QUANTIFYING SOCIAL OBJECTIVES AIMING POLLUTION CONTROL – AN ECONOMIC PERSPECTIVE UPON STRATEGIC MANAGEMENT AND PROJECT MANAGEMENT*

Oana - Cătălina ȚĂPURICĂ[**], Florin TACHE**[***]

Abstract: *The paper aims to emphasize certain methods and modern instruments used for quantifying the economic impact of setting-up either pollution control or environment protection related social objectives, in the context of strategic management and project management processes carried out within economic organizations. The paper also underlines that setting-up social objectives in the field of pollution control and environment protection may lead to short-run tangible economic benefits for organizations, in addition to already known long-run benefits for society, consisting in quality improvements of the social life's parameters.*

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1. Introduction

Under the circumstances of using both strategic management and project management as main instruments for achieving performance in the

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** The Bucharest Academy of Economic Studies, Romania, Faculty of Management, oana.tapurica@yahoo.com.

*** The Bucharest Academy of Economic Studies, Romania, Faculty of Management, florin.tache@yahoo.com.

new economy, decision-makers tend to focus on strategic approaches for providing a more careful and comprehensive analysis on the organizational objectives, taking into account the contemporary assumption that sustainable development is supposed to become the main strategic target within all industries and organizations. Thus, when developing a project or setting up a business strategy, every contemporary managerial approach on sustainable development states the necessity of assuming three kinds of objectives in order to achieve a more complete perspective upon the business performance or the project efficiency: **economic objectives**, **social objectives** and **environment objectives** (pollution control objectives).

Taking into account the differences between the categories of objectives stated above, the managers face the necessity for *quantifying* the impact of each objective in order to obtain an overall perspective upon business or project perspective, which is regarded as ***impact analysis*** (Roche, C., 2000, pp. 89-95)**.**

The *quantification method* is being regarded as the measurement of the quantity or amount, without specifying the specific unit of volume (Wilkinson, D., Ferguson, M., et. al., 2004, p. 11). When using the quantification technique, decision-makers usually deal with different units of measurement which are not comparable with each other. Moreover, if the economic objectives involve no difficulty in being quantified, the social and environmental objectives are more difficult to quantify. This assumption leads to the conclusion that sustainable development is being approached from an unbalanced perspective, with high quantification limitation of benefits and costs (Hahn, R.W., Litan, S., 2005, pp. 480-505).

So far, any attempt for quantifying non-economic objectives, such as social welfare, pollution reduction and control, biodiversity, happiness or health over people's lifetime, presents several methodological as well as ethical problems. For example, evaluating human life by using a conventional cost is a controversial aspect in the process of quantifying social objectives. Also, identifying the economic value for the growth of people welfare, is as difficult as estimating the economic impact of pollution control.

This paper introduces the necessity for promoting complex innovative methods of quantification and also for developing an overall approach for quantifying financial, social and pollution impacts, so that business or project stakeholders become aware of the economic dimension of both the social and environmental objectives, including the pollution control perspective.

2. The role of impact assessment in the context of sustainable development

Apparently, social and environmental objectives cannot be quantified and expressed in economic terms. Therefore, there is a high probability that measurable objectives will crowd out social or environmental objectives (Campbell, H., Brown, R., 2003, pp. 18-44). The most common instrument partially used for object quantification is the *cost-benefit analysis*, but it usually provides rigid estimations, not susceptible to analyze risk and uncertainty (Stead, W.E., Stead, J.G., 2003, pp. 86-133).

Carrying out an ***impact analysis***, in regard to cost-benefit analysis, may prove to be a more pertinent solution for solving the difficulties that might occur when developing a business strategy or when leading a complex project.

In the process of quantifying environmental and social impacts assigned through the objectives of a project or business strategy, impact analysis underlines two broad categories of valuation techniques: *direct valuation method – the primary role - and indirect valuation method – the auxiliary role* (Kirkpatrick, C., 2000, pp. 5-9).

