

THE ROLE OF THE DETERMINANT FACTORS WHICH ACTS ON ROMANIAN COMPANIE'S PRODUCTIVITY GROWTH - CO-FINANCED PROJECT

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Abstract—As regards the case study selected have been implemented numerous energy efficiency measures, innovative technologies, improvements and important modernization of the technological processes. The company development and its revenues depends on a major investment, which proves the decisive role had by POS CCE in the financial support on medium and long term development activities.

Projects' objectives were compliant with the program and its successful implementation within the analyzed company and will play an important role for the community, as well as for local and national economy.

During the writing and project implementation have occurred both predisposing and perturbing factors, project's objectives and indicators set through projects can only be achieved through best practices and an efficient bilateral communication between the beneficiary (now under review) and the authorities.

Keywords—innovative technology, sustainable development, energy efficiency, production capacity, investments in modernization, management process, intelligent equipment.

I. INTRODUCTION

In the global sense, sustainable development is a process of change in which the exploitation of resources, directing investments orientation of technological developments and institutional changes are all in harmony and increases both current capabilities and future ones to satisfy human necessities and aspirations.

Due to continuous changes and major at global level, I believe the most relevant definition of sustainable development is surely the one given by the World Commission on Environment and Development (WCED) in the report "Our Common Future", also known as the Brundtland Report "sustainable development is the development which aims to meet the needs of the present without compromising the possibility of future generations to meet their own needs".

This sense has as central element the man and is based

on the concept of intergenerational equity.

As regards subject approached I tried to outline some key factors that have a decisive role in the overall objective of sustainable development that is the continuous improvement of life quality for present and future generations by developing sustainable communities able to manage and use resources effectively and to capitalize the ecological and social innovation potential of the economy in order to ensure prosperity, environmental protection and social cohesion.

In our country sustainable development of productive sector is not only consistent with the requirements of current EU policy and the basic principles of Europe 2020.

In the post-accession to the European Union the productive sector in Romania was supported by two major development programs based on the sustainable development principle, namely the Regional Operational Programme (POR) 2007-2014 and the Operational Programme to Increase the Economic Competitiveness (POS CCE) 2007 - 2014.

POR is one of the Romanian Operational Programmes agreed with the European Union, being a very important tool for implementing the national strategy and policies for regional development. It applies to all 8 regions of Romania.

The overall objective of POR is to "support and promote sustainable local development, both economically and socially, in Romania's regions, by improving the infrastructure and business environment, which support economic growth [1]."

This means that POR aims to reduce economic and social disparities between the more developed regions and less developed ones.

The Sectorial Operational Programme "Increasing Economic Competitiveness" 2007-2013 (POS CCE) is the main instrument for achieving the second thematic priorities of the National Strategic Reference exactly long-term growth of of economic competitiveness in Romania, set priority and the National Development Plan and the development of a knowledge-based economy[2].

The general objective of POS CCE is to increase the productivity of Romanian companies to reduce the gap to the EU average productivity. The target is an average annual increase in productivity of approx. 5.5% by 2015, which will allow Romania to reach a level of about 55% of the EU average. The exposure to competition will generate sustainable economic development, promotion on the international market and the increase product quality Romanian [3].

The overall implementation and management of POS CCE and its associated procedures are similar to other operational programs within the National Strategic Reference Framework 2007 - 2013 (CSNR) Management and implementation of POS CCE is governed by European regulations.

In terms of general responsibilities, the Romanian Government through line ministries and the Managing Authority hold full responsibility for the commitments contained in the documents related to Structural Funds and their efficiency and correct implementation, thus ensuring the system availability and access to financial resources and other types of resources needed to accomplish the priorities described in POS CCE.

II. ANALYSIS AND FACTORS EXEMPLIFICATION WITH DECISIVE ROLE FOR THE PRODUCTIVE SECTOR

The case study I decided to choose in order to highlight the main key factors and for the development of the productive sector in Romania is a company which main object of activity is manufacture of ceramic household and ornamental.

The company has implemented two major projects under the POSCCE:

- 1) Extending an existing unit to increase production capacity and building a place for the production of ceramics;
- 2) Increasing energy efficiency through investments installation and equipment specific to the ceramic industry.

The overall purpose and final investments was the on one side the development of the productive sector in this field of activity through the acquisition of new

equipment, expansion creation of new jobs, increased productivity and competitiveness of the company. And on the other other hand economic efficiency which means obtaining relevant economic effects in terms of spending in a rational and economical of material resources, human and financial resources, using scientific methods for the organization of work.

