

ELECTRIC VEHICLES IN EUROPE & THAILAND

Introduction to Thai Economy
Julius Everke



INTROUCTION

Electric vehicles (EVs) refer to all vehicles for which an electric motor is the primary source of propulsion, including plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs) (McKinsey, 2014). The first known EV was built in 1837 by Robert Davidson in form of an electric locomotive that moved at a speed of 6km/h. The first practical electric cars were produced in the 1880s, powered by batteries. Compared to standard vehicle engines, the EV has higher costs, lower speed and a shorter battery lifetime. Global interest in motor vehicles increased heavily in the late 1890s with the first gasoline-electric hybrid car being released in 1911. Despite of their slower speed, EVs had a number of advantages over their early-1900s competitors. (Wikipedia, 2016)

ADVANTAGES & DISADVANTAGES

The advantages of EV's include reduced emission of carbon dioxide due to less dependence on fossil fuels. This decreased emission of greenhouse gases is supported by tax breaks from the government. Next to a more efficient saving system of kilometers per liter, the quiet vehicles also reduce 'noise pollution'. Furthermore, the cars are safe to drive and require little maintenance. (Rinkesh, 2015)

The disadvantages of electric vehicles include the aforementioned higher purchasing price, short range and slow speed. Next to that, additional higher costs arise due to the necessary installment of charging stations at respective homes. Compared to filling up a car at a gas station with fuel, the time to charge the car takes significantly longer. Additionally, electric and hybrid car battery replacements may be very costly. (Rinkesh, 2015)

EUROPE

Electric vehicles have proven to be successful in Europe due to their comfort and convenience in terms of noise and driving. Norway and the Netherlands are clear frontrunners in sales, however France, Germany and the United Kingdom have report significant growth in their national sale figures as well. The European EV market had more than 14,000 registrations in May 2016, representing a 7% increase over May 2015, largely due to the upcoming financial subsidies in Germany (McKinsey, 2014). By the end of the year, the market is expected to reach registrations beyond 200,000 units, possibly reaching 240,000 registrations (McKinsey, 2014). Looking at the electric car sales for all models across most of Europe, Mitsubishi Outlander, Renault Zoe and Nissan Leaf represent Europe's electric car leaders. Looking at the European frontrunner, impressive sales increases show how increasingly popular the EV industry has become in the European continent. Norway increased registrations by 129% from 2012 to 2013. The Netherlands even boosted their EV sale from 5,155 in 2012 to 19,655 in 2013 (CAGR of 281%) (Zach, 2016). The most popular battery electric vehicle (BEV) in the Netherlands is the Tesla Model S, accounting for 47.5% of the Dutch sales. The most common plug-in hybrid electric vehicle (PHEV) is the Volvo XC90, with 35.6% of sales. (McKinsey, 2014) (Zach, 2016)

The key motives for European EV producers include carbon footprint reduction, driving and usage benefits, as well as cost savings. A key benefit for European sellers include the support of national governments that invest into the EV industry through subsidies, tax breaks and special driving privileges. Looking at the Netherlands as an example, the success of the EV car is due to the promotion of E-mobility by policy makers, fiscal advantages, high quality infrastructure, and reduced air pollution in densely populated areas. (Rinkesh, 2015)

THAILAND

When analyzing the Thai automobile market, it becomes evident that the country is not prepared to sell EV's yet, primarily due to their high import costs. Sales of hybrid EV cars decreased from roughly 19,000 in 2012 to 5,000 in 2015 (Pantaweesak 2016). Next to that, low sales are a consequence of premium prices for EV cars compared to conventional cars. Senior LMC Automotive analyst Tharasrisuthi argued that, "prices for EVs and hybrid cars in Thailand are high and Thai people perceive that EVs and hybrid cars are too expensive compared to the performance of the same or similar conventional models" (Pantaweesak 2016). A necessary condition for EV cars to become successful in Thailand is a supportive government that implements promoting measures and subsidizes competitive prices.

