Orchestrating an EV Ecosystem: Ushering a Sustainable Future

Serious Concerns...

India has 14 out of 15 most polluted cities in the world. - WHO*

** World Health Organization*

Department of Heavy Industry
Government of India

The percentage of oil imported by India has risen from 57 % in 1997 to 85 % in 2010 and is expected to reach 92 % in 2020 : DHI **

*** Department of Heavy Industry (Government of India)*

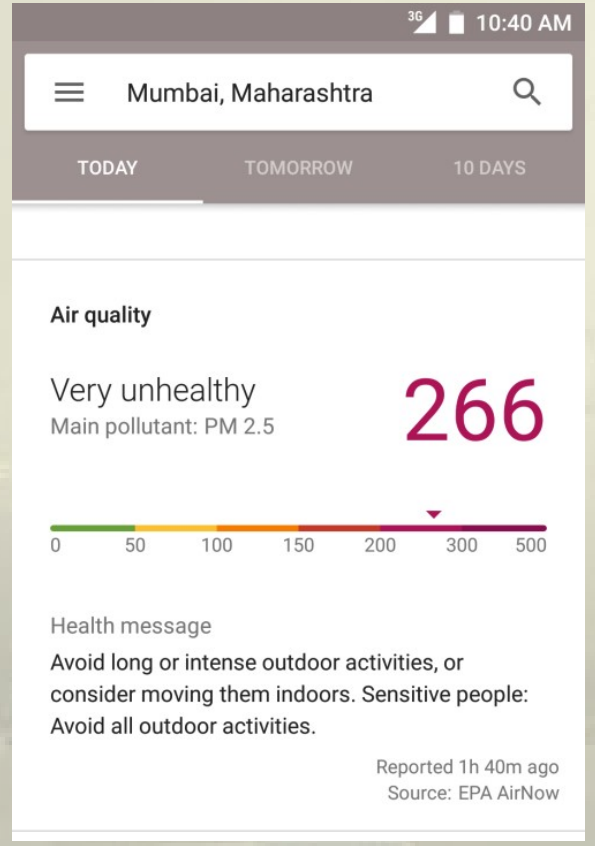
CSE

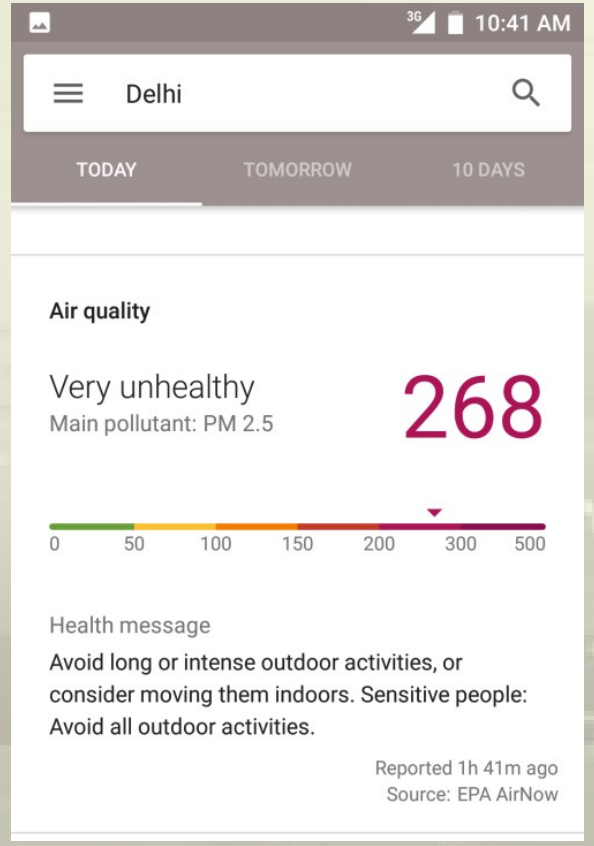
Air pollution is responsible for 12.5 percent of all deaths in India. Over 1,00,000 children below the age of five die due to bad air in the country - CSE +

