

Energy Report:

“Barriers to Widespread Adoption of Electric Vehicles”



By

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Introduction:

Despite a lot of talk about electric vehicles, their presence is still very limited compared to conventional petrol cars, and demand for them is still erratic. For example, the annual growth in sale has dropped from 85% in 2014 to 50% in 2016. According to recent statistics, China and America are the top two users of these cars.

Up till now, the future of electric vehicles over the next 10-15 years is still shrouded in uncertainty. For example, the International Energy Agency (IEA) expects total ownership of electric vehicles to reach between 40 million and 70 million by 2025 and 120 million to 160 million by 2035, depending on based on a number of scenarios. Based on other scenarios, IEA expects that the number of vehicles may exceed 200 million in 2030. According to some press reports, the number of electric vehicles is expected to be no less than 100 million between 2030 and 2035. These and varying figures and projections reflect the difficulty of predicting the future of the industry in the short term, not to mention the medium and long term.

Challenges Faced by the Electric Vehicles Industry:

The above-mentioned studies highlight many barriers to the adoption of electric vehicles. The most important of these are the following: manufacturing technical challenges, weak legislation supporting these vehicles, high cost of manufacturing and the unfamiliarity of this type of cars to consumers and the market. However, the electric vehicles industry has witnessed significant improvements and development since its early beginnings, particularly in the field of the efficiency of batteries and fast charging techniques. In the same context, the European Commission published in 2011 a road map for promoting this technology and making electrical vehicles the best choice for European citizens. The Commission's support for this industry is based on the following:

- First:** The adoption of electrical vehicles helps the Europeans achieve their climate change goals. They have been able to reduce the negative environmental impacts of other industrial sectors but the transport sector continues to be a major contributor to climate change. In fact, the sector's contribution is increasing steadily every year: It was 13% in 1990 and increased to 19% in 2014.
- Second:** In particular, electrical vehicles reduce air pollution and help create a healthy environment in major cities, thus reducing health hazards to people.
- Third:** Electric vehicles cause less congestion and noise compared to other means of transportation.

However, these and other reasons are still debatable among many decision-makers, because their benefits, although real and tangible, are limited. Some claim that supporting electric vehicles in this way may be a waste of resources in a manner that does not guarantee the sustainability of the industry itself.

Barriers to Replacing Conventional Cars with Electric Cars:

The electric vehicles industry suffers from other problems, most notably the difficulty to compete with conventional cars. The conventional car industry poses a major challenge to the use of electric cars on a wide scale. Conventional car engines are seeing an improvement in consumption efficiency at the rate of 2% annually over many years now. The consumption efficiency of these engines is expected to continue to improve, making it all difficult to economically market electric vehicles.

Even if an individual or a family acquires an electric vehicle, this does not necessarily mean that a conventional car has been replaced by an electric car. The US National Household Travel Survey highlighted this point in particular. The survey showed that if an American family purchased an electric car, it would normally be in addition to and not instead of owning a conventional car, which means just increasing the total number of cars per household. The survey also showed that the distance travelled by an electric vehicle is 12% lower than that by a conventional car in the same household.

The survey also showed that one-third of US households earn more than \$ 100,000 a year and these households own two-thirds of the electric vehicles according to survey data. This is another indication that it is difficult for middle or low-income families to own this type of vehicle because of its high initial and total cost of owning such a car compared to conventional cars.

Government Policies Supporting the Adoption of Electric Vehicles:

Most experts stress the importance of government policies to supporting the electric vehicles industry and enhancing their ability to compete with conventional cars. These policies call for taking a series of measures aimed at reducing greenhouse gas emissions such as carbon dioxide and others. These measures may come in the form of taxes and fees on energy sources, especially fossil fuels such as oil, gas and coal, as well as taxes targeting consumers of these sources of energy, such as power plants, factories and conventional means of transportation.

The declared goal of these policies and measures, commonly known as the carbon tax, is to reduce harmful emissions and limit their negative effects on the environment. In reality, the aim is to raise the cost of fossil energy sources to make alternative sources appear less expensive when compared to one another. The same applies to conventional cars and electric vehicles. The imposition of a carbon tax at any stage of the manufacture or ownership of conventional cars will increase the cost, and thus improve the competitiveness of, electric vehicles.

In addition to the carbon tax, financial incentives were introduced to support the sales of electric vehicles. These take the form of multiple tax exemptions. In the United States, a program was initiated to encourage the owning of electric vehicles by offering a tax rebate of up to \$ 7,500 per car. The amount of rebate will be reduced gradually as the sales of electric vehicles increase. In Europe, many countries have adopted similar policies in an attempt to reduce the initial cost of buying an electric vehicle.

These policies have improved the sales of electric vehicles. However, after the removal of these incentives or reducing their amounts, the effect on sales was considerable, which indicates that sales of electric vehicles are susceptible to the slightest change in prices, and that the reasons for buying them are mainly economical rather than the desire to reduce carbon emissions or other environmental considerations cited to justify the governmental support to the industry

Recommendations:

1. To pay more attention to electrical vehicles technologies, as they are one of the important issues in the realm of energy that has direct impact on the future growth of oil and gas consumption.
2. The majority of electric vehicles technology research focuses on improving the efficiency of batteries. Investment in this field, therefore, represents a promising investment opportunity for sovereign wealth funds.
3. To consider and examine ways of benefiting from electric vehicles and the associated technologies to reduce the domestic consumption of petrol and petroleum products. This reduction of consumption will make more oil available for export and thus help increase the country's revenues.