

PECULIARITIES OF THE RENEWABLE ENERGY BUSINESS MODELS

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Abstract: *By exploring the competitiveness of industries and companies, we could identify the factors whose importance is likely to generate competitive advantage. An inventory of content elements of the business model summarizes the clearest opportunities and prospects. The objectives developed throughout the paper want to identify the pillars of a renewable business model and to describe the strategic dimensions of their capitalisation in regional and national energy entrepreneurship. The trend of increasing the renewable energy business volume is driven by the entrepreneurs and company's availability to try new markets, with many unpredictable implications and the willingness of these players or their creditors to spend their savings, in various forms, for the concerned projects. There is no alternative to intensive investment strategies, given that the small projects are not able to create high value and competitiveness for interested entrepreneurs. For this reason, the international practice shows that the business models in energy production are supported by partnerships and networks of entrepreneurs who are involved in the development of large projects. The most important feature of renewable business initiatives is on attracting the latest clean emerging technologies, and obviously the investors who can assume the risk of such great projects. The benefits of a well developed business model recommend a prudent approach in the launching in the investment strategies, because the competitive contexts hide always some dissatisfaction of the partners that endanger the business concept's success. The small firms can develop a profitable business model by exploring the opportunity of the alliances, namely the particular joint ventures (association between Romanian and foreign firms). The advantages of joint venture's partners are considerable; they include access to expertise, resources and other assets that the partners could not achieve on their own. The present research emphasizes a series of positive aspects and shows the dysfunctions encountered by the companies that develop business models in the Romanian renewable energy.*

Keywords: *business model, renewable energy, inside-out innovation, infrastructure models*

JEL classification: O13; Q42; Q55.

Traditionally, the industries of the last century were characterized by one or few dominant business models, but today the things have changed. The evolution of contemporary competitive forces involves a lot of options from which the entrepreneur must select the driver-variables describing the architecture of the new and new business models, taking into account the fact that *a good business model remains essential to every successful organisation* (Magretta, 2002, pp. 86–87).

There are many markets where totally different business models are in rivalry and the boundaries between industries are often blurred or even disappear. Thus is the case of power producers industry that exploits the renewable energy opportunities. Not coincidentally companies such as CEZ, Enel and Petrom, whose activities were essentially and exclusively based on the exploitation and distribution of conventional energy, mobilized their skills into new business concepts to exploit renewable energy, even in Romania. The same tendencies of diversification are also proved by the Hidroelectrica Public Company, a company that negotiates her involvement in wind energy production.

Frantzis et al. (2008) highlight that ownership of renewable energy assets is the most promising path for utilities, because it offers the largest return potential but it warns of the risk that the ownership of photovoltaic and concentrated solar power projects has been limited in the United States, because some states have prohibited utilities from owning and operating distributed energy resources.

1. Conceptual clarifications

The new ideas, initiatives and business concepts takes the form of business models through which the companies can build sustainable competitive advantages. The building and innovation of a business model does not mean a retrospective approach followed by the extrapolation phase, because the past can indicate very few tendencies regarding the business model's future. However, the concept *does not involve the copying of competitors' practices, as the company develops a competitive business model by developing new mechanisms for value creation and profit obtaining and not through imitative or benchmarking practices.*¹⁶

Particularly interesting are the observations of Baden-Fuller and Morgan (2010). They considered that the business model concept using can provides managers and researchers with valuable ways to expand their understanding of business phenomena by building generic categories and the development of ideal types. Hence, the business model helps managers to capture, visualize, understand, communicate and share the business logic.

From a practical standpoint, the difference between business models and strategy is that business models are a coordination system, matching the parts of a business, while the strategy prioritizes the competitive struggle (J. Magretta, 2002). Some authors consider that a business model is an abstraction of a successful strategy that can be applied in other companies (Seddon, Lewis et.al cited by Osterwalder, Pigneur & Tucci, 2005). However, there are frequent confusion: many researchers use alternatively the two terms - considering them synonymous, although we believe that there are clear differences.

The business ideas and concepts have been investigated by most of the strategy theorists, starting with Ansoff, Porter or Mintzberg. Yet, Chesbrough and Rosenbloom are recognized as the ones that have shown the business models utility as a strategic tool. The substantive content of any theoretical approach regarding business models include the major aspects of running a business, but the name and the number of components coagulated by a business model are different.

¹⁶ syllabus of the course Competing through Business Models , prepared in the past academic years by Hanna Halaburda at Harvard Business School, accessed at <http://www.hbs.edu/mba/academics/coursecatalog/1205.html>

The components of business model, formulated in various forms and significances in the last decades, summarizes the contribution of many theories and strategic schools, recognized in all economic fields. The most important strategic approaches that contribute to the description of the attributes of a business model are: the resource-based theory, the transactional costs theory, the value chain theory (Porter), the school of dynamic capabilities, the relational approach of the strategy etc.

