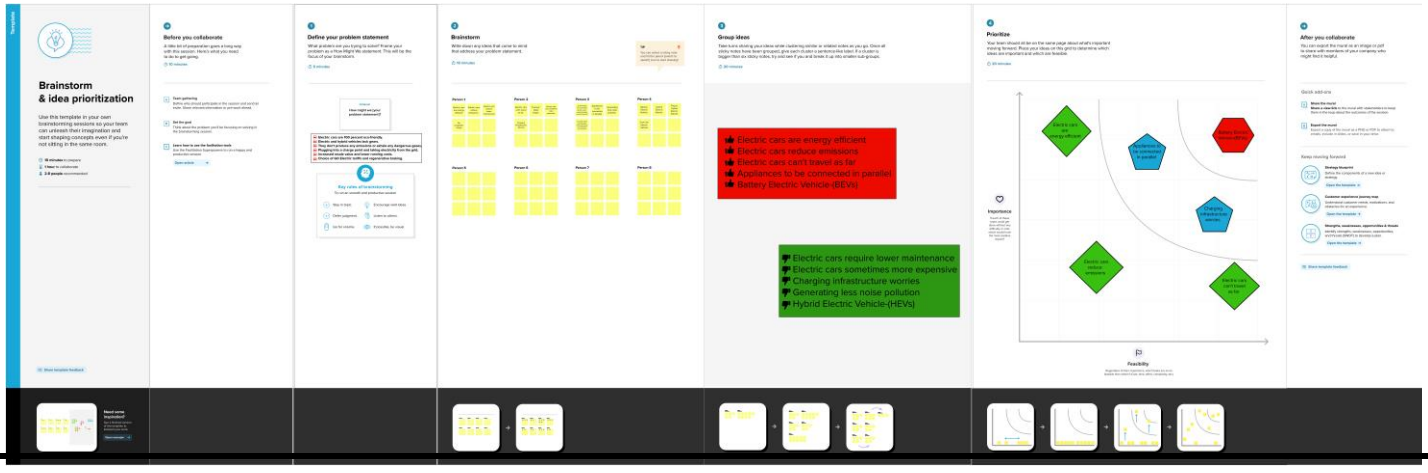
ELECTRIC CAR

INTRODUCTION:

An electric car, battery electric car, or all-electric car is an automobile that is propelled by one or more electric motors, using only energy stored in batteries. Compared to internal combustion engine (ICE) vehicles, electric cars are quieter, have no exhaust emissions, and lower emissions overall. In the United States and the European Union, as of 2020, the total cost of ownership of recent electric vehicles is cheaper than that of equivalent ICE cars, due to lower fueling and maintenance costs. Charging an electric car can be done at a variety of charging stations; these charging stations can be installed in both houses and public areas.



Electric Car

See

1.) Gas-electric hybrid:Vehicle's kinetic energy is converted to electric energyzno external power source.
2.) Plug-in hybrid:Battery can be plugging it into an external source of electric power.
3.) Electric car:Runs completely on electric battery packs;needs to be plugged in regularly for charging.

Say and Do

1.)Provide instant torque: Electric motors provide instant torque, which means that electric cars can accelerate quickly and smoothly.
2.)Regenerative braking: Electric cars can capture some of the energy that is normally lost during braking and use it to recharge the batteries.
3.)Offer a quiet ride: Electric motors are much quieter than ICEs, which means that electric cars offer a smoother and quieter ride.

Here

1.)Quiet Operation: Electric cars are much quieter than traditional gasoline-powered cars, which can make for a more peaceful and enjoyable driving experience.
2.)External Sound System: Some electric cars are now equipped with external speakers that produce artificial engine sounds when the vehicle is operating at low speeds or in reverse. These sounds are designed to improve pedestrian safety by alerting pedestrians to the presence of the car.
3.)Customizable Sounds: The artificial engine sounds produced by external speakers can often be customized to suit the preferences of the driver or manufacturer. Some electric cars may offer a range of different sound options, from subtle hums to more traditional engine sounds.