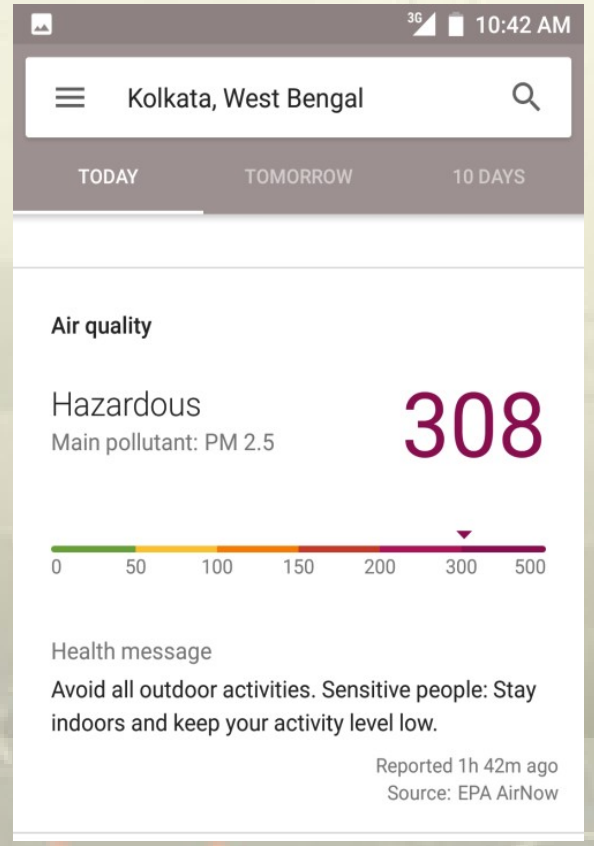
+ Centre for Science and Environment

https://timesofindia.indiatimes.com/world/india-has-14-out-of-15-most-polluted-cities-in-the-world-/articleshow/63997961.cms

Photograph courtesy : Sanjeev Verma/Hindustan Times







Cars using Internal Combustion Engines (ICE) release billions of tons of carbon dioxide into the atmosphere annually, which is approximately 20% of the worlds' total emission.

Motor vehicles also contribute to 72 % of Nitrogen oxides and 52 % of reactive hydrocarbons !!!

EV, the Future...

Efficiency : 17-21 %

Efficiency of ICE poor

High Maintenance Cost

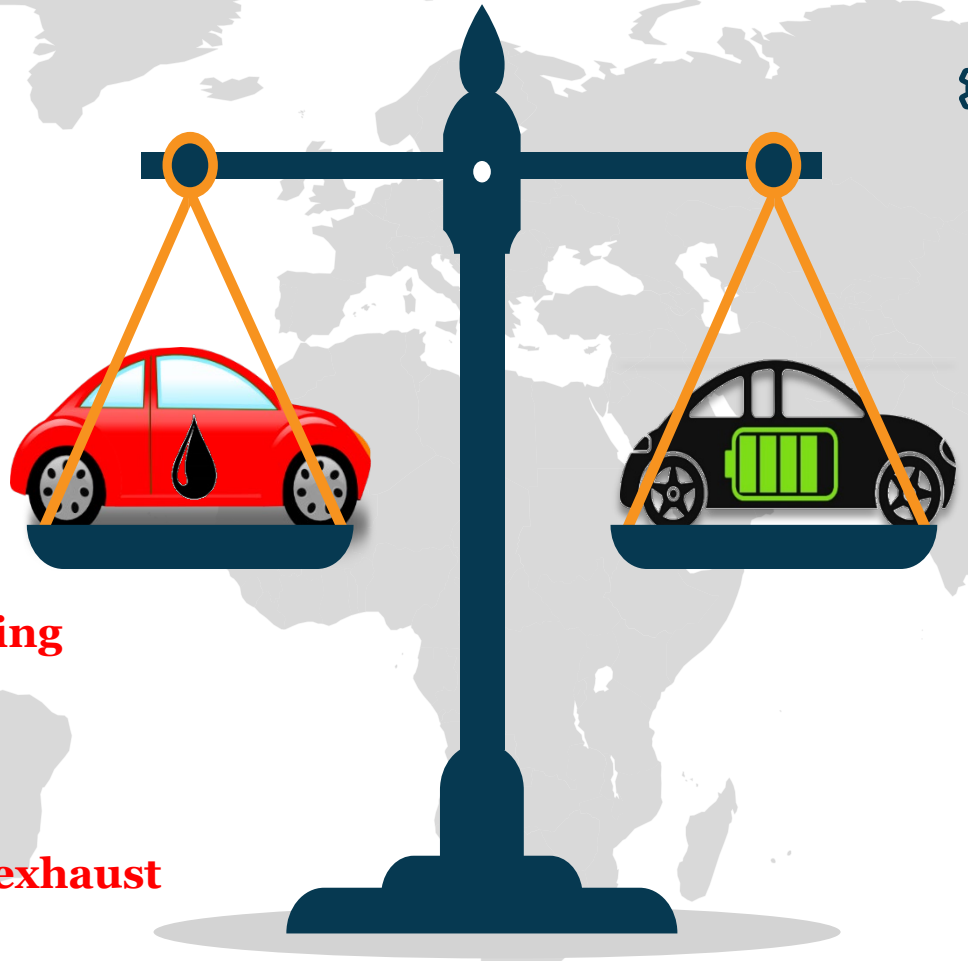
2000 moving parts

Fuel Cost High

Oil & Gas Prices are increasing

Highly Polluting

More than 27 % GHG from exhaust



Efficiency : 90-95 %

5X more Energy Efficient

Low Maintenance Cost

18 moving parts (<1 %)
Infinite Mile warranty !!!

