

Governmental Entrepreneurship: The Case of the Electric Mobility in Portugal

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ABSTRACT

This case study describes the introduction of the electric mobility in Portugal, as an experience of governmental entrepreneurship and innovation. Taking from the background of this experience, we analyze the initial conditions leveraged by Portugal, the opportunities seized by Portuguese public authorities, and the way governmental powers triggered private entrepreneurial activities. This made possible to develop first mover advantages in electric mobility industry. Our conclusions reinforce the importance of the role played by public authorities in the process of foster private entrepreneurship and innovation activities where they do not come up by themselves.

Keywords

Entrepreneurship, Case studies, Electric mobility

1 INTRODUCTION

Back in 2008, the Renault-Nissan Alliance announced that 100 mile range pure electric vehicles would be available for market introduction as early as 2010 in Japan, United States and some European countries. This 4.5 billion dollar joint venture for electric cars approached several public authorities, in many different countries, in order to make sure that minimal conditions would be in place in a large scale, making possible a successful introduction of this product in the world market. The required conditions meant the installation of a minimal network of charging stations in the public way, tax incentives for early adopters, and governmental commitment to adopt supporting legislation. Portugal, a country concerned with its oil dependence but with no significant tradition in the automobile industry and no research and development in the electric mobility hardware was among the first nations to respond to this challenge.

2 INITIAL CONDITIONS

In July 2008, the highest oil peak ever led the most dependent nations on hydrocarbons to the edge. Considering that about 50% of oil-related imports in those countries go directly to transportation, and bearing in mind the growing concerns about environmental issues, existing mature projects on electric mobility seemed to be a good idea for struggling public powers and eventually got momentum. Portugal had a meaningful set of conditions to

adopt electric mobility: first, with no oil or gas reserves, the country was struggling with the escalate of the prices in the international markets; second, the country had made substantial investments in renewable energies, but the unavailability of storage technologies was diminishing the case for additional investments in green energy; third, the country was politically committed at international level to enforce ambitious environmental targets of CO₂ emissions; fourth, since the nineties the country has been for several times a case study for new technology introduction and adoption.

The storage limits of the renewable energy produced during the night also played a key role for calling governmental attention for electric mobility, given that electric vehicles tend to be charged during the night. The massive introduction of electric vehicles in the country would make the massive investments in renewable energy more profitable.

Nonetheless public authorities looked at what seemed to be the beginning of a major shift in the automobile industry not only in a technology-client perspective but also as an opportunity to become a technology-supplier in this new market.

Unlike domestic private players, focused in the classic issues of weak internal demand and lack of automobile industrial base, public authorities understood that very few international technology manufacturers had developed a value chain for electric mobility support. Furthermore, electric mobility had the potential to generate a huge societal change.

Therefore, in February 2009 the Portuguese government launched the program for electric mobility with the ambition of deploying the first nation-wide public network of charging stations for electric vehicles in the world. The commitment, vision and funding made available was in the origin of a consortium of Portuguese private entrepreneurs that, in about a year, developed the technology to put the network in place.

3 GOVERNMENTAL ROLE

When it comes to major market changes, both entrepreneurship and economic theory outline the

importance of the governmental role to ensure basic conditions for venture success.

Electric mobility can be considered a radical innovation in the sense that it represents a major change in the way one uses a vehicle. Such a dramatic shift has an effect in broader urban and sub-urban mobility models, which depend on central and local public powers strategic view. However, global industries, such as the automobile, require large scalability, impossible to achieve in small markets. Hence, this usually means the need to go beyond national borders.

Consequently, the Portuguese government acted proactively within the European Union to get consensus and support for a feasible and sustainable introduction of the electric mobility. The consistent efforts eventually paid-off and countries such as France and Germany encouraged car manufacturers to announce ambitious plans for electric vehicles. Finally, potential entrepreneurs were led to believe that the bet on the new technology would eventually be worthwhile. However, that was just the beginning of a long way to go!!

4 THE MODEL

The basic assumption for electric vehicles market launch is the existence of charging stations in the public way. Previous research made very clear that electric vehicles users would not adopt this technology unless drivers would feel comfortable and safe about charging car batteries.

Therefore, some kind of charging network would be required, the underlying technology must exist and it must be in place a legal framework to underpin security and economic rules. None of this existed in Portugal.

While the initial experiences in other countries were based in the coexistence of several small networks, or lock-in networks, the Portuguese government chose a single open network, in which all business players would be able to join and to add value, with flow transparency and roaming ensured by a clearance and billing management entity. Simultaneously, energy resellers gained entry points to the grid and users could access any charging station of the network, regardless of their commercial provider. By deploying energy from all electricity providers, in any given charging station, this business model destroyed the basis for electricity providers lock-in this market. Finally, this totally novel approach established the basis for standardization in the manufacturing side and it created a new actor – the charging stations operator.

5 ENTREPRENUERIAL OUTPUTS

This initiative had a huge impact in hardware and software innovation, but also in related products and services innovation.

In a matter of months, charging stations ventures were running real-condition tests, network software ventures were running real-time tests and enlarged working-groups

were discussing implications of possible legislation in transportation, environment, energy, tax, urban, etc.

In April 2010, the framework for electric mobility activities was legally enforced. Technical, economic, tax and regulatory context was formally in place.

Five months later 25 charging station in 25 municipalities were inaugurated and linked among them in a pilot network.

Throughout 2010, many ventures applied to integrate their services in the network, offering integrated mobility solutions to the network' users (e.g. car sharing services), enlarging the original scope of the market.

The software of the clearance and billing network management entity was so powerful that retailing stores, ideal places to have charging stations, also began to develop schemes of bundled discounting pricing for electricity through the network.

On the grid side, technical and management innovation projects entered the pipeline of energy transportation and distribution companies. Charging stations, despite look like any other electric equipment in the public way of any city in the world, the myriad of actors involved and regulation compliance led to a reengineering in the process of installation and related project management. Know-how has also been created and shared with follower companies in other countries.

Vehicle to grid (V2G) R&D projects were launched by energy transportation companies all over the world, especially in countries with prior investments in green energy like Portugal. The possibility of using car batteries to flat the energy consumption curve is something that these companies are very much interested in. Cars charging off-peak with zero marginal production costs able to return the energy to the grid during peak periods could totally change the energy market and energy pricing and costs.

6 CONCLUSION

The introduction of the electric mobility in Portugal produced results so quickly that most of the technology developed by these entrepreneurs appeared before international standardization has been agreed. This gave them access to international forums of decision-making, which was the ultimate challenge for entrepreneurial development and upgrade.

By the end of 2011, a unique network of about 1,100 sophisticated and smart charging stations was in place, all over the country, providing full interoperability of equipment operators and energy suppliers. During this adventure, the resulting technology called the attention of several entities in Europe, Asia and Africa. Additionally, a wide range of electric mobility services and products was developed by a second level of Portuguese entrepreneurs.

Against all odds, through governmental entrepreneurship, a country with no particular experience in automobile industry or mobility solutions was able, in a short period of time, to generate a private pilot venture and develop innovative technology to a new market.