

## *Exploring the Great Potential of EV Industry in Argentina*

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### **Overview**

The paper consists of four parts.

First, it introduces the brief history and the current development of electric vehicle (EV) industry in Argentina. The development of Argentine EV industry is comparatively late due to high tariffs on imported EV and low acceptability of this new technology. Argentine EV industry is ready to take off in 2017 when the government imported 50 BYD electric buses as a pilot program to promote EV in national scale. From the late 2017, the EV development extended into passenger car import, charging infrastructure construction, lithium-ion battery investment and local brands manufacturing after Argentina imported first four-door electric SUV from Chinese brand Baic, YPF installed charging systems in 110 gas stations, Indian companies were invited to invest in Argentine lithium mines and local brand Volt Motors were to manufacture EV in Argentina.

Second, it analyzes the good foundation of developing EV in Argentina. The advantages for Argentine EV industry development covers clean power resources, abundant battery raw materials, supportive governmental policies and experience from other countries. To begin with, Argentine energy sector can provide sufficient clean energy resources, including hydro and natural gas, to generate electricity for EV. The biggest reason for countries around the world to develop EV is to tackle with exacerbating environmental problems. EV that is based on coal-generated electricity cannot be strictly defined as environmental-friendly transportation. Differently, a great proportion of electricity comes from hydro in Argentina. Meanwhile, the ratio of natural gas is climbing due to indigenous shale gas resources. For example, the Vaca Muerta shale formation has more than 300 Tcf of recoverable gas resources and has attracted many renowned international oil companies to engage in it. In this way, we will foresee cleaner and more sufficient power to support the function of EV. Next, Argentina is abundant with lithium resources. As we known, most EVs are equipped with lithium batteries in current stage and batteries are the most expensive single part in the whole vehicle. In other words, car manufactures are trying their best to occupy lithium resources around the world in order to control and manage the core technology of EV. In this way, Argentina is by nature holding the prominent position in EV industry. In addition, the Argentine government has the ambition to promote EV industry. By researching on the EV history in EU and Asian countries, we can make a conclusion that the prosperity of EV is highly related to government support. The Argentine government made macro policies such as 2035 Clean Transportation Plan (Plan de Movilidad Limpia), duty and tax cut for importing BEV and hybrids from the automakers with manufacturing plants in Argentina, and infrastructure construction conducted in major cities. Moreover, Argentina has the opportunity to develop EV industry systematically. Even though the start of EV development in Argentina is comparatively late, it can also be granted as an advantage since Argentina is able to learn the lessons from countries with successful experience and avoid making detours. Some countries neglect to keep the balance of EV sales and charging system construction, some ignore the problems of abandoned battery recycling and some focus on the promotion of BEV but overlook the practicability of hybrids in incipient stage. As a bystander and quick learner, Argentina can avoid making those mistakes and work out a comprehensive plan to adapt local needs.

Third, it proposes the problems that may be caused in promoting EV in Argentina. The potential problems range from high EV price, aggravated power burden and public infrastructure construction. The price of imported vehicles in Argentina is high due to current tax regime. Since Argentina is still in the incipient stage of development, importing EV from mature countries is one of the solutions to explore this new frontier. However, the price of imported EV is not fair enough for the bulk of local people to afford. Besides, Argentina is suffering

from the mounting pressure of power generation. If EV is in rapid growth, it will definitely put more pressures on the power system, which is already under full load. Moreover, the construction of infrastructures, including public charging systems and battery-recycling plants, also require thorough planning and massive capital investment from the government.

Fourth, this paper offers several suggestions to unleash the potentials of Argentine EV industry. Firstly, making sure to provide sufficient and affordable energy for power generation. As mentioned above, natural gas is crucial to build a greener EV industry and the shale gas resource in Argentina is vast. Nevertheless, the economic competitiveness and ratio of exploration are not ideal enough due to high drilling cost. Thus, the Argentine government should optimize fiscal terms, improve infrastructure constructions and enhance oil service abilities in order to attract more leading oil and gas companies to exploit abundant underground resources. Secondly, encouraging off-peak household charging so that it will not increase the load of power pressures. The government should encourage people to install private and small-scale charging system, which is convenient and cheap, in garages for people who live in houses and in the public vacant land for those who live in apartments. Although the household charging rapid is slower than large business ones, cars will get fully charged during the time when people are asleep at night. In this way, burdens on peak power system and public infrastructures will be alleviated. Thirdly, promoting EV manufactures in Argentina in order to decrease purchasing cost, increase domestic employment and stimulate economic growth. Compared with lowering taxes for imported EV, manufacturing domestically will benefit both people and the government since the consumers get lower prices and the government receives more revenues. Thus, Argentina should form joint ventures to bring in advanced technologies in current stage and start independent research in next phase.

## **Methods**

The paper adopted interdisciplinary research, case study and statistical analysis methods.

## **Results**

The paper considers that the future of EV in Argentina is prominent if gas-based power generation, private charging system construction and local EV manufacturing are taken into account.

## **Conclusions**

With increasing environmental concerns and energy security considerations, people draw more attention to EV. The EV sales and stocks keep increasing world widely. However, the number is still very low in Argentina. Nevertheless, by researching on the good foundation in this country, the paper considers that EV industry has great potential due to substantial resources for power generation, abundant battery raw material, supportive government policies and experience from leading and failure countries. Of course, Argentina will probably face some problems, including consumers' low acceptance for high EV price and burdens added to the government from charging and public infrastructure construction. Thus, the paper proposes three suggestions, which are providing sufficient and affordable energy by exploiting shale gas, encouraging the installation of private household charging system and off-peak charging to alleviate government's burden on power and infrastructure and promoting EV manufactures in Argentina in order to decrease purchasing cost and stimulate domestic economic growth.

## **References**

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