

CALCULATION OF INVESTMENT EFFICIENCY

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In order to prepare the analysis of project feasibility, a financial projection studied investment including both the period of project initiation (years 2007-2010), the period of reference accepted to the I analysis years 2011-2030 and the period of economic functioning of the object including years which are beyond the period of reference (years 2031-2049). All data included in the projections are expressed in fixed prices (without taking inflation into account). Money values were expressed in Polish zlotys. The rate of profitable tax from legal persons was accepted in the whole period on the level of 19%. The forecast was prepared in net prices.

Keywords: *Project feasibility, studied investment, eco technology, new quantifications, green friendly*

1. Introduction

The analyzed undertaking called *Improvement of the sport infrastructure by way of reconstruction of the Stadium in RZESZOW* consists in the realization of the first stage of reconstruction of the Stadium situated in Rzeszów at Hetmańska 69 street, at present loaned by the Commune City of Rzeszów to the Institutional Sports Club Stal Rzeszów. As part of the investment, nine segments of stadium (stands) are foreseen to be built on the present facility on the eastern side of the stadium along with the access roads. The realization of only nine segments (not the whole stadium) is conditioned by the financial possibilities of the City as well as the accessible allocation of means as part of the Regional Operation Programme of the Sub-Carpathian Voivodeship (RPO WP). The new stands will make it possible to enlarge the capacity of the stadium about 4 711 sitting places for spectators of sport contests. After the realization of the investment the capacity of the stadium will increase up to 14 211. The realization of the project will also make it possible to increase the level of safety and comfort of leading as well as participation in games and sport competitions, adapt the facility to the needs of handicapped people, improve the image of the city, rationalize operating costs of the facility. Improvement of the sport infrastructure of the Stadium in Rzeszów is strictly connected with the conception of swimming pool reconstruction at the Cracovian South "Karpik" housing estate which is to be enriched with a competitive trough to go in for diving in the Olympic class along with a ten-meter diving platform. A common part of both tasks is the perspective of creating in Rzeszow an over-regional centre of various sports disciplines, especially in branches which require intensification and assumption with a sport patronage of the sections in its charge, demonstrating the best results in competitions both on national and foreign stages. The speedway racing section in

Rzeszów, the diving section of the ZKS Club, as well as the " Sokół " swimming club proved many times that investing in young talents results in an effective promotion of the City as an important centre of professional and qualified sport. The Institutional Sports Club STAL Rzeszow will be responsible for exploitation of the established as part of the project fixed assets.

2. Methodology and used methods

Investment expenditures on the realization of the project were received on basis of the estimated cost calculations in the range of investment tasks (initial pricing of the speedway-football stadium in Rzeszow on the basis of the headwork green friendly project), beneficiary's calculations and contract with the executors of the feasibility study. Total gross investment expenses comprise in the sum of 30.000.000 zł. Below, one can see table 1 the composition of material expenditures in division on years of realization (*eco technology*) and table 2 of the assembly of financial project.

Based on the presented below assumptions the financial plan of the operator of the Stadium for the activity connected directly with its usage was worked out. The plan includes the operator's balance, especially his positions indispensable to elaborate the demand on the net circulating capital, the profit-and-loss account and the account of money flows. Below, the most important assumptions of the forecast are presented.

The incomes acquired by the operator of the project come from three sources: incomes from tickets sale on sport events and remaining events organized on the Stadium; incomes from the advertisements placed on the buildings of the Stadium and incomes from organizing various events on the Stadium. On account of the small sizes of incomes from organizing events, these incomes were aggregated along with the incomes from the sale of advertisements. The incomes generated by the operator on account of managing the Stadium in the years 2005-2007 are presented by the following table 3.