2. Hypothesis

We will analyze some assumptions highlighted by the economical analysts in their Romanian media appearances or the ideas presented by few comprehensive industrial analyses. The most important of these cover issues such as:

- The technological resources are paramount for the overall functionality of the business model.
- The network that adds value and the strategies are developed based on the principles of partnership, and by the existence of alliances and collaborations between the units in different areas.
- The heavily regulated market affects the rapid development of the businesses, but offers the certainty of production and distribution once the capacities have been / shall be operational.
- The renewable energy businesses are run by few Romanian companies and the capital sources are predominantly foreign; hence the high but risky shares of dependence on foreign entrepreneurial initiatives, taking into account the energy security of the Romanian state.

The renewable energy business fundamentals are represented by the technological pillar, namely innovation and upgrading technologies converting natural sources of energy into kinetic, mechanical, thermal energies and finally into electricity. Chesbrough & Rosenbloom's opinion (2002) is that the innovative technologies can be successfully applied in the new business models.

Whether they are based on the principles of kinetic energy transformation into electricity by converting the heat/light energy from the sun, or by processing and transforming of organic matter into ethanol or other types of bio-fuels, the engineering researches in the past years are reflected in improved systems, more and more efficient. Moreover, factors such as the worsening of environmental pollution and global warming trend, the unprecedented rise of conventional energy resources prices, the concerns of political decision makers and society as a whole regarding the energy security are just some of the trends that require to the energy market to change his supply structure; this process is accelerated by the claims of beneficiaries, seeking higher value from the energy producers.

The energy entrepreneurs can speculate these general trends exhibited in the market, by trying to take advantage of technological and engineering research results. Because the entry barriers in conventional power generation segments are huge (mainly related to capital costs of building the power stations, the hydroelectric or nuclear plants), the investors accept the challenge of developing new business concepts, original or similar with such business ideas arising from the exploiting of new technological inputs. Thus, the business concepts become business models by combining the available technical assets and the successfully economic outlook.

Our opinion is that a business model works as a driver of competitiveness because it integrates the manager's expectations regarding the business in the context of an organized framework that allows exploiting the opportunities (technological heritage is the most important) and converts them to the value proposition for the customers and the market.

3. Characteristics of the renewable energy business in Romania

In the light of the economic, competitive and cultural features, we can set the assertion that business models suitable to renewable energy producers typological correspond with the infrastructure pattern. Other standard models used in different industries falling (Ostervalder and Pigneur's opinion, 2010., p.57) in the category of the customer relationship based models (Delta model is representative for this pattern) or the product innovation models category. A company that coordinates all these types of models has practically more business and deals with many risks. Given the size of the companies they work to build power generation plants in Romania, their infrastructure business model is based on business innovation elements and infusion of innovative technology. The content of business models reveals a static image, is a snapshot of the pillars that sustain the renewable energy business. The architecture of a business model is dynamic, is similar with the business development itself. The external environment exerts unpredictable influences at which the business model elements gradually adapt. The dynamics of the external environment is determined by the sources of innovation and also by the constraints that require creativity in every aspect of the business model. In our interpretation, the vectors that require dynamic adjustment of the content of business models in renewables are:

- the new clean technologies, proliferate on the energy market;
- the availability of large capital resources and the possibility of accessing funds that can be preferentially reimbursed by the promoters of these business.

The constraint which determines the changes of the business models includes, in our opinion:

- the legislative and regulatory trends of each market: the green certificates market, the regulated and competitive electricity market, the market of bilaterally negotiated contracts etc.;
- the structure of each market segment of producers: oligopoly in the hydropower sector; few players with equal influence in biomass and biogas energy; no serious initiatives for exploitation of geothermal and photovoltaic; a weak competition between few small and large operators, but each year more numerous, in wind energy production.

The financial issues have a vital importance for the developers of electricity generation capacities that use renewable resources. This factor causes a significant dependence between the strategies (of the industry companies) and the capital markets. No segment of the renewable energy sector does not benefit of facilities for funds obtaining from these markets, but the investors manifest a contingency predisposition for the wind farms/parks projects. The financial alternatives of capital participation that we recorded after a brief investigation of the investments made in recent years (table no 1) show that, in the most of the initiatives, they are used the industrial loans, the venture capital investment and the structural public funds (without reimbursement) for micro projects capacities - less than 1 MW - likely to be supported. We have not considered the geothermal energy, operated exclusively for her heating utility (buildings, homes, greenhouses, etc.) in Romania. Although they benefit from a good promotion through the green certificates system, the number of biomass plants is reduced, their capacities are small and all of them are cogeneration units; they produce principally heat but deliver also electricity in the Power System (the share of destinations is generally 2/3 - 1/3).

