

The GREPCon tool for standardising energy performance contracts

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Financing Energy Renovation of Buildings in Italy, Croatia and Slovenia

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FINANCING ENERGY EFFICIENCY

We have money,
but cannot find
“good” projects!



“Investment”

Capacity Building
GREPCon Tool
Pipeline of EPC
Projects

We have “good”
projects, but we
are looking for
money!



“Sustainable energy project”

FINANCING ENERGY EFFICIENCY

KEY BARRIERS

- **Credit risk**
- **Performance and technical risks**
- **Lack of track record**
- **Decision making**
- **Administrative hurdles**



KEY DRIVERS

Standardisation: the energy efficiency investment process, from the definition of the energy saving measures onwards, should be standardised

Robust baselining: the definition of the initial energy consumption situation is key to a correct estimation of savings and financial returns

Reduction of transaction costs: the reduction of all the costs involved in the preparation and assessment of an investment opportunity is key to untapping the investment potential

Insurances: Insurance products are available to cover the equipment risk and also (recently) project performance risks

Clear business case: the customer needs to understand all the benefits of the proposed energy saving measures (beyond the mere energy dimension) in order to facilitate decision making and mitigate rejection

Clear contractual arrangements: Roles/responsibilities of each project stakeholder, validation of savings, sharing of financial benefits, performance guarantees, prices and termination cases need all be accounted for.

TRUST EPC SOUTH

OUTCOMES

What do we offer?

Promotion of dialogue and synergies between the EPC offer side, the tertiary sector demand side and the financing side.

An **investment assessment and benchmarking tool** based on the Green Rating™ methodology and tools by:

