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SOCIAL COST-BENEFIT ANALYSIS FOR INFRASTRUCTURE PROJECTS: A CASE STUDY IN THE WAR AFFECTED REAS OF CROATIA.

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Abstract

The paper presents a simplified social cost-benefit analysis approach tested on around thirty projects of small infrastructure in Croatia, and deals with some of the specific issues encountered in this field work. In Zadar and Šibenik– Knin counties, Croatia, a Sustainable Development Project funded by CARDS -*Community Assistance for Reconstruction, Development and Stabilisation*- was active from 2003 to 2006 for the war-affected areas. The project aimed to support the two administrations in managing local development programs through CARDS and to prepare for the pre-accession Funds. The assistance consisted in training in EU procedures, preparing grant scheme, updating the Regional Operational Program, implementing an infrastructure project pipeline. The paper focuses on the last activity, more precisely on the project appraisal for the preparation of the pipeline, and describes the experience developed in this context through a methodology commonly used for the management and evaluation of infrastructures funded by Cohesion and Structural Funds. The methodology applied for the evaluation was social cost-benefit analysis. The challenge of this experience is represented by the reference context, where either Public Administration than local actors started only recently to cope with the EU program procedures and principles, and by the chosen operative methods, made of a cooperation of International experts and professional evaluators with local personnel.
Given the financial dimension of the concerned projects (from a few hundred thousands EUR to a maximum of five millions EUR, with one exception) a simplified yet rigorous version of the standard methodology has been applied. For the data collection the input came from the contribution of local actors, either the personnel of the company appointed for the management of this program than the Public Administration and the projects promoters. Surveys, personal interviews through well-structured questionnaires, printouts' desk analysis and presentation of the main results were the activities of the involved personnel.
The application of a standard methodology allows a certain degree of comparability among the projects and makes it easy to horizontally read the interventions' performance. The message of the paper is that even for small infrastructure projects CBA is a tool by means of which project analysts and decision-makers could have a useful dialogue for the planning exercise.

Key words: Cost-Benefit Analysis, Project Appraisal, Water Sector, Accessingcountiris

JEL codes: D61, H43, O22

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INTRODUCTION

The present paper illustrates some lessons learnt in the framework of a technical assistance assignment in Croatia, funded by CARDS, Community Assistance for Reconstruction, Development and Stabilisation[1] (CARDS 2002 programme for Croatia). The project was devoted to the Sustainable Development for the war affected areas and was targeted to Zadar and Šibenik-Knin counties.

It started in 2003, lasted since April 2006 and was aimed at supporting the local authorities in using funds for development, with capacity building activities. The need addressed was to prepare local stakeholders and beneficiaries to manage pre-accession funds and, later, Structural Funds. Services provided were of different nature in different sectors: from funding basic infrastructures for local development to de-mining activities and training to public officials in managing funds. More specifically, technical assistance and training was provided on three project components:

1. support the system of aid coordination and Public Investments selection, including advice in multi-annual/annual strategic planning;

2. strengthening capacity of the Programme Management Units (PMUs) in regard to their respective roles in the overall CARDS programme/project cycle;

3. development of efficient internal monitoring system for the projects financed by CARDS programme, including advice on upgrading the monitoring structures overall (Joint Monitoring Committee and Monitoring Sub-committee structures), training and capacity-building.

The authors of this paper were appointed short term experts for the transfer of know how, drawing from the experience in evaluating Structural Funds programmes in Italy and in CBA methodology in the regional development context. Every practice of knowledge transfer is in fact a learning experience in two directions: beneficiaries learn best practices from more experienced managers, and consultants learn to put in perspective some practices used since then. The implementation of this technical assistance assignment has been developed trough a strong partnership approach, where international consultants and professional evaluators worked closed to stakeholders still not so used to manage funds for development according to a bottom-up approach. Municipalities, business associations, third sector representatives and social parties were involved in each step of the process, raising awareness and capacity on building consensus for planning choices.

The paper focuses on the application of a 'hard' analytical tool, such as cost benefit analysis, to select and assess small infrastructure projects and prepare a project pipeline. The fine-tuning of such a tool for the application in that specific context enabled the authors to use the potential of the methodology for the selection of 'good' projects together with the learning capacity for the monitoring of crucial variables during the project implementation.

The message of the paper is that, even if, according to the literature, the application of cost benefit analysis is not always appropriate for small infrastructure projects, an analytical framework considering opportunity costs of public funds, shadow prices for social benefits and forecasts of main variables on a time horizon of 10-20 years is always helpful to prevent future failures.

The first section of the paper describes the institutional and political setting where the project took place, with a view on future opportunities in Croatia as accessing country. The second section describes the object of the study and the key features of the infrastructure projects. The third section illustrates the methodology used to prepare feasibility studies. The fourth section presents the results obtained, success in the implementation of projects and suggested improvements for the future. The final sections concludes with some reflections of the authors about responsibility of project analysts supporting public authorities in managing public funds and put forward ideas for systematic use of accountable practices.

[1] Council Regulation (EC) N.2666/2000 of 5 December 2000.

1. BACKGROUND AND CONTEXT

1.1 EU assistance to Croatia

Since 1991, The European Union has provided more than 7 billion EUR in assistance to the countries of the Western Balkans through its various aid programmes. In December 2000, the European Union's principal instrument for financial assistance to the region has been CARDS. The full financial envelope for 2000 - 2006 for CARDS is 5.13 billion EUR.

Tab. 1.1. CARDS Programme Allocation for 2000-2006 (million €)

	2000	2001	2002	2003	2004	2005	2006	TOTAL
Albania	33.4	37.5	44.9	46.5	63.5	44.2	45.5	315.5
Bosnia and Herzegovina	90.3	105.2	71.9	63.0	72.0	49.4	51.0	502.8
Croatia (transfer to pre-accession from '05)	16.8	60.0	59.0	62.0	81.0	-	-	278.8
The former Yugoslav Republic of Macedonia	13.0	56.2	41.5	43.5	59.0	45.0	40.0	298.2
Serbia and Montenegro	650.5	385.5	351.6	324.3	307.9	282.5	257.5	2559.8
Interim Civilian Administrations	10.0	24.5	33.0	32.0	35.0	36.0	35.0	205.5
Regional	20.2	20.0	43.5	31.5	23.0	47.9	43.5	229.6
Other[b]	141.5	118.0	11.0	17.0	22.5	19.7	16.1	345.8
Macro-Financial Assistance (grants)[c]	70.0	120.0	100.0	15.0	16.0	33.0	50.0	404.0
TOTAL	1045.7	926.9	756.4	634.8	679.9	557.7	538.6	5130.2
Croatia, pre-accession 2005-6						105	140	245
TOTAL including Croatia, 2005-6						662.7	678.6	5385

