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Creating Competitive Advantage in Coal Mining Industry in Romania: A New Challenge

Csiminga Diana ^{a*}, Mangu Sorin ^a, Iloiu Mirela ^a, Marica Laura ^a, Irimie Sabina ^a,

^a University of Petrosani, University Street no.20, 332006, Petrosani, Romania

Abstract

As we know, human society is closely linked to the provision of energy sources. Crises lately manifested globally in oil and natural gas price movements for these resources, coupled with increasing demand for them led to a rethinking of national strategies for the exploitation and utilization of resources. One of the objectives of any industrial policy is to use comparative and competitive advantages due to the existence of natural internal resources and an appropriate level of qualification, experience and tradition of labor in the sectors of mining and exploitation of these resources, which requires judicious exploitation and search processing of the corresponding starting materials. The paper aims diagnosis of the current situation in the mining industry in Romania, especially coal, accompanied by an assessment of the competitive potential of this industry and its determinants. Conclusions and proposals provide general guidance on key factors and key considerations that may be relevant when considering the difficult issues inherent officials balancing process exploitation of valuable mineral resources - to long-term needs of the country, now and in the future.

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1. Introduction

Profound changes, political, social and cultural mutations that took place in the Romanian economy in the last two and a half decades have led to a radical change of its statute, transforming it from a centralized economy to a free market and functional economy, that needs to ensure its competitiveness in the competitive struggle, both in Europe and worldwide. In this context, the Romanian companies are forced to ensure their viability, to manage resources efficiently, to increase flexibility according to demand and supply variability, so that the value and quality

* Diana Csiminga. Tel.: +04-072-263-9423
E-mail address: diana_csiminga@yahoo.com

to ensure its competitive advantage in the market on which it operates. In addition, rapid changes in the economic and technical environment have led to the need for firms to quickly adapt to it.

Coal mining industry in Romania is no exception to this reality. Mining enterprises, like many businesses today, see their market places, customers and operations undergo a constant parade of changes and challenges. The volatile economy affects all, especially this particularly severe and destructive downturn we have been facing. (IMB Corporation, 2009, p.2)

2. The role and importance of coal as a source for electricity generation in Romania

Energy sources are central to national wealth, constituting both material conditions and the driving force necessary for economic development of a country. Modern history is, especially since the second half of the twentieth century, strongly influenced by the significant increase and diversification of production and consumption of energy, by the profound change of their structure. The continuous growth of energy demand, high cost, limited reserves and other fossil fuels efficiency (oil and gas), late confirmation of alternative renewable and nuclear energy encountered opposition lead to reconsideration of the position of coal in the energy balance. Corroborating existing data on trends in the coal sector and energy policies of various countries, and considering the viability of the pros and cons, it can be concluded that giving up coal as a primary energy resource is neither possible nor rational. According to projections made by the International Energy Agency, it is obvious that about a quarter of primary energy needs worldwide will be covered by coal (IEA, 2012). These items underlying the shifting energy policies of all countries depend to a greater or lesser share of imported energy.

Romania has a wide range of primary energy resources, but quantitatively reduced, so that indigenous coal has a decisive role in the national energy balance.

As shown in Figure 1, fossil fuels (coal, oil, natural gas) represent a majority share in primary energy production (72%), (EU, 2013) mostly represented by natural gas. Production of natural gas knows but a gradual decline due to the decline in deposits, and oil became the third carrier for energy in energy production in Romania, second returning coal, (Table 1.) (ME, 2011).

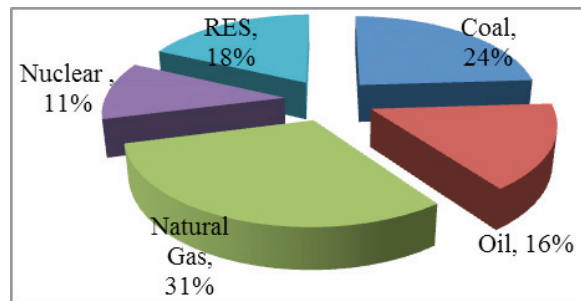


Fig.1. Primary energy production, by fuel in Romania. Share of each fuel to total production, 2011 (%)
 Source: EU, Energy, transport and environment indicators, 2013

Coal markets are characterized by a strong competition. Thus, between standardized by grade and calorific properties coal, on the one hand, and oil, gas, hydro and nuclear energy, on the other hand, there is greater competition in the substitution.

