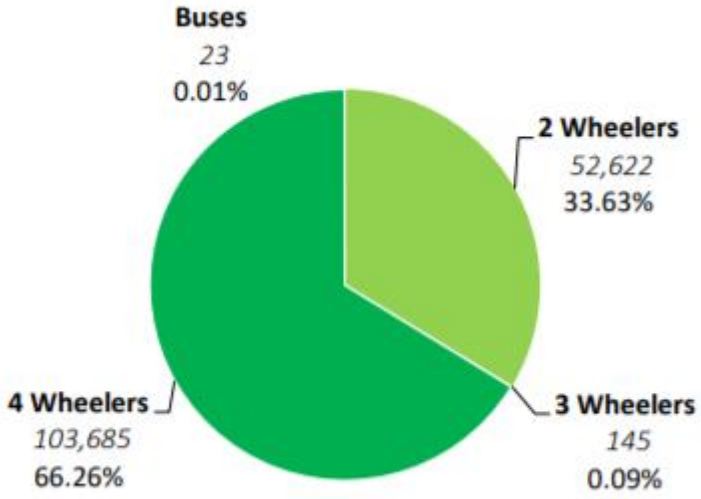


Fig: Current market of EVs

image source: internet

WHY ELECTRIC VEHICLES ARE THE FUTURE

Electric vehicle range is also improving. Why is that important? Because "consumers need to overcome 'range anxiety,' or fears that a battery cannot take them as far as a gas tank. As battery performance continues to improve and charging networks expand, this fear is likely to eventually abate over time. Over the last six years, the median range for EVs has extended 56%, and certain models can now drive well over 300 miles on a single charge."

And EV battery costs are falling too. However, for legacy automakers, "EVs remain more expensive than ICEs... yet many analysts believe this will change within the next 10 years as battery costs continue to rapidly decline. In the three year period from 2014 to 2016, battery costs fell over 50% from process improvements and scale effects, bringing EVs significantly closer to parity with ICE costs."

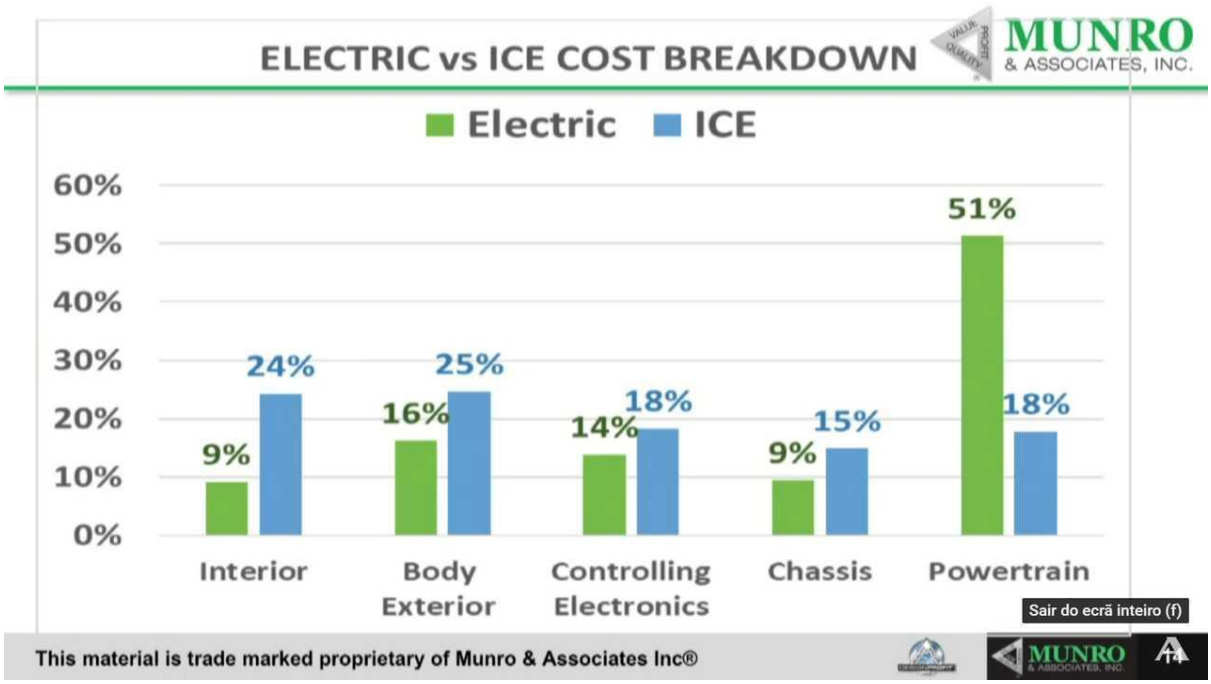


image source: internet

Challenges faced by EV industry

List of challenges that a EV industry is facing in India by manufacturers, Government and Consumers are:

