

FINANCIAL EVALUATION OF FEASIBILITY STUDIES OF WASTE-WATER TREATMENT PROJECTS

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ABSTRACT

This paper was written with two major purposes. First, I intended to analyze the results of the financial evaluations of the latest waste water treatment projects. Secondly, I wished to draw a conclusion from the analysis and propose a new method for a working process. I dealt with 56 projects in 65 individual evaluations. A solution to the issue of environmental protection is essential for the Hungarian government, as the EU regulatory body has set a specific and rather tight deadline. The topic is interesting and significant, as the total applied budget was over HUF 150 billion; it is also quite relevant today: the first observed project documentation submitted to the Managing Authority was due by the end of October 2010. I carried out my analysis based on the documentation of the project evaluation. The investigated issues were in accordance with the official data sheet used in the evaluation process, such as: Mechanism and level of the collected fees, affordability; Compliance with the replacement policy; Financial sustainability of the projects; Verification of the economical analysis; Verification of the financial analysis; Compliance with social cost-benefit standards; Availability and reliability of own financial resources. According to the results of the analysis, the preparation of the projects is not satisfactory. To improve the quality of the project preparation and enhance the absorption of EU funds, the preparation processes must be amended, and urgently. At the end of my paper I recommend an alternative procedure for preparing the feasibility documentation and the cost-benefit analysis.

Keywords: Waste water treatment projects, financial evaluation, preparatory methodology

INTRODUCTION

The importance of the program, according to the foreword of the EU Call of Proposal is described as straightforward and direct. The public utility gap in 2004 exceeded 30 basis points, which should be decreased compared to the standard of the developed European countries. Only 62.2% of the country's cities and towns had a waste water network, and only 66.5% of the collected waste water was cleaned biologically (*Nemzeti Fejlesztési Ügynökség, 2010*). Between 2009 and 2013 under the application of KEOP-1.2.0, a 369-billion-Forint fund is available. The significance of this amount is great, as it equals to 1.5% of the total Hungarian GDP (*Nemzeti Fejlesztési Ügynökség, 2010*).

According to the recent rules calculation on the intensity of the subsidy must be based on financial and economic calculations. The output should refer to the result of the financial and economic analysis, based on the financial gap. There are three

major effects driving the cost benefit analysis. First, the size of the investment (and its amortization) and the yearly operational and maintenance costs. The type of the investment is normally supported with sufficient technical parameters, and should be chosen from the option analysis. Second, the fee policy, which reflects the disposable income of the population, so this is an affordability issue. Last, the financial gap, this is the financing ability or the bank loans, which support the required own liability (*European Commission, 2002*). These three factors should be balanced, none of them should have priority over the other two.

In my analysis I relied on the official documentation both at the European level and the national one. First of all, I investigated the professional documentations¹. Secondly, I gained a relevant and up-to-date database from seventy-one individual waste water projects.² Initially I investigated this broad documentation, and I selected the relevant data into an own database.

DISCUSSION

First and foremost, I intend to introduce the origin of the database. With the permission of the Environmental Development Department I could investigate its entire database of the recent waste water projects. The entire documentation was made available, including feasibility studies, cost benefit analyses, official project sheets and both external and internal evaluation sheets. From October 2010 until March 2011 altogether 71 project documentations were filed to the Intermediate Body for evaluation (*Table 1*). More than two thirds of the total applications were made in the KEOP-1.2.0/2F, which were carried out based on the first methodology. The second methodology is called KEOP-1.2.0/B. The procedure was amended and some additional templates were introduced.

Table 1

Distribution of application types

Type	Sum	%
KEOP-1.2.0/2F	48	68%
KEOP-1.2.0/B	23	32%
Sum	71	100%

The coverage of the project represents the whole country both at county and regional level, although the weight of the regions is not balanced (*Table 2*). From the whole 19 counties only 16 were involved in the evaluation process (*Table 3*).

¹All the available Hungarian water treatment documentations and guidelines were investigated, and listed in the Bibliography.

² The Managing Authority let the latest database, and documentation investigated, which consisted 71 individual waste water projects. The feasibility study, the CBA and the evaluations were generally researched, but sometime the pre-feasibility studies or the documentations from the external and internal quality control were also involved.