Table 1. The situation of non-renewable primary energy resources in Romania

Carrier resources primary energy	Reserves (million tons)	Exploitable reserves leased (million tons)	Exploitable reserves in new areas (million tons)	Estimated yearly production (million tons)	The estimated operating period (years)
Coal					
- Hard coal	755	105		2,5	229
- Lignite	1490	455	1045	3	47
Oil	74			4,5	14
Natural gas	145			10,5	15

Source: ME, Romanian Energy Strategy 2007-2020, updated in 2011

According to the data in Table 1 it is obvious that, excepting renewable energy sources, coal is the only internal primary energy carrier in terms of resources, that can contribute significantly to the supply of electricity consumption for the next 4-5 decades (if we refer only to lignite).

All three areas of mining and quarrying (solid, liquid and gaseous) can offer to Romania a great competitive advantage. The mineral resource that the mining company has access to, represents the majority of the value that exists within the company, as well as the competitive advantage the company has over its peers (Garcia, Camus, & Knight, 2010, p.268).

2.1. Turning to account of the competitive potential of coal mining industry in Romania

The coal mining industry in Romania is facing a confidence crisis. This situation is not unique to Romania. Generally, in recent years, it was found that the market has lost confidence in mining, confidence that costs can be controlled or that returns on capital employed will improve (PwC, 2013).

Despite being called an industry of the old economy, it plays a leading role in today's world economy. However, in spite of the latest resource super cycle, mining appears to lag behind other sister industries such as the oil and gas. The perseverance of mining companies for growth acquisition and technical developments has not been enough to surpass the oil and gas industry in creatind shareholder value. (Garcia et al., 2010)

Today, analyzing the results of coal extraction activity in Romania we can say that the coal mining industry does not have competitive advantages over other similar activities worldwide. On the contrary, it presents significant competitive disadvantages caused by:

- the cost per ton of coal or exceed delivery prices such as coal, or are higher than those of similar operating worldwide (lignite mined in career);
- lack of products differentiation, that to confer competitiveness Romanian coal on the world market.

But, comparing the situation of the coal mining industry in Romania with the world we highlight the significant comparative advantages resulting from the endowment with factors of production data:

- large amount of coal reserves that can cover internal consumption of Romania contributing to the energy security of the country;
- extraction technologies adequate to geological characteristics of the coal mining and similar to the existing technologies worldwide (especially in the case of lignite);
- quality coal is appropriate to the quality parameters for which power plants are designed to operate.

To present reality entirely, there is also the comparative disadvantages arising from:

- difficult geological conditions of coal extraction;
- low quality of coal caused by low calorific value and high sulfur content;
- low productivity holdings situated below the world average;
- advanced wear and tear of the mining and processing equipment;

Issues arising in determining the development strategy of the coal mining industry with effects on competitiveness of the sector target, on the one hand, limited economic and energy mining deposits attracted in business and on the other hand, the limit to which can be used to produce electricity and heat.

2.2. The Coal Industry Value Chain and Competitiveness

In order to consider a competitive advantage of the mining industry in Romania, it is necessary a new approach that introduces two concepts: resource and value chain.

Mining value chain analysis requires an approach with modern analysis techniques, based on the concept proposed by Michael Porter's value chain as a basic analytical tool for identifying sources of competitive advantage (Porter, 1998). The value chain concept states that it is possible to derive competitive advantage by arranging value adding activities in a sequential chain in order to satisfy the requirements of a customer. Camus, Knight, & Tapia, 2009 considers that both the value adding activities and the linking of these activities may be sources of competitive advantage (as cited in Garsia, Camus & Knight, 2010).

According to the value chain concept the enterprise may be modelled as a range of primary activities that are responsible for the generation of value and a range of supporting activities that do not directly generate value but support the value generating activities.

A customization of the value chain in mining is described by Garcia et al., who consider a mapping of specific activities upstream and downstream of the sector (Garcia et al., 2010). Upstream is the resource-related activities that embody the holistic function of mineral resource management. Its aim is to discover a new economic resource and transform it into economic mineable reserves. Downstream are situated industrial activities are responsible for implementing the operational plan defined in previous activities.