Another reason for the lacking success in sales and manufacturing of EV's are the unfavorable business conditions in the country. These include a limited number EV charging stations, the inability of their technological capacity to support the production of primary EV parts, and the unwillingness to support a transition towards new business models that will arise with EV usage. A total of merely 20 charging stations in Bangkok do not spark consumer interest and confidence. Consumer uncertainty also arises due to the necessity to import car parts given the Thai insufficient technological capacity, leading to few car maintenance and service operators within the country. A new business model that emerges with the EV industry is a car-sharing system that is widely present in the United States, France, Japan and South Korea. Next to that, businesses for alternative energy sources and battery recycling would arise with EV popularity. An additional problem next to the lack of charging stations that arises in large cities, such as Bangkok, is the EV's limited range that may not be appropriate for traffic congestion. Due to Thailand being a middle-income country, EV cars must also be affordable unlike hybrid cars that cost beyond one million baht. (Pantaweesak 2016)

FUTURE DEVELOPMENTS IN THAILAND

However, Thailand also experiences positive developments for the EV market due to the involvement of governmental ministries and foreign companies. Several ministries have already shown cooperation by organizing projects that would support EV production, such as setting standards for car capacitor socket outlets (Ministry of Industry), setting up of EV charging stations (Ministry of Energy), EV motor and battery development projects for manufacturers (iEVT & NSTDA), and research projects to develop batteries for EVs (Ministry of Science and Technology) (Pantaweesak 2016). Furthermore, foreign nations plan to introduce their electric cars into the Thai market. Japanese electric cars are expected to enter the market as a Thai prototype model soon, costing less than 300,000 baht excluding the battery price. This shows that next to foreign marketing efforts, the government and the private sector can drive the future EV industry in Thailand. (Pantaweesak 2016)

THAI ELECTRIC VEHICLE POLICY

With the establishment of the Electric Vehicle Association of Thailand (EVAT), the government has started to launch a policy to promote EVs in Thailand in 2015 that can be an important contributor to a successful EV future. The goal and objective of the EVAT is to promote the EV usage in Thailand, whilst financially supporting the industrial manufacturing, and the research and development of EV technologies. Beneficial reasons include a reduction of road pollution, particularly in major cities, the improvement of energy efficiency in the transport sector, and the increased competitiveness of Thai entrepreneurs and domestic companies in the global market. (EVAT, 2016)

Further public promotional EVAT measures include the advertisement of appropriateness and safety usage of EV. Next to that, the government promised to support the knowledge exchange and innovative technology collaboration on EV and all related technologies. Lastly, they support and consult on regulation, standardization and operational solutions that will lead to a deployment, manufacture and development research on EV in Thailand. (EVAT, 2016)

ROADMAP 2019

The National Innovation System Development Committee, chaired by Thailand's prime minister, approved the roadmap of the Thai EV policy that aims to have developed the capability to commercialize, manufacture and export in several areas by the end of 2019. The EV Bus market development is supposed to increase to up to 1,000 EV buses by then. Through tax exemptions, manufacturers will gain access to components that cannot be manufactured in Thailand to enhance and develop the EV conversion technology. The automotive industry is expected to adapt to global market trends, with hybrid EVs and plug-in hybrid EVs being replaced by battery EVs and fuel cell EVs. Next to that, heavy emphasis will be put on EV imports from abroad and the financial support in EV investment in Thailand. To meet demand, EV charging stations will be increased, new and environmental friendly regulations will be introduced, battery factories will be built, and small, medium and large motors will be designed and manufactured by 2019. (EVAT, 2016)

CONCLUSION

Overall, the Thai EV market has not yet developed to standards that are comparable to the European success. Reasons for a stagnant progress include the lack of demand due to high costs and only slowly increasing governmental support in terms of tax breaks, subsidies, and promotional marketing efforts. Within the coming five years however, the Thai automotive industry is expected to undergo a transition and adapt to global market trends that have proven to be successful in Europe.

BIBLIOGRAPHY

EVAT (2016). *Global Trend and Thai Policy on Electric Vehicle*. Electric Vehicle Association of Thailand (EVAT). Available at: [http://www.eabc-thailand.eu/uploads/files/2016_EABC_Yossapong_rev1\(1\).pdf](http://www.eabc-thailand.eu/uploads/files/2016_EABC_Yossapong_rev1(1).pdf)

McKinsey (2014). *Electric vehicles in Europe*. McKinsey. Available at: www.mckinsey.com/~media/.../Electric-Vehicle-Report-EN_AS%20FINAL.ashx

Pantaweesak, N. (2016). *Paving the pathway to future of the Thai electric vehicles*. SCB. Available at: <https://www.scbeic.com/en/detail/product/2441>

Rinkesh (2015). *What is an Electric Car? Advantages and Disadvantages of Electric Cars*. Conserve Energy Future. Available at: <http://www.conserve-energy-future.com/advantages-and-disadvantages-of-electric-cars.php>

Wikipedia (2016). *Electric Vehicle – History*. Wikipedia. Available at: https://en.wikipedia.org/wiki/Electric_vehicle#History

Zach (2016). *Europe Electric Car Charts*. EV Obsession. Available at: <http://evobsession.com/15-europe-electric-car-charts/>