Note 1: Figures include assistance from Phare and Obnova where relevant in 2000, and from CARDS 2001 and onwards. Note 2: 2005 budget implementation: Re-use of recoveries from 2004/5, i.e. above budget allocation 2005: 6m for the former Yugoslav Republic of Macedonia, 7,5m for regional programme

a) Includes the Republic of Serbia, the Republic of Montenegro and the province Kosovo, which is currently under UN administration. Amounts for Serbia in 2002-03 include assistance from Regional Programme for Integrated Border Management destined for the whole of FRY/Serbia and Montenegro. In 2004, 8 Mio. € for that purpose is shown under the regional programme.
b) Until 2001 (incl.): Humanitarian aid, Specific Measures, Rapid Intervention Operations, EIDHR and CFSP
From 2001 (incl.): Administrative costs and the Western Balkans' contribution to the European Training Foundation.
c) For 2000-2002: disbursements and not commitments.

Source: http://ec.europa.eu/enlargement

An overall amount of 262 million EUR was committed to Croatia in the CARDS programme between 2001 and 2004. The main priorities covered were:

- return of refugees, sustainable development in return areas, reconstruction and civil society development (74.70 million EUR /28.5% of total);
- trade, investment climate, social cohesion including TEMPUS (68.85 million EUR /26.3% of total);
- reform of the judiciary and police, migration and asylum, integrated border management, the fight against organised crime (62.95 million EUR /24% of total);
- public administration reform, regional and local development, public finance (41 million EUR /15.6% of total);
- environmental approximation, institution strengthening, monitoring and planning, investment preparation (12.50 million EUR /4.8% of total).

Tab. 1.2. Croatia Programme Allocation for 2002-2004 (million EUR)

Sector	2002	2003	2004	TOTAL
Justice & home affairs	10.0	12.0	26.85	43.85
Administrative capacity building	12.0	11.8	15.1	38.9
Economic & social development	18.0	17.5	17.75	53.25
Environment, natural resources	3.0	3.7	3.8	10.5
Democratic stabilisation	16.0	17.0	17.5	50.5
TOTAL ALLOCATION	59.0	62.0	81	197.0

Source: http://ec.europa.eu/enlargement

Croatia as a candidate country benefits from all three pre-accession financial instruments: Phare for institution-building and economic and social cohesion, ISPA for environment and transport infrastructures and SAPARD for agricultural and rural development. Croatia also remains eligible for the CARDS Regional Programme in 2005 and 2006. Pre-accession financing amounted to 105 million EUR in 2005 (Phare: 80 million EUR, ISPA: 25 million EUR) and 140 million EUR in 2006 (Phare: 80 million EUR, ISPA: 35 million EUR, SAPARD: 25 million EUR). This represents a substantial increase in overall EC assistance compared to the amounts foreseen under CARDS for 2005 (60 million EUR) and 2006 (62 million EUR).

In Croatia a Stabilisation and Association Agreement (SAA) with the EU was signed on 29 October 2001 and entered into force on 1 February 2005. This agreement is supposed to prepare Western Balkan countries for future membership by introducing EU rules in various fields well in advance of accession and is an essential element of the EU's Stabilisation and Association Process with the Western Balkans. Croatia was the second country to sign a Stabilisation and Association Agreement with the EU. Since October 2005 the EU opened accession negotiation for Croatia and Turkey.

Croatia accession process - Key events

November 2000 - Zagreb Summit launches the Stabilisation and Association Process
29 October 2001 - Stabilisation and Association Agreement signed
21 February 2003: Croatia applies for EU membership
June 2003 - Thessaloniki summit confirms accession perspective of Western Balkans countries, including Croatia
April 2004 - European Commission issues positive opinion on Croatia's application for EU membership application
June 2004 - European Council confirms Croatia as candidate country
December 2004 – European Council sets 17 March 2005 as start date for negotiations conditional upon full cooperation with the International Criminal Tribunal for the former Yugoslavia
1 February 2005 - Stabilisation and Association Agreement enters into force
16 March 2005 – EU postpones start of accession negotiations but adopts framework for negotiations with Croatia
26 April 2005 – first meeting of Stabilisation and Association Council; meeting of extended "EU troika" on Croatia's cooperation with the International Criminal Tribunal for the former Yugoslavia
3 October 2005 – ICTY Chief Prosecutor assesses Croatia is now fully cooperating with ICTY. Council concludes last remaining condition for starting negotiations is met. Accession negotiations are launched the same day.
20 October 2005 – 'screening' stage of accession negotiations begins.

Source: http://ec.europa.eu/enlargement/croatia/key_events_en.htm

1.2 Technical assistance projects

In order to prepare Croatia for the access, the European Commission has implemented since 2001 a number of technical assistance projects. These projects aimed at strengthening the overall administrative system in Croatia, both at central and regional level, in the context of programming, implementation, monitoring and evaluation of the CARDS programmes. The strengthening of public administration is a key priority contained in the Accession Partnership[2].

In few years Croatian administration, both central and local, shall manage the financial resources coming from the Structural Fund, far more generous than CARDS. The recent experience of the ten new Member states showed that the most critical variable in the accession process is the institutional and administrative capacity. In Croatia this is particularly delicate because of the state building process, which is still ongoing after the home war ('91-'95). The massive destruction of civil infrastructures brought by the war was particularly serious in Dalmatia.

A second key challenge, quite common in the new member States, is the transition from a state-controlled to market economy, which in the last ten years has been traumatic for the productive and social system.

The stabilisation of the Administrative and Territorial Regulation is another important issue. Despite the recent institutional reform, which was already characterised by a certain degree of decentralisation, there are in fact five levels of government authorities (counties, municipalities, towns and villages). Now the introduction of a regional level is under discussion in order to comply with the EU NUTS 2 system. The local administration has to deal not only with new procedures but also with new competences. Most of the municipalities and smaller towns in the county require additional administrative and financial resources to fulfil their duties prescribed by the new Croatian administrative system. This is particularly the case on the islands and inland areas. Lastly, there is a need of adequate resources, not only financial, to be provided to support the decentralization process.