Fuel Cost Low

Electricity rates are lower
RE sources proliferation

Almost Zero pollution

No tailpipe emission

EV, the Future...

Electric Vehicles are going to be more cost effective

Why EV ?

Less prone to fire

Studies have shown that EVs are less prone(80 % less)to fire than conventional Gasoline counterparts.

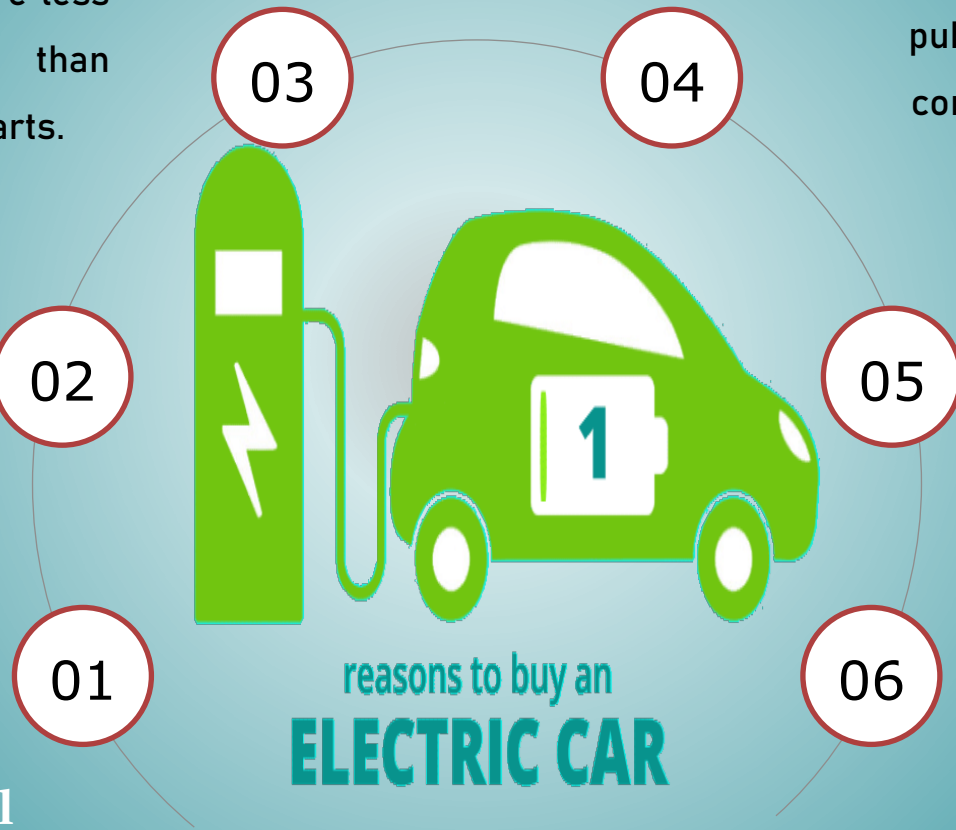
Stringent Emission Laws

Emission laws are getting more stringent and to adhere to them EV is a must.

Cess on petrol and diesel is expected to continue to increase as India strives towards reducing its carbon emissions intensity

Reducing Dependence on Oil

This will significantly reduce oil import & improve our Current Account Deficit .



Charge anywhere

EVs can be charged anywhere from home to public charging stations provided compatible chargers are present

Better Customer experience

EVs are more quite and smooth to drive owing to the less number of moving parts

Better Future

There is no Pollution from tailpipe emission in EV. With proliferation of RE sources EVs are the future for a sustainable environment

How Clean is the Electric Vehicle?

GASOLINE-ONLY

Conventional cars run on gasoline and tend to be dirtier and more expensive to fuel than EVs.

381 GRAMS OF CO_2e PER MILE

AVERAGE EMISSIONS NATIONWIDE

PLUG-IN HYBRID ELECTRIC

Plug-in hybrids use both gasoline and electricity and can be recharged from an outlet.

196 GRAMS OF CO_2e PER MILE

BATTERY ELECTRIC

Battery electric vehicles run on electricity and are some the cleanest and cheapest cars to drive.

129* GRAMS OF CO_2e PER MILE

* Emission to produce the electricity powering EVs. If only RE sources are present then there will be no emission

https://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-emissions-tool

EV CHARGERS...