Training on financing solutions and EPC basics for all stakeholders involved

Facilitating the financing process for **small/medium projects**

Reducing transaction costs thanks to its **standardised approach**

Providing a **independent third party certification**

GREPCon VIDEO

Link to the video: https://www.youtube.com/watch?v=rD2aw5_NP68

GREPCon TOOL

GREEN RATING™ METHODOLOGY

Four levels of performance

ACTUAL

Covers the building as it is, with its operation and tenants' behavior

POTENTIAL ACTUAL

Achievable through implementation of operational and behavioural recommendations

ACTUAL

POTENTIAL
ACTUAL

USER

BUILDING

INTRINSIC

POTENTIAL
INTRINSIC

INTRINSIC

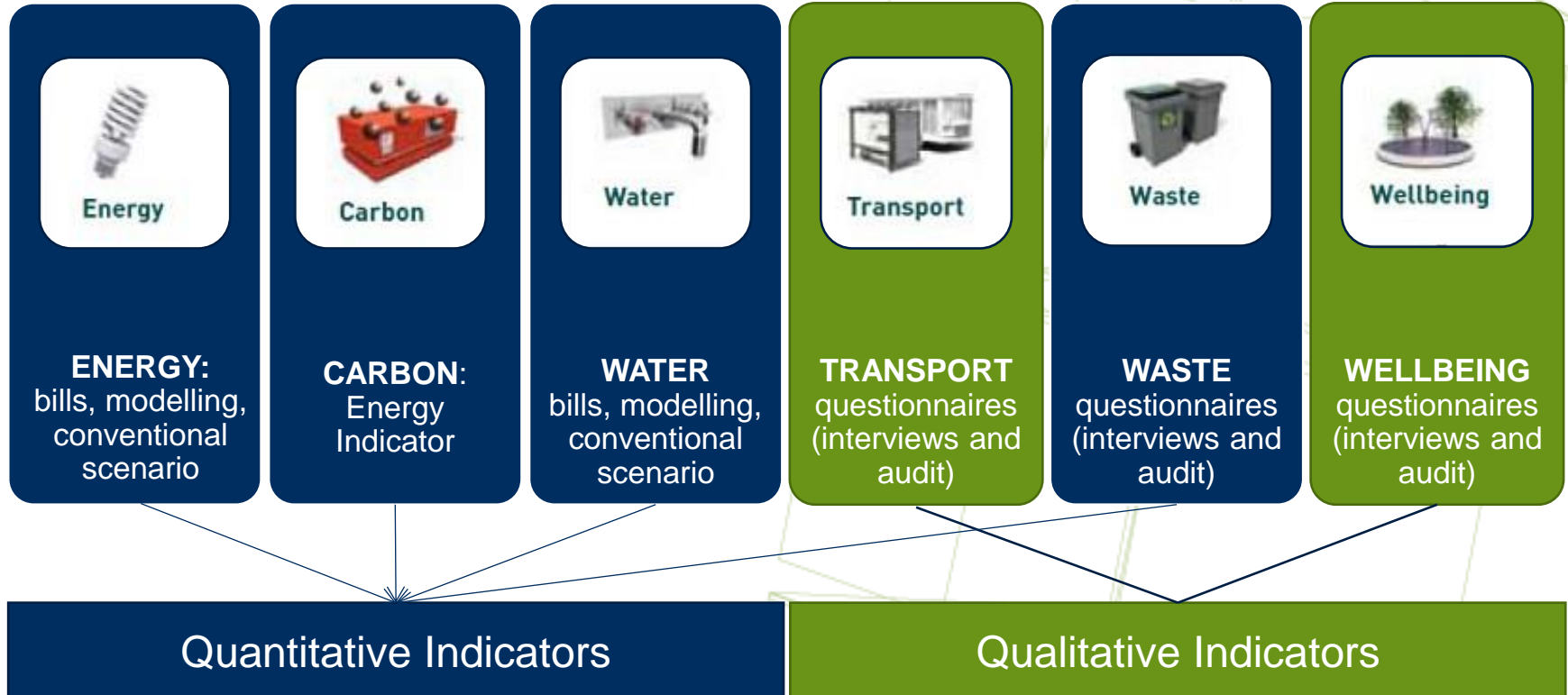
Related to building design, equipment and physical provisions

POTENTIAL INTRINSIC

Achievable through implementation of tech. recommendations covering the building design & equipment

GREPCon TOOL

KEY INDICATORS



GREPCon TOOL

THE APPROACH

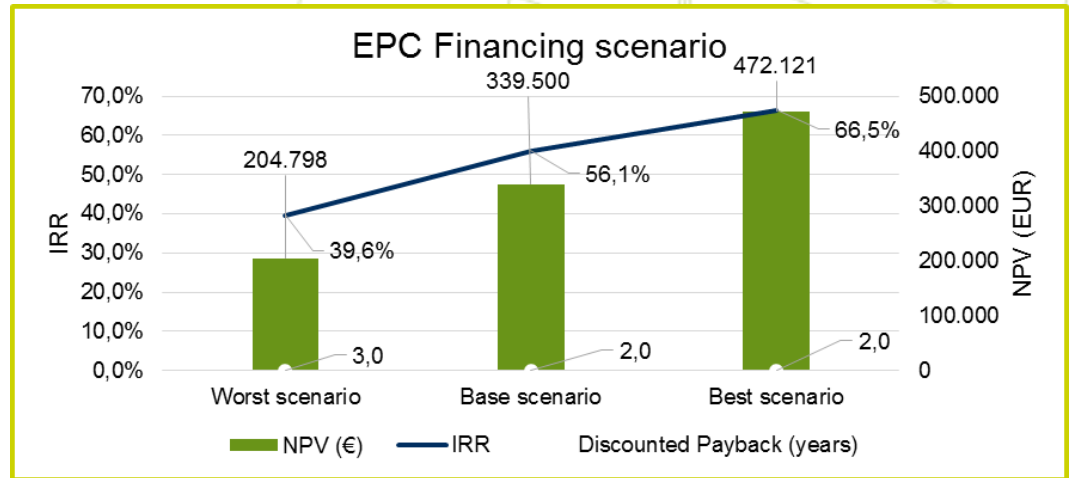
Identification of standardised energy efficiency measures scenarios



