

## THE INVOLVEMENT OF THE STATE IN FINANCING ELECTRIC TRANSPORT SYSTEM

CLAUDIA ISAC<sup>1</sup>

**Abstract:** This paper presents a financial perspective of green businesses, in particular how they can be financed. Thus, we presented the main external sources of financing, highlighting the role that European funds play in this context. In the second part of the paper, I presented the methods through which the state can stimulate these businesses, and in particular the financial incentives granted through different categories of programmes. I ended the paper by highlighting the main conclusions that I reached after studying this topic.

**Keywords:** financial perspective, green business, European funds, electric transport system, electric vehicles.

### 1.INTRODUCTION

Generally speaking, business financing means obtaining and making available sums of money, rights and productive goods that allow the company's activity to be carried out under normal conditions. In order to finance its development, an enterprise can resort to internal and external sources [2].

Financing from internal sources is achieved through self-financing and increasing the social capital by incorporating incentive pays and reserves. Financing from external sources knows two main ways of achieving, namely increasing the social capital through the issuance of new shares and increasing the degree of indebtedness through: contracting bank loans, issuing bonds, financing through leasing, financing through factoring, lump sum, etc. Apart from these "classic" funding sources, in recent years, *access to European funds has become an important source for business development.*

In the context of Romania's integration into the European Union, the most important source of financing is the non-refundable financing intended to support activities in areas for which there are not enough financial resources currently accessible or in areas where there is a need for financial resources greater than availabilities. The system of external public non-reimbursable financing is one of the components of the broader mechanisms of collaboration between states, it has the connotation of support

---

<sup>1</sup> *Assoc. Prof., Ph.D., University of Petrosani, claudiaisac@upet.ro*

given to solve special situations for which the beneficiary state does not have the necessary financial resources.

Much like the pre-accession funds (Sapard, Phare, Ispa), the structural funds are a form of non-reimbursable financing that became operational in Romania starting with 2007, with Romania's integration into the EU. The structural funds are financial instruments through which the European Union pursues eliminating or reducing economic and social disparities, in order to achieve economic and social cohesion between regions and are allocated to various projects through development programs that contain certain development directions and eligible measures to receive such funding.

## **2. GREEN BUSINESS FINANCING**

Ecological or green businesses have an innovative character, which also determines technological and managerial risks, a fact for which their development is constrained from a financial point of view.

Since accessing funds with a non-reimbursable component is beneficial for the financing of green businesses, the factors that can prevent access to financing have been identified, such as: the uncertainty and complexity of technologies, the ambiguity of the evaluation criteria by creditors due to the lack of evaluation specialists, the instability market demand and the regulatory environment.

Knowing them allows institutions with attributions in developing strategies and with a role in financing green businesses to create the necessary framework through which green entrepreneurship is stimulated [3].

Green businesses have a high potential to provide much better sustainability compared to conventional businesses. The involvement of interested stakeholders is a key element for the development of these businesses [1].

Thus, it is important to implement a set of government measures aimed at protecting the environment through which the necessary conditions for the emergence of green entrepreneurship on a wider scale can be stimulated and new trends can be identified in enhancing the role of institutions for the performance and survival of green entrepreneurship. From this perspective, European funding can complement the funding sources related to the development of this type of business.

For the period 2014-2020, the most important European funding program with important effects on infrastructure and resources is the Large Infrastructure Operational Program whose objectives were: the development of transport infrastructure, environment, energy and risk prevention to European standards, strengthening the capacity to management of the COVID-19 health crisis in order to create the premises for sustainable economic growth, in safe conditions and efficient use of natural resources [4].