	AC	DC	AC + DC
			
Output Power	Up to 22 kW	Up to 400 kW	43 kW AC+400 kW DC
Charging Rate	Slow Charging	Fast Charging	AC : Slow ; DC : Fast
Types	Type 1 with Yazaki Socket , Type 2 Mennekes Socket..	CHAdeMO, GB/T (Bharat Chargers)	CCS 1 & CCS 2
Popularity	Japan, USA, France	Japan, USA, China	Europe

EV : A Money Saver ?

	2-Wheelers	3-Wheelers	4-Wheelers
Battery Capacity:	~ 2 kWh	3-8 kWh	14 kwh- 50 kWh (India) Even up to 100 kWh in international models
Charging Time:	2-4 hrs.	5-6 hrs.	8-10 hrs. (AC charger) 30 mins-2 hrs. (DCFC)
Range(Full charge):	50-70 km (depends on no of batteries)	80 km	110-320 km (mid range cars) > 450 - 663 km (high end cars)
Cost / km :	20 - 30 p/km 7 times cheaper than petrol bikes *	50-65 p / km	70 p – ₹ 1.2 / km (800 % cheaper than petrol cars !!!) *

Electric Vehicles are Surely Cheaper to Run

Propensity for 2W/3W adoption is more than other segments

* Petrol price : ₹ 107/L (Oct 2021)

What are you waiting for?

More Affordable

EV battery prices reducing by 10 % year on year

Charging made quick

EVCS : Fast Chargers are gradually entering the Indian Market

Now drive more

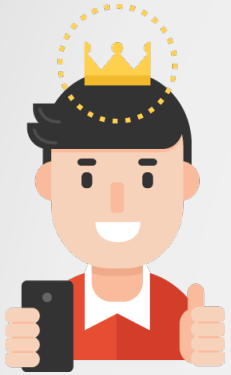
With Oil Prices increasing running cost of EVs are 5-6 times lesser .

Future is Bright

E-vehicles industry to create 10 million jobs

Good News...

1



Goods and services tax (GST) on electric vehicles to 5% from 12% has been proposed by GoI.

(GST for traditional vehicles : up to 28 %)

2

Electric Vehicles (all types) in India to be Exempted from Registration Fees

3

GST rate slashed to 12% on EV chargers from earlier 18 %

4

Government Proposes No Road Tax For Electric Cars

5

Loan for EVs at discounted price than regular car loan rates

6

Both Central and State Governments doling out attractive incentives

https://timesofindia.indiatimes.com/business/india-business/government-proposes-no-registration-charges-for-electric-vehicles/articleshow/69862901.cm

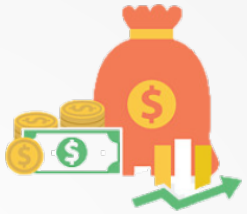
More Good News...

Additional income tax deduction of

₹ 1.5 lakh

on interest paid on electric vehicle loans

... up to ₹ 2.5 lakhs benefit over the loan period



₹ 10000 crore outlay till 2022 for Evs under

FAME II Scheme...