*Feasibility assessment
Profitability projection
Risk assessment*

FINANCIAL ASSESSMENT GREPCOn ASSESSMENT SCENARIOS

- In order to allow for risk assessment, each financial scenario is considered under three scenarios: **best, base** and **worst case**
- Such cases, utilising a Ceteris Paribus analysis, take into account 7 different factors that can influence the cash flows of the investment such as income, costs, inflation and interest rates
- For instance, the worst case takes into account the possibility that the generated incomes are lower than forecast or that the interest rates are higher than initially assumed
- The best case works on opposite assumptions





	Best	Base	Worst
Income - energy and water savings	+	=	-
Income - energy production	+	=	-
Investment overcost	N/A	=	+
O&M overcost	N/A	=	+
Energy inflation rate	+	=	-
General inflation rate	+	=	-
Interest rate	-	=	+


Legend:

+ : increase = : unchanged - : decrease N/A : non-applicable

FINANCIAL ASSESSMENT

PROJECT RATING

- For each financial scenario, based on the analysis discussed in the previous slide, the GREPCon tool elaborates its rating based on a 5 levels scale, outlined in the table below.
- A standard label is also presented to the user, graphically representing the rating with the  labelling
- The environmental labelling  will be available once a sufficient number of pilots within the same building category are assessed.

GREPCon PROJECT RATING	
XXX	
	
Energy Performance Contract Potential	
Financial savings:	241.609 €/year
Energy savings:	1.990.560 kWh/year
Energy savings percentage:	23,62 %
Carbon savings:	682.501 kgCO₂/year
Investment:	1.234.660 €
Equity percentage:	20 %
IRR:	29,0 %
NPV:	260.727 €
avg. DSCR:	1,9
min. DSCR:	1,4
Discounted payback:	4 years

LABEL	DESCRIPTION
A	High Profitability, low likelihood of bad performance, very robust structure, short payback time, with a high level of security in the loan
B	Medium-High Profitability, medium-low likelihood of bad performance, medium-short payback time, with a medium-high level of security in the loan
C	Medium Profitability, medium likelihood of bad performance, medium payback time, with a medium level of security in the financing
D	Medium-Low Profitability, medium-high likelihood of bad performance, medium-long payback time, with a medium-low level of security in the financing
E	Low Profitability, high likelihood of bad performance, long payback time, with a low level of security in the financing

PROJECT EXAMPLE

GENERAL DATA

Project name	Sector	Size [m ²]	Estimated energy savings [MWh/year]	Investment [€]	Payback [years]
Assago Sport Centre	Sport	1.963	109,1	233.738	7,0

The key aspects and open issues of this project are:

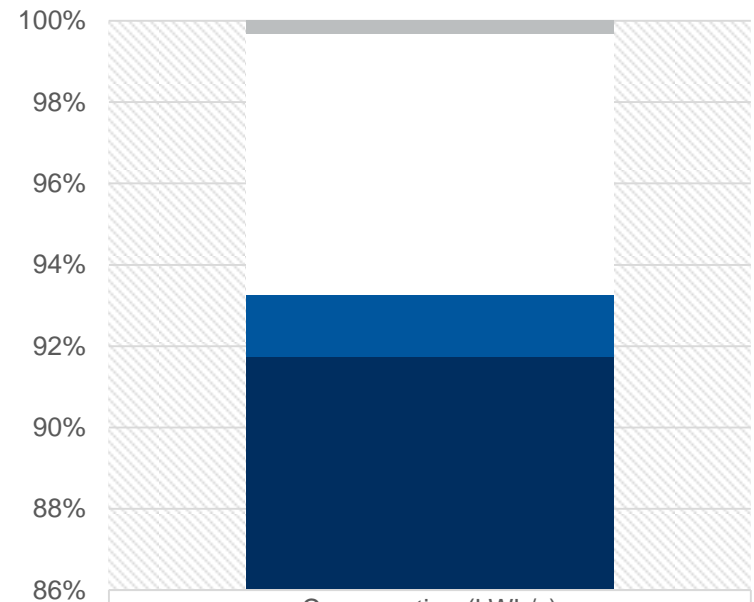
- A major retrofitting of the sport centre is foreseen
- In the main building the windows need to be renewed
- An EPC financing has good chances
- The project could be started in the first half of 2018