Table 2

Distribution of applications by regions³

Region	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum
South Plain	20	7	27
South Transdanubia	6	3	9
North Plain	8	6	14
Northern Hungary		2	2
Central Tansdanubia	5	2	7
Central Hungary	5	1	6
West Transdanubia	4	2	6
Sum	48	23	71

Table 3

Distribution of applications by counties

County	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum
Bács-Kiskun	6	2	8
Baranya	1	1	2
Békés	7	4	11
Csongrád	7		7
Fejér	2	2	4
Győr-Moson-Sopron	1	1	2
Hajdú-Bihar	2	2	4
Heves		2	2
Jász-Nagykun-Szolnok	2	5	7
Komárom- Esztergom	3		3
Pest	5	1	6
Somogy	2	1	3
Szabolcs-Szatmár-Bereg	4		4
Tolna	3	1	4
Vas		1	1
Zala	2	1	3
Sum	47	24	71

The waste water treatment projects are of outstanding importance whether we can measure the concerned population and the applied funds or not. The size of the population involved accounted for almost 10% of the total population (*Table 4*). The funds under evaluation amounted to 195 billion Forints, which is approximately 1% of the country's total gross GDP. Considering this it is only one initiative of the several environmental protection issues, this program is one of the most important tasks to solve.

³ DA- South Plain, DD- South Transdanubia, ÉA- North Plain, ÉM- Northern Hungary, KD- Central Tansdanubia, KM- Central Hungary, NyD- West Transdanubia

Table 4

Features of examined projects

Region	Population covered	Funds applied
South Plain	366 222	86 530 424 164
South Transdanubia	56 793	9 736 399 382
North Plain	148 458	30 728 274 088
Northern Hungary	5 269	2 217 958 824
Central Tansdanubia	135 344	15 555 779 188
Central Hungary	193 503	32 348 461 800
West Transdanubia	78 707	18 405 053 465
Sum	984 295	195 522 350 911

In my research I investigated the results of the project evaluations (Table 5). The quality of the projects can be measured directly from the evaluations. The evaluation activity was made by external experts. In the evaluation sheets all the major facts are described and a proposal on the support is made to the decision makers (Evaluation Committee). I only concentrated on the financial and economic analysis, which consisted of six plus two major issues. According to the major issues the proposal of the support can be positive, positive with reduction in the investment costs or negative. In certain cases the Evaluation Committee can send the project documentation into the evaluation process again to help them revise some critical points which have been discovered.

Table 5

Quality of projects⁴

Number of projects	Checking the conditions of state support and cofinancing (max. 10p)											Sum	
	0	1	2	3	4	5	6	7	8	9	10		
Checking the financing of the project (max 5p)													
0	1	1	2		2		1						7
2	2	3	2		1	1	1						10
3		1	1			5	2		1		1		11
4	1		1	2			3	2	1		1		11
5	1		1	3	4	7	5	2	2	3	4		32
Sum	5	5	7	5	7	13	12	4	4	3	6		71

39 projects (54%) out of the total 71 were granted a better than a mediocre evaluation regarding both the conditions of the state support and the financing

⁴ According to the governing guidelines. The Nemzeti Fejlesztési Ügynökség (2009): Módszertani útmutató költség-haszon elemzéshez KEOP támogatáshoz, and the Nemzeti Fejlesztési Ügynökség (2009): Útmutató projekt adatlap kitöltéséhez a Környezet és Energia Operatív Program 1. 2. 3. és 6. prioritásainak összes konstrukciójához.

ability. Unfortunately the total picture worse, than it seems at first sight. Only 17 projects (24%) received positive decision from the evaluators (Table 6). The hypothesis to be proved is the following: changing the preparatory methodology can ceteris paribus enhance the quality of the projects.

Table 6

Successful project status

Number of projects	Checking the conditions of state support and cofinancing (max. 10p)						Sum
	5	6	7	8	9	10	
Checking the financing of the project (max 5p)							
2		1					1
3	1					1	2
4			2	1			3
5	2	2		1	2	4	11
Sum	3	3	2	2	2	5	17

24% of the projects were supported by the evaluators. Under the first preparatory methodology KEOP-1.2.0/2F 10 projects (21%), while under the second preparatory methodology KEOP-1.2.0/B 7 projects (30%) were awarded positively. The result from the amended methodology is significantly higher, so the type of the preparatory methodology does make a difference.

The identification of the weak points of the feasibility studies including the cost benefit analysis will help us concentrate on the necessary changes of the processes. In accordance with the aspects of the official evaluation there are six main issues to investigate about the financial and economic points of view, and two additional issues about the financing. The evaluation process is divided into two parts. Firstly, the technical part is investigated. I did not include this part in my research as it is independent. Secondly, the financial and economic evaluation which determines the long-term financing sustainability.