Think and Feel

1.)Smoothness: Electric motors provide instant torque, which means that electric cars can accelerate quickly and smoothly. This can make for a more enjoyable and exciting driving experience.
2.)Environmental Benefits: Electric cars produce fewer emissions than gasoline-powered cars, which can make drivers and passengers feel good about their environmental impact.
3.)Cost Savings: Electric cars can be cheaper to operate than traditional cars because electricity is generally cheaper than gasoline. Additionally, electric cars require less maintenance than traditional cars, which can also lead to cost savings over time.

Gain

In total, one in eight cars sold Worldwide in 2023 could be electric. Tesla dominance-Elon Musk's Tesla remains the biggest seller of electric cars globally. Tesla sold 1.3 million units in 2022, driven by its Model Y SUV. It predicts a 37 percent increase for 2023 to 1.8 million cars.

Pain

National market share for electric cars climbed to 4.9 percent from January to September this year, up from 2.4 percent in the same 2021 period, Edmunds said. And 36 percent of respondents told a Consumer Reports (CR) survey earlier this year that they will buy or lease a battery-only car, or at least seriously consider one.

BENEFITS OF ELECTCRIC CAR:

Transport is a fundamental requirement of modern life, but the traditional combustion engine is quickly becoming outdated. Petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. Fully electric vehicles (EV) have zero tailpipe emissions and are much better for the environment. The electric vehicle revolution is here, and you can be part of it. Will your next vehicle be an electric one?

Lower running costs

The running cost of an electric vehicle is much lower than an equivalent petrol or diesel vehicle. Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements. Using renewable energy sources can make the use of electric

vehicles more eco-friendly. The electricity cost can be reduced further if charging is done with the help of renewable energy sources installed at home, such as solar panels.

Low maintenance cost

Electric vehicles have very low maintenance costs because they don't have as many moving parts as an internal combustion vehicle. The servicing requirements for electric vehicles are lesser than the conventional petrol or diesel vehicles. Therefore, the yearly cost of running an electric vehicle is significantly low.

Zero Tailpipe Emissions

Driving an electric vehicle can help you reduce your carbon footprint because there will be zero tailpipe emissions. You can reduce the environmental impact of charging your vehicle further by choosing renewable energy options for home electricity.

Tax and financial benefits

Registration fees and road tax on purchasing electric vehicles are lesser than petrol or diesel vehicles. There are multiple policies and incentives offered by the government depending on which state you are in. To find out more about electric vehicle incentives, click below .

Petrol and diesel use is destroying our planet

The availability of fossil fuels is limited, and their use is destroying our planet. Toxic emissions from petrol and diesel vehicles lead to long-term, adverse effects on public health. The emissions impact of electric vehicles is much lower than petrol or diesel vehicles. From an efficiency perspective, electric vehicles can covert around 60% of the electrical energy from the grid to power the wheels, but petrol or diesel cars can only convert 17%-21% of the energy stored in the fuel to the wheels. That is a waste of around 80%. Fully electric vehicles have zero tailpipe emissions, but even when electricity production is taken into account, petrol or diesel vehicles emit almost 3 times more carbon dioxide than the average EV. To reduce the impact of charging electric vehicles, India is ambitious to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by the year 2030. Therefore, electric vehicles are the way forward for Indian transport, and we must switch to them now.

Electric Vehicles are easy to drive and quiet

Electric vehicles don't have gears and are very convenient to drive. There are no complicated controls, just accelerate, brake, and steer. When you want to charge your vehicle, just plug it in to a home or public charger. Electric vehicles are also quiet, so they reduce noise pollution that traditional vehicles contribute to.

Convenience of charging at home

Imagine being at a busy fuel station during peak hours, and you are getting late to reach your workplace. These problems can easily be overcome with an electric vehicle. Simply plug your vehicle in at your home charger for 4-5 hours before you plan to go. If you are able to get a charger where you park at home, it is very convenient to plan your journeys in advance. What if you

forget to plug in your machine someday? Then you can easily take the help of fast chargers or even battery swapping services if you are on a two-wheeler on the road.