PROJECT OVERVIEW
ENERGY BALANCE

- The overall annual energy consumption is 516.883 kWh/year
- The corresponding annual energy costs of the building account for 58.062 €/year
- The emissions associated are of 127.923 kgCO₂eq/year
- Heating is the main consumption item.

Energy Balance Breakdown



	Consumption (kWh/y)
■ Other	1.674
■ Ligthning	33.131
■ Cooling	-
■ Ventilation	-
■ Heating (Electric)	7.962
■ Heating (gas)	474.116

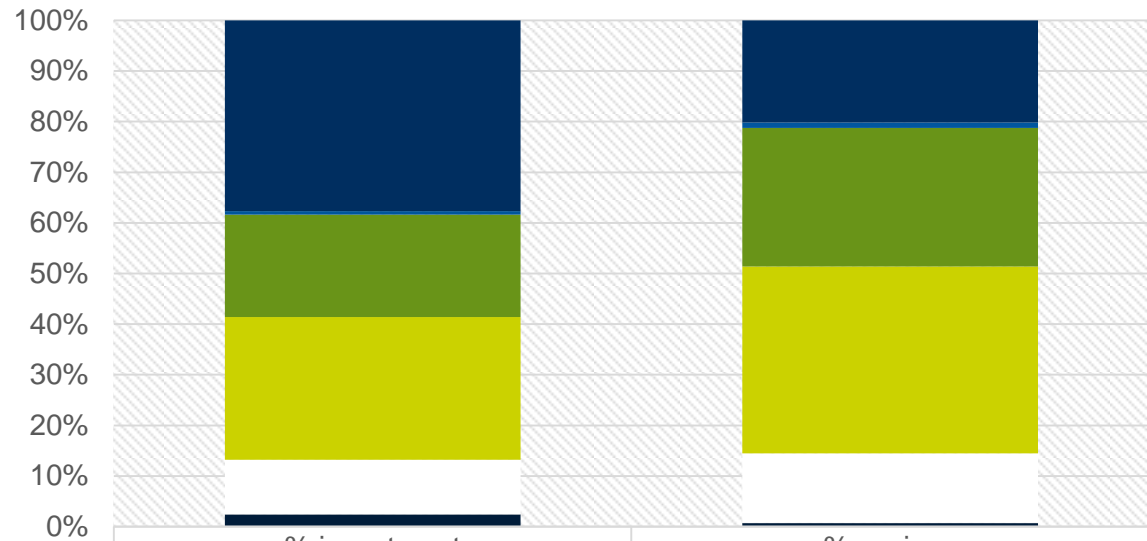
PROJECT OVERVIEW

RECCOMENDED ENERGY SAVING MEASURES

ESM Recommendation	Savings [kWh/year]	Savings [€/year]	Investment [€]	Payback [years]
Substitution of conventional lamps	19.138	5.799	88.080	15,2
Occupancy and presence sensors	1.022	310	1.670	5,4
Substitution of windows	107.899	7.872	47.250	6,0
Thermal insulation of building envelope	145.651	10.627	65.856	6,2
Substitution of conventional boiler with condensing boiler	54.343	3.965	25.200	6,4
Water saving aerators	97	7	82	11,6
Solar thermal plant	2.742	200	5.600	28
TOTAL	330.892	28.780	233.738	8,1