Constructing of any model of demand on tickets authorizing to participation in events organized on the facilities of the Stadium would be burdened with risk achieving the level submitting the practical usefulness of such models for doubt. The price elasticity of demand on tickets is minimum. The elaborated projections of incomes are therefore based on the assumption of proportional growth of incomes from the sale of tickets due to the increase of number of places on the stands. The number of places will increase about 50 %. The average level of ticket prices, according to the forecast will be not changed, this is why the annual incomes from the sale of tickets in the period of reference will increase about 150 %. The forecast includes also proportional growth of incomes from advertisements. Due to the fact that the incomes from the sale of tickets within the last several years were characterized by significant fluctuations, the weighed average of incomes in particular years was accepted as the input data in order to the forecast objective. However, the arithmetical average from the years 2005-2007 was accepted for the incomes from the sale of advertisements.

Both the analysis of the historical data and the projections of costs are based on distinguishing costs referring to the activity led with the use of the facilities of the Stadium from among all costs incurred by the operator. Indirect costs were allocated on the basis of their estimated part in incomes in particular years.

The forecast of particular types of costs were worked out on the basis of division on constant and variable. Costs recognized as variable (or predominantly variable) were

forecast in a determined proportion to the planned change of the number of places on the stands. Moreover, the instructions of technical experts concerning the scale of growth of particular costs as a result of putting the new objects into operation.

The realization of the undertaking will not directly cause significant changes in the generic structure of the functioning costs of the Stadium. The essential abrupt growth of costs will occur in the year 2011 in result of putting new objects into use. Below, detailed assumptions of costs forecast are presented.

In the years 2005-2007 materials and energy costs constituted on average 14,5 % of the total costs of the Stadium exploitation excluding amortization. Table 4 represents material and energy costs in the years 2005-2007. Both the costs of materials and the costs of energy were recognized as variable positions of costs, though the degree of their reaction to the increase of number of places on the stands is small.

In the years 2005-2007, foreign services constituted on average 18 % of the total costs of exploitation of the Stadium excluding amortization (tab. 5). These costs include the costs of current repairs, protection services, telecommunication services, transportation of impurities. Foreign services were included to variable costs. It was assumed that the coefficient of increase of foreign services costs constitutes % of the rate of increase of the places number on the stands.

The facilities constituting the composition of the Stadium used by the operator in the year 2007 became entirely remitted. However, the property is still used in the operator's activity and it never became formally closed down. This is why, the basis of making amortization copies is the value of investment expenditures increased with the gross value of the existing, entirely remitted buildings. On the basis of the records kept by the operator and in accordance with the regulations of the law on profitable tax from legal persons, the amortization rate in the amount of 2,5 % was accepted for the buildings of the Stadium.

The average-year participation of remuneration and derivatives in the costs of exploitation without amortization came in years 2005-2007 56%. The project assumed maintaining the present state of employment and the level of remuneration. The derivatives having the character of "mark-ups" on remunerations were directly connected with the plurality of remuneration budget. Owing to this fact, both positions of costs were integrated in the analysis.

Due to the insignificant amount of taxes and payments, they were aggregated in the position of remaining generic costs. In the years 2005-2007, taxes and payments constituted on average 11,9 % of the total costs of the Company (tab. 6). The remaining costs include costs of trainings, business trips, representations and advertisement, insurances. Their average-year participation in costs without amortization in the years 2005-2007 carried out 10 %.

The forecast operator's financial results on the activity connected with the exploitation of Stadium were included in the profit-and-loss account. Both in the variant before the realization of the project and in the variant after the realization of the project, Stadium achieves a positive result on sale. Essential increase of costs in effect of making amortization copies from the accomplished investment of a green friendly modernization character is balanced by a significant increase of incomes from tickets sale.

Distinguishing incomes and costs connected with the exploitation of Stadium from among all economic transactions of the operator and the analysis of profitability of so distinguished activity substantiates correction of the result on the operating activity of

the project about the sum of profitable tax. In accordance with the regulations of article no. 17 of 5a law on profitable tax from legal persons, earnings of tax payers being sport clubs, as defined by law⁰ dated on 29 July 2005 on qualified sport in the part oriented on training and sport competition of children and youth, are free of tax. Based on the analysis of historical data it was assumed in the forecast to allot 75 % of earnings on training and children's competition. In the whole period of forecast the assumed rate of profitable tax from legal persons carries out 19 % (tab. 7).