1. charging infrastructure
2. on battery imports
3. components and parts
4. Affected by broader automobile industry downturn
5. Range anxiety among consumers
6. High price of EVs currently
7. Lack of quality maintenance and repair options.
8. Inadequate electricity supply in parts of India

High price of EVs currently:

The biggest problem for buyers to buy is the high price of EVs. The average cost of electric cars in India is around Rs.13 Lakh, much higher than the average Rs. 5 Lakh for economical cars run on traditional fuel. Also, the price of electric scooters and motorcycles in India is between the price range of Rs. 70K – Rs. 1.25 Lakh, as compared to Rs. 30K – Rs. 40K cost range of ICE bikes and even lower for scooters.

Charging infrastructure:

In addition to charging points, the lack of private parking spaces is also noted as a hindrance for electric vehicles adoption, and the lack of affordable renewable energy means charging EVs is putting a toll on the already stressed coal-powered electricity grid.

Range Anxiety:

Range anxiety is what consumers suffer from knowing that the electric vehicle might not have sufficient range to take them to their destination. This is deeply linked to the lack of charging infrastructure in the country, and while conventional vehicles can be refueled at petrol stations, such regularised infrastructure is not yet available for EVs.

Rudratej Singh, president and CEO of BMW Group India, also earlier said that the infrastructure for electric vehicles is still ambiguous and uncertain, which would affect the price and acceptability of the vehicle among Indian consumers. Toyota too has recently halted the manufacturing of electric and hybrid cars for the Indian market, citing inadequate charging infrastructure.

Battery imports:

The cost of the battery and power electronics constitute almost two-thirds of the cost of an EV. The most widely used battery materials today are nickel-metal hydride (NiMH) and Lithium-Ion (Li). Multiple factors like demand-supply gaps, uneconomically low volumes etc, lead to the high cost of manufacturing EVs. Today, an EV's battery, power electronics and motors can together cost as much as six to seven times that of an IC engine affecting the ex-showroom price.

Lack of skilled workers:

EVs have higher servicing costs and higher levels of skills is needed for servicing. India lacks the dedicated training courses for such skill development.

Automobile industry downturn:

with the entry of EV's makes the down stream of automobile industry in India. As they makes no pollution and no use of fuels and other parts makes the auto mobile industry into downturn.

In India we can replicate some of the initiatives followed by these countries. The country should fund some of amount such that it makes the price of the less and also should decrease taxes on the purchase of electric cars in an effort to encourage citizens to make the switch. Also the government should provide subsidies for those purchasing electric motorcycles, the government is set to create new policies to promote the purchase of electric cars in the near future. Also the government has to take some quality steps like, allow to install EV chargers at Petrol/Gas stations, to make charging the EVs cheap the charging stations will get electricity at a tariff that is on par with residential electricity rates, which is significantly cheaper than commercial electricity rates.

Techno-Commercial Analysis of Hyundai Kona Electric Car

image source: internet

Versatile and powerful, the KONA Electric the first All-Electric SUV in India. Its power packed performance provides a thrilling driving experience with high acceleration over long distances. KONA Electric is here to change the way people think about going electric. Hyundai's Kona can cover 452 km in one single charge and is considered one of the best long range e-SUVs in the world along with Nissan's Leaf. To beat the range anxiety and lack of charging infrastructure in India, Hyundai will provide two chargers- a portable one and AC Wall Box Charger - to its customers along with the vehicle. The Kona will be sold by 14 dealers of Hyundai in 11 cities and the company is also collaborating with Indian Oil Corporation Ltd (IOCL) in four cities - Mumbai, Delhi, Chennai and Bengaluru - to set up changing stations with fast chargers in select fuel stations. The company is also offering a warranty of three years with unlimited kilometres on the Kona. On the lithium ion battery, Hyundai will offer warranty of eight years upto 1,60,000 km. The Kona SUV comes with a battery of 39.2 KWh advanced lithium polymer battery. Most of the existing electric vehicles in India come with batteries less then 20KWh.