A. Favorable Factors

Contributing factors represent the specific objectives through investment program and the positive aspects regarding the multitude of activities that are funded within this general objective and which converge to Romanian businesses increase productivity. Also this study will highlight the factors favoring POS CCE implemented project by presenting a comparison of results before and after the investment [4].

The main contributing factors within the project to increase production capacity:

- a) Before the investment were two production halls and the implemented project has led to two more production plants of approximately 4752 sqm and 1800 sqm;
- b) Purchase and release for production of some ultramodern equipment which were launched on the market the last calendar year, performing and useful in order to increase the research capacity and development through the introduction of innovative technologies that will enhance the productive sector to ensure sustainable development principles. Purchasing performant equipment necessary in ceramic industry;
- c) forklifts; presses for ceramic products; retouching tables; injection molding equipment; industrial robots; glazing machines; kilns and industrial ovens; Moulder, automatic packaging machine , palletized and labeling equipment, shaping and painting equipment; IT equipment (server, computers, IT network);

The new production hall built within the project have allowed increasing the production capacity by approximately 60% and increased production equipment with 69.

TABLE I
INDICATORS

INDICATORS	Value at beginning of implementation [figures]	Estimated value at the end of the implementation period	Estimated value at the end of the holding period of the required investment (5 years)
Achievement			
Tangible / intangible acquired by the project (number)	0	69 (pcs)	69 (pcs)
Production area upgraded / built through the project (sqm)	0	7.800(sqm)	7.800 (sqm)
Achievement			
Increase of the turnover compared to the last financial year (%)	40 mil RON	175,72(%)	184,68(%)
Number of jobs created	0	190	196
The number of jobs maintained	390	390	390
Increase the export (%)	0	39(%)	46(%)

This project is generating profit and therefore it will be financially self-sustaining after the termination required financing due the income derived from the sale of manufactured products.

In the figure we present the evolution of the company forecasted revenue (turnover) over a period of 5 years from the date of the investment.

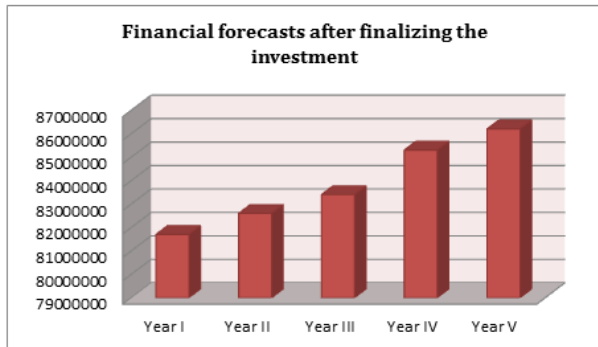


Fig 1. Financial forecasts after finalizing the investment

Labour force employed in the construction of new buildings;

Ensuring equal opportunities for all participants in the labor market through the inclusion of women, poor communities and the Rome ethnic groups;

Developing the economic capacity for implementing of some lines in the company's development plan to increase the company's competitiveness, diversification in the supply and economic efficiency, given that currently pottery market requires versatility [5];

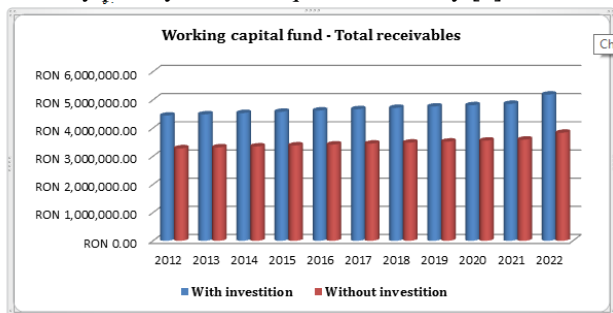


Fig 2. Working capital fund – Total receivables

It can be seen from the above chart the differences between receivables present in the planned the working capital fund if the investment is not executed and those expected if the investment is conduct.

Integration of the new investment in the existing quality management system in production and its certification [6].

At the beginning of the investment there was no integrated quality management standard, and now the company is in an advanced state for implementing the certification EN ISO 9001: 2008 and the principles of Lean Management.