Within the last several years the operator showed relatively small states of stores, dues and short-term obligations. It is also proper to emphasis their gradual decrease in the analyzed period reflecting on the rationality of managing the circulatory capital. The projection is based on calculation of the average circulatory coefficient for the years 2005-2007 and it intends to maintain this coefficient in the next years.

In the variant "with the project" it was assumed that the reconstructed expenditures will be incurred each year, starting on the year in which making amortization copies of the realized investment will begin. It was accepted that reconstructed expenditures in the variant "without the project" grow about 3% annually which means that it will be necessary to enlarge the annual reconstructed expenditures as the facility wears out. The reconstructed expenditures rate of increase in the variant "with the project" is also 3% annually. The reconstructed expenditures amount in the base year for the variant "without the project" was set on the basis of the historical data analysis. The reconstructed expenditures amount according to the instructions of the technical expert and allotting on reconstructed investments 10% of the amortization copy already in the first year of the economic utilization of the realized investment. Such an assumption suits the practice of activity of subjects controlled by public bodies or acting in the public sector which usually make the amount of investment expenses conditional on amortization copies. The reconstructed expenditures amount in particular years in both variants is presented in the table 8.

Below, one has presented the tables 9-13 of profit-and-loss account, account of money flows, and money flows after the period of reference.

3. Results

3.1. Costs of the trip - new quantifications

In the analysis of economic efficiency of the studied investment the following streams of costs and social benefits will be used social costs (*new quantifications*). Private costs include net investment expenditures and operation costs. Private benefits include incomes from operation activity corrected about the changes of circulatory capital and the residual value of the project in the end of the period of reference. The external benefits is benefits resulting from the increase of accessibility to the place of recreation.

Pricing of external effects connected with the modernization of Stadium was based on the method of costs of the trip (TCM). This method consists in accepting the TCM of people heading to the place of recreation Stadium as a measure of value of good of a non - market character. The method assumes therefore that costs of the trip constitutes a suitable measure of readiness to pay for the possibility of using place of recreation. The evaluation of social effects of Stadium modernization using the method costs of the trip was conducted on basis of costs of the trip zonal calculations and consumer's surplus resulting from about 73 000 additional approaches to Stadium annually in connection with participation in organized events as a result of realization of an investment. As a

result, one has received the value of social benefits resulting from the modernization of the Stadium in the amount of 1 022 287 zł.

3.2. Numerical data and calculations indispensable to determine residual value (RV) of the studied investment

An essential element of efficiency account is the coefficient of discount (a_t). While establishing discounted money flows concerning investments in its calculations one has considered the discount rate of 5% (RV=15 474 569), while analyzing the costs and the social costs from the realization of the studied investment one has used the discount rate on the level of 5,5 % (see tab. 14-16).

$$RV = \frac{(1+q)NCF_m}{r-q}, \quad (1)$$

Where:

RV - residual value,

NCF_m – cash flows in the last year calculation period,

r – discount rate,

q – constant growth rate of net cash flow (NCF_m) projection period,

$$RV = \frac{5\,289\,979}{0,3418} = 15\,474\,569$$

The evaluation of social investments efficiency called the macroeconomic evaluation consists in examining all costs and benefits relating to the surroundings of the investment, taking into consideration the influence on the natural and cultural environment of man and social - economical phenomena which accompany the undertaking. Such an evaluation should constitute an indispensable element of investment efficiency evaluation, especially the ones funded by public and public - private means. Among the macroeconomic methods of the investment efficiency account, the most popular is the method of costs analysis and the social benefit (CBA – Cost-Benefit Analysis)¹. The results of benefits\costs analysis can be expressed in many ways, in this in the net economic value (ENPV) and the economic rate of return - ERR.

The economic net value ENPV informs about real economic benefits (estimated in money), which will be brought by the realization of an investment.