Hyundai Kona Electric	
Motor	**Electric Motor**
Motor type	Permanent magnet synchronous motor
Configuration	Front mounted driving front wheels
Maximum power	150 kW
Maximum torque	395 Nm
Battery	**Electric Motor**
Battery type	Lithium-ion Polymer
Capacity	64.0 kWh
Voltage	356 V
On-board AC charger	**Electric Motor**
Charging capacity	7.2 kW
Standard charging time (240 V)	Approximately 9 hours 35 minutes
On-board DC fast charger	**Electric Motor**
Charging capacity	100 kW
50 kW fast charging time (up to 80%)	Approximately 75 minutes
100 kW fast charging time (up to 80%)	Approximately 54 minutes
On-board DC fast charger	**Electric Motor**
Type	In-cable control box (ICCB) with domestic 3-pin plug input
Output capacity	230 V, 10 A
Charging plug	Type 2 (IEC 62196-2 Type 2)
Transmission	**Electric Motor**
Reduction gear	Single speed reduction gear
Gear ratio	**Reduction gear**
Reduction gear	7.981
Motor/transmission availability	**Electric Motor**
	Reduction gear
Elite	•
Highlander	•
Steering	
Type	Column mounted Motor Driven Power Steering (C-MDPS), rack & pinion
Minimum turning circle diameter between kerbs / walls	10.6 m
Number of steering wheel turns lock to lock	2.5

Technical Analysis of Hyundai Kona Electric Car

source: internet

Specification	Items	KONA Electric
DIMENSIONS	Overall Length (mm)	4,180
DIMENSIONS	Overall Width (mm)	1,800
DIMENSIONS	Overall Height (mm)	1,570*
DIMENSIONS	Wheelbase (mm)	2,600
ELECTRIC MOTOR	Electric Motor Type	Permanent Magnet Synchronous Motor (PMSM)
ELECTRIC MOTOR	Max Power (ps)	136
ELECTRIC MOTOR	Max Torque (kgm)	40.27
HIGH VOLTAGE BATTERY & CHARGING	TYPE	Lithium-ion Polymer
HIGH VOLTAGE BATTERY & CHARGING	Capacity (kWh)	39.2
HIGH VOLTAGE BATTERY & CHARGING	AC Charging (0-100%)**	Approx 6 h 10 min
HIGH VOLTAGE BATTERY & CHARGING	DC Charging (0-80%) @50 kW**	Approx 57 min
AUTOMATIC TRANSMISSION	TYPE	Single Speed Reduction Gear
SUSPENSION	Front	Mcpherson Strut Type
SUSPENSION	Rear	Multi - Link
BRAKES	Front	Disc
BRAKES	Rear	Disc

source: internet

Market for Hyundai Kona Electric:

The Hyundai Kona EV has sold 88 units in August 2019, while the cumulative sales number of this EV in the current fiscal 130 units. However, with just a few months away from the launch, the electric SUV is now ready for competition from MG ZS EV, which is scheduled. As the MG Motor has already launched its first car in India, MG Hector with a disruptive pricing. The MG ZS EV too is expected to come following the same strategy with high localised production. The Hyundai Kona EV is powered by a 39.2 kWh lithium-ion battery pack, which chuns out 136 PS of power output and 395 Nm of peak torque. On the other hand, the India-spec MG ZS EV is expected to come with a more powerful 44.5 lithium-ion battery pack. Also, it could come with an even more powerful 52.5 kWh battery pack with the advancements.

While the Kona Electric is a halo product from Hyundai, which is also aimed at determining its technological capabilities when it comes to EV technology, the company is looking at introducing a mass-market 'small EV' being developed specifically for India with collaboration of the Indian and Korean design centres. Investment into localised battery manufacturing is also on the cards, so Hyundai Motor India is looking to invest into a completely new battery manufacturing plant in India as well.

