EVALUATION OF PROJECTS IN AGRI BUSINESS USING COST BENEFIT ANALYSIS

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REZUMAT. **Analiza cost-beneficiu este o metoda utilizată pentru evaluare, o politică care cuantifică in termeni monetari, valoarea tuturor consecinţelor acestei politici pentru toţi membrii societăţii. Beneficiu net social exprimă valoarea acestei politici. Principalul scop al analizei cost-beneficiu este de a ajuta în luarea deciziilor. Mai precis, obiectivul analizei cost-beneficiu este de a facilita o alocare mai eficientă a resurselor.**

Cuvinte cheie: analiză cost-beneficiu, ex ante analiză cost-beneficiu, ex post analiză cost-beneficiu, in media res, proiect de investiţie, rată internă de rentabilitate, analiză sustenabilă, valoare netă actuală.

ABSTRACT. Cost-benefit analysis is a method used for evaluating, a policy which quantifies in monetary terms the value of all the consequences of this policy on all society members. Net social benefit expresses the value of this policy. The main purpose of cost-benefit analysis is to help decision-making. More specifically, the objective of cost-benefit analysis is to facilitate a more efficient allocation of resources.

Key words: cost-benefit analysis, ex ante cost-benefit analysis, ex post cost benefit analysis, in media res, investment project, internal rate of return, sustainability analysis, net present value.

1. INTRODUCTION

Cost-benefit analysis is a method whose main purpose is to help decision-making. The difference between social benefits (B) and social costs (C) represents social net benefit (SNB):

SNB=B – C

There are two main types of cost-benefit analysis:

- ex ante cost-benefit analysis, which is standard cost-benefit analyse in the usual sense of this term; it is performed when a project is still subject of study, before its starting or implementation.
- ex post cost-benefit analysis is carried out at the end of the project. In this moment all the costs are "allocated", in the sense that all resources have already been used in the project. The value of ex post analysis is more comprehensive, but less direct because it offers information not only for a certain intervention, but also for "cataloging" of such interventions.

Other cost-benefit analysis is developed over the duration of a project, namely in media res. Some elements of such studies are similar to those ex ante analysis, while others are similar to ex post analysis.

Ex ante analysis is useful in the resources reallocation decision-making for a certain project being studied. For ongoing projects, a in media res can be also useful in decision-making process when the modification of resources reallocation for other uses is justified.

The main phases of cost-benefit analysis are:

- specify the set of alternatives
- identify subjects who will receive the benefits and those who will bear the costs.
- Clasify the impacts and select the measuring indicators.
- Quantitative estimation of impacts over the life of the project.
- Monetary evaluation of all impacts.
- Update the value of costs and benefits in order to obtain real values.
- Partly calculation of net present value (NPV) for each alternative.
- Sustainability analysis
- Formulate recommendations based on NPV and sustainability analysis.

2 COST-BENEFIT ANALYSIS OF INVESTMENT PROJECTS

In accordance with the type of projects, will be applied the provisions of specific regulations, namely:

- Regulation (EC) no. 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, European Social Fund and Cohesion Fund and repealing Regulation (EC) no. 1260/1999 – Articles 37, 39, 40, 41, 55;

- Corrigendum of Commission Regulation (EC) no. 1828/2006 of 8 December 2006 laying down detailed rules for implementing Regulation (EC) no. 1083/2006 laying down some general provisions concerning European Regional Development Fund, Social European Fund and Cohesion Fund and Regulation (EC) no. 1080/2006 of European Parliament and Council of the European Regional Development Fund - annex XX; annex XXI (The application form for infrastructure investments); Annex XXII (The application form for investments);
- Commission Regulation (EC) no. 718/2007 of 12 June 2007 implementing Council Regulation (EC) no. 1085/2006 establishing an instrument of pre-adheration assistance (IPA) - Article 157.
- Guidelines on the methodology to achieve cost-benefit analysis, Working document no.4 of European Commission.

2.1. Evaluating process of investment projects includes the following steps:

- Presenting socio-economic context and project's objectives: the first step in achieving the evaluation is represented by a qualitative presentation of socio-economic context and objectives expected to be achieved through investments to be achieved, both directly and indirectly. In this first step should be also taken into account the relationship between objectives and priorities set out in the framework of Operational
- Programme, National Strategic Reference Framework, the coherence and objectives of EU Funds; Project identification: all project essential characteristics should be included in the evaluation.
- Project feasibility analysis and alternatives: feasibility analysis should determine if the local context is favourable for the project (for example, if there are physical, social or mandatory institutional requirements), to estimate the evolution of labour demand, to justify the project implementation (scale, location and so on) compared with alternative proposed sceneries.
- Financial analysis (fig 2.1.1) is based on updated cash-flow estimation. EC suggests as a reference financial term, a discount rate of 5%. In this respect, in accounting should be maintained a clear record of cash inflows and outflows related to:
- Total cost investments;
- Total operating costs and revenues;
- Financial profitability of investment costs: net present value of investment (FNPV/C) and internal rate of return of investment (FRR /C);
- Sources of funding;
- Financial sustainability;
- Financial profitability of domestic capital: net present value of capital (FNPV/K) and internal rate of return of investment (FRR/K): this takes into account the impact of EU subsidy on national (public and private) investors.