No noise pollution

Electric vehicles have the silent functioning capability as there is no engine under the hood. No engine means no noise. The electric motor functions so silently that you need to peek into your instrument panel to check if it is ON. Electric vehicles are so silent that manufacturers have to add false sounds in order to make them safe for pedestrians.

Disadvantages of an Electric Car

Although the evidence of the positives has become very clear, there are also some downsides that each individual needs to consider before they decide to make an electric car their next big investment. These reasons are:

1. Recharge Points

Electric fuelling stations are still in the development stages. Not a lot of places you go to on a daily basis will have electric fuelling stations for your vehicle, meaning that if you're on a long trip or decide to visit family in a rural or suburban area and run out of charge, it may be harder to find a charging station. You may be stuck where you are.

However, until charging stations are more widespread, be sure to have a charging station maps where you live and where you frequently go so that you'll be able to charge your new EV when you need to.

2. The Initial Investment is Steep

As EVs are very new, you may be surprised when you take a look at the sticker price for EVs. Even the more affordable brands can be around $30,000 to $40,000.

If you're looking for a luxury option, you may be paying $80,000 or even more. Though technology is advancing and the price to produce electric cars continues to drop, you still have to pay $10,000 to $50,000 more for an EV than for a gas-powered car.

3. Electricity isn't Free

Electric cars can also be a hassle on your energy bill if you're not considering the options carefully. If you haven't done your research into the electric car you want to purchase, then you may be making an unwise investment.

Sometimes electric cars require a huge charge to function properly – which may reflect poorly on your electricity bill each month.

4. Short Driving Range and Speed

Electric cars are limited by range and speed. Most of these cars have a range of about 50-100 miles and need to be recharged again. You just can't use them for long journeys as of now, although it is expected to improve in the future.

5. Longer Recharge Time

While it takes a couple of minutes to fuel your gasoline-powered car, an electric car takes about 4-6 hours and sometimes even a day to get fully charged.

Therefore, you need dedicated power stations as the time taken to recharge them is quite long. Thus, the time investment and necessary planning do put some people off.

There are some kits that can cut the charging time down. But again, that is going to be an additional investment. So consider that, too.

6. Silence as a Disadvantage

Silence can be a bit disadvantage as people like to hear the noise if they are coming from behind them. An electric car is, however, silent and can lead to accidents in some cases.

7. Normally 2 Seaters

Most of the electric cars available today are small and 2 seated only. They are not meant for the entire family, and a third person can make a journey for the other two passengers a bit uncomfortable.

8. Battery Replacement

Depending on the type and usage of battery, batteries of almost all electric cars are required to be changed every 3-10 years.

9. Not Suitable for Cities, Facing Shortage of Power

As electric cars need the power to charge up, the cities that already facing acute power shortages are not suitable for electric cars. The consumption of more power would hamper their daily power needs.

10. Lower Amount of Choices

The market today for electric cars is expanding, with no signs of slowing down. However, the truth is that there are fewer options to customize and choose the aesthetics of your EV.

At the same time, the vast amount of customization is available with traditional cars. This is likely to change over time, but for many people, it is going to be a disadvantage.

11. Minimal Amount of Pollution

Electric vehicles are also not 100% emission-free; they cause a little amount of pollution indirectly. The batteries and electricity needed for charging are not necessarily generated from renewable energy sources.

12. Some Governments Do Not Provide Money Saving Initiatives to Encourage You to Buy an Electric Car

Just because there is a variety of factors doesn't mean they have to be overwhelming. Doing a fair bit of research into different models, and maybe even hybrids will help you make an accurate decision moving forward. However, no matter how you look at it, an electric car can save our precious environment.

HISTORY:

Robert Anderson is often credited with inventing the first electric car some time between 1832 and 1839.