Techno-Commercial Analysis for MG ZS EV

image source: internet

MG (Morris Garages) Motor today launched the ZS electric vehicle in India for an introductory price of Rs 19.88 lakh (ex-showroom). The new MG ZS EV is the carmaker's second offering in India after the much-popular MG Hector and marks the entry of MG into the electric vehicle space of India, where the ZS will compete with the likes of Hyundai Kona EV and the upcoming Tata Nexon EV. Coming to the specifications of the ZS electric vehicle, the new MG ZS EV comes with a 3-phase permanent magnet synchronous motor that generates 142.76 PS and 353 Nm of maximum torque and is mated to an automatic transmission. A 44.5 kWh water-cooled, lithium-ion battery is paired with the motor. An 80 per cent battery charge can be

achieved using an AC fast charger in 6-8 hours, while a similar amount of charge can be achieved using a DC super-fast charger in 50 minutes. The ARAI-certified range of the ZS electric vehicle is 340 km. You can drive MG ZS EV in three modes (Normal, Sport and Eco). The new electric vehicle can touch a maximum speed of 140 kmph, while it can make 0-100 kmph in 8.5 seconds. Talking about the bells and whistles available with the ZS electric vehicle, it gets all the features that you expect a vehicle of its price range to come with. Besides, there are several segment-best and segment-first features as well. The exterior features include chrome grille, projector headlamps with LED DRLs, rear spoiler, silver finish roof rails and 17-inch machined alloy wheels. Inside the cabin, you will come across 20.32 cm touchscreen infotainment system, 8.9 cm multi-information display, multifunction steering wheel, 6-way power-adjustable driver seat, cruise control, dual-pane panoramic sunroof and PM 2.5 filter. The new electric vehicle is available in three colour options -- Ferris White, Copenhagen Blue and Currant Red.