We will evaluate it on the basis of the following formula 2²:

$$ENPV = a_t S_t, \quad (2)$$

Where:

S_t - balances of economic costs streams and costs social generated by a project in particular years of the accepted temporary horizon

a_t - coefficient of discount, calculated according to the formula $\frac{1}{(1+r)^t} = a_t$,

¹ A. Michalak, *Finansowanie inwestycji w teorii i praktyce*, Wydawnictwo Naukowe PWN, Warszawa 2007, s. 93.

² Ibidem.

The economic rate of return is the discount rate for which the economic net value equals zero. The economic rate of return will be evaluated from the following pattern (3):

$$ERR = r_1 + \frac{EPV(r_2 - r_1)}{EPV + |ENV|} \quad (3)$$

Where:

EPV - positive value ENPV for a lower discount rate r_1 .

ENV - negative value ENPV for a higher discount rate r_2 .

To evaluate the efficiency of an investment for the society one has used the method of economic updated net value of the project (ENPV), economic rate of return (ERR) and the coefficient of benefits-costs (BCR).

As the first, the economic updated net value of the project was marked. In order to calculate ENPV one should firstly establish the net money flows on the basis of social benefits connected with the investment. The results of these calculations were presented in the table 17 (column 4). Money flows were set with the use of the formula $NCF_t = D_t - K_t$. In the last year of the accounting period the value increased about the residual value of the facility in the end of 2030 years.

4. Conclusion

Based on the presented assumptions the financial plan of the operator of the Stadium for the activity connected directly with its usage was worked out. The plan includes the operator's balance, especially his positions indispensable to elaborate the demand on the net circulating capital, the profit-and-loss account and the account of money flows. The most important assumptions of the forecast are presented.

Knowing the results of calculation of net money flows, it calculate the level of economic net value of the studied undertaking. To calculate ENPV it, the $ENPV = \sum a_t S_t$, formula was used. The indispensable calculations contains column 5 (table 17). From the calculations contained in table 17 it can be seen that the economic updated value of investment carries out **2 064 871,31 zł**. It can be seen from the aforementioned that the analyzed investment is effective, because the economic modernized net value set for the whole accounting period is larger than zero.

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Annexes:

Table 1

Schedule of works and expenditures

Investment costs		Total	2007	2008	2009	2010
Lp.		2007-2010				
1	Preparation of investment - technical records, feasibility study, permissions	1 475 409,84	245 901,64	1 229 508,20	0,00	0,00
	VAT 22%	324 590,16	54 098,36	270 491,80	0,00	0,00
2	Net investment works - value of works	23 360 655,74	0,00	0,00	16 393 442,62	6 967 213,11
	VAT 22%	5 139 344,26	0,00	0,00	3 606 557,38	1 532 786,89
3	Investment supervision	0,00	0,00	0,00	0,00	0,00
	Total brutto	30 300 000,00	300 000	1 500 000,00	20 000 000,00	8 500 000,00
	Total netto	24 836 065,57	245 901,64	1 229 508,20	16 393 442,62	6 967 213,11
	VAT together	5 463 934,43	54 098,36	270 491,80	3 606 557,38	1 532 786,89
	Total costs	30 300 000,00	300 000,00	1 500 000,00	20 000 000,00	8 500 000,00
	Ineligible costs	0,00	0,00	0,00	0,00	0,00
	Eligible costs	30 300 000,00	300 000,00	1 500 000,00	20 000 000,00	8 500 000,00

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 156.

Table 2

Method of investment funding

Detailed list	Total 2007-2010	2007	2008	2009	2010
Individual means City Rzeszowa	5 800 000,00	300 000,00	1 500 000,00	2 807 018,00	1 192 982,00
Credit	0,00	0,00	0,00	0,00	0,00
EFRR	24 500 000,00	0,00	0,00	17 192 982,00	7 307 018,00
Total	30 300 000,00	300 000,00	1 500 000,00	20 000 000,00	8 500 000,00

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s.156.