In the field of the environment, the investments considered the implementation of the community acquis in the field of water and wastewater, by continuing the process of regionalization of management in this sector, as well as that of waste management, the financing of protected natural areas and Natura 2000 sites, as well as the decontamination of historically polluted industrial sites and from the perspective of

## THE INVOLVEMENT OF THE STATE IN FINANCING ELECTRIC TRANSPORT SYSTEM

---

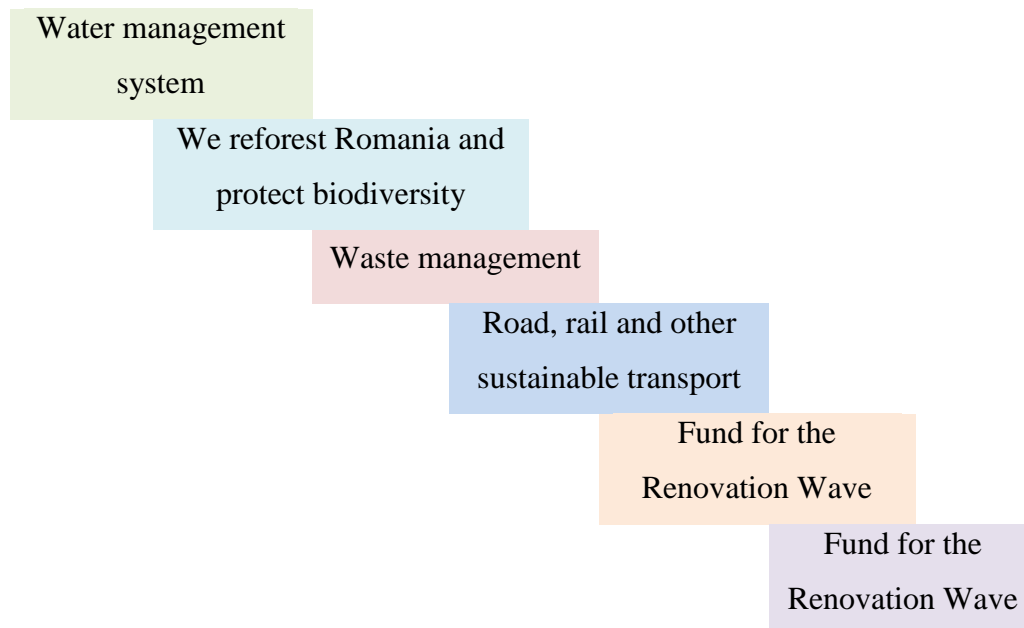
climate change, the investments were oriented towards non-structural and structural measures with the role of prevention of the main risks faced by Romania, namely floods, drought and coastal erosion, also granting attention to strengthening the response capacity of structures with a role in the management of emergency situations.

Clean energy and energy efficiency, as well as ensuring the flexibility of electricity and natural gas transport, are a priority dedicated mainly to the private sector, both for producers and distributors of energy from renewable resources whose potential has been less exploited, and for commercial companies active in the industrial sector, who want to make their energy consumption more efficient through cogeneration.

In the next period, the European Resilience and Recovery Mechanism will be implemented, which is the central element of the Next Generation EU Instrument, with loans and grants worth 672.5 billion euros, available to support the reforms and investments undertaken by the countries of the European Union.

The implementation of this project aims to mitigate the economic and social impact of the pandemic and to make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities offered by the transition to a green economy and the digital transition.

From the perspective of environmental protection, the first pillar of the Green Transition, which is structured in 6 priority areas, is important [7]:



**Fig.1.** Priority area in Green Transition

Another source of funding is the Investment Plan for a Sustainable Europe, which mobilizes public investments and contributes to unlocking private funds through EU financial instruments worth at least 1000 billion euros. This funding source will mobilize EU funds and create an enabling framework to facilitate and stimulate the

public and private investments needed for the transition to a climate-neutral, green, competitive and inclusive economy.

The plan is based on three components [8]:

➤ *The financing component* through which more than 1,000 billion euros representing sustainable investments will be mobilized in the coming years. The largest share will be redirected to climate and environmental actions and will make it possible to attract private funds with the help of the European Investment Bank;

➤ *The facilities component*, which provides incentives for unlocking and redirecting public and private investments, will facilitate the realization of sustainable investments by public authorities and will encourage the largest share of the budget to be directed towards ecological public procurement;

➤ *The advisory component* through which support will be provided to public authorities and those interested in sustainability projects.