The first aspect to consider is the fee policy. Not only the mechanism of the collection is important, but the level of the fee has to be taken into account. The extent of the fee collected refers to the disposable income of the population. The poorer the population is the lower investment size can be implemented. Here we can identify a bottleneck. The affordability defines the size of the investment, which should be supported with a feasible technical implementation. Only 42% of the total projects met this standard (Table 7).

The replacement policy is to be regarded when the long-term sustainability is in focus. According to the CBA standards no amortization is taken into account when calculating the financial gap. The reasonable replacement costs have to be calculated instead of the amortization. According to the standard the full amortization has to be covered by the fees however it can be built in fees later on. In the average lifetime 50% of the total amortization has to be included in the fee, yet at the end of the measured period (30 years) the fee is to cover the complete

amortization in the given year. The long-term sustainability was met only to 38%, therefore this aspect needs strict monitoring (*Table 8*).

Table 7

Collected fees and affordability

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	22	8	30	42%

Table 8

Replacement policy compliance

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	18	9	27	38%

The financial sustainability refers to the financing. According to the regulations the cumulative free cash-flow always has to be positive. Normally every study initially complies with that standard. Nevertheless the mistakes which are made have negative effects on the stock of cash. This aspect is not a driver variable, rather a result of other aspects. It is clear the low level of 25% compliance is derived from the accumulation of the latter mistakes (*Table 9*).

Table 9

Financial sustainability of projects

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	14	4	18	25%

Meeting the financial analysis standard is the least difficult aspect among the inspected ones. The template which was introduced in the second preparatory methodology supported the project owners, and enabled them to avoid potential mistakes. The implementation of this aspect is typical area which can be enhanced through professional support, such as templates and guidelines (*Table 10*).

The economic analysis is the most important part in terms of the decision-making. Unfortunately it is rather intangible, which makes it difficult to handle. Well-based studies about the possible methods and acceptable values of variables can support both the preparation and the evaluation work. In this sense the regulations are obvious, and the result or the quality of this section is above average (55% and 61%) (*Table 11* and *Table 12*).

Table 10

Verification of the financial analysis

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	23	6	29	41%

Table 11

Verification of the economic analysis

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	26	13	39	55%

Table 12

Compliance of the social cost-benefit standards

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	31	12	43	61%

The financing part of the feasibility study is rather confusing than simple. The result of the evaluation does not reflect to any problems, however according to my personal experience certain general and essential mistake can occur during the contract closure stage or in the implementation period. First of all, financing the necessary own part can be provided from the project owner’s budget or from bank loan. The latest changes in state funding of the local governments points out that changing the frame regulation can cause serious problems in the funding. An alternative solution can be the binding offer from the bank financing the projects. In the current methodology the banks are external stakeholders, and they are not involved either in the preparation or the evaluation (*Table 13* and *Table 14*).

Table 13

Reliability of granting own financial resources

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	OK			
Sum	29	14	43	61%

Table 14

Availability of granting own financial resources

	KEOP-1.2.0/2F	KEOP-1.2.0/B	Sum	%
Status:	Ok			
Sum	34	20	54	76%

CONCLUSION

I have divided my conclusions into three certain specific parts. First, it is proved that amending the methodology of the preparation can enhance the quality of the filed documentation. The changes introduced in the second methodology were right, yet insufficient. According to the results of this study, the bottlenecks are as follows:

- the affordability of the fee policy linked to the technical part (size of the investment),
- the financial analysis referring to the replacement policy and the operational costs,
- the financial sustainability which is evitable for long-term sustainability.

There are certain assumptions which have to be tested, or confirmed by impact studies. The first and most important one is that compiling templates, guidelines and standards facilitates the improvement of the projects. The deeper and closer the Intermediate Body can support the preparation process the less mistakes will be made. The Intermediate Body needs to act as a professional advisor collaborating with the project holder. At the start of the process particular definitions are to be prepared, as a limit of the investment size calculated from the population's financial affordability. The financial variables are the drivers. The technical planning has to comply with the results of the financial analysis. Based on the research the importance of the economic analysis should be increased as spending money on projects which are not established properly is wasteful.

The research does not reflect any problems in connection with the financing part. According to the process we can only make an assumption about this part therefore, it is advisable to carry out further investigation in the contracting period, or in the implementation period. Unless we can examine the latter sections, we cannot find the right solution.

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