₹ 1000 crore for charging Infrastructure

Import Duty on Lithium-Ion cell imports to be

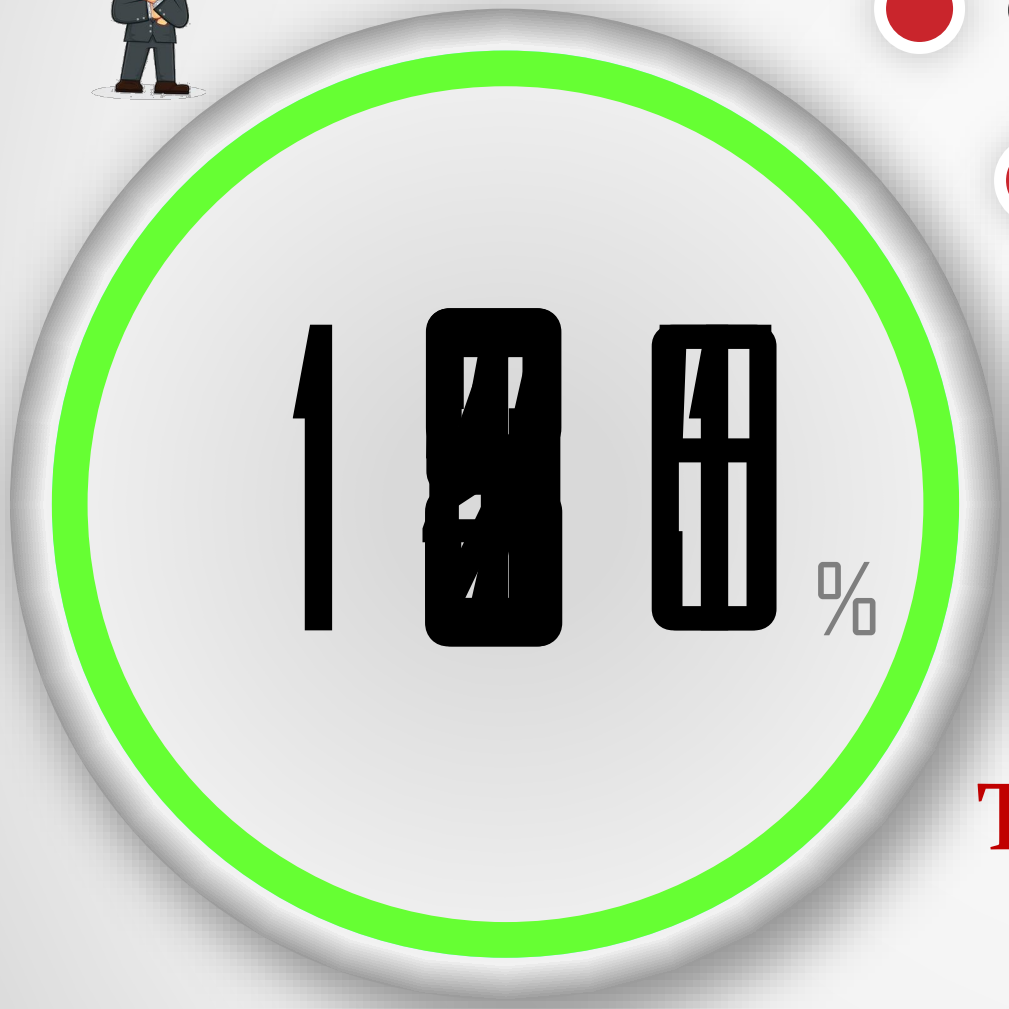
Nil

Customs duty is also being

exempted

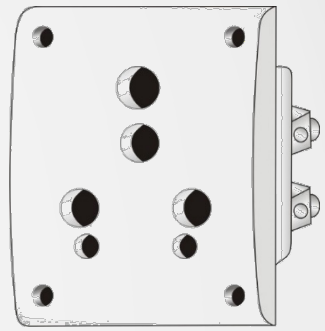
for certain components of electric vehicles

“Where will I charge my EV ? Hardly any Charging Infrastructure” !



- Only a **15 A** Socket at Home is enough
- Charge **Over-night**, drive throughout the day in peace…

  Just Like your mobile phone….
- Charge at cheap tariff

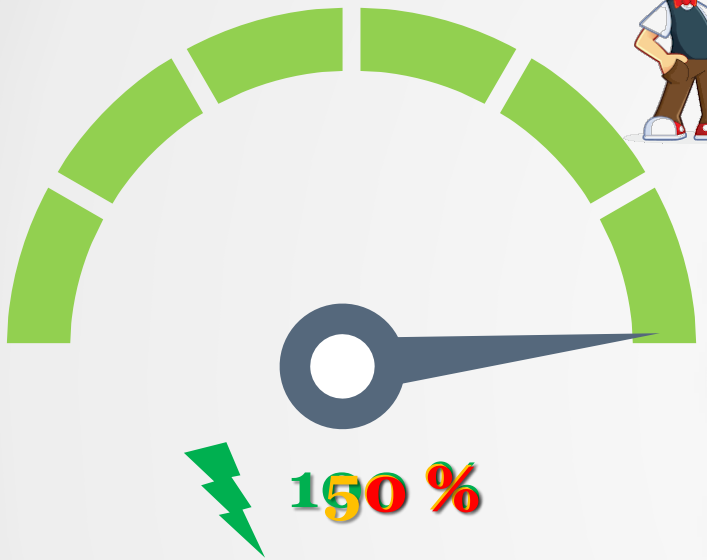


15 A Socket at Home

Time : 0 0 Hrs

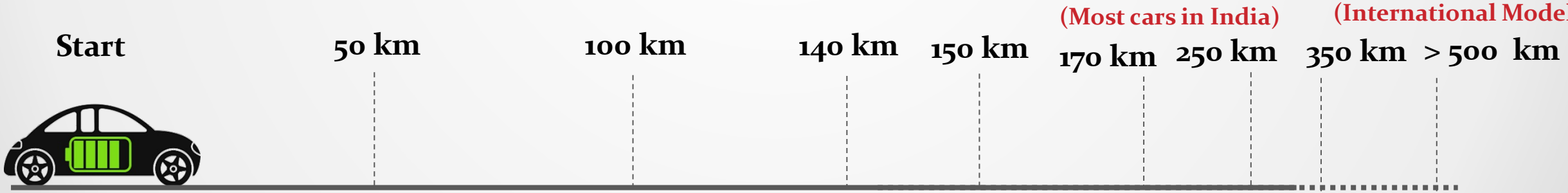
Worried about Travel Range??

