

# THE ENERGY EFFICIENCY FOR ACHIEVING SUSTAINABLE MANAGEMENT, A PRE-REQUISITE TO OVERCOME THE FINANCIAL CRISIS

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## ABSTRACT

*Energy efficiency is the key to the current challenges: globalisation, economic and financial crisis, climate change, poverty. It is cost saving while protecting the environment – a useful tool for reaching a sustainable management. The current financial crisis offers an opportunity of rethinking the current development model. The more increasing globalisation phenomenon, correlated with the current recession tendencies accelerate the competition at national or international level, bringing up a whole range of additional pressures on the companies. In this context, one of their best choices is to adopt a sustainable management by fostering energy efficiency in all economic sectors, promoting investments in renewable energies and smart energy grids, in order to ensure secure, clean and affordable energy, while substantially curbing carbon emissions. Energy efficiency represents the first pillar of a sustainable energy future.*

**KEYWORDS:** *energy efficiency, sustainable management, financial and economic crisis, competitiveness, clusters.*

## Introduction

Realising the gravity of the economic crisis, the countries have been trying to adopt measures in order to combat its negative effects and to set the economy back on its natural course. This difficult situation put a lot of pressure on the companies in their efforts to face the new challenges.

In this paper, we intend to draw attention to the other side of the present situation, namely to take it as an opportunity. The crisis fosters solutions. Companies, and especially SMEs, are confronted with the necessity to survive in an ever-more competitive environment. Consequently, they acknowledge the need for a sustainable management. This ***might be an answer, because the recession periods are those in which we must reevaluate the efficiency of our output and consumption. Sustainable management*** can be achieved through scientific and technological progress and by increasing knowledge, mobility, competitiveness and innovation. Competitiveness is the driving force that promotes efficiency and economic progress, and this concept starts gaining more and more weight worldwide. We can, without doubt, affirm that by giving a chance to sustainable management, we give a chance to the future perspectives of development.

***Also, the energy is a key element, with a great share, in every local, national, regional or international activity. Therefore we turn our attention, inevitably, towards it.***

## **The current context and actions to surpass the financial and economic crisis**

The global approach of the crisis implies the integration of all countries in the multi-sectorial international effort. Nevertheless, it must be underlined that, even under a common approach, the answer to the crisis cannot be uniform, due to the specific situation of every nation. The uncontrolled dimension of the crisis leads to ever more marked tendencies of restraining and even closure of the market access, by a protectionism possibly assuring on a very short term, but devastating on medium and long term. The effects felt by companies all over the world are being spread due to the influence of the external shocks. The fight for surviving is hard and with many economic cost cuttings.

Due to all these aspects there are a lot of discussions about the place and role that management can play or should have played in overpassing this situation and helping the overall economic recovery process. In order to have a clear image about the crisis we tried to observe the main actions that took place at international and European level.

### ***Impetus at international level***

The international business climate has the opportunity to take advantage of the measures adopted at international level, in order to combat the negative effects of the economic and financial crisis. The measures concerning the financial markets and the world economy aim to reestablish trust, revive economic growth and employment; strengthen financial supervision and regulation; finance and reform financial institutions; develop international rules for improving the quality and the quantity of bank capital and for discouraging excessive leverage; foster trade, international investment and deny protectionism; build a sustainable recovery.

### ***Impetus at European level***

The European business climate can and has to benefit from the measures adopted by the European leaders in the framework of a European economic recovery plan. The main objectives are referring to: stimulating demand and strengthening consumers' trust, reducing social costs and diminishing the effects of the crisis on the most disadvantaged social categories, preparing Europe for the relaunch of economic growth. The Plan identifies financial-budgetary measures and structural measures that can support the European economy. In what concerns "intelligent investments", the plan comprises a set of concrete proposals of public-private partnerships to finance clean technologies.

Small and Medium-Sized Enterprises (SMEs) find support at European level, the economic recovery plan underlying the importance of Small Business Act in helping SMEs face the economic crisis. The measures envisaged regard the relaxation of accounting regulations, access facilitation to financing, relaxation of public procurement rules, reducing administrative burdens or market entry costs.

We notice that all these measures adopted at European or international level offer the business environment a range of opportunities, by facilitating the repositioning of the economic activities on a sustainable path. It is the proper moment for structural changes in activity and in economy to take place, oriented towards sustainable competitively growth.

The current crisis brings pertinent questions related to the aspect of environmental protection and the constant need for economic growth. In the paper 'Romania's economic development in light of a sustainable development perspective' the authors are describing the main relations between economic development and sustainable development. The economic development depends directly on a good environment protection. Any economic activity is in touch with the environment's exploitation, so, any disequilibrium encountered in the environment could induce major loses in that economic area, sometimes it