PROJECT OVERVIEW
ENERGY BALANCE

Investment and Savings



	% investment	% savings
■ Substitution of conventional lamps	37,7%	20,2%
■ Occupancy and presence sensors	0,7%	1,1%
■ Substitution of windows	20,2%	27,4%
■ Thermal insulation of building envelope	28,2%	36,9%
■ Substitution of conventional boiler with condensing boiler	10,8%	13,8%
■ Water saving aerators	0,0%	0,0%
■ Solar thermal plant	2,4%	0,7%

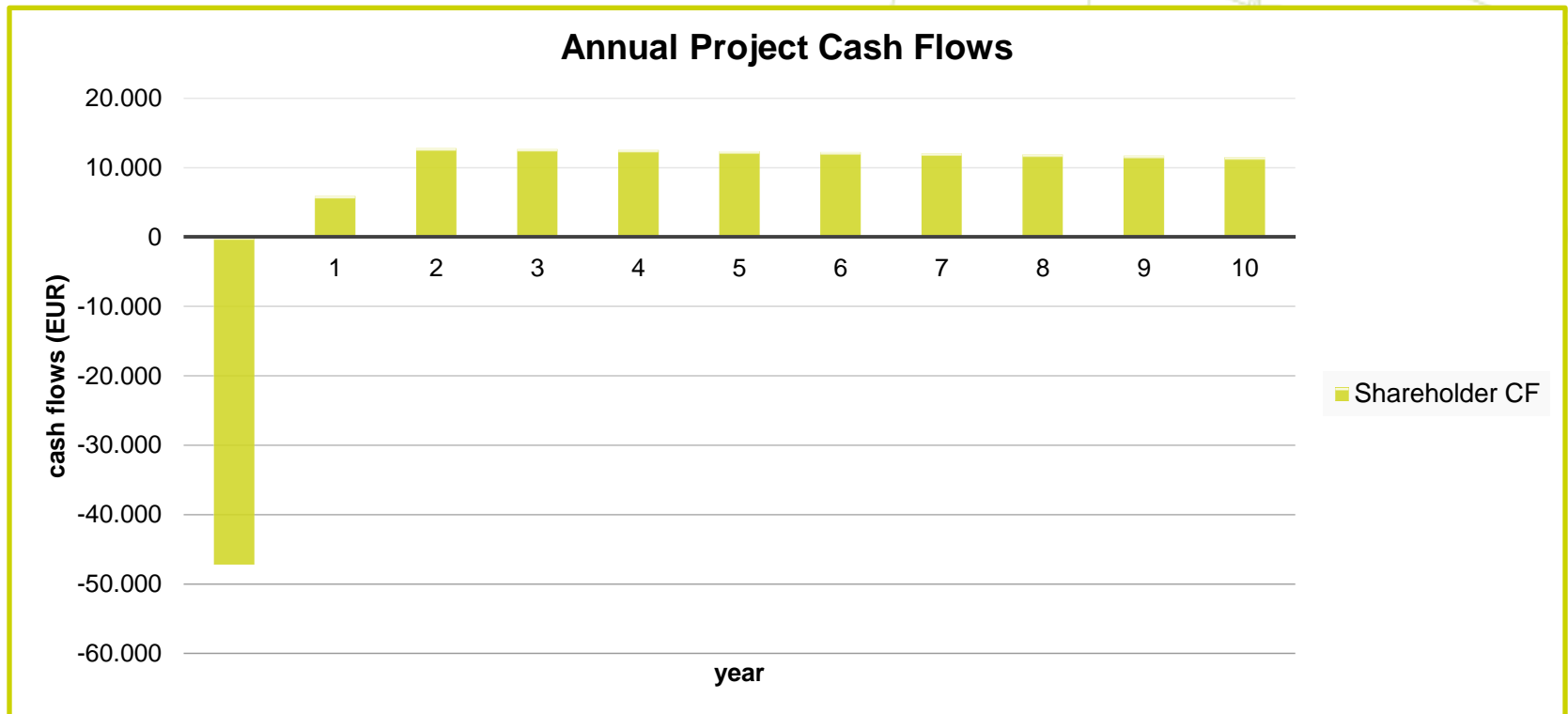
FINANCIAL ASSESSMENT EPC PROJECT ASSUMPTIONS