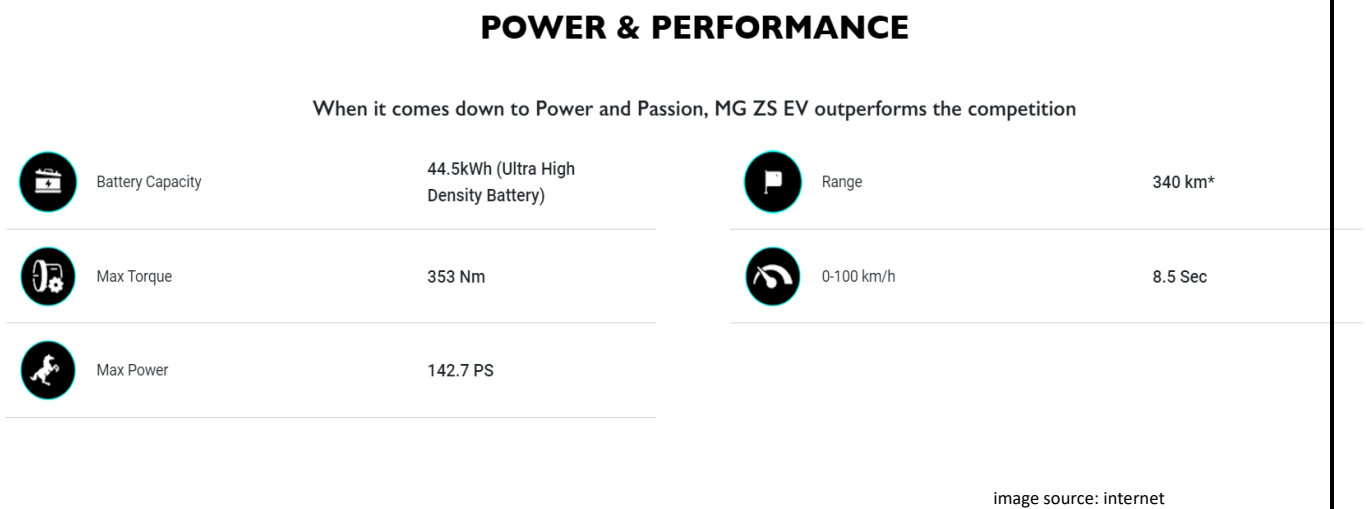


image source: internet

TECHNICAL SPECIFICATIONS

FEATURES	EXCITE	EXCLUSIVE
DIMENSIONS		
Overall Length (mm)	4314	
Width excluding mirrors (mm)	1809	
Height (mm)	1620	1644 (With Roof Rails)
Wheel Base (mm)	2585	
ELECTRIC MOTOR		
Electric Motor Type	Three Phase Permanent Magnet Synchronous Motor	
Max. Power (PS@rpm)	142.76@3500	
Max. Torque (Nm@rpm)	353@5000	
HIGH VOLTAGE BATTERY		
Battery Capacity (kWh)	44.5	
Charger Connection Type	Type 2 plus CCS	
Estimated 7kW Charge Time (0-80%)**	6 to 8 hours	
Estimated 50kW CCS Charge Time (0-80%) @ 50kW**	50 minutes	
TRANSMISSION		
Transmission	Automatic	
TYRE		
Tyre & Wheel	215/50 R17 Diamond cut Machined Alloy Wheel	
Spare Wheel	T125/90R16	
BRAKES		
Front & Rear Brakes	Disc	
SUSPENSION		
Suspension- Front	MacPherson Strut	
Suspension- Rear	Torsion Beam	

source: internet

Commercial Analysis:

MG ZS EV bookings started in India , in five cities (Delhi, Mumbai, Ahmedabad, Bengaluru and Hyderabad), with the carmaker announcing a special introductory price for the first 1,000 customers. The first round of bookings of the ZS electric vehicle closed with the carmaker garnering 2,800 bookings for the new electric vehicle.
The new MG ZS electric vehicle, which was unveiled in India gets a couple of variants -- Excite and Exclusive. There are more new electric cars coming to India, which will also keep the MG ZS EV on toes. These includes Mahindra eKUV 100, Renault Kwid EV etc. Renault has already launched the fully-electric variant of Kwid in China as City K-ZE, which gets power from a 26.8 kWh lithium-ion battery pack that is capable of churning out 44 PS of peak power and 125 Nm of maximum torque.

Techno-Commercial Analysis for Tata Nexon EV

image source: internet

India's EV revolution is slowly but steadily taking shape. They had major launches and announcements in this space over the last year or so and while Tata is no stranger to electric vehicles having already put Tigor EVs on the road, the Nexon EV is well and truly the product that

spearhead its EV aspirations in India. The Nexon EV debuts a new look for Tata's popular compact SUV with a thoroughly redesigned front end and minor updates to the rear end as well. There are new headlamps with eye catching LED detailing for the DRLs that also double up as the turn indicators. The bumper now sports a sharper, more chiseled look with black inserts housing the fog lamp units. Specific to the Nexon EV are the electric blue highlights on the front, the sides and the rear as well replacing the regular Nexon's white highlights. There are new alloy wheels on offer which, all four combined, are lighter by a kilogram compared to the IC variants that have been on sale. Towards the rear the Nexon gets LED detailing for the tail lamps along with Ziptron and EV badges that adorn the nose and the sides too. A 30.2kWh battery pack pairs with a single permanent magnet synchronous motor that powers the front wheels.

The setup affords maximum power of 129bhp and a peak torque of 245Nm. Access to all that right from the get go makes for quick acceleration with the Nexon EV claiming a 0-100kmph time of just 9.9s. Drivers get to choose from two modes. 'Drive' or 'D' mode is what is suited to city driving and the one you would want to select for maximum range. 'Sport' or 'S'mode which can be engaged with a clockwise turn of the gear selector sharpens throttle response for more aggressive power delivery and added excitement but it will have a negative impact on range. Tata is claiming an overall range of 312km for the Nexon EV as certified by the ARAI. On paper, if you've got a daily commute of about 50km, then a full charge should last you a five days to a week. The Nexon EV can be charged from 0 to 80% in 60mins using DC fast charging. A 20 to 100% charge with a domestic 15amp socket will take around 8 hours. Practically speaking then, an overnight charge should give it enough juice for daily commutes for around a week via the wall-box charger that Tata will install free of charge.