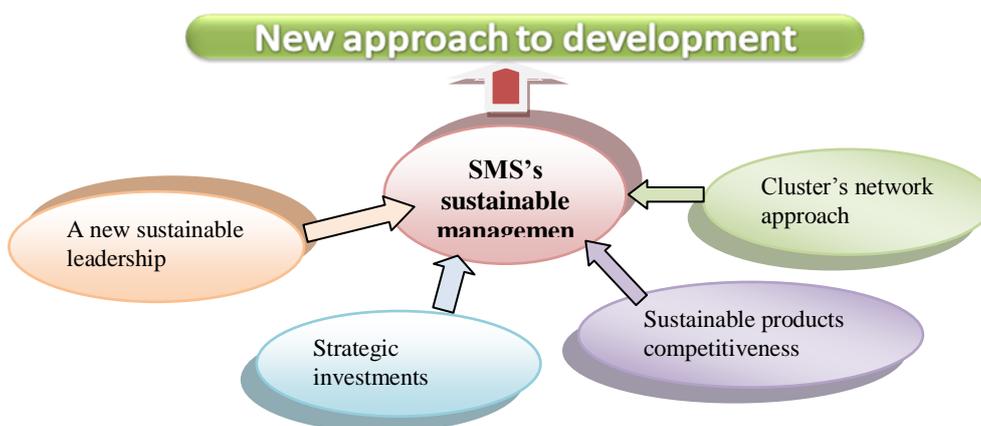
contributes even at the collapse of an economic branch. The main conclusion of the authors is that without sustainable development, living standards will drastically decrease (Gagea and Stănculescu., 2008, pp. 223-232).

We should bear in mind that even if environmental protection is important, a total and rapid change of the technical systems is difficult to do without any costs for intelligent investments. The alternative of this kind of development we consider it as a vital solution not only for the company's management, but also for a country's future development.

After this briefly analysis we can say that the need for finding solutions is urgently calling for new approaches. A solution can be the sustainable management that we can define as being like an "umbrella management" due to its characteristics:

- this type of management will try to offer a better equilibrium between economic results and environmental resources consumed per production output;
- it will try to consider the usage of ecotehnologies in order to reach energy efficiency and to minimize costs per production output;
- it will have a sustainable competitive advantage due to the promotion of ecotehnologies;
- it will try promote a new type of leadership, that will include the principles of sustainable management.

In our view, the sustainable management is directly connected with the principles of sustainable development. The sustainable management can integrate different management aspects and economic decisions as presented in the figure 1:



**Fig. 1 The sustainable management approach**

*Source: The authors own interpretation*

We have tried to identify *potential barriers* in adoption of the energy efficient principles for companies:

- The overall decision-making process is lacking information or has no real leadership culture for the inclusion of these principles into the company's overall management culture. As a general tendency, the energy awareness as a means to reduce production costs is not a high priority in many firms, despite a number of excellent examples in industry worldwide. (Worrell E., Price L). It can be noticed a deficiency regarding the internal SME's environmental policy or energy rationalisation policy.
- The available funds for investments are in majority of cases the subject of competition with other strategic investments. For small and medium sized enterprises it is hard to find financial resources, due to the limitation of credits offered by banks;

➤ Managers' attitude towards investments in state of art technology is sometime reluctant. The main reasons are the high prices of these types of technologies and their desire to wait for the right time, when the prices will go down.

The change of paradigm should start beginning with the usage of environmentally friendly raw materials and continue during the whole production cycle process. We know that in the present economic situation, it is difficult to start implementing a sustainable management framework, due to high cost that should be allocated for this process. A good solution in this case can be the association in *clusters*. We can say that for companies, that are parts of local competitive areas or local clusters could determine the perpetuation of competitiveness at regional or national level. The advantages of being part of a cluster are the following: effective promotion combined with the region/city promotion, stronger relations with the research and development, growth of competitiveness of companies operating within the cluster, better access to know-how. The increasing number of clusters is influencing the local, regional development of a country. (Ștefănescu, Ciocan, Gagea, 2008, pp. 419)

The clusters can be a good solution for solving problems. The thematical clusters are the best options also for Romanian small and medium sized entripreses. The creation of the energy efficient clusters network, that will be a platform for the exchange of expertise and good practices, will contribute to a deeper awareness of the necessity of a sustainable management culture. Other possible alternatives can be the creation of a special fund for energy efficiency designed to help small and medium sized enterprises or tax exemptions for those investements that are targeting energy efficiency issues.

### **Energy efficiency - a factor for increasing competitiveness**

We have asked ourselves about the relation between sustainable development and the energy efficient concept. Therefore, we have observed that the energy is ubiquitous in all economic activities, becoming in recent decades an indispensable factor. The complexity of the issues related to energy production, transport and energy consumption has evolved greatly in the recent decades, with the problems of global environment, climate change and depletion of natural resources becoming more acute.