Table 3

Incomes generated by the operator on account of stadium management in the years 2005-2007

	2005	2006	2007	Razem 2005-2007
Ticket sales	1 361 797	2 625 703	703 655	4 691 155
Advertisement-total sales	788 467	1 016 107	1 149 800	2 954 383
Total	2 150 273	3 641 810	1 853 455	7 645 538

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 157.

Table 4

The costs of materials and energy in the years 2005-2007

	2005	2006	2007	Razem 2005-2007
Materiale	35 377	37 075	52 615	125 067
Energy	42 098	54 192	48 636	144 926
Total	77 475	91 267	101 251	269 993

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 159.

Table 5

Costs of foreign services in the years 2005-2007

	2005	2006	2007	Razem 2005-2007
Foreign services	44 564	184 189	171 120	399 873

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 159.

Table 6

Taxes and fees and other costs between generic in the years 2005-2007

	2005	2006	2007	Razem 2005-2007
Cost of generic reference	83 229	101 090	97 745	282 064

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 160.

Table 7

Components of circulatory capital and coefficients of circulation in the years 2005-2007

	2005	2006	2007
Current assets	2 481 552	1 939 178	1 566 669
Wrestling	1 164 168	252 067	192 861
Coefficient of stores traffic	1,85	14,45	9,61
Claims	965 162	1 056 624	898 153
Turnover rate of duty	2,23	3,45	2,06
Cash	352 22	630 487	475 655
Sale/Cash	6,10	5,78	3,90
Current obligations	1 077 322	953 232	851 370
Period of obligations payment in days	180	94	165
NWC	1 404 230	985 947	715 300

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 161.

Table 8

Amount of reconstructed expenditures in the variant "without no project" and "without the project"

Capital replacement	2009	2010	2011	2012	2013	2014	2015
„no project”	70 492	72 607	74 785	77 029	79 340	81 720	84 172
„with project”	70 492	72 607	79 465	81 849	84 305	86 834	89 439

cont. tab. 8.

2016	2017	2018	2019	2020	2021	2022	2023
86 697	89 298	91 977	94 736	97 578	100 505	103 521	106 626
92 122	94 886	97 732	100 664	103 684	106 795	109 999	113 299

cont. tab. 8.

2024	2025	2026	2027	2028	2029	2030
109 825	113 120	116 513	120 009	123 609	127 317	131 137
116 698	120 199	123 805	127 519	131 344	135 285	139 343

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 170.

cont. tab. 10

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315	4090315
1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813	1547813
794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655
105782	105782	105782	105782	105782	105782	105782	105782	105782	105782	105782	105782	105782
156425	156425	156425	156425	156425	156425	156425	156425	156425	156425	156425	156425	156425
396930	396930	396930	396930	396930	396930	396930	396930	396930	396930	396930	396930	396930
94021	94021	94021	94021	94021	94021	94021	94021	94021	94021	94021	94021	94021
2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502	2542502
120769	120769	120769	120769	120769	120769	120769	120769	120769	120769	120769	120769	120769

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 169.

Table 11

Profits-and-loss account (differential)

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Incomes from sale	0	0	0	0	1355955	1355955	1355955	1355955	1355955	1355955	1355955
Costs of operation activity	0	0	0	0	833573	833573	833573	833573	833573	833573	833573
Depreciation	0	0	0	0	794655	794655	794655	794655	794655	794655	794655
Use of materials and energy	0	0	0	0	15784	15784	15784	15784	15784	15784	15784
Foreign services	0	0	0	0	23134	23134	23134	23134	23134	23134	23134
Remunerations and derivatives	0	0	0	0	0	0	0	0	0	0	0
Remaining generic costs	0	0	0	0	0	0	0	0	0	0	0
Gross financial result	0	0	0	0	522382	522382	522382	522382	522382	522382	522382
Tax	0	0	0	0	24813	24813	24813	24813	24813	24813	24813

cont. tab. 11.