The following experimental electric cars appeared during the 1880s:

- **In 1881, Gustave Trouvé presented an electric car at the Exposition internationale d'Électricité de Paris.**
- **In 1884, over 20 years before the Ford Model T, Thomas Parker built an electric car in Wolverhampton using his own specially-designed high-**

capacity rechargeable batteries, although the only documentation is a photograph from 1895.

- **In 1888, the German Andreas Flocken designed the Flocken Elektrowagen, regarded by some as the first "real" electric car.**

ECONOMICS:

Manufacturing cost

The most expensive part of an electric car is its battery. The price decreased from €605 per kWh in 2010, to €170 in 2017, to €100 in 2019. When designing an electric vehicle, manufacturers may find that for low production, converting existing platforms may be cheaper, as development cost is lower; however, for higher production, a dedicated platform may be preferred to optimize design, and cost.

Total cost of ownership

In the EU and US, but not yet China, the total cost of ownership of recent electric cars is cheaper than that of equivalent gasoline cars, due to lower fueling and maintenance costs.

The greater the distance driven per year, the more likely the total cost of ownership for an electric car will be less than for an equivalent ICE car. The break even distance varies by country depending on the taxes, subsidies, and different costs of energy. In some countries the comparison may vary by city, as a type of car may have different charges to enter different cities; for example, in England, London charges ICE cars more than Birmingham does.

Purchase cost

Several national and local governments have established EV incentives to reduce the purchase price of electric cars and other plug-ins. As of 2020, the electric vehicle battery is more than a quarter of the total cost of the car. Purchase prices are expected to drop below those of new ICE cars when battery costs fall below US$100 per kWh, which is forecast to be in the mid-2020s.

Leasing or subscriptions are popular in some countries, depending somewhat on national taxes and subsidies, and end of lease cars are expanding the second hand market.

In a June 2022 report by AlixPartners, the cost for raw materials on an average EV rose from $3,381 in March 2020 to $8,255 in May 2022. The cost increase voice is attributed mainly to lithium, nickel, and cobalt[1]

Running costs

Electricity almost always costs less than gasoline per kilometer travelled, but the price of electricity often varies depending on where and what time of day the car is charged. Cost savings are also affected by the price of gasoline which can vary by location.

Safety

The safety issues of BEVs are largely dealt with by the international standard ISO 6469. This document is divided into three parts dealing with specific issues:

- **On-board electrical energy storage, i.e. the battery**
- **Functional safety means and protection against failures**
- **Protection of persons against electrical hazards**

APPLICATION:

The first known electric car was built by chemist Robert Davidson in Aberdeen, Scotland, in 1837—48 years earlier than the first internal combustion car. Thomas Parker, an English inventor, built the first *practical* electric car in London in 1884 and started production soon thereafter.

Thomas Alva Edison recommended Henry Ford to manufacture electric cars rather than internal combustion cars and is credited in saying,

"Electricity is the thing. There are no whirring and grinding gears with their numerous levers to confuse. There is not that almost terrifying uncertain throb and whirr of the powerful combustion engine. There is no water-circulating system to get out of order — no dangerous and evil-smelling gasoline and no noise."

Still, the short range, time to recharge and low top speed of electric vehicles led to a worldwide decline in their use. By 1935 they had all but disappeared. The early 60s marked the rebirth of electric cars based on the need to reduce contamination from exhaust emissions and dependency on imported oil.

Now, burning coal or natural gas at a generation plant to produce electricity to later power electric cars is clearly not the smartest way to reduce pollution and CO_2 emissions—although still better than gasoline vehicles.

What's exciting about electric cars is the near future:

- **distributed solar in rooftops, charging…**
- **clean batteries—hopefully, FlashCharge Batteries—in the basements, that charge…**
- **electric cars at any time of the day or night in 15 minutes or less—hopefully, cars powered by FlashCharge Batteries.**

For electric cars to become the vehicle of choice and reduce pollution from fossil fuel combustion, manufacturers' only need is a battery that: charges fast, powers cars for 100 miles or more, delivers more power for instant response and is non-flammable.