Let's check Facts



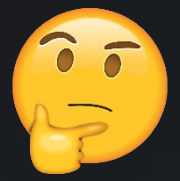
A good 75% of Indian commuters travel less than 1,000 km (or roughly less than 35 km a day)...
-----Times of India

- 140-170 km in a 'Single Charge'
  (Even more in the newer ones)
- Absolutely no problems for Intra-city Commutation
- EV stations planned every 25 km on Highways



1 -day Charge equivalent to 3- days travel within the city

Fastidious about Battery life? Replacement?



Brands promise Battery life of 8-10 yrs.

"Owners today are changing their cars faster: from 7-8 years earlier to 4-5 years now..."

Manufactures now giving warranty of 8 yrs./ 1.6 Lakh kms

"In Kms, an average petrol car can easily be run till 1.10 Lakh Kms and Diesel car can run till 1.5 Lakh kms"

International Brands offer Unlimited-Miles warranty too !!!

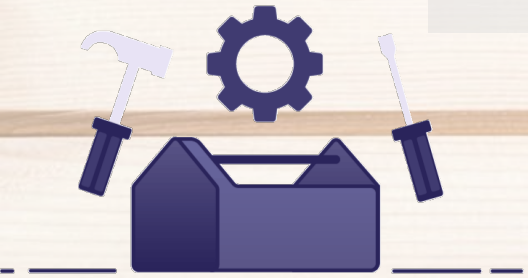
“EVs are as Slow as Golf Carts!!”

Myth busted…

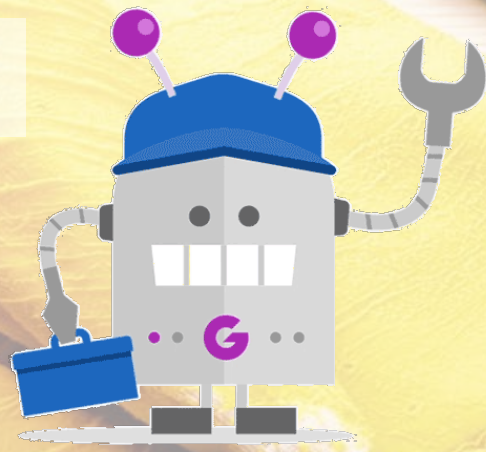
- Electric vehicles are generally **quicker** than their gasoline-powered counterparts.
- The electric motor in EV **generates 100% of its available torque instantly.**
- When you push the accelerator pedal, **the transition from stationary to speed is almost instantaneous.**
- Newer models in India clocking top speed of **150 km/hr** with **0-100 km/h** in under **11 sec**
- How much **“Fast”** do you want?….. Don’t want a speeding ticket? …..Do you? 😏

“How about Maintenance??”

- EVs have only **1 %** moving parts compared to Conventional Cars
- No Spark Plugs, Valves, Fuel Tank, Muffler/Tailpipe, Distributor, Starter, Clutch, Drive Belts, Hoses…
- EVs don’t require regular oil changes or tune-ups
- Less Moving parts → Less Wear & Tear → Less Maintenance
- Still if required …. Service Centres growing throughout the city…



EVs are dirt cheap to run….



“What about Safety ?”

- Electric vehicles are safer than gasoline/diesel-powered vehicles.
- Reports : EVs are less prone to catch fire
- EVs undergo the same rigorous Safety Testing and meet the same Safety Standards required for Conventional Vehicles
- One thing we can’t control: Your driving , remember pedestrians can’t hear you coming..

SAFE DRIVE, SAVE LIFE

https://www.energy.gov/eere/electricvehicles/electric-car-safety-maintenance-and-battery-life

“Prices are too high now”