[2] See 2006/145/EC: Council Decision of 20 February 2006 on the principles, priorities and conditions contained in the Accession Partnership with Croatia and repealing Decision 2004/648/EC.

Progress made by Croatia

Croatia faces no major difficulties in meeting the political requirements for membership. There has been progress in most areas but important efforts are still needed to reform the judicial system, including the unbiased prosecution of war crimes, to fight corruption, to improve the situation of minorities and to facilitate refugees' return. There has been good progress on regional cooperation, both in terms of bilateral relations with neighbouring countries and in terms of regional initiatives. The lack of full cooperation with the International Criminal Tribunal for the former Yugoslavia (ICTY) prevented the EU from opening accession negotiations as envisaged in March 2005; full cooperation has now been established and must be maintained.
Regarding the economic criteria, Croatia can be regarded as a functioning market economy. It should be able to cope with competitive pressure and market forces within the Union in the medium term, provided that it continues to implement its reform programme to remove remaining weaknesses.
As regards the adoption and implementation of the EU legal order, Croatia has made some progress, mainly in terms of legislative alignment. Croatia needs to continue legislative alignment across the board while at the same time strengthening administrative and judicial capacity to enforce the acquis. In many cases enforcement is weak and administrative capacity remains uneven.

Source: Communication from the Commission - 2005 enlargement strategy paper, COM/2005/0561 final

Some of the Capacity Building activities performed were linked to the specific technical framework elements of the European Union Development Cohesion Policy like the understanding of EU procedures, in particular the public procurement and project cycle management. But a great deal of the efforts was devoted to the common paradigm of good governance that implies partnership and the introduction of principles such as value for money and accountability. The activities to support the CBA aimed both to implement a typical tool of the EU Cohesion Policy and to introduce some key concepts of good public management.

1.3 Projects for sustainable development

Zadar and Sibenik-Knin counties have a population of, respectively 215,000 and 153,000 people. Most of them live in the coastline and urban areas, while the inland areas are scarcely populated. The two counties are very rich in natural resources and have a large number of islands, islets and cliffs, which make them a perfect environment for tourism activities. As for the other economic activities, agriculture activities, which is the core of family households income in some inland areas, is weakened by the parcelisation of rural estates; fisheries is a relative important sector and industry sector is more developed in Zadar county, with important metal processing, chemical as well as textile industries. Basic infrastructures are needed, both to increase internal stock and to replace damages by the war.

The present work focuses on twenty-five projects analyses, sixteen of them for the Zadar County while the remaining in the Šibenik-Knin County. Three projects are located in the islands of Uglyan, Pag and Dugi Otok, while the others twenty-two are coastline or inland projects.

As displayed in table 3 the projects pertain to different sectors. The majority of them are small or micro infrastructures that would spread their effects strictly at local level. Total project costs, with minor exceptions, are of few hundred thousands of Euros. Moreover they have on average less than 700 people as potential direct beneficiaries. Basic infrastructure needs are mainly due to the war damages: especially population of rural villages is now suffering because of basic needs (lack of running water, of road connections etc.).

Only two projects could be considered as major projects[3]: the Economic Zone of Podi and the Benkovac Water Supply project.

[3] The 'major' infrastructure projects are defined with a financial threshold over 5 million Euro for ISPA, 10 million EUR for Cohesion Fund and 25 million EUR for Structural Funds. See *Guide to cost-benefit analysis for major infrastructure projects*, European Commission, DG Regio, 2003. According to the new Regulations these thresholds have been increased to 25 million EUR for environmental projects and 50 million EUR for other projects (see Reg.1083/2006).

Tab. 1.3. Project Features

Name of the project	Sector	Objective	Project Indicators		
			Cost (EUR)	Nr. Of direct beneficiares (Units)	Cost/Beneficiary rate (EUR/Units)
Jordane-Stojici water supply project	Water	Building of the local distribution network	116,688	100	1,167
Piramatovci water supply project	Water	Building of the local distribution network	156,000	350	446
Primosten-Bilo water project	Water	Building of the local distribution network	175,000	300	583
Primosten-Saricevi water project	Water	Building of the local distribution network	245,000	120	2,042
Podgradina water supply project	Water	Building of new water reservoir	393,342	650	605
Vrana water supply reservoir	Water	Building of new water reservoir	400,000	724	552
Slivnica water supply project	Water	Building of the local distribution network	455,305	320	1,423
Povljana water supply reservoir	Water	Building of new water reservoir	540,800	750	721
Kistanje water project	Water	Building of the local distribution network	560,000	910	615
Promina water supply project	Water	Connect local water nets to the main net	568,560	500	1,137
Visočane water supply	Water	Connect local water nets to the main net	630,000	391	1,611
Benkovac (Lisičić-Buković) water supply project	Water	Connect local water nets to the main net	1,126,529	591	1,906
Zemunik water supply project	Water	Building of the local distribution network	1,159,946	2,000	580
Biskupija water project	Water	Connect local water nets to the main net	1,300,000	2,000	650
Polača water supply project	Water	Building of new water reservoir and building of the local distribution network	3,560,700	2,500	1,424
Benkovac water supply project	Water	Building of new water reservoir and building of the local distribution network	5,067,150	2,800	1,810
Sanation of the area "Kapelica"in Luka	Torism Facilities	Sanating the waterfront	82,170	120	685
Reconstruction of Novigrad Coastal Wall Project	Torism Facilities	Ultimatinhg the construction of the waterfront	550,000	540	1,019
Rovanjska Harbour project	Torism Facilities	Building a small harbour	745,994	320	2,331
Entrepreneurial incubator Šibenik	Industry	Establishing a business incubator	440,000	N.r.	N.r.
Economic Zone of Podi near Šibenik.	Industry	Developing a business zone/incubator	14,182,000	N.r.	N.r.
Popovići-Karin Road Reconstruction project	Transport	Paving of a macadam road	480,000	500	960
Construction of the Kali jetty	Transport	Expanding the existing jetty	1,287,671	2,100	613
Marići canal in Knin	Environment	Construction of a dreinage canal	101,000	1,000	101
Zemunik Physical Therapy project	Social Infrstructure	Building of facilities for disable people	814,000	N.r.	N.r.

Water projects is the largest category and allows some general considerations (see paragraph 2.3). Moreover, large similarities in the projects allowed the evaluation team to enjoy a sort of 'economy of scale' in the estimation of basic parameters and benchmarks (per capita water consumption as well as the per unit water costs). In addition such similarity facilitates the use of a very standard methodology to evaluate the projects.