FUTURE SCOPE

There are no emissions:

Electric automobiles are being developed primarily because they do not emit any pollution when driving. An electric vehicle is propelled by a battery-powered electric motor. There is no burning of fuel. An electric vehicle does not have an exhaust system. It's the best road transportation solution at a time when global CO2 emissions and air pollution must be drastically cut.

Access to city centres is unrestricted:

Aside from the fact that more cities are implementing LEZs, these zones are also growing in size and strictness with time. With an electric car, you have limitless access to low-emission zones, now and in the future, wherever and whenever you want.

Electricity is less expensive than gasoline:

Electricity is less expensive than gasoline and fuel. In this regard, an electric automobile is less expensive than a car with a combustion engine. The most cost-effective solution is to charge at home.

Comfortable and quiet:

Unlike a combustion engine, an electric motor produces very little noise. As a result, the silence inside an electric vehicle is unmistakable. Additionally, unlike a combustion engine, an electric motor does not produce any vibrations or resonance. The vibration-free and silent drivetrain adds to the relaxation.

To switch There's no need gears:

An electric automobile does not have a traditional gearbox, which is another key distinction from a car with a combustion engine. An electric car always works like a car with an automatic transmission, which eliminates the need to shift gears. You also don't have to pay more for it. Driving in busy start-stop traffic in the city or traffic congestion has never been more comfortable, thanks to the quietness of an electric motor.

Torque on the fly:

The incredibly high torque of an electric motor is a distinct feature. Much more powerful than a typical internal combustion engine. Furthermore, an electric motor responds rapidly to throttle motions and generates peak torque right from a standstill. Internal combustion engines have an unavoidable response time and can only generate maximum torque in a specific speed range. All of this assures enticing performance thanks to the smooth and powerful acceleration, as well as a great deal of driving pleasure.

Extremely effective:

At the moment, the most efficient combustion engines have an efficiency of around 40%. That means they only put 40% of the energy in the fuel into motion. Heat and friction account for the remaining 60%.

An electric motor has a 90 per cent efficiency, which means it uses the battery's energy far more efficiently. Furthermore, because an electric motor can be transformed into a generator in the blink of an eye, an electric car can swiftly recover kinetic energy.

Requires less maintenance:

Electric drivetrain technology is much simpler than that of a combustion engine. Because only a few sections need to be lubricated, it has far fewer (spinning) parts and fluids. So, as you may have guessed, an electric vehicle requires less maintenance.

Generate your power:

Having your oil refinery in your garden to make your auto fuel is impossible. It's hardly unexpected, though, that you can create your electricity. For example, solar panels on the top of your home or office building can provide energy. You may further lower your kilometre cost by charging your battery with this renewable energy.

Electric Vehicle future related FAQ

As electric vehicles become more common, their costs are constantly decreasing, and drivers who make the switch get several perks. Electric vehicles have the potential to save you money in a variety of ways, including the environment, fuel, tax, and maintenance costs. A fully electric vehicle might cost a quarter or less per mile than a standard gasoline or diesel vehicle.

Q1. Will electric vehicles take over by 2030?

While estimates ranged from more than 20% to almost 90%, executives in the study predicted that by 2030, 52 per cent of new car sales would be all-electric.

Q2. Are electric vehicles the future of transport?

Electric vehicles offer a strong potential to reduce emissions and aid in the fight against climate change. In many cases, they will most likely replace combustion engines.

Q3. When do electric vehicles take over?

While estimates ranged from more than 20% to almost 90%, executives in the study predicted that by 2030, 52 per cent of new car sales would be all-electric.

Q4. How many kinds of electric vehicles are there?

There are three different types of electric vehicles: BEVs (Battery Electric Vehicles) are electric vehicles that run entirely on electricity. PHEVs (Plug-In Hybrid Electric Vehicles) are cars that have an internal combustion engine and a battery that is charged from an external socket; they have a plug