NEXON EV - TECHNICAL SPECIFICATIONS			
Electric Drivetrain			
Motor (type)	Permanent Magnet Synchronous Motor		
Electric motor power (PS)	129*		
Electric motor torque (Nm)	245*		
Drive modes	Multi-drive modes (Drive | Sport)		
Battery pack	30.2 kWh High energy density Lithium-ion battery pack		
Thermal management system	Liquid cooled		
Ingress protection for motor and battery pack	IP 67		
Acceleration (0-100 kmph in sec)	9.9		
Gradeability (%)	34%		
Emission	Zero tailpipe emission		
Smart Drive Features	XM	XZ+	XZ+ Lux
Smart Regenerative Braking	•	•	•
Hill Ascent Assist	•	•	•
Hill Descent Assist	•	•	•
Transmission			
Transmission	Single speed transmission for automatic like drive		
Dimensions and Weight			
Length x Width x Height (mm)	3993 x 1811 x 1606		
Wheelbase (mm)	2498		
Ground clearance (mm) - unladen	205		
Boot space (litre)	350		
Kerb weight (kg)	1400		
Steering			
Steering	Electrically power assisted		
Turning circle radius (m)	5.1		
Brakes			
Front, Rear	Disc, Drum		
Suspension			
Front Suspension	Independent MacPherson strut with coil spring		
Rear Suspension	Twist beam with dual path strut		
Wheels and Tyres			
Size	R16 215/60 LRR		
Type	Steel	Alloy	Alloy
Charging			
Charging standard	CCS 2		
Estimated regular charging time (SOC 10% to 90% from any 15A plug point)	8.5# hours		
Estimated fast charging time (SOC 0%-80%)	60# minutes		
Warranty			
Battery pack & motor warranty	8 Year / 1,60,000 km (whichever is earlier)		
Vehicle warranty	3 Year / 1,25,000 km (whichever is earlier)		
Driving Range and Efficiency			
Certified full charge range (as per MIDC cycle)	312*		
Energy efficiency (Wh/km)	100*		

source: internet

Tata has revealed an price tag of Rs 15 to 17 lakh rupees (ex-showroom). With no immediate rival at this price point and a practical range of over 300 kilometers, the Nexon EV can help thrust electric vehicles into the limelight and into the radar of Indian car buyers looking to spend less than Rs 20 lakh on a vehicle. However, it still doesn't fall into the "one car fits all" category mainly because of the constraints that accompany electric vehicles when it comes to long distance driving. That said, as a city runabout that is easy on the environment as well as your pocket, the Tata Nexon EV ticks all the right boxes. The next most accessible electric car in India happens to be the Tata Nexon EV.