Patenting of innovative technologies in ceramics production, retouching the products with water jet, applying the torch by soldering through vibration;

Development of applications for increasing the

performance and optimization of the production process, implementing an informational system ERP (Enterprise Resource Planning). The existing server within the company is based on Linux, MySQL its interface is Adempiere;

These applications have the role:

- i) to record the real-time output from the production unit through touch screens installed at the production lines;
- ii) to record all the parameters of the equipment and to be able to check if the technical sheet is followed.
- iii) to achieve equipment cadence of work and to check if the labor standards are performed;

Benefits brought by these IT applications are obvious and the measurable result is:

- Real-time correction of some operational parameters;
- Reducing the losses of material, energy and time.

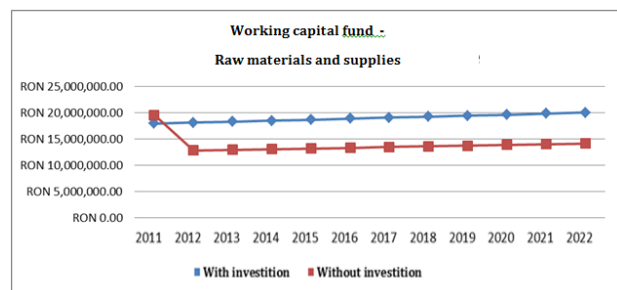


Fig 3. Working capital fund - Expenditure on raw materials

The production report is no longer made the next day at the production meeting as it was prior to implementation, now they are getting all the data in real time;

Taking the information live directly from the production it is helping the company to get a more concrete evidence of the situation at the production plant level/ a real evidence of stocks;

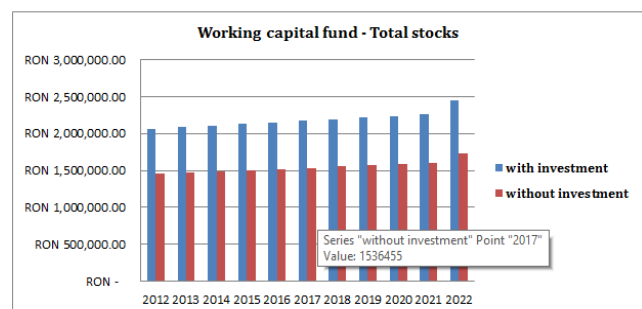


Fig 4. Working capital fund – total stoks

Also the total of stocks is reduced considerably with the implementation of the project, which aims to optimize the system with real-time data from production.

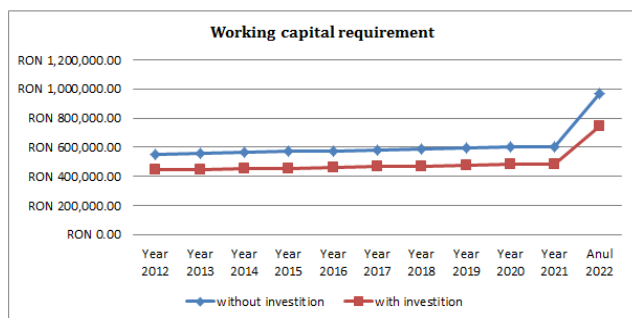


Fig 5. Working capital requirement

It can also be seen that the provision for working capital available is diminishing together with the investment due the losses reduction and less energy consumption.

The main contributing factors within the project to increase energy efficiency.

Energy efficiency is made by applying some techniques to increase energy efficiency in the production of ceramics [7];

Using in kiln construction of efficient thermoinsulating materials, light thermoinsulating bricks and mineral fibers (ceramic fiber, basalt, single component) in order to reduce heat loss to the outside.

Constructing trolleys with lightweight, lightweight insulation materials, allowing quick efficiently heating and cooling and to reduce heat loss from the outside.

Optimizing the product shape / burning auxiliaries composition in order to reduce unit mass of the product / plates, to reduce raw material consumption per unit and hence the consumption of heat for drying and firing and to exchange efficient heat between agent heating / cooling and the product.

Using high-speed burners in order to efficiency heat exchange between flue gases and products and order to equalize thermal the furnace atmosphere.

Conducting and computerized control of the combustion process to reduce heat consumption and pollutants at the basket, through modernization were replaced switchboards where necessary,

Reduce the use of ceramic burning auxiliaries or the utilization of auxiliary combustion type silicon carbide (SiC), in order not to heat and cool along large mass produced unproductive.

Natural gas heat recovery of burning kilns combustion for air preheating;

Recovering advanced physical and chemical heat of combustion gases discharged (energy and environmental effects). Taking into account the main characteristics of

combustion gases evacuated from process furnaces they can be considered: secondary energy thermal resources and energy resources combustible of natural side[8].