Direct valuation role *method* is used to elicit preferences by experiments or questionnaires and the most common method for achieving this objective is **contingent valuation.** Contingent valuation technique encompasses both the *willingness to pay* for a certain benefit or for avoiding a possible cost and the *willingness to accept compensation* to ignore a possible benefit or tolerate a certain loss (Kirkpatrick, C., 2000, pp. 5-9).

Indirect valuation role *method* includes techniques such as *hedonic pricing*, *wage techniques*, *travel cost methods* and *dose-response techniques*. The second auxiliary role solves problems associated with direct valuation such as strategic, information and hypothetical biases, where respondents' answers are bias in favour of a particular outcome and/or limited information can alter true preferences (Tietenberg, T.H., 2004, pp. 16-33).

3. Developing a strategic methodology for impact assessment analysis

In order to achieve an overall quantifying realistic perspective upon the objectives stated within a project or within the business strategy of an organization, decision makers should combine several techniques and methods in order to assess the economic, social and pollution control impacts, as shown in *Figure 1.*

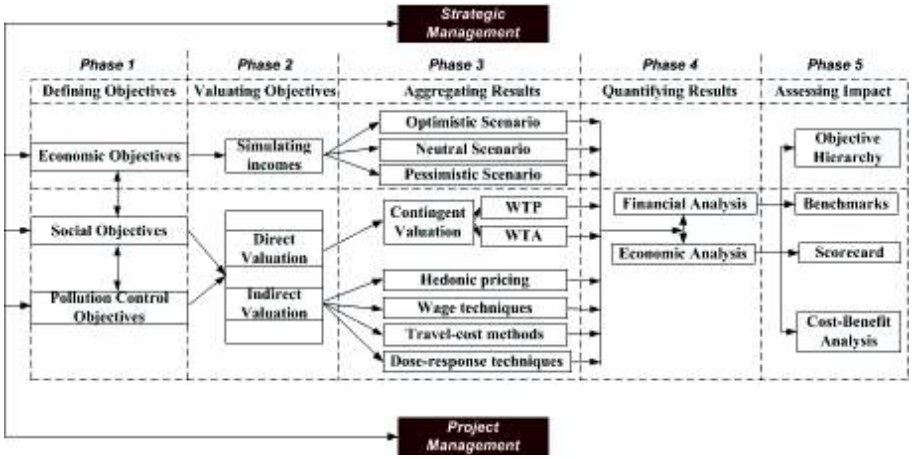

Figure 1. Sustainable development impact assessment methodology

The ***first three phases*** underline specific methods for the valuation of indicators, based on two distinguish natures of the objectives, *the measurable possibility* (for economic objectives) and *the immeasurable context* (for social and pollution control objectives). In the ***fourth phase***, the quantification process is based upon the *financial analysis* – which refers to the money value of impacts (positive and negative) as expressed in market transaction values –, and the *economic analysis* – which refers to the economic value of positive impacts (benefits) and negative impacts (costs) as measured by a decision maker's willingness to pay (or accept) valuation. The main advantage of quantifying social, economic and environmental impacts in either economic or financial terms is given by the usage of a common unit of measurement, allowing different impacts to be compared in relative terms. As shown in *Figure 1*, ***assessing impact phase***, the last necessary element for obtaining a holistic indicator in order to quantify economic, social and pollution control objectives, introduces a combination of the following methods: *objective hierarchy, benchmarks method, scorecard method and cost-benefit analysis.*

The developed methodology is a tool for improving the quality of objective-setting process, by providing credible and solid evidence on the likely consequences of strategic options, and by focusing on *causal chain analysis* in order to track the path from the process of setting objectives to

their final impact on the organization or project results. Last by not least, this final impact is reported in terms of *indicators,* which record the *significance* of the *positive and negative* impacts.

4. Methods and instruments used for impact assessment

Classical approaches of business objectives, which consider the economic perspective in a single state, ignoring or under-valuating the non-market costs of social and environmental issues, will obviously underestimate the costs incurred by any proposed project or strategy, thereby reducing overall social, economic and environmental welfare.