Table no 1 - *Systems for financing investment in the renewable energy generation*

	Prevailing system of financing
wind parks and farms	Venture capital, business loans
Micro-hydropowers	business loans, Venture capital
Photovoltaic	venture capital, business loans, structural fund assistance
Biomass, biofuels, waste (CHP)	individual investments, venture capital, structural fund assistance

Notes: We investigated the most of the projects reflected in the Romanian press. We also used the references published on the ANRE website.

It is noteworthy that most renewable energy businesses developed in Romania have a foreign ownership of capital (large multinational companies with business in several sectors of the energy industry). Solar energy projects are undertaken by consortia regrouping local companies but rely heavily on the support of bank loans. The largest investment in biomass processing plants are Austrian and Italian and the small hydro segment is operated almost entirely by Hidroelectrica through its partnerships with foreign suppliers of technology, consulting and engineering design, although the financial contribution is provided 90% by the large banks.

The loans are characterised by the disadvantage of bank dependency and the local banks require high shares (equity) of the new affairs. For this reason, the most common crediting are made by large investment banking units as the World Bank, the EBRD, the European Investment Bank.

However, the State companies are interested in these opportunities, but do not have their own sources (capital from the operation of the previous business), excepting perhaps Hidroelectrica, they cannot easily access the medium- or long term loans, or the budget subsidies. The remaining alternative is to attract direct capital investments of large global companies and the loans approved by the international banking consortia.

The strategic implications of foreign capital dependency have also positive valences because the financial flows are generally accompanied by the investors' interest for such businesses and they work for facilitate technology transfers. Not coincidentally, the strategic alliances involves traditional very close relationships, between business promoters and major manufacturers of turbines and components of electric plants as Siemens, General Electric, Vestas, etc.

Given these considerations, we must emphasize the high costs of financial transactions. Even if the renewable energy business models are highly profitable, the beneficiaries have mostly a foreign origin; the Romanian's advantage remains the creation of a large number of jobs occupied by local work force. From the perspective of Romanian participants in these businesses, the financial attributes of business models can improve, namely by increasing the domestic capital share and therefore the ownership percent of the generating capacities.

If we closely follow the value created in the electricity generation industries, we must notice the differences regarding the distance between the producers and the consumers. In the past few years, of all the manufacturers, only Hidroelectrica can sell by itself to consumers his production of MWh. All the other segments, wind, solar, biomass or geothermal, they negotiate the prices and the supply energy conditions with the regional distributors. Each manufacturer may cover the internal demand of electricity through self-consumption, and to deliver the remaining power through the National System.

The general approach of foreign companies in Romania wants to create value through open business models but requires an inside-out innovation approach. Our finding is based on the original objectives of many companies seeking to develop turnkey wind farms in the region to sell them after commissioning. This scheme aims to exploit its

assets: the licenses to use the technology and the skills of its engineers and specialists (intellectual property) and transfer of completed units to entrepreneurs who cannot build on their own such wind capacities (they also can benefit from operating consultancy, on demand).

For example, the Global Wind Power uses this strategy but also has the backup option of own operating the inaugurated capacities in the case of lack of alternatives for a profitable exit from the business. The Hidroelectrica involvement in the value creation is characterized by a different type of partnership - the company manages and controls all the operations: in case, they can use the subcontractors.

As a simple observation, we note that Hidroelectrica, Global Wind Power or any manufacturer that uses the renewable sources have the competitive epicentre of their business models the availability of capital resources, the existence of collaboration with specialized companies and, of course, the virgin opportunity of green energy sources.

4. Conclusions

Until now, the approaches of business models were and are only theoretical ones, used to decipher the internal analytical strategic variables; in the near future, the disaggregation of these models can lead to the strengthening of competition position of the industry players. The entrepreneurs manage today the business model's components by optimizing the prices diminishing, the more advantageous position in the value chain, the launching of new products, or the increase of advertising spending.

The Hanna Halaburda's course presentation (Competition through business models cited above) backed at Harvard Business School, highlights the opportunities generated by a business model in stimulating current abilities and creating dynamic skills, if possible at the level of each attribute of the business model. The advantages offered by a well-defined and know business model gives managers the position to identify and block the rivals' abilities and, furthermore, to find solutions to neutralize the virtues of business concept developed by these competitors.

The challenge of exploring business models can support as we have shown the outlining of competitive advantages and we also can affirm, therefore, that the usefulness of the dynamic researches of the business models greatly contributes to improving the strategic position of enterprises in the competitive theatre of energy markets.

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