Nowadays more and more institutions and organizations are interested in supporting the concept of green entrepreneurship, an example being Startarium created by Impact Hub and ING Bank and which developed Black Sea ClimAccelerator, an opportunity for green start-ups in Romania [9] which has the role of supporting innovative Romanian solutions in the field of climate change by financing green start-ups that are in the idea stage or green startups with a prototype validated with customers and scalable solutions.

Examples of ideas that startups can apply for consulting and funding follow [10]:

- eco-innovation solutions through clean urban mobility;
- Green and sustainable solutions for cities and buildings;
- waste management projects;
- climate-smart agriculture;
- nature education projects;
- projects for the development of a circular economy;
- intelligent transport solutions [6];
- ecological transport solutions;
- projects for the development of sustainable materials;
- ways and solutions that encourage responsible consumption.

### **3. THE FINANCIAL INVOLVEMENT OF THE STATE FOR THE DEVELOPMENT OF ELECTRIC TRANSPORT**

An area with a negative impact on the environment is the area of transport, especially land transport, with motor vehicles that use fuels. For these reasons, research in the field comes up with various ways to replace them that will have a much more protective impact on the environment and will constitute effective solutions for the transport of people and goods.

The trends in this field are moving towards the use of electricity as fuel, so the production of electric cars and the provision of the necessary logistics represent niches for business development and more and more entrepreneurs have identified this potential.

In Romania, to promote electric vehicles, the Ministry of the Environment has implemented the program to stimulate the purchase of electric and hybrid cars [11]. *This program is modified by the 2020-2024 National Car Park Renewal Stimulation Program, approved by Order of the Minister of Environment, Water and Forests no. 324/2020, with the subsequent amendments and additions to modify the Rabla (Olod Cars) Program and provides:* a bonus of 10,000 euros and zero tax for the electric car; obtaining a voucher of 45,000 lei for the purchase of a new purely electric vehicle and 20,000 lei for the purchase of a new hybrid electric vehicle with an external power source through the Rabla program.

*And other states have implemented “national policies on the promotion of electric cars and the pollution-free market” [12], the most interesting being the following:* In Belgium from 2016, the battery of electric vehicles is included "in the same tax scheme of oil and diesel cars. The resulting increase in the number of registrations will be gradual, to 20% of the total taxes in 2016, 40% in 2017, 65% in 2018, 90% in 2019, 100% in 2020; In France there is an option to offer a registration tax exemption for alternative fuel vehicles (eg electric, hybrid, CNG, LPG and E85). \

A premium is also guaranteed for the purchase of a new electric vehicle, for a vehicle that emits 20g CO<sub>2</sub> / km or less, the bonus amounts to 63,000 euros. Electric vehicles are exempt from the car tax, hybrid cars that emit less than 110g CO<sub>2</sub> / km are exempt in the first 2 years after registration; In Denmark, battery electric vehicles are exempt from paying annual taxes; in Germany, non-polluting cars with zero CO<sub>2</sub> emissions are exempt from car taxes; In Greece, electric and hybrid cars are exempt from all taxes; in Ireland until December 2021, electric vehicles benefit from a 5,000 euros discount on the vehicle registration fee; in Italy, buyers of electric cars benefit from a 75% tax reduction; exemptions from purchase tax and annual road tax have been adopted in Norway for electric cars.

In conclusion, the state has a very important role in stimulating business in the field of transport, by reducing taxes in the purchase of an electric car, exemptions from annual road taxes, bonuses granted for the purchase of an electric car, etc.