Two typologies of interventions are considered within this category:

- completion of water distribution networks through the construction of water pipelines;
- construction of water reservoirs.

The specific objectives of the projects were to improve the living conditions of the local population and to create favourable conditions for their economic development. Regarding the first objective, it must be said that the projects aimed at assuring an effective and satisfactory level of running water supply to the recipient areas. This kind of interventions would satisfy a basic need for the population and in fact in the case of the construction of water pipelines, the community would be provided with running water, while in the other case, water shortages would be definitively solved. In addition to these two objectives, project proponent stressed the need of preventing or reversing the depopulation process that villages, settlements or towns were facing. Due to the war, in fact, most of the recipient villages underwent a dramatic drop in population[4]. All the water projects considered were appointed as "adequate" to be inserted in the project pipeline. In fact in all the cases the social and economic benefits were higher than their social and economic costs.

As regards the other projects:

- three of them consisted in tourism facilities with an overall objective to provide the towns with infrastructures able to foster the development of the tourist sector (small marinas, jetty for fisheries). These infrastructures mainly aimed at equipping the three towns with new berthing spaces for residents and tourists.
- two projects in transport: a first one consisting in the reconstruction and paving of a road linking the coastline to the inland. The other project deals with the construction of a small jetty in a fishermen village, including the realization of new berths and of the facilities necessary to upload and unload the fishing ships. The first project was

[4] On this point the evaluation team stressed that the achievement of this final development goal was conditioned not only by the lack of running water, but also by the existence of economic opportunities for the people. The effect of the water project on the achievement of the final goal was in some cases overestimated by the project proponent, given also the fact that the depopulation process started even before the war.

considered not to be financed since it was too costly as compared to number of forecasted users[5]. On the contrary the jetty was judged adequate as able to create substantial economic benefit to the beneficiaries in terms of reduction in the costs for the damages produced by the winds to the boats, and also increasing the capacity of berths.

- the Zemunik Physical Therapy project consists in the rehabilitation of an institution intended for the accommodation and for the provision of rehabilitation treatments to patients with mental or physical handicaps.
- finally there were two industrial projects, one of them a bit out of the scale as compared to all the others. The two projects are located into the city of Šibenik[6] and both try to provide the city with new business opportunities. The evaluation of both the projects underlined some crucial aspects that might have affected their financial and economic viability: the number of users and the managerial capacity of the two municipalities in attracting new businesses.

The Šibenik industrial projects

The project of the Entrepreneurial incubator of Šibenik plans to convert former military barracks into offices and workshop buildings in order to constitute the Mandalina Business incubator. The incubator is supposed to cover a total space of 1,820 m2 and an outside area of nearly 2,000 m2. The idea is that upon the completion of the refurbishment works, new spaces will be available for entrepreneurs and these spaces would be rented at competitive prices. Companies located there might also receive support in the form of counselling and training programmes and might take advantage of the incubator's communal facilities such as conference rooms and copy machines. The firms would be selected according to objective criteria measuring the potential and the soundness of their business plans. A firm owned by the City, Podi-Ražine d.o.o., would be responsible for implementing and running the Business incubator. The City of Šibenik would have to fund 46% of the whole cost, while the remaining is supposed to be financed by the CARDS programme: the forecasted total cost is 440,000 EUR.

The project of the Economic Zone of Podi aims at the construction of an industrial zone near the city of Šibenik on which different kind of industries can settle down their activities. The project is promoted by the City and the County of Šibenik together with a group of 6 industries and firms that are interested in settling down their businesses in the zone. Physically it would consist of an area of 549 ha on which units ranging from 80,000 m2 to 2,500 m2 would be constructed. The area would be equipped with a road network and it would be connected to the main local road network and to the near highway. In addition this area would profit to be only 2 km away from the local railway station. The project also comprised the construction of a water reservoir and of an energy-transmission network together with its connections to the main network.

2. THE USE OF SOCIAL COST-BENEFIT ANALYSIS

2.1 The use of Cba for infrastructure projects in the EU

The application of cost-benefit analysis as a decision tool for allocation of funds for projects is a standard within the context of cohesion policy for major projects[7]. According to the Regulations of Structural Funds for the 2000-2006 period (Reg. 1260/99, art.26) a cost-benefit analysis is required for the of co-funding decision of major infrastructure projects. For the Cohesion Fund and ISPA projects (Transport and Environmental infrastructure) lower financial thresholds was required.

In the new Regulations (Reg.1083/2006), art. 40 requires a cost benefit analysis for ERDF and cohesion fund projects upon a threshold of 25 million EUR for environmental projects and 50 million EUR for other projects. Moreover, in the new planning period, the Commission is asked to assist Member States in the definition of standards and guidelines for the application of the methodology at regional level[8]. Besides the cohesion policy Cba is also a regulatory requirement for the Trans European Network infrastructures funded by the TEN Budget (Article 9 of Council Regulation No 2236/1995).

Although being a regulatory requirement for funding decision process, from a methodological point of view the standards for quality of Cba studies is far from excellence, and the application of consistent methods and rules is unsystematic (see for example European Commission, 2004 and Florio, 2005).

Many research projects and debate address the need of consistency and quality in the feasibility studies of major infrastructure projects (see for example HEATCO, 2005 and Florio, 2006). In fact, it should be stressed the Commission effort and willingness in providing guidelines and standards for the application of the Cba methodology, confirmed for example by

[5] A point should be made on methodology to assess this unsustainability: in the lack of reliable sources of information on potential and generated users of the road, the analysts calculated, given the investment cost of the road and the unit value of time savings monetised on the basis of hourly per capita income, a sort of 'break even' for users, that is to say the number of users that could have justified the investment (so the number of users that could have guaranteed a reasonable, say more that 6%, economic rate of return). With this data it was obvious, also to the project proponent, that under no circumstances the investment could have generated such a number of users.

[6] Šibenik is a town of nearly 51,000 inhabitants with an unemployment rate at 35%. According to the last data (census 2003), only 7,200 people were employed.

[7] See footnote 3.

[8] This means, for example, the calculation of shadow prices, conversion factors and discount rates at national and even regional level to be consistently applied for feasibility studies within the Member State.

past work carried out in providing several editions of the DG Regio Guide (1994, 1999, 2001) and training and capacity building seminars, especially targeted to the new member states. More recently, the JASPERS (Joint Assistance to Support Projects in European Regions) initiative[9] provides joint effort of EIB, EBRD and DG Regio in the framework of a technical assistance programme to member states for the selection of projects and preparation of feasibility studies for co-funding decision.