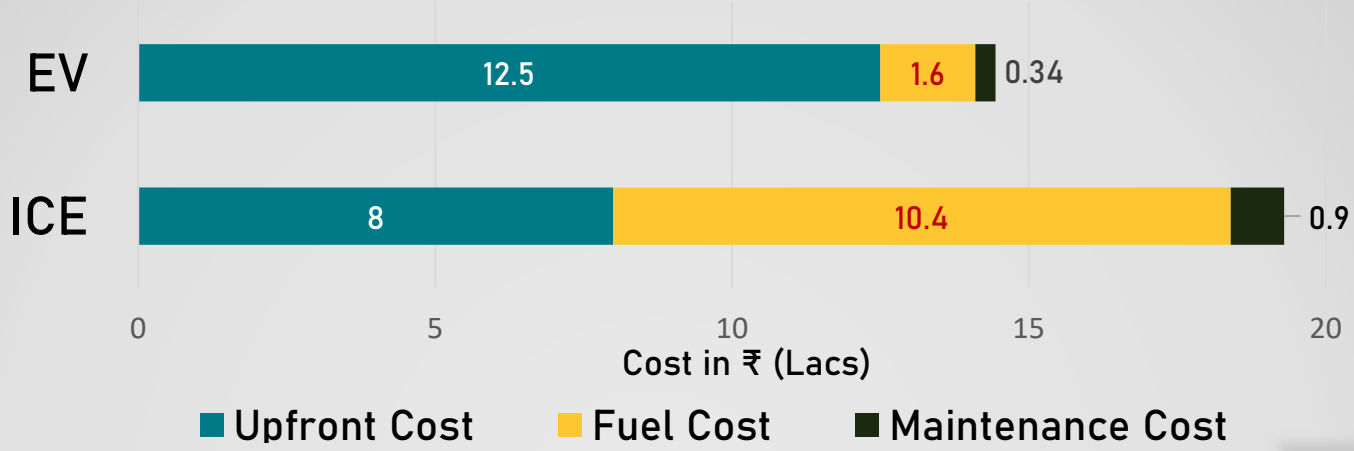
Yep.. We agree but not that much as you think

- ₹ Newer affordable models are with price tags at around ₹ 6.5 lacs in the anvil
- ₹ Good news : Prices are coming down drastically .. Battery price decreasing by **10 %** year-on year
- ₹ **5 %** GST on EV , down from earlier **12 %** … Prices will fall further… (up to **28 %** GST apply for conventional cars)
- ₹ Govt. Incentives, Registration tax exemption... And more to come
- ₹ An Running cost is **6-7** times less than conventional cars…

EVs are still out of your reach??

Total Cost of Ownership

ICE



EV

For a travel distance of 1.6 lacs km

(~55km/day for 8 years)

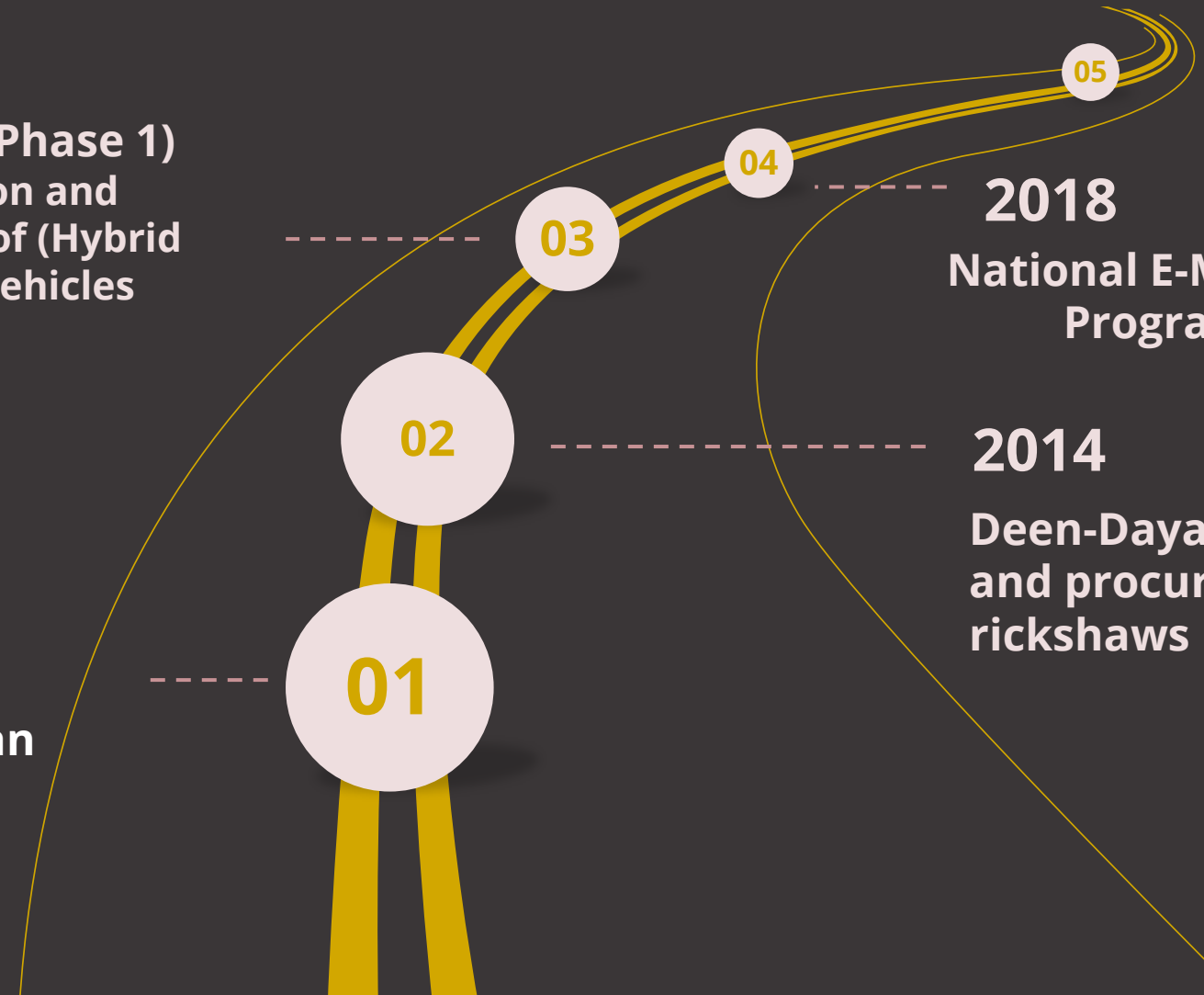
₹ 8 lacs	Upfront Cost	₹ 12.5 lacs
₹ 10.4 lacs (₹ 6-7 / km)*	Fuel Cost	₹ 1.60 lacs (₹ 1 /km)
₹ 0.9 lacs	Maintenance Cost	₹ 0.34 lacs