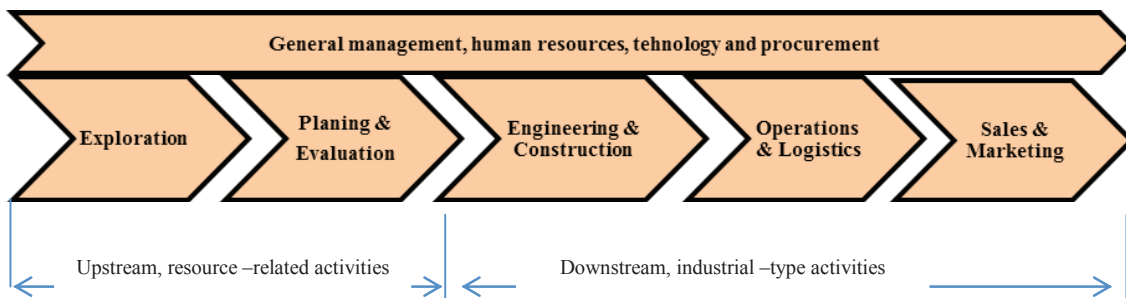


Fig.2. Mining value chain

In mining industry there is a belief deeply rooted as that value creation is based primarily on downstream industrial activities. These are focused on the production and costs reducing, which in turn, causes the creation of competitive advantage through cost. Lately, there are moves that support the main factors that create value in mining activities are concentrated in the upstream activities, focused on proper management of mineral resources without minimizing the essential role that they have structures, processes and systems used mining companies in the management of mineral resources (top of the value chain - support activities). Approach from the perspective of the relevant activities, that contributes to the creation of added value, creates a large space for innovation and development machines these areas of interest (Vorster, 2001).

Companies operating in the coal mining industry must be able to answer to a fundamental question: these activities (identified in the value chain) just bring added value or adds cost? Operational performance improvement

requires the development of high performing core processes with predictable outcomes, which meet output targets and generate revenue.

Performance improvement initiative based on optimizing process performance will deliver the best value for investment and will entail four steps to achieve and sustain competitive advantage (Boyle, 2009, p.9):

1. Undertake audits to identify value-adding and non-value-adding processes;
2. Design and implement improvements to processes that add value;
3. Measure and benchmark process performance;
4. Continual improvement measured against benchmarks.

We need to appreciate the contribution that value chain of coal has in the Romanian economy, in assurance of the welfare of citizens and natural environment.

Depending on market pressures and combining the opportunities and the threats as well as combining the strengths and weaknesses of mining companies operating in the coal sector in Romania, two scenarios can be created with different implications on coal value chain. (Table 2)

The scenarios were developed by considering local, national or even global factors: Romania's economy and local development priorities, the evolution of coal global markets, development of technologies, including carbon capture and storage as alternative sources of electricity generation. Together, these often interdependent actions lead to the change of the future and of the evolution of the coal value chain in Romania.

Table 2. Coal Scenarios

Market pressure	Scenario1	Scenario 2
Low prices natural gas	Loss of coal market share	Continuous development of new extraction technologies, mining spoil enrichment
Utilities retiring coal fired power plants		
Limited & costly CO ₂ reducing technologies	Missing global market opportunities in CO ₂ reducing technologies	Accelerate development and adoption of CO ₂ reducing technologies Development of new products & end markets for coal
Restrictions concerning the carbon dioxide emission		Meeting growing global demand for clean technologies
Development and popularization of renewable sources of energy	Low technology	
Supply and prices of coal from international competitor		

These scenarios are influenced first by the demand for electricity and they represent two completely different situations, situated at the extreme: a pessimistic situation that would finally lead to cessation of the coal mining in Romania and an optimistic situation, where environmental conditions are favourable, which means a development of this industry, in order to ensure the needs for energy and a gradual, continuous development of mining technologies. A necessary condition to achieve this scenario involves obtaining funding sources for the research - development activities and the use of solutions developed and an increased awareness of the role of innovation in mining sector (Morden, 1989).

3. Conclusion

Coal is expected to remain an indispensable component of global energy system in the coming decades.

The coal industry needs to adapt to climate change impacts on weather and infrastructure in order to ensure it remains a viable source of energy. The four dynamics of the new global economy—globalization, democracy, free markets, and sustainability - create an environment where economic, social, and ecological factors are increasingly interdependent. Consequently, natural resources companies need to move beyond looking only internally for value extraction and adopt a value creation approach by also looking externally for new competitive space (GMC, 2013).

The future of the coal mining industry in Romania and the real possibility of getting coal in terms of profitability is based on reengineering competitive and fundamental redesign of the whole process of coal mining extraction that aims to report the significant improvement of the critical indicators of performance evaluation, starting with the quality and the volume of geological reserves to the cost and quality of the finished product.

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