➲ Objective hierarchy method

One perspective of approaching the relationship between the economic, social and pollution control objectives resigns in underlining a *hierarchy of objectives*, in which sustainable development is the ultimate goal for all strategic processes. The hierarchy objectives may prove useful when several objectives may have a contradictory impact on the final assessment. For example, assuming a pollution control objective may involve lower economic performances on short-run, while ignoring a pollution control objective may involve lower economic performances on medium-run and long-run. Therefore, by using an objective hierarchy method, the decision makers will be able to choose the most suitable trade-off, in order to achieve a certain level of expected value both on short-run, medium and on long-run.

When finalizing the fourth phase, the financial and economic analysis, decision-makers will obtain a certain *net present value* and a certain *internal rate of return*, encompassing the quantitative side of all the economic, social and environmental objectives which were subject to the analysis, assuming that each objective has the same assigned relevance. If a certain objective is more important than another one, the decision-maker will be obliged to set a hierarchy for his objectives, which will finally lead to a trade-off.

➲ Benchmarks method

Benchmarks method used in impact assessment analysis consists in a set of performance indicators that make an objective suitable for being taken into account when performing either the financial or the economic analysis.

Some social and pollution control objectives may involve high costs, high levels of risk and uncertainty or low impacts on the business performance or on the developed project sustainability.

Therefore, inefficient or non-value-added objectives should be eliminated before performing the economic and financial analysis of a project or strategy. Under these circumstances, arises the necessity to associate each objective with a set of benchmarks, and to evaluate whether it is possible to achieve certain levels of performance in a specific period of time.

However, choosing a bad or an inappropriate benchmark can undermine the effectiveness of a strategy or project and may lead to dissatisfaction between the stakeholders and the decision-makers (Franz, J., Kirkpatrick, C., 2006, pp. 5-10). Most problems associated with benchmarks arise from not observing the basic rules for choosing a benchmark (e.g. the manager doesn't understand benchmark construction or the benchmark doesn't match the mandate). Moreover, problems can enlarge from setting multiple benchmarks which conflict with each other (e.g. outperform cash in the short term and equity in the long term).

➲ **Scorecard method**

Better results in assessing impact are obtained by performing a „scorecard" assessment against a benchmark practice (Wilkinson, D., Ferguson, M., et. al., 2004, p. 11), (Renda, A., 2006, pp. 10-20).

By transposing each economic, social and environmental objective in measures, targets and initiatives, seen from multiple perspectives of the business, the scorecard method allows to move away from an exclusive reliance on financial metrics and to act quicker and more appropriately to early indications of problems in the delivery of customer value, the execution of operations or the resources management.

However, the scientific literature highlight weaknesses in terms of problem identification, narrowness in the range of strategic options covered and unbalanced coverage of different types of impacts (Vibert, F., 2004, p.17).

➲ **Cost-Benefit Analysis**

Despite several criticisms, Cost-Benefit Analysis is still the most common used method for assessing impact and quantifying in a holistic

manner, the economic, the social and the pollution control objectives of an organization or project.

Cost-benefit analysis is a technique based on welfare economics that examines the present value of economic benefits and costs of an activity or project over some defined period of time (Weiss, J., 2006, pp. 44-76). The cost-benefit analysis is currently being used as a background instrument in which non-quantifiable costs can be more deeply considered within impact assessment process. The methods and techniques developed under the cost-benefit analysis methodology allow a better quantification of impacts which classically are assigned as having no value.

Emphasizing, carbon trading schemes is a primary example of successful cost-benefit analysis which established a market for "non-quantifying" goods, such as the negative environmental impacts of carbon emissions. In this case, cost-benefit analysis provided the economic dimension of negative externality, underlining the benefits of acting under uncertainty to avoid the costs of inaction (Helm, D., Pearce, D., 1998, pp. 1-16).