Although electric cars were introduced to the market more than three decades ago by major car manufacturers, it is only in recent years that they have become popular among consumers, with both hybrid and electric cars having a significant impact on the car market. “Electric cars are classified into five categories” [13]:

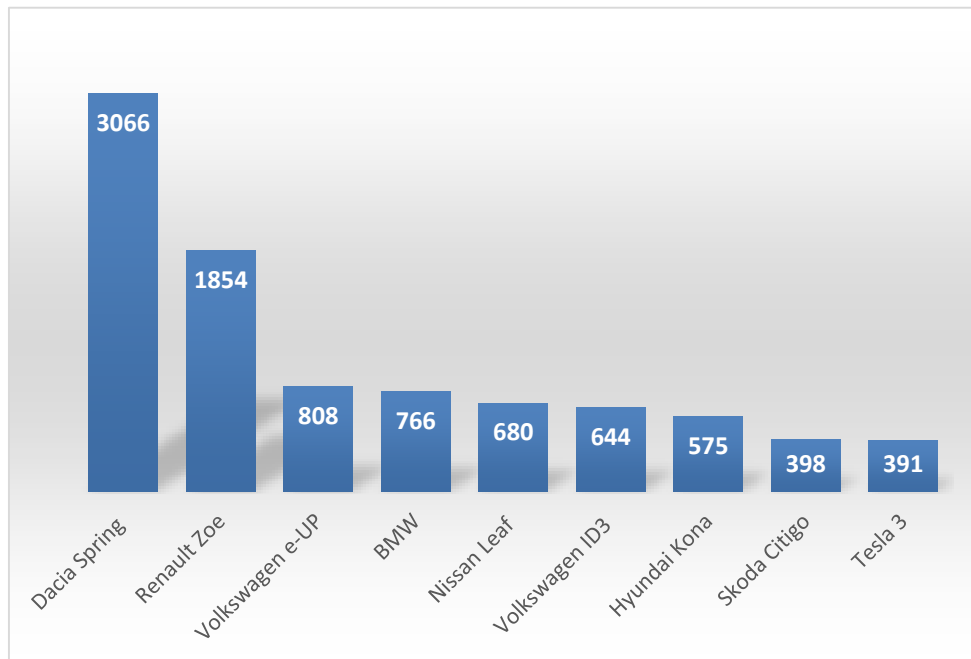
- *BEV – Battery Electric Vehicle* – a car that is set in motion by one or more electric motors, powered by a battery that needs to be recharged at a special station or at home at a regular outlet. Charging times vary by cable and method, ranging from 30 minutes to 12 hours. The most popular electric cars of this kind in Romania are Renault Zoe, Nissan Leaf or Volkswagen e-Golf.
- *PHEV – Plug-In Hybrid Electric Vehicle* – where the power is provided by an internal combustion engine, simultaneously with an electric motor. The battery of the electric motor can be charged separately or via the heat engine. Popular examples in Romania would be the Mitsubishi Outlander PHEV, Peugeot 508 or Toyota RAV 4 PHEV.
- *MHEV – Mild Hybrid Electric Vehicle* – the car is based on the internal combustion engine but also on an electric drive with the role of conserving

resources during braking, constant driving or stops. Even if this electric propulsion is not enough to move the vehicle by itself, it allows the thermal engine to be stopped in the right circumstances and restarted promptly, thus saving fuel and reducing polluting emissions.

- *EREV – Extended Range Electric Vehicle* – a variant of "PHEV" in which the batteries are charged when needed and by a small current generator that has the function of a very small gasoline engine (around 500-600cc) and that can be fed at any gas station. An example for this category is the BMW i3.
- *HEV – Hybrid Electric Vehicle* – the electric engine works simultaneously with the thermal engine, thus achieving excellent consumption performance. Popular models that use this technology are the Toyota CH-R and the Toyota Prius.

According to the data presented in the Deloitte report „Electric Vehicles. Setting a course for 2030 [14]”, electric car sales will grow by almost 30% annually over the next ten years, so that one in three new cars sold globally will be electric and the total number of electric cars sold annually worldwide will increase from 5 million in 2021, to 11.2 million in 2025 and to 31.1 million in 2030.

The authors of this report also identified a key factor in stimulating the increase in demand for electric cars, namely the change in consumer attitudes by dissipating the barriers that have, until now, limited access to such cars, respectively: limited model supply for electric and hybrid cars, relatively high prices, user education, poor logistics for charging electric cars etc.