Having said this, when speaking about the cost benefit analysis for infrastructure projects we talk about a common practice and a, more of less, well-established set of information to be provided as well as rules to be applied. Even if a lot of discussion is on the ground about its potentials and applications, and sometime also the realism of some analytical foundations, it could be identified a list of common topics usually dealt with in a Cba study. For seek of simplification, the key features are:

- the forecast of the main variables affecting the financial performance of the projects (investment costs, operating costs and revenues, financial resources) over a period of 10 to 30 years;
- the use of monetary values and the application of the discounted cash flow method[10];
- the calculation of financial sustainability by means of estimation of cumulated net cash flow;
- the calculation of financial performance indicators (net present value and internal rates of return) of the project and of the equity capital;
- the calculation of social and economic costs and benefits, their quantification and monetisation and the calculation of an economic rate of return;
- the valuation of variables in the economic analysis according to their shadow prices (reflecting the opportunity cost of resources);
- the use of an appropriate social discount rate;
- the appraisal of uncertainty through scenario, sensitivity or risk analysis.

A standard feasibility study usually contains additional information, regarding for example the institutional context, the technical feasibility of the project, organisation and management, location, human resources, financial capacity of the private company and, in a nutshell, every other aspect potentially influencing the success or failure of the project. Nevertheless the core of cost-benefit analysis is the calculation of monetary values for the appraisal of net effect of social benefits and costs.

The complexity of the methods in terms of its applicability, the expertise required and the cost needed to perform a standard cost benefit analysis is such that it is justified as appraisal method only for large projects. However, the potential of its approach, especially as a learning process, seemed to the authors to be an excellent support for the decision making process even on minor projects and scarce resources to invest in project appraisal activities.

Moreover, as it is well known, theory and practice are two different stories, and even if cost benefit analysis is a well-established in guidelines, putting the rules into practices is far from being an automatic practice. As a matter of fact, the fine-tuning of the standard tool for the specific need of project analysis could justify, in some cases and with prudence, the use of a framework of analysis in a rather different application. This exercise gave the authors useful results.

2.2 The key features of the Cba studies

In the Croatian context the challenge was to give the decision makers a useful set of information to decide whether or not financing the project, but in a scarcity of resources, both time and money, there were not so much room for sophisticated analytical tools. There were not such a number of ready-to-start projects as to allow a real competition for funds, which, in principle, is expected to naturally raise the quality of projects. At the same time, small municipalities were in competition for funds, and this provided them an incentive on pushing even not well defined or weakly justified projects.

In a framework like the one described, with a relative large amount of funds, a lot of basic needs to be answered and a small number of ready-to-fund projects, it is of a primary importance to develop a practical and transparent procedure for the construction of project pipeline. Without it, the credibility of the programme to the stakeholders and beneficiaries is dangerously affected. Standard procedure of pre-feasibility, feasibility and final assessment of projects could result in a cultural barrier that weakens the dialogue between beneficiaries and founders. The choice of a methodology for the selection of the pipeline of projects should have addressed the following challenges:

a) the selection of project should have been an *exemplum* for the following pre-accessing phase and for future regional development policies within the Structural Funds;
b) feasibility studies should have been based on sound and well-known methodology in the EU context;

[9] JASPERS will assist beneficiary countries (principally the new Member States and acceding countries of the EU) to prepare major infrastructure projects that will be assisted by the EU Structural and Cohesion Funds over the next budgetary planning period 2007-2013. All assistance will be offered free of charge. Assistance may be given to prepare individual projects or horizontal studies that cover more than one project or more than one country. *Source*: http://www.eib.org/

[10] Only cash flows are recorded, while accounting rules, such as calculation of depreciation or capital reserves are not applied here.

c) the selection process should have been feasible and not too costly (since were applied to 'minor[11]' infrastructure projects);
d) start a dialogue with local administrators unprepared to the concept of economically advantageous project;
e) Project pipeline should have guaranteed efficiency in spending in order to avoid de-commitment of funds.

The approach was to try and apply each of the eight points recalled in the previous section as the key features of a Cba study. Of course a very simplified version of rules and basic principles has been applied. Basically, this meant in practical terms that the authors had to take for granted the inputs provided by the project proponent, having no resources to make ad hoc verifications and collections of primary data. In some case, however, a cross-comparison of different sources of data was used at least to verify the reliability of some crucial data. For example, this was the case of forecasts on demographic trends or tourist flows. In any case, lacking clear data, we always adopted a prudent approach, taking the most pessimistic forecast, or adjusting forecast perceived as too optimistic.

The methodology for collection of data was the following:

1) a first input came from the project fiche prepared by the project proponent (the municipality). It was usually very poor of quantitative data but it was appropriate in order to have a very preliminary idea of the project rationale;
2) an on-site visit to meet the project proponent and visit the place where the project should have been built. This was meant to provide an explanation on the main aim of the project, and to have an idea on the management of the construction phase and the actors involved (the role of municipalities as compared to the role of the private company, for example, in the water supply projects). Moreover it provided the inputs for the basic variables to be taken into consideration for the financial and economic analysis (main items of construction costs, operating costs, sources of funds, timing of each phase, expected benefits and their nature).
3) a questionnaire prepared by the consultants and addressed to the project proponent, asking for quantitative data and projections for future values. This activity required usually assistance for the explanation on the specific input needed and the way to provide it.
4) the validation of primary data collected by means of questionnaires and collection of secondary data if needed, especially for benchmarking purposes (for example on the average water consumption in Croatia as compared to other EU and accessing countries).
5) the preparation of financial and economic tables, according to the standard Cba methodology, and a sensitivity and scenario analysis in order to check for robustness of performance estimated.
6) the preparation of the final short report and the assessment on the justification of the project.

The document prepared was then attached to a set of other information for the project fiche. The full set of document included in the final project fiche was: project background, project objectives, expected results, scope of the work , beneficiaries, project implementation, project costs, economic justification and cost-benefit analysis, project eligibility, project maturity, project sustainability, and impact on the environment

On the overall number of projects some of them where considered not suitable for co financing (see paragraph 1.3 for the road project). In this case it was told the municipality proponent to strengthen with some adjustment the project design.