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955	1355955
833573	833573	833573	833573	833573	833573	833573	833573	833573	833573	833573	833573	833573
794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655
15784	15784	15784	15784	15784	15784	15784	15784	15784	15784	15784	15784	15784
23134	23134	23134	23134	23134	23134	23134	23134	23134	23134	23134	23134	23134
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
522382	522382	522382	522382	522382	522382	522382	522382	522382	522382	522382	522382	522382
24813	24813	24813	24813	24813	24813	24813	24813	24813	24813	24813	24813	24813

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s.169.

Table 12

The project account of money flows

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Net earnings	0	0	0	0	497568	497568	497568	497568	497568	497568	497568
Depreciation	0	0	0	0	794655	794655	794655	794655	794655	794655	794655
Cash flow from operation activity	0	0	0	0	1292223	1292223	1292223	1292223	1292223	1292223	1292223
Circulatory capital	0	0	0	0	0	0	0	0	0	0	0
Wrestling	0	0	0	0	112714	112714	112714	112714	112714	112714	112714
Claims	0	0	0	0	491288	491288	491288	491288	491288	491288	491288
Cash	0	0	0	0	280156	280156	280156	280156	280156	280156	280156
Current obligations	0	0	0	0	488859	488859	488859	488859	488859	488859	488859
Change circulatory capital	0	0	0	0	395299	0	0	0	0	0	0
Investment expenditures	0	0	0	0	0	0	0	0	0	0	0
Reconstructed expenditures	0	0	0	0	4680	4820	4965	5114	5267	5425	5588
Investment	300000	1500000	20000000	8500000	0	0	0	0	0	0	0
Total	300000	1500000	20000000	8500000	4680	4820	4965	5114	5267	5425	5588
Residual value	0	0	0	0	0	0	0	0	0	0	0
Money flows	-300000	-1500000	-20000000	-8500000	892244	1287403	1287258	1287109	1286956	1286798	1286635

cont. tab. 12

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
497568	497568	497568	497568	497568	497568	497568	497568	497568	497568	497568	497568	497568
794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655	794655
1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223	1292223
0	0	0	0	0	0	0	0	0	0	0	0	0
112714	112714	112714	112714	112714	112714	112714	112714	112714	112714	112714	112714	0
491288	491288	491288	491288	491288	491288	491288	491288	491288	491288	491288	491288	0
280156	280156	280156	280156	280156	280156	280156	280156	280156	280156	280156	280156	0
488859	488859	488859	488859	488859	488859	488859	488859	488859	488859	488859	488859	0
0	0	0	0	0	0	0	0	0	0	0	0	-395299
0	0	0	0	0	0	0	0	0	0	0	0	0
5755	5928	6106	6290	6478	6673	6873	7079	7292	7510	7735	7968	8206
0	0	0	0	0	0	0	0	0	0	0	0	0
5755	5928	6106	6290	6478	6673	6873	7079	7292	7510	7735	7968	8206
0	0	0	0	0	0	0	0	0	0	0	0	0
1286468	1286295	1286117	1285933	1285745	1285550	1285350	1285144	1284931	1284713	1284488	1284255	17153887

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 171.

Table 13

Money flows after the period of reference

Year	Money flows after the period of reference
2031	1 283 770
2032	1 283 517
2033	1 283 255
2034	1 282 986
2035	1 282 709
2036	1 282 424
2037	1 282 130
2038	1 281 827
2039	1 281 515
2040	1 281 194
2041	1 280 863
2042	1 280 522
2043	1 280 171
2044	1 279 810
2045	1 279 438
2046	1 279 054
2047	1 278 659
2048	1 278 252
2049	1 244 985
Total	24 307 081

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 171.