**Fig.2.** Electric vehicles registered in Romania, 2021

In Romania, in 2020 there were 3210 electric vehicles, ZOE, i3 and Leaf, which were the most popular, totalling together over 53% of the BEV market, where you can also add the E-Golf reaching almost 64%.

Due to the COVID pandemic, the number of electric cars purchased in 2020 recorded a decrease of approximately 46%, the most popular cars being the most affected, namely the Renault Zoe which had a decrease of 80%, the Hyundai I3 by 40% and the Leaf by 25%.

The electric vehicles registered in Romania in 2021 had an increase compared to the previous period and the best-selling cars were: Dacia Spring with a number of 3066 units, followed by Renault Zoe with 1854 units and the other brands, respectively Volkswagen, BMW, Nissan, Hyundai, Skoda, Tesla with a much smaller number.

Businesses and entrepreneurs with innovative ideas can reimagine and create services, products and supply chains that do not negatively impact the planet.

#### 4. CONCLUSIONS

In conclusion, green business financing is necessary and possible and businesses and entrepreneurs with innovative ideas can reimagine and create services, products and supply chains that do not have a negative impact on the planet.

Thus, by operationalizing these ideas a society shapes its economic, social and environmental system so that global natural resources and life support systems are maintained and used efficiently.

#### REFERENCES

- [1]. **Abuzeinab A., Arif M.**, *Stakeholder Engagement: A Green Business Model Indicator*, *Procedia Economics and Finance*, volume 18, pp. 505-512, 2014.
- [2]. **Dura C., Isac C.**, *Economia și gestiunea firmei*, Ed. Sitech, Craiova, 2012.
- [3]. **Isac C.** *Green entrepreneurship and sustainable development*, *Annals of the University of Petrosani – Economics*, 2021.
- [4]. **Giannopoulos G., Munro J.**, *The Punctuated Transformation of Public and Private Sector Involvement in (Transport) Innovation*, Chapter 10 - *in The Accelerating Transport Innovation Revolution. A Global, Case Study-Based Assessment of Current Experience, Cross-sectorial Effects, and Socioeconomic Transformations*, pp 181-190, 2019.
- [5]. **Tan Wee Hin L., Subramanian R.**, *Creating Smart Cities with Intelligent Transportation Solution: Experiences from Singapore*, in *Green and Ecological Technologies for Urban Planning: Creating Smart Cities*, 2012.
- [6]. <https://mfe.gov.ro/programe/autoritati-de-management/am-poin/>
- [7]. <https://www.fonduri-structurale.ro/2021-2027>
- [8]. The Just Transition mechanism: making sure no one is left behind. The European Green Deal, jan. 2020 [https://ec.europa.eu/regional\\_policy/ro/newsroom/news/2020/01/14-01-2020-financing-the-green-transition-the-european-green-deal-investment-plan-and-just-transition-mechanism](https://ec.europa.eu/regional_policy/ro/newsroom/news/2020/01/14-01-2020-financing-the-green-transition-the-european-green-deal-investment-plan-and-just-transition-mechanism)
- [9]. <https://startarium.ro>
- [10]. <https://startarium.ro/articol/opportunitatile-antreprenoriatului-verde>
- [11]. \*\*\* Association of motor vehicle manufacturers and importers, *Guide to financing electric and plug-in hybrid vehicles; The program to stimulate the renewal of the national car park 2020-2024*, O.M. 324/2020

[12]. \*\*\* <https://www.sciencedirect.com/science/article/pii/S2212827114008506>

[13]. \*\*\* <https://www.g4media.ro/totul-despre-masinile-electrice-de-cate-tipuri-sunt-cat-costa-care-sunt-avantajele-si-dezavantajele-cum-alimentam-si-care-sunt-cele-mai-populare-marci-in-romania-merita-un-sh-electric.html>

[14]. \*\*\* <https://www2.deloitte.com/uk/en/insights/focus/future-of-mobility/electric-vehicle-trends-2030.html>