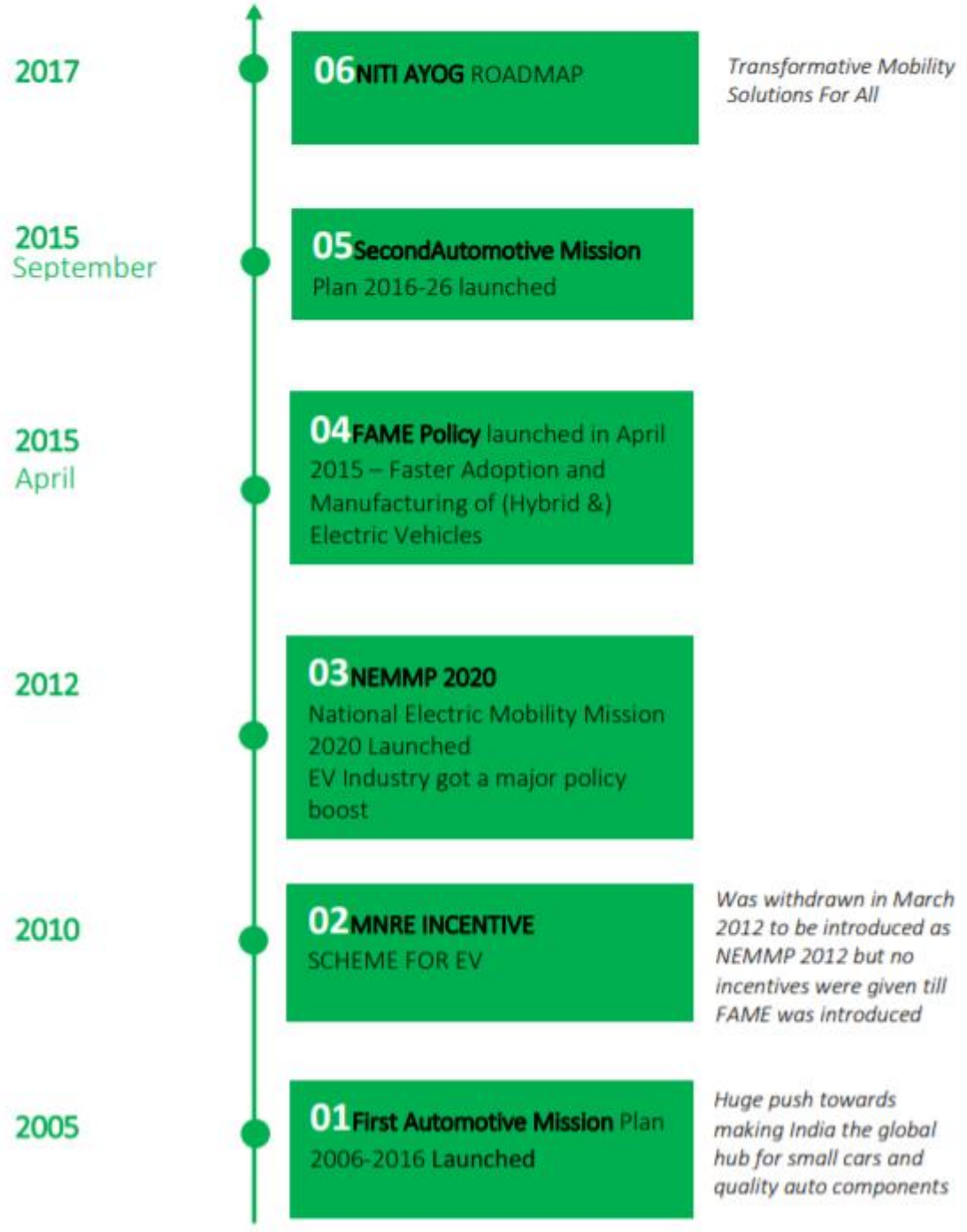
Tata launched the Nexon EV earlier this year and the response so far has been good. In a somber March, Tata managed to sell 198 Nexon EVs. In comparison, MG Motors managed to sell 116 units of the much more expensive and bigger ZS EV. That’s a difference of 82 units. The Hyundai Kona EV, the car with the highest range right now in India, numbers are awaited from the company. However, the Kona is sold in limited numbers here, and just like the MG isn’t exactly made in India. It is likely that the Kona might have sold fewer units or at par with the ZS.In no way can this be taken as a measure of success of each vehicle, irrespective of the segments. The pandemic has gripped the world and buyer sentiments are at an all-time low. Manufacturers are reporting a sales decline by up to 70 per cent in some cases and we are referring to the mainstream ones here. The factories are shut whereas showrooms too are functioning digitally. In short, dealers are taking online bookings with a promised delivery after the lockdown lifts.

SUCCESS STORY OF ELECTRIC VEHICLE IN INDIA

In order to promote the sale of electric vehicles in the Indian market, the government launched FAME scheme (Faster Adoption and Manufacturing of Hybrid and Electric vehicles) in India, as a part of the National Electric Mobility Mission Plan 2020, under which, the government would provide certain incentives to lower the purchasing cost of electric vehicles. Under the JNNURM (Jawaharlal Nehru National Urban Renewal Mission), NEMMP (National Electric Mobility Mission Plan) and Smart city plans launched by the government, various state and local transport bodies are expected to purchase electric buses over the next 5 years.

In India, the focus will be on getting the public transport fleet onto the electrification journey before focusing on private vehicles. Priority will be given in the order of electric buses, 3 wheelers, fleet cars, 2 wheelers and then private cars. In February 2019, the Union Cabinet cleared a Rs 10,000-crore programme under the FAME-II scheme. This scheme came into force from April 1, 2019. The main objective of the scheme is to encourage a faster adoption of electric and hybrid vehicles by offering upfront incentives on purchase of electric vehicles and also by establishing necessary charging infrastructure for EVs.

Key milestones in the EV Policies in India



source: internet

Conclusion:

The progress that the electric vehicle industry has seen in recent years is not only extremely welcomed, but highly necessary in light of the increasing global greenhouse gas levels. As demonstrated the benefits of electric vehicles far surpass the costs. The biggest obstacle to the widespread adoption of electric-powered transportation is cost related, as gasoline and the vehicles that run on it are readily available, convenient, and less costly. As demonstrated, we hope that over the course of the next decade technological advancements and policy changes will help ease the transition from traditional fuel-powered vehicles. Additionally, the realization and success of this industry relies heavily on the global population, and it is our hope that through mass marketing and environmental education programs people will feel incentivized and empowered to drive an electric-powered vehicle. Each person can make a difference, so go electric and help make a difference.

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