PROJECT GENERAL DATA

PROJECT SPECIFIC DATA

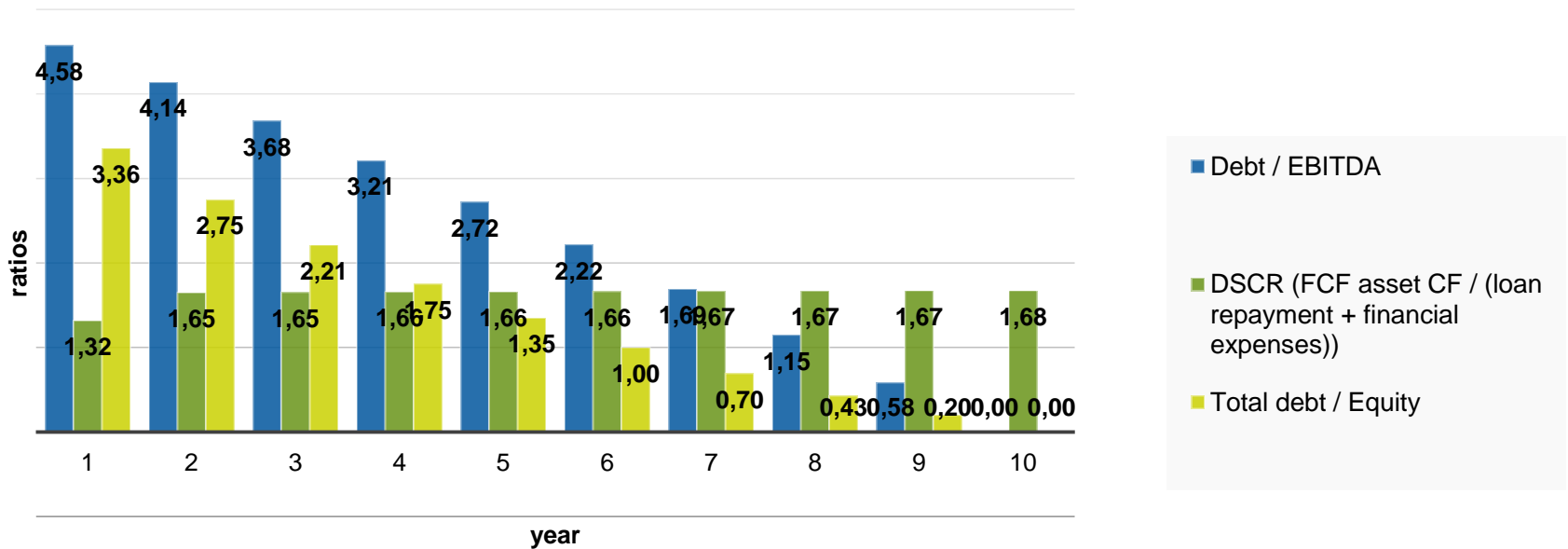
Project indexes		Project financial data		RESULTS (€)	
(1)Energy inflation rate	0,0%	(8)Project direct investment	€ 233.738	Income (Sales)	€ 38.159
(2)General inflation rate	1,0%	(9)% of additional expenses	1%	(17) Energy savings	€ 28.580
(3)Euribor (select)	2,0%	(10)% of Grant (subsidies)	0%	(18) Energy production	€ 2.742
(4)Spread	2,0%	Total investment amount	€ 236.075	(19) Water savings	-
Interest rate	4,0%	(11)% debt	80%	(20) Incentives	€ 6.837
(5)Loan formalisation fee	0,5%	% equity	20%	Expenses	€ -
(6)EPC Loan repayment term (years)	10	Debt	€ 188.860	(21) Energy supply	-
(6bis)Loan repayment term (years)	10	Equity	€ 47.215	(22) O&M	-
(7)EBT tax rate	28%	Grant	0	(23)Overhead	1,0%
		(12)K asset (required return)	9%	(24)Client shared savings (%):	0,0%
		(13)K equity (required return)	9%		
		(14)% of investment subject to depreciation	100%	(25)EPC Project duration (years)	10
		Investment subject to depreciation	€ 236.075	(25bis)ESM Project Horizon (years)	20
		(15)Working capital requirements (% of income)	16,7%		
		(16)EPC Depreciation period (years)	10		
		(16bis)Asset Depreciation period (years)	11		