Overlap the Sectoral Operational Programme POS CCE / AP4 /DMI-1, the objectives of the ceramic manufacturer can be observed from the following:

a) Increase of production efficiency by reducing the company's energy consumption and losses [9]:

Manufacturing processes;

Engine and transmission systems;

Fans, variable speed drives and ventilation.

b) Increasing the security level of energy supply in the process by reducing the number of interruptions.

c) The purchase and putting into service of the new equipment with high efficiency embracing innovative technologies launched on the market the last year, whose performance and versatility will reduce consumption and increase production quality, ensuring competitive market prices [10].

d) Reduced maintenance costs through power distribution networks.

Investments were:

- i. Investment in replacing existing equipment with new equipment - with very high efficiency, specific to ceramic industry companies [11];
- ii. Investments in modernization of equipment incorporated manufacturing processes by replacing high-efficiency electric motors and endowment with variable speed / frequency converters.
- iii. Investments in modernizing milling equipment by replacing the liner and the milling balls, resulting in decreased time required for grinding;
- iv. Investments in modernizing the kilns through buying a new equipment of kiln with heat exchanger and other automation equipment;
- v. Investments in increasing the use of electronic controls and the implementation of integrated application programs by replacing conventional switchboard relays and contactors with PLCs programmable automatons, variable of frequency;

Improvements can be made to equipment and systems by partial or complete replacing or through modernization in terms of management and control the optimum parameters. The following investments and a summary table showing the calculations of energy savings resulting from the implementation of all proposed measures:

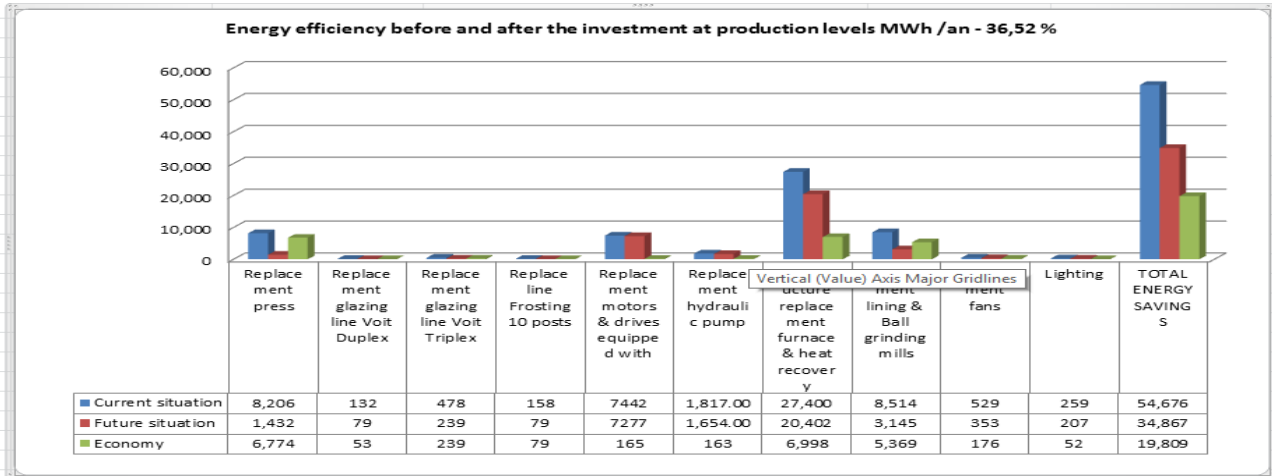


Fig 6. Energy efficiency before and after the investment at production level

Commissioning of investment, respectively implementation of the measures improvement of energy efficiency in the manufacturing process does not cause increasing the consumption of other resources downstream from the application place of the measures.

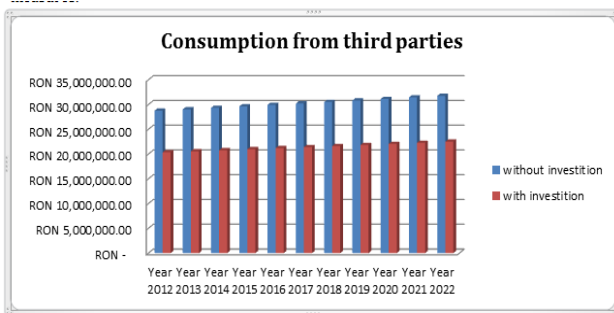


Fig 7. Consumption from third parties

The chart above shows the efficiency in terms of reducing energy consumption from third parties, equipment and other materials presenting a high degree of wear in a non-optimized process technology. Investments decreased consumption and decreased financial expenses generated by them.