In some other cases the project was considered justified for funding 'under a number of conditionalities'. This was the case for the Business zone, the most important in strategic and financial terms. In this case the funding amounts to Eur 14,182,000[12] and would have financed only the realization of the first 139 ha of the new area. It was in fact suggested the whole project to be split in three different phases, in order to face some potential weaknesses due to lack of demand and managerial capacity of municipality. The real interest of potential users was exhaustively investigated after concerns emerged about the reliability of an already existing demand analysis, and an optimal dimension advice for the first phase was advanced to the City. The first phase is the most expensive as it is the one during which the area would be equipped with the facilities for energy, water and road transport. The further development of the zone will not need public funds, but will be covered by revenues coming from the sale of plots of land. The complexity of the project suggested caution especially on three topics:

- the entrepreneurs' willingness to settle down in the business zone;
- the administration's capacity to attract investments;
- Ht price (€/m^2) applied to the plots of land.

[11] The 'major' infrastructure projects are defined with a financial threshold over 5 million Euro for ISPA, 10 million EURO for Cohesion Fund and 25 million Euro for Structural Funds. See *Guide to cost-benefit analysis for major infrastructure projects*, European Commission, DG Regio, 2003.

[12] The financial sponsorship is shared among different actors:
- The City of Šibenik, the County of Šibenik and the Republic of Croatia cover nearly 3,900,000 EUR;
- CARDS programme sponsors an amount of 3,739,000 EUR;
- Nearly 8,662,000 EUR is financed by the industries buying plots on the Podi zone.

The three are crucial factors that discriminate whether the project will succeed or not. The evaluation team suggested to further appraise these aspects in order to assess more precisely the riskyness of the project. The first issue was addressed through an additional survey on the local entrepreneurs; further, a number of instruments were recommended to assure that those entrepreneurs with a real willingness to settle down and invest in the business zone - and generate more employment - could be the first recipients of the plots of land, and to avoid possible speculation through a short-term re-selling of the plots assigned. Specifically, the consultants recommended that, in assigning the plots, the selection has to be done on the basis of the business plan, provided by the candidate enterprises, and that the buyers should agree on the following obligations: deadline to invest, deadline to start the productive activity, prohibition to sell the plots for 5 years. It was advised that the Podi Zone Authorities should have retained the right to re-acquire the plots at the original price if the buyers do not comply with the above clauses.

The second one was addressed by suggesting to the City to promote and organise the territorial marketing of the Šibenik-Knin area - to also attract external resources in the area - and to appoint new human resources specifically devoted to the task. The management capacity of the zone was pointed out as a critical success factor for the business zone, so the City was advised to provide the Podi Business Zone with a competent management.

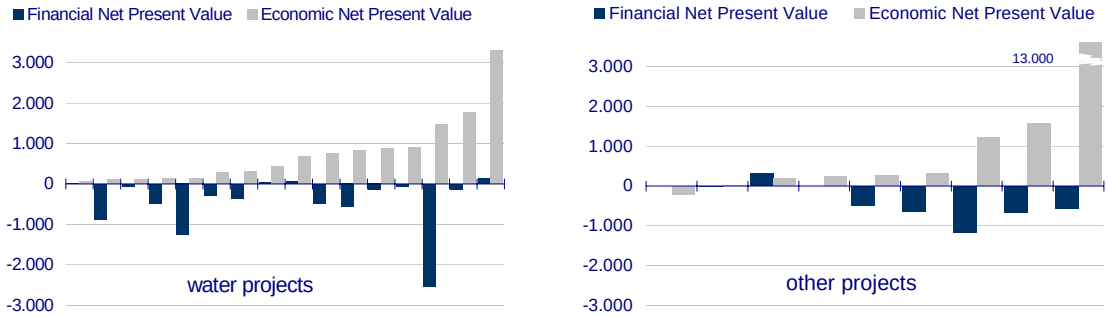
As regards the third topic, a price was established in order to be attractive for entrepreneurs and to avoid possible distortions affecting European competition. To solve the problem, the Podi industrial zone referred market had to be recognized - and was identified in the new Dalmatian Business Zones. It was also advised the application of a higher price once the economic zone will be better established.

2.3 Main results and lessons learnt

Some lessons could be drawn from main findings, with a particular attention to water projects. Main results of water projects performances, as derived by means of feasibility studies were as follows:

- negative financial performance of investment cost;
- positive and often high financial performances of private equity;
- high variability of results in the sensitivity analysis.

Graph. 2.1 Financial and Economic Net Present Values. *Thousand Euros*.



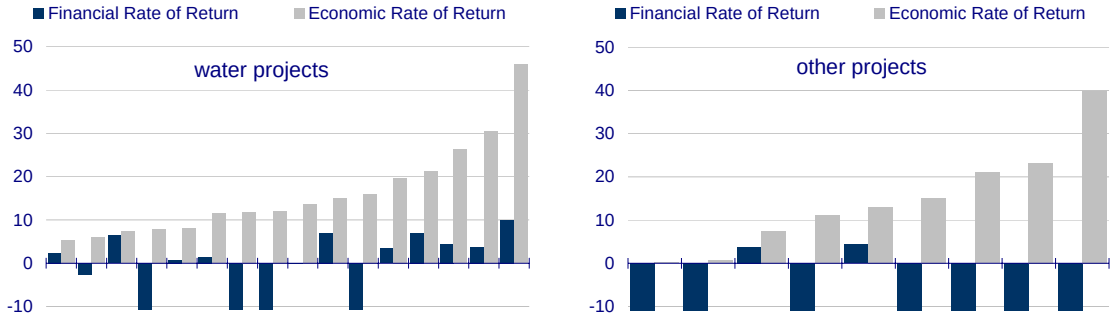
As regards the financial analysis, performance indicators showed systematically negative results, in terms of internal rate of return and net present value of investment. This was due in particular to the fact that the investment and running costs were not paid by the revenues. From a private investor point of view this is a bad news, not the same for a public-funded project, which in fact shows its need of financial support by this negative result.

However, if we turn to the financial performance of equity capital, meaning here the rate of return expected in financial terms as the remuneration of equity capital invested[13], indicators showed on average good performances. This performance is explained by the fact that the EU is giving a 100% grant to fully cover the investment costs. Moreover, after the construction phase, projects start providing revenues given by the water tariffs, which are usually higher than running costs. This of course generates a rate of return for the private investor, the water municipality company.