FINANCIAL ASSESSMENT
PROJECT CASH FLOWS



FINANCIAL ASSESSMENT
LIQUIDITY & SOLVENCY RATIOS

Project Liquidity & Solvency Ratios



FINANCIAL ASSESSMENT RISK ANALYSIS – INTERNAL RISK

Higher investment amount

Measure	Probability of occurrence	Impact	Risk	Weighted risk
Substitution of conventional lamps	Unlikely	High	2,63%	0,99%
Occupancy and presence sensors	Likely	Restrained	2,10%	0,01%
Substitution of windows	Rare	Insignificant	0,05%	0,01%
Thermal insulation of building envelope	Unlikely	Restrained	0,90%	0,25%
Substitution of conventional boiler with condensing boiler	Likely	High	6,13%	0,66%
Water saving aerators	Unlikely	Restrained	0,90%	0,00%
Solar thermal plant	Unlikely	Restrained	0,90%	0,01%
Total				2,03%

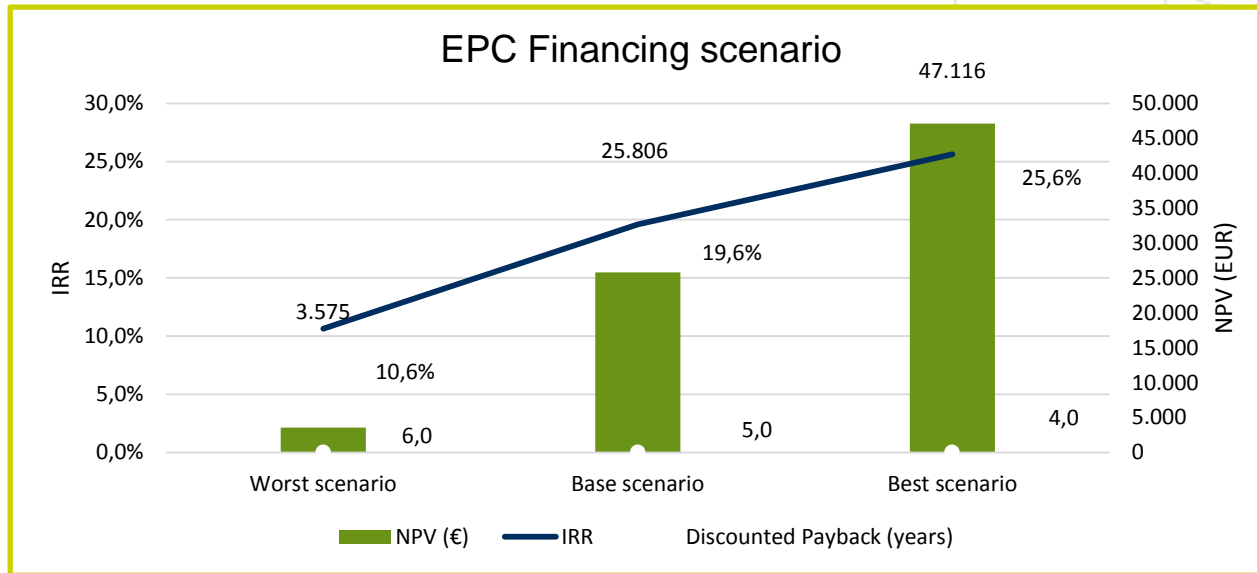


Smaller energy and water savings

Measure	Probability of occurrence	Impact	Risk	Weighted risk
Substitution of conventional lamps	Likely	Restrained	2,10%	0,42%
Occupancy and presence sensors	Unlikely	Restrained	0,90%	0,01%