Table 14

Numerical data and calculations indispensable to determine residual value of the studied investment green friendly

Year	t	Money flows after the period of reference	at for r=5%	Discounted NCFt (3x4)
1	2	3	4	5
2030	22		0,3418	
2031	23	1 283 770	0,3256	417 959
2032	24	1 283 517	0,3101	397 977
2033	25	1 283 255	0,2953	378 949
2034	26	1 282 986	0,2812	360 828
2035	27	1 282 709	0,2678	343 571
2036	28	1 282 424	0,2551	327 138
2037	29	1 282 130	0,2429	311 489
2038	30	1 281 827	0,2314	296 586
2039	31	1 281 515	0,2204	282 394
2040	32	1 281 194	0,2099	268 879
2041	33	1 280 863	0,1999	256 009
2042	34	1 280 522	0,1904	243 754
2043	35	1 280 171	0,1813	232 083
2044	36	1 279 810	0,1727	220 969
2045	37	1 279 438	0,1644	210 385
2046	38	1 279 054	0,1566	200 307
2047	39	1 278 659	0,1491	190 709
2048	40	1 278 252	0,1420	181 570
2049	41	1 244 985	0,1353	168 424
Total		24 307 081	NPV Money flows after the period of reference	5 289 979

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego Rzeszowie”, s. 171

Table 15

Net money flows after corrections and social benefits

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Adjusted cash flow	-300000	-1500000	-20000000	-8500000	917057	1312216	1312071	1311922	1311769	1311611	1311448
social benefits	0	0	0	1022287	2378242	2378242	2378242	2378242	2378242	2378242	2378242

Cont. tab. 15.

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1311280	1311107	1310930	1310746	1310558	1310363	1310163	1309957	1309745	1309526	1309301	1309069	16976071
2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 176.

Tabela 16

Costs and social benefits from the realization of the project

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Costs from the realization of the project	300000	1500000	20000000	8500000	438898	43739	43884	44033	44186	44344	44507
Benefits from the realization of the project	0	0	0	1022287	2378242	2378242	2378242	2378242	2378242	2378242	2378242

cont. tab. 16.

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
44675	44847	45025	45208	45397	45591	45792	45998	46210	46429	46654	46886	-348173
2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	2378242	17650185

Source: Feasibility study „Poprawa infrastruktury sportowej poprzez przebudowę Stadionu Miejskiego w Rzeszowie”, s. 176

Table 17

Numerical data and results of accounts of financial flows net and economic modernized net values of projects of modernizations (green friendly) of city stadium in Rzeszow

at=1,055-t	Dt	Kt	NCFt(2-3)	ENPV(1x4)
1	2	3	4	5
1,0000	0	300000	-300000,00	-300000,00
1,0000	0	1500000	-1500000,00	-1500000,00
0,9479	0	20000000	-20000000,00	-18957345,97
0,8985	1022287	8500000	-7477713,00	-6718369,31
0,8516	2378242	438898	1939344,00	1651571,85
0,8072	2378242	43739	2334503,00	1884449,91
0,7651	2378242	43884	2334358,00	1786097,50
0,7252	2378242	44033	2334209,00	1692875,35
0,6874	2378242	44186	2334056,00	1604516,01
0,6516	2378242	44344	2333898,00	1520765,30
0,6176	2378242	44507	2333735,00	1441383,02
0,5854	2378242	44675	2333567,00	1366141,48
0,5549	2378242	44847	2333395,00	1294825,39

cont. tab. 17.

1	2	3	4	5
0,5260	2378242	45025	2333217,00	1227229,02
0,4986	2378242	45208	2333034,00	1163159,02
0,4726	2378242	45397	2332845,00	1102431,08
0,4479	2378242	45591	2332651,00	1044871,47
0,4246	2378242	45792	2332450,00	990314,16
0,4024	2378242	45998	2332244,00	938603,50
0,3815	2378242	46210	2332032,00	889590,70
0,3616	2378242	46429	2331813,00	843134,74
0,3427	2378242	46654	2331588,00	799102,74
0,3249	2378242	46886	2331356,00	757367,99
0,3079	17650185	-348173	17998358,00	5542156,36
Total	x	x	x	2064871,31

Source: personal elaboration on base from table 16