The situation is of course quite different for the non water projects, where the vast majority concerns projects non generating revenues (see graph. 2.2.).

[13] It is the so-called FFR/K in the DG REGIO CBA Guide, (2001).

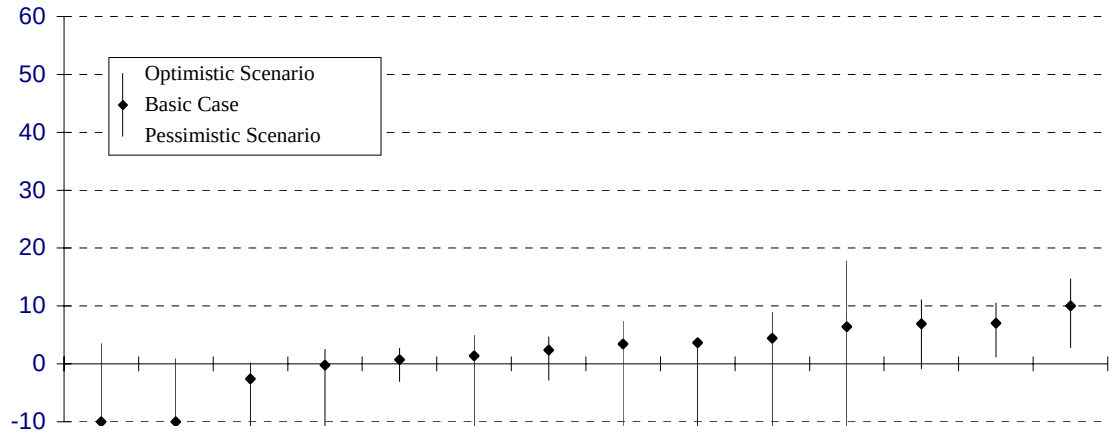
Graph. 2.2 Financial and Economic Net Present Values. *Thousand Euros*.



According to the common rationale of the use of public funds, a project showing high financial returns is not suitable for public funding. In this case, in fact, public resources are displacing private funding from investors who can reasonably find a scope for investing in a profitable project. In the Structural Funds Regulations specific rules are provided for the so-called revenues-generating projects.

In the case of projects showing a positive inflows coming from tariffs, the co-financing rates by the EC, which could range, in the 2000-2006 period for Cohesion and Structural Funds from a minimum of 50 to a maximum of 85%, is decreased accordingly[14]. For CARDS grants within the framework of the present project there were no such a rule, and the final results were profitable investments for water company.

Graph 2.3. Water Projects: Scenario Analysis of the Financial Rate of Returns*

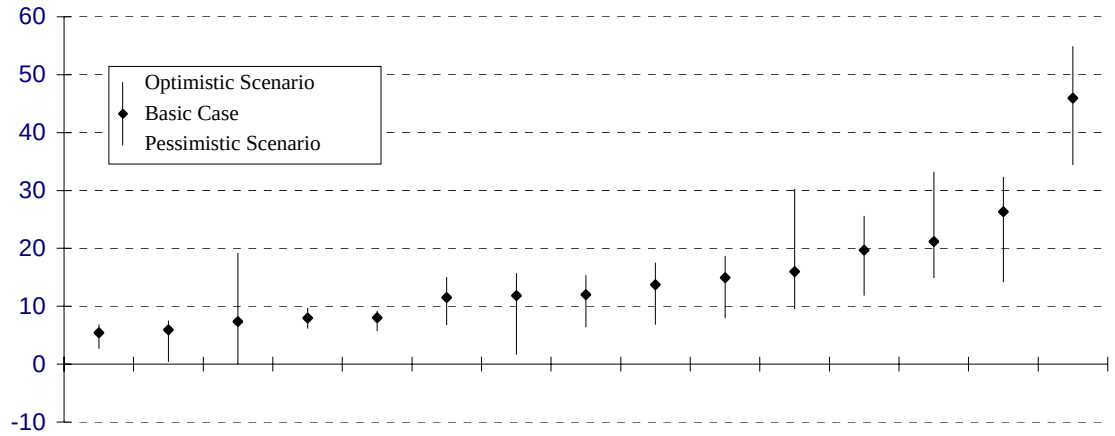


Legend
*: For one water project the scenario analysis was not carried out

As for the sensitivity analysis, it provided a measure for uncertainties in the estimation of future variables. In particular, some of the critical variables identified, as it is clear, are the forecast about future demand: increase in population and water consumption for water projects, users flows for tourism facilities, number of businesses for industrial projects. In some cases the variability din not substantially affect the overall project performances, while in some other cases it could have dramatically reverse the final performance of project. In this case, again, a list of “conditionalities” was pointed out in the final assessment, in term both of condition to satisfy in order to make the project justifiable, and in terms of monitoring needs during project implementation of a list of circumstances to be verified.

[14] As regards the measure of this modulation, a specific rule, the ‘financing gap’ method, is applied. See also DG Regio Guide.

Graph 2.4. Water Projects: Scenario Analysis of the Economic Rate of Returns*



Legend
*: For one water project the scenario analysis was not carried out

3. CONCLUSIONS

Adopting CBA as a cornerstone of the project appraisal mechanism resulted in an effective tool not only for project selection but also for capacity building. It has been the tool of a planning exercise both for project analysts and decision-makers involved. As already explained, the technical assistance did not replace the local public administration but had often worked side by side. This allowed a transfer of know how, but further more helped to fix some important basic principles:

- *A project must be selected through transparent and shared objective criteria*. The first achievement was the common understanding of the need of objective criteria to select a project in a situation of large basic needs. At the beginning the local administration did not often understand why there should have been a selection through objective criteria and moreover a competition among the projects. In the former administration system the decision was basically political without a specific need of providing evidences. Asking about the reason for a project to be financed was a question facing more cultural than technical problems. A strong validation to this *modus operandi* came from the approval, and then concrete financing, of the first projects by the Commission. As far as the Podi zone is regarded, the most critical project, after two years of implementation it is considered a success.