Time of return of this investment is 13 years.

B. Disturbing Factors

All tables and figures you insert in your document are only to help you gauge the size of your paper, for the convenience of the referees, and to make it easy for you to distribute preprints.

- 1) Stopping the payments by the Managing Authority and major problems for beneficiaries who can not finalize the investment and pay the equipment, mostly supplied by foreign producers;
- 2) Low institutional capacity of the Managing Authority and Intermediate Bodies, due both to insufficient staff and lack the necessary skills (communication and relationship with the beneficiaries, financial management, procurement, financial control and other specific areas related to the monitoring of

- projects);
- 3) A number of regulatory issues and public policy still unresolved, especially for energy and growth poles;
- 4) Complex and burdensome laws and procedures for public procurement and financial control;
- 5) Lack of experienced subcontractors to provide specialized support in implementation.

These elements have had several negative consequences from the early stages, including delays in project appraisal, a large number of requests for clarification during the evaluation process, a slow progress beyond the initial stages of implementation and likely very high level costs [12].

Other problems, targeting human resources, include high levels of vacancies or locked within Intermediate Bodies the need for specific skills, ability to deal with peaks of activity, access to specialized services (legal, financial, procurement) and a general need for better cooperation to solve problems within and between involved organizations in implementing POS CCE

To improve the problems encountered have measures were taken, including flexibility on financial eligibility, the use of pre-financing, administrative simplification by extending self-declarations (eg fiscal Documents necessary only in the contractual phase).

III. CONCLUSION AND PROPOSALS

A. Conclusion

The overall conclusion is that the implementation of the program was needed to accelerate the pace of implementation of the Operational Programme, especially in the stages of selection, contracting, implementation and payments. As the program advanced was stated a focus of attention to these types of activities in all institutions, from the Monitoring Committee to intermediate bodies, but the pace needs to be accelerated. The main priority of steps before launching and processing applications should be replaced with attention to spending; all other steps are essentially preparatory elements for absorption.

B. Proposals

Find below some measures to improve the program management process POS CCE regarding [13].

- a) Find below some improvement measures of the program management process in terms of:
- b) Financial Reallocations: it takes informed decisions, both in terms regards the operations "donor", where it will take some funds and whose operations budget to be supplemented; should not start from the idea that the two transactions being in the same area of intervention or priority axis;
- c) Procedures for submission and selection: simplification must be applied where feasible, including the introduction of mechanisms for negotiation or type of sheets used for technical assistance, where the number of potential beneficiaries is very small or the introduction of the voucher scheme, where there is potential to attract a large number of small grants;
- d) Target group: potential beneficiaries need to be addressed in a proactive manner through direct promotion for low popularity operations;
- e) Access to finance: action must be taken to improve the access to finance for beneficiaries, including the creation of dedicated tools or use national funds;
- f) The quality of applications: together with the increasing popularity, improve the quality of applications submitted is a solution to increase absorption. Technical assistance should be used to provide support to applicants, both for information and counseling;
- g) Capacity management: institutional capacity and implementation of the management system should be improved through training of existing staff; access to specific expertise (legal, procurement, financial management, audit or technical) should be improved through the use of external resources, technical assistance;
- h) Spending of funds: the number of calls and applications processed will not contribute to absorption if not coupled with an increase in payments. In this respect, it is necessary to simplify the control procedures and approval of payments, proactive support to beneficiaries (which may be considered "customers" of the program), monitoring at project and estimation of payments that will be made;
- i) Technical Support: Priority Technical Assistance Program is designed to support implementation by providing the necessary support to avoid bottlenecks; however, the axis itself facing a number of bottlenecks, like the others. Overcoming these, in terms of the number of staff, resources and expertise to be a top priority, so that the technical assistance is a solution and not a new problem.
- j) Co projects[14]: in terms of ability to co-beneficiaries is required comfort letter which must cover the total expenditure of the project, not just those eligible, including VAT (value added tax). Banks refuse to

include the VAT expense in the letter of comfort, especially in situations where the equipment purchased by the project are from other EU Member States, so VAT is not included in the cash flow of the project.

The solution bridge-loan where the beneficiary covers also VAT indebtedness the risk of beneficiary. The proposal made is that the comfort letter not to cover the VAT expense.

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