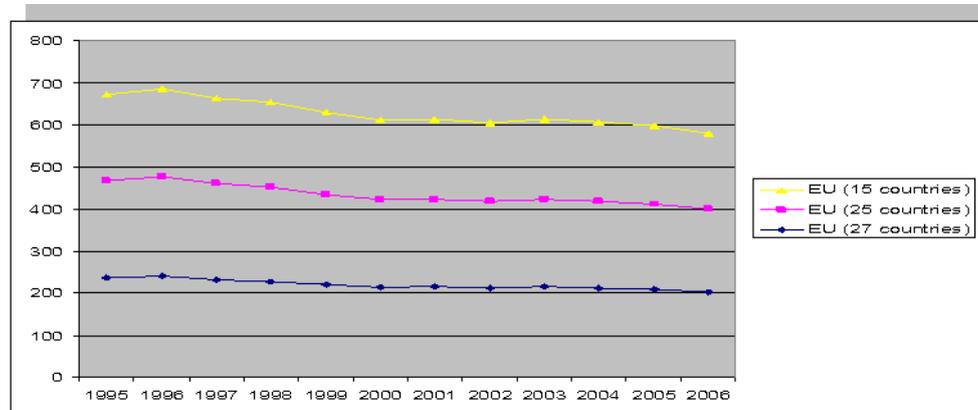
In the present period and in the future, companies and businesses will confront with the need to search and implement pragmatic and sustainable solutions. These include increasing energy efficiency and developing innovative products and technologies. At the same time, they will lead to lower costs and increased competitiveness, entailing economic growth.

The challenge of finding and implementing the best energy-efficient solutions for a company can determine the reduction of fuel consumption while improving, at the same time, production. If we want to measure the performance indicators, we can use the energy consumption/produced unit, the emissions/produced unit and the energy efficiency/energy intensity index.

In order to determine energy efficiency, the indicator "energy intensity (EI)" is used the following formula:  $EI = \text{Gross domestic energy consumption} / \text{Gross Domestic Product in constant prices (kg oil equivalent (kgoe)} / 1000 \text{ euros)}$

The indicator is relevant for the performance of the technological process and for the overall economic development, taking into account factors like the exchange rate, purchasing power etc. Depending on the statistical data, the intensity of primary, electric or final energy can be calculated.

If we consider the energy intensity in the overall economy, we can observe that it was improved substantially in recent years. Progress has been obtained in particular by lowering the energy intensity in the industrial sector, while transport and services, which have recorded a downward trend in energy intensity, contributed to a lesser extent. If we watch the trend at EU level, we see the energy intensity lowering at the same time with the enlargement of the EU-15 to EU-25 and further to EU-27 (Fig. 2).



**Fig. no. 2 Energy intensity in 2006, at EU level (Mtoe)**

Source: Calculated by the authors, using data from Eurostat database, 2008

The SMEs show great potential for reducing the overall energy intensity. Particularly those with a high percent of energy costs in the total production costs can benefit from enhancing efficiency of energy conversion and decreasing energy waste. Nevertheless, many obstacles and market failures have hindered the extensive fostering of these measures.

An innovative method for assessing the energy-efficiency improvement potential of a company is comparing its total production energy intensity with an energy intensity benchmark value of a similar company (Price, Worrell and Sinton, 2004, 17 p.). An Energy Efficiency Index (EEI) is developed, based on the calculated energy intensity and benchmark energy intensity values. This indicator shows the enterprise's energy-efficiency potential and facilitates the evaluation of its progress towards the chosen energy-intensity target.

The aggregated EEI is calculated as follows:

$$EEI = 100 * \frac{\sum_{i=1}^n P_i \cdot EI_i}{\sum_{i=1}^n P_i \cdot EI_{i,B}} = 100 * \frac{E_{tot}}{\sum_{i=1}^n P_i \cdot EI_{i,B}}$$

where:

- $EEI$  = energy efficiency index
- $n$  = number of process steps to be aggregated
- $EI_i$  = actual energy intensity (EI) of process step  $i$
- $EI_{i,B}$  = benchmark energy intensity (EI) of process step  $i$
- $P_i$  = production quantity for process step  $i$
- $E_{tot}$  = total actual energy consumption for all process steps

The difference between the current energy intensity and that of the reference technology is calculated for each of the key process steps of the company and then cumulated for the entire company. By definition, a company that uses the benchmark technology will have an EEI of 100. In practice, all companies will have an EEI greater than 100.

The gap between the current company's energy intensity at each process step and the benchmark level energy consumption represents the technical energy-efficiency potential of the company.

The EEI is an examining tool that shows which activities are most efficient and which are most inefficient compared to the benchmark conditions. It also indicates which activities have a substantial potential for energy-efficiency improvement.

### **Conclusions**

In the current conditions of global recession, we must see the good side of things. Instead of thinking that we are facing a crisis and instead of trying to rebuild things from the past, we could see it like an opportunity and might try to build a sustainable future. We can foster energy efficiency in all economic sectors, accelerating the transition to sustainable growth, which will encourage technological innovation, provide new economic opportunities and create more and better jobs.

The companies that will engage on the path of increasing energy efficiency as a factor of economic relaunch, will have much to gain, being among the first to benefit from the renewed economic activities. In order to promote sustainable development as a key objective for transition to a low-carbon economy, the investments in ecotechnologies will offer major opportunities to European companies of developing new products and penetrating new markets.

Due to the last trends registered, we consider that the sustainable management should be considered as a key for future development. It offers pertinent solutions for minimizing costs and obtaining competitive products. Applying the energy efficiency strategy can be a good chance also at national level for small and medium sized enterprises. As Albert Einstein said, 'in the middle of difficulty lies opportunity', so we have to reinvent ourselves with new paradigms of thinking. A sustainable management can be a good solution for the future.

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