The time horizon must be consistent with the economic life of main assets. The residual value must be included in accounting at the end of the year. However, inflation variation and price relative changes should be treated in a coherent way. Generally, the internal rate of return on investment (FRR / C) may be very low or negative for public sector projects, but for private sector the internal rate of return (FRR / K) should normally be positive.

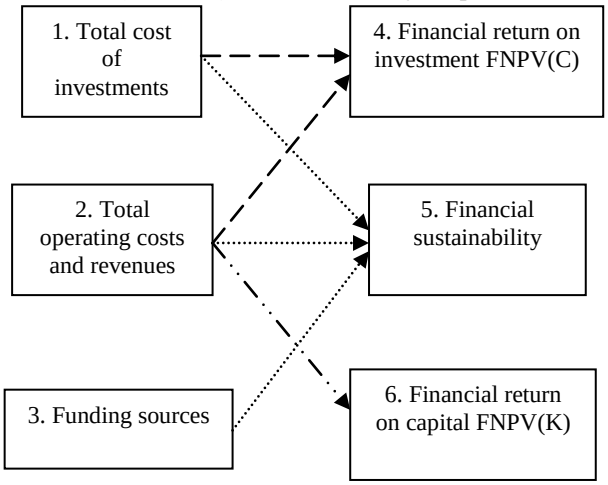

Figure 1 *Financial analysis structure*

Economic analysis: cost-benefit analysis also involves project assessment of economic welfare. In order to achieve this aim is followed the following five steps:
- observed prices and public charges are converted into shadow prices, which better reflect social opportunity cost of assets.
- externalities are taken into account and are assigned a monetary value;
- indirect effects analysis;
- the costs and benefits are updated at a real social discount rate (for cohesion countries and IPA, as well as for convergence regions is 5,5 %, but for competitive regions is 3,5%);
- indicators calculation of economic performance economic net present value (ENPV), economic rate of return (ERR) and benefit-cost ratio (B / C).

Risk assessment: project assessment risk is achieved as economic analysis in five steps (fig 2.1.2), as follows:
- sustainability analysis: identification of critical variables, eliminating deterministic dependent variables, elasticity analysis, the choice of critical variables, the scenario analysis;
- assumption of a probability distribution for each critical variable;
- calculating of performance indicators distribution (usually FNPV and ENPV);
- assessment results and acceptable level of risk;
- establishment of some risk reduction measures.