* Mileage : 15km/L , Fuel : ₹107/L

The potential for cost savings by switching to electric mobility increases with the Kilometres driven

Indian Government too is very serious about building an EV ecosystem to support you...

EV Roadmap : India's Ambitious Mission towards E-mobility



2012-13

National Electric Mobility Mission Plan (NEMMP) 2020

2014

Deen-Dayal scheme : Financing and procurement of the battery rickshaws in the country

2015

FAME India (Phase 1)
Faster Adoption and Manufacture of (Hybrid and) Electric Vehicles

2018

National E-Mobility Program

2019

FAME India (Phase 2)

Other Initiatives

03

All cars sold are EVs by 2030

02

All New commercial cars , motorcycles to be EV from 2026

01

Taxi Aggregators like Uber & Ola to convert 40% of their fleet of cars to Electric by April 2026 in phased manner

https://indiacsr.in/overview-indias-2030-vision-electric-vehicle/

Developing the Charging Infrastructure

The Ministry of Power (MoP) has published fresh guidelines and standards to expedite the e-mobility revolution by developing country wide Charging infrastructure :

- **No separate Supply Licence** required for setting up public charging stations
- Private charging at residence/offices : **Permitted**
- **Prioritisation of Rollouts :** Mega cities (>4 million population) in **Phase 1**
- Public Charging Stations to be set up in all existing **Expressways & Highways**
- Charging station every **25 km** on highways , 1 PCS in a grid of 3 km x 3 km
- **Phase 2** : Big cities like State capitals & UT head quarters to be targeted

Our City of Joy is in the Phase 1 of Rollout

We too are ready...

EV charging facility at CESC House

Charging Panel

One of our EVs being charged

Charging Socket

CESC joins hands with KMC

The Mayor Speak :

"We are holding talks with CESC and will soon come up with electric vehicle charging stations in spaces under flyovers or parking lots, wherever there will be availability of space.

Our aim is to encourage the citizens to use electric vehicles. The vehicular pollution is on the rise in the city and if people use electric vehicles, pollution will be reduced..."

Walking the Talk...

Public Charging Stations has been set-up at :

- Park Circus (Below MAA flyover)
- Beckbagan (Beneath AJC Rd Flyover)
- Dhakuria (Near Lake PS)

Future plan : More Charging Stations throughout our licenced area

Some more Initiatives

Installation of EVCS at Petrol Pumps- **EESL to set up EVCS**

Initiatives to setup a no of EVCS on roads (parking lot) in **association with KMC**

Engaging with leading **EV manufacturers** for in house fleet change-over (2/3/4 wheelers)

Captive AC & DC Charging Stations at CESC house & Technical Training Centre

Advocating changes in building rules and favourable policies

Supply to WBTC bus charging stations to mobilise **80 E-buses** in the city.
1000 more buses planned by WBTC

#LiveFreeBreatheFree

Promoting EV at various events and fora like CREDAI, Book Fair & EV Carnival

ZERO EMISSION

“Healthier World , Healthier Country”

Thank you

CESC LTD