Similarly, emissions liabilities concerning water and air pollution are commonly used all over Europe and are also an example of cost-benefit analysis used in determining the charge rate in terms of environmental and economic costs. Thus, cost-benefit analysis provides a starting point for setting-up the costs of the polluter (Helm, D., Pearce, D., 1998, pp. 1-16).

If all benefits and costs (positive and negative externalities) could be expressed in economic terms, the cost-benefit analysis can be considered as the best practice for solving the problems of „equilibrium" and „quantification" within impact assessment (Weiss, J., 2006, pp. 44-76).

5. Conclusions

Sustainable development objectives ensure the process of harmonizing the economic, social and environmental objectives of a community or of a company, in order ***to maximise human well-being in the present without compromising the ability of future generations to meet their needs*** (UWC, 1987, p. 54)**.** This approach implies seeking mutually supportive approaches whenever possible, and making trade-offs where necessary.

A major weakness is the limited quantification of impacts. Very few strategies and projects attempt simultaneous quantification of economic, social and environmental impacts. Most decision-makers continue to

approach the development of their organization from a single perspective, even if they claim the assumption of including in their analysis social objectives, CSR objectives or pollution control objectives.

Moreover, where quantification is used, it is often presented in terms of different units of measurement which are not comparable with each other, and which present no utility in assessing a global impact of a strategy or project.

Developing a global methodology for quantifying the economic impact of social and pollution control objectives and for expressing the results of the assessment by using a unique unit of measurement, is still a challenge for many researchers and decision-makers, as long as this kind of instrument may prove to be a source of competitive advantage, given the accuracy of the assessments supposed to be performed by using it.

This paper has made a first step in this direction, by identifying two main areas of weakness, relating to the ***treatment of social, economic and environment impacts within contemporary organizations, in strategic management or project management processes.***

As well, the paper includes several methods and instruments assigned in an innovative methodology which is supposed to strengthen the quality of analysis in impact assessments, particularly with regard to the quantitative analysis. The paper has also underlined the need for both quantitative and qualitative analysis methods, as well as both economic and financial analysis techniques, to avoid giving undue weight to quantified impacts and to ensure that a „balanced" treatment is given to all three pillars of sustainable development.

References

1. Campbell, H., Brown, R., (2003), *Benefit-Cost Analysis*, Cambridge University Press, Cambridge
2. Franz, J., Kirkpatrick, C., (2006), *Integrating Sustainable Development into EC Policymaking: An Evaluation of Recent Impact Assessment*, IARC Working Paper Series, 17/2006
3. Hahn, R.W., Litan, S., (2005), *Counting Regulatory Benefits and Costs: Lessons for the US and Europe*, in: "Journal of Economic International Law", vol. 8, no. 20

4. Helm, D., Pearce, D., (1998), *Assessment: Economic Policy Towards the Environment,* in: "Oxford Review of Economic Policy", vol. 6, no. 1
5. Kirkpatrick, C., (2000), *Economic Evaluation of Environmental Impacts*, John Wiley Publishing House, London
6. Renda, A., (2006), *Impact Assessment in the EU,* Center for European Policy Studies, Brussels
7. Roche, C., (2000), *Impact Assessment for Development Agencies,* Oxfam Publishing, Oxford
8. Stead, W.E., Stead, J. G., (2003), *Sustainable Strategic Management: Strategic Management,* ME Sharpe INC, New York
9. Tietenberg, T.H., (2004), *Environmental Economics and Policy,* Pearson Education, Harlow
10. Vibert, F., (2004), *The EU's New System of Regulatory Impact Assessment – A Scorecard,* European Policy Forum, London
11. Weiss, J., (2006), *Cost-Benefit Analysis for Development,* in D. Clark (ed), "The Elgar Companion to Development Studies", Edward Elgar Publishing House, Cheltenham
12. Wilkinson, D., Ferguson, M., et. al., (2004), *Sustainable Development in the European Commission's Integrated Impact Assessment for 2003,* Institute for European Environmental Policy, London
13. United World Commission, (1987), *Brundtland Report - United World Commission on Environment and Development,* Towards Sustainable Development - Chapter 2