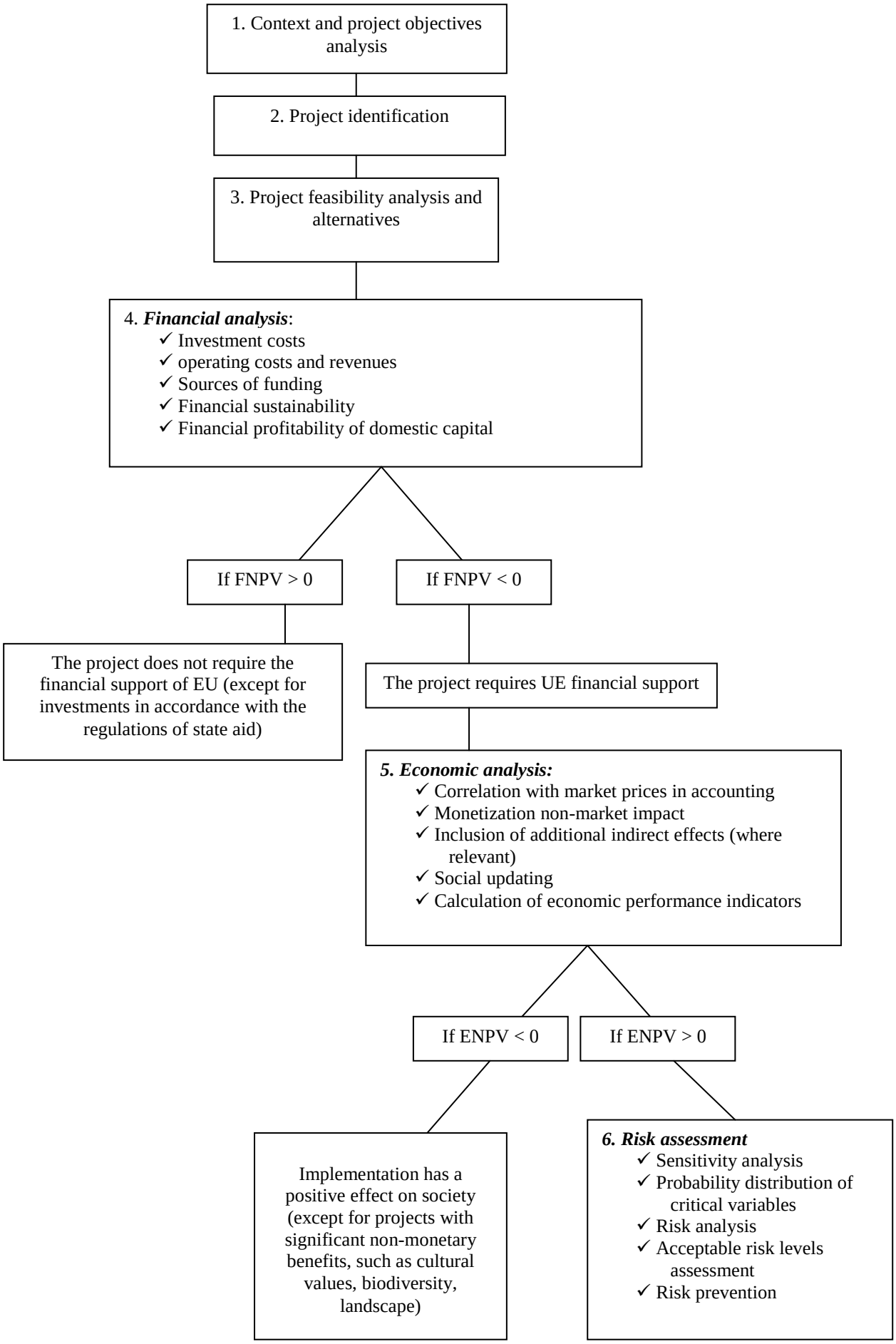

Figure 2 *Project assessment stages*

3. PROJECT DESCRIPTION

Cross-border cooperation program Hungary-Romania 2007-2013.

Priority axis: 2. Strengthen social and economic cohesion in the border region

Key areas of intervention:

2.1. Supporting cross-border business

Action: 2.1.1. Business infrastructure development

According to Operational Programme, the overall objective is to offer to people and institutions from the cross-border area joint development facilities, which will constitute the key development in the region, aiming at developing businesses according to sustainable development principle. So, it will be incubated under more favorable conditions those companies that conduct research for implementing the most efficient renewable technologies (solar, wind, biogas, renewable resources) or a combination of thereof, depending on the energy potential and the zone specific, transferring the already existing good practice, but also developing new practice as result of research. The entire infrastructure is created within the sustainable development principles set out by the European Commission documents.

The overall objective of the present project is the creation of a joint business infrastructure (new buildings and renovations, insisting on facilities and utilities specific to some business structures). Activities are divided into five packages containing the achievement of a joint business infrastructure, particularly in sustainable development field (renewable energies), conferences, fairs, exhibitions, publications of some business opportunities bulletins and design a strategic plan to improve business infrastructure.

General objective: Improvement of socio-economic conditions and crossborder business development including construction/modernization of business centers.

Specific objectives:

1. Achievement of a pilot center in Timisoara and the modernization of those from Bekescsaba, Szeged.
2. Achievement of a renewable energies market.

Thus, the project through its objectives, activities and proposed results complies with equal opportunities principle and EU provisions of Council Directive no.1000/78/EC of 27th November 2000, in order to apply equal treatment principle and combat the social exclusion risk. The main idea, the whole project is based on is that of respecting equal opportunities and that of "mainstreaming", in other words valuing gender differences transforming a disadvantage in an opportunity. As for, sustainable development, the project complies with guidelines from framework documents of European Commission, so that in the cost-benefit analysis were determined its specific indicators: B/C, RIR, VAN, but during the project-related conferences were forseen section devoted to environmental protection, as well as dissemination of research-development results, in general, but also from own projects.

Tabel 1. *Project budget*

- euro -

	LP		PP1		PP2		PP3		Total
Grant (ERDF+ state cofinancing)	270000	90%	90000	90%	54000	90%	36000	90%	450000
Own contribution	30000	10%	10000	10%	6000	10%	4000	10%	50000
Total	300000	100%	100000	100%	60000	100%	40000	100%	500000

Tabel 2. *Financial analysis*

- euro -

Project start date	***2010***
Residual value	**354.730,00**
Updated financial rate	5%
Investment total cost	**669.274**
Updated investment cost (DIC)	**610.745**
Updated net revenue (DNR)	9.623
Funding gap ratio: (R=(DIC-DNR)/DIC)^2	98,42%
Total eligible expenditures	500.000
Desicion amount (DA=EC*R)	492.122
Co-financing project rate (CRpa)	90,00%
Grant total value (DA*CRpa)	442.909
Own contribution	49.212
Financial net present value (FNPV)	**-601.122**
Financial rate of return	-9%

4. CONCLUSIONS

From cost-benefit analysis result and their recording in accounts the following are come off:

There are differences between accounting interpretation regarding residual value of the building which is represented by the recovered value from the asset out of service at the end of the normal operation and residual value according to cost-benefit analysis which represents the total value of the building at the end of the 10 year of project monitoring.

According to tab. 3.2 can be noticed that in case of income-generating projects is diminishing financial assistance and increase own contribution value.

On completion it is found that the total expenditure value is higher than that expected in the project, resulting in their sharing of eligible expenses and ineligible costs according to financial reports related to grants.

Considered eligible expenses are those forseen and approved, but those ineligible are represented by the VAT on the one hand, and financial costs on the other hand, there are additional costs necessary to complete investments, costs bear by the beneficiary, representing own contribution.

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