- *Value for money*. The second step was to identify criteria to be used for selection. Bringing water to a village destroyed by the war or helping an economically depress area trough the construction of a business incubator, all these interventions seem respectable projects, but which one should be chosen? Social CBA can provide an objective and transparent way, at least theoretically, by means of economic indicators: the project proponent has to justify the intervention in terms of social benefit, duly quantified and monetised. Although the simplified model of CBA adopted was not data demanding, nevertheless it requires key information to be provided. So the local administrations were asked to show the economic convenience of its intervention by identification and quantification of costs and benefits. Generally the administration had an estimate of the costs and not for benefits. The latter requires a demand analysis while often the administration did not make any forecast of the "potential users" or of the alternative supply, it simply registers the actual situation. For example, transport projects did not have any kind of traffic flow forecast, water supply projects did not distinguish between actual and future demand, and neither supply displacement effects were taken in consideration. The activity of Technical assistance pushed the civil servants to analyse several different aspects of the project, not only the cost side. This was achieved through an intense field work. In practical terms during the meeting with the local administration, the consultant explained and tried to simplify the questions in order to help the rationale under the information request. Finally most of the local administration made sensible efforts to provide the data required. This was the case of the water project supply where there was a demographic forecast to analyse the future demand, the calculation of average consumption, the average actual market price of the water, the percentage of consumption coming from the water tank and from the rain, etc.

- *The role of the public intervention*. It was not the rare the case where the financial cash flow showed a high performance. In most of the cases this was the output of miscalculation or a very optimistic approach because, as an example, the running cost or the BAU[15] situation were not taken into account. But in some cases the financial revenues were actually high. So there was an effort to explain that the logic of EU intervention was to choose the project with highest advantages for the community but with least chances to be financed by the market in a context of economic scarce public resources.

– *What next?* One of the main results of the introduction of CBA was the debate on financial and institutional sustainability issue. The nature of the analysis obliges to look at the medium and long period. The CBA time horizon takes into consideration 20 years on average and it can be a useful tool to prevent future problems and dangers. The Zadar and Šibenik local administration had to answer what would have been after the project funding, i.e. after the EU money stop. This question was related not only to the financial cash flow but also to the institutional and administrative management. For some typology of project, like the water supply, transport, sanitation, this could not be the key problem. In water project pumping water in a pipeline does not arise tremendous nor managing neither financial difficulties. For some other the issue of sustainability was crucial. This was the case of the business zone. Here the rationale of the project is to attract enterprises in order to increase the development chances for the area. This concretely means, as an example, starting with an aggressive territorial marketing, providing services to the

[15] BAU situation is " the "business as usual" scenario, when the project will give the reasons for the choice of "doing something" instead of maintaining the status quo option. The arguments will focus on the economic, social and environmental benefits of the project and should emphasize the cost occurring for the status quo option in terms of economic costs, environmental and human health impacts". See DE Regio Guide to Cost Benefit analysis (p. 45)

SMEs, building a network with the other development actors (private or public, regional or international), setting up a business favourable conditions. It is clear that material infrastructure is necessary but not sufficient. The future sustainability of the project is strongly related to the managerial capacity after the construction works. In the case of Podi business zone, the technical assistance work together with the proponent in order to assure the financial and managing sustainability. The construction area of the plots and the selling price for squared meter were redefined in order to assure the future necessary cash flow. The managing of the zone was designed in order to establish a marketing plan and a specific activity of support to the managing authority of the Business zone. This model of assistance was welcomed by the regional authority and by the EU Delegation in Zagreb and it was replied in similar cases in Croatia. In some, less favourable, sustainability conditions could not be proved and so the proponent had to admit the high probability for failure. But also in these cases there was an intense dialogue between the technical assistance and the proponent in order to transmit a, as far as possible, shared motivation for refusal.

To sum up, preparing a CBA required often civil servant to change approach, from a legalistic- bureaucratic vision to an economic and pragmatic one. This because the Cost Benefit analysis, also in a simplified version, looks to different dimensions of the project and, at the same, time allows a moment of final synthesis. The administration has to look to the financial dimension, the breakdown of the cost and revenues, and it has to assure the financial suitability. At the same time, it shall prevent the misuse of the public money assuring that there are no other cheaper solutions for the community. The civil servants in charge of making the CBA are pushed to analyse the project in details and to understand its overall rationale beyond the formal aspects. In our experience we verified that the introducing CBA changed the attitude of civil servant toward the project design and it contributed to the overall capacity of the administration itself. It is also to say that there is a strong need of assistance and our experience was a true form of “learning by doing”. It is also to notice the importance of the need of simplification of the tool on one hand, and, on the other, the willingness to maintain a methodological rigour. Achieving a good balance in this trade off allows the passage not only of technical knowledge but also of a specific cultural approach. This formula can be adopted in other context where consolidated tool of governance are adopted as laboratories to build capacity. This is true in the case of the accession countries, which will be supported by IPA Program, and for the neighbouring action financed by ENPI (European Neighbourhood and Partnership Instrument) but also for the New Member States,

Finally, we should admit that a shift from a formalistic – bureaucratic approach to a more economic and pragmatic one is still far to be fully achieved in a number of EU western countries, old member states and the process seems sometimes to be slow and difficult. Interventions of capacity building, training and assistance for projects, programme – design, as the one described above, are widely needed also there.

REFERENCES

Belli P. et Alt. (2001), “Economic Analysis of Investment Operations”, The World Bank, Washington D.C.

European Commission, DG Regional Policy (2002) “Guide to cost-benefit analysis of investment projects in the Framework of Structural Funds, Cohesion Funds and ISPA”, Brussels”, Brussels

European Commission (2006), “Regulation No. 1083/2006”, Brussels

European Commission, DG Regional Policy (2004), “Ex-post evaluation of a sample of projects co-financed by the Cohesion Fund (1993-2002)”, Brussels

European Commission (1999), “Regulation No. 1260/1999”, Brussels

European Commission (1995), “Regulation No. 2236/1995”, Brussels

Florio, M. (1999) “An international comparison of financial and economic rates of return of development projects”, University of Milan - dept. of Economics Working Paper, n.6

Florio, M. (2006) “Cost benefit analysis and the EU cohesion fund: learning from experience” Regional Studies, 40, 2, April

Florio M., Vignetti, S. (2003) “Cost-Benefit Analysis of infrastructure projects in an enlarged European Union: an incentive oriented approach”, University of Milan - dept. of Economics Working Paper, n.13, forthcoming in ‘Economic Change and Restructuring’

Florio M., Vignetti, S. (2005) “Project analysis and European regional development: the EU Cohesion Fund”, The ICFAI Journal of Environmental Economics, Vol. III, n. 3, August.

HEATCO (2005), Deliverable 1, “Current practice in project appraisal in Europe”, Brussels

HEATCO (2005), Deliverable 2, “State-of-the-art in project assessment”, Brussels