Substitution of windows	Likely	Restrained	2,10%	0,58%
Thermal insulation of building envelope	Likely	Restrained	2,10%	0,77%
Substitution of conventional boiler with condensing boiler	Likely	High	6,13%	0,85%
Water saving aerators	Unlikely	Restrained	0,90%	0,00%
Solar thermal plant	Very likely	Restrained	4,50%	0,01%
Total				2,64%

FINANCIAL ASSESSMENT

RISK ANALYSIS – INTERNAL RISK

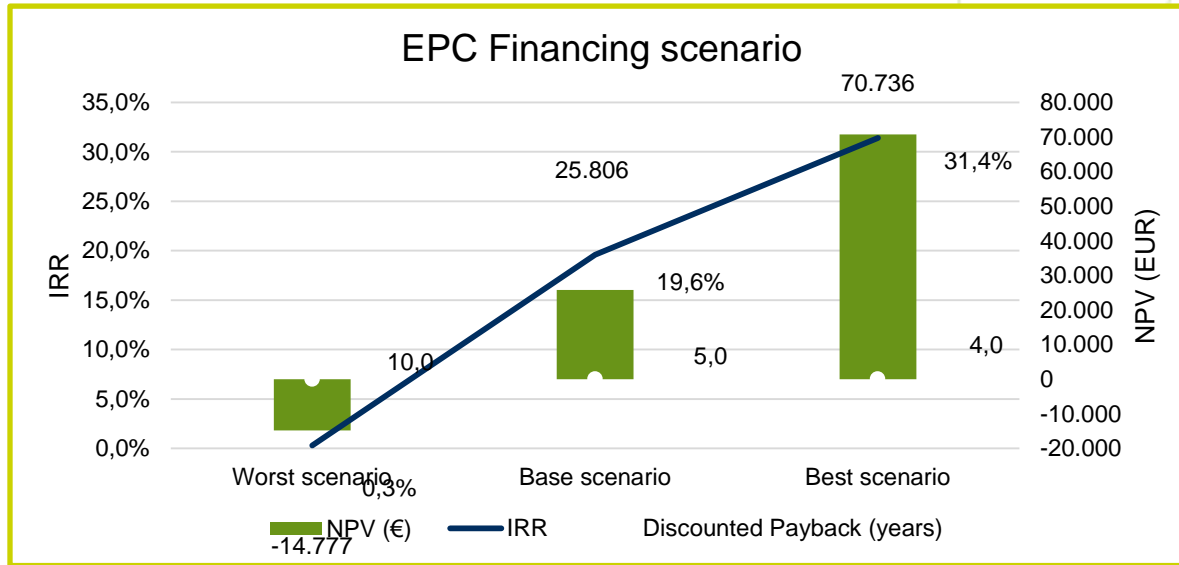


EPC Financing scenario

<u>FINANCIAL KPIs</u>	IRR	NPV (€)	Discounted Payback (years)	Min DSCR	Average DSCR	Negative FCF (years)
Worst scenario	10,6%	3.575	6,0	1,3	1,4	0,0
Base scenario	19,6%	25.806	5,0	1,3	1,6	0,0
Best scenario	25,6%	47.116	4,0	1,3	1,9	0,0

FINANCIAL ASSESSMENT EPC PROJECT RATING

PROJECT RATING
B



EPC Financing scenario

FINANCIAL KPIs	IRR	NPV (€)	Discounted Payback (years)	Min DSCR	Average DSCR	Negative FCF (years)
Worst scenario	0,3%	-14.777	10,0	1,0	1,2	0,0
Base scenario	19,6%	25.806	5,0	1,3	1,6	0,0
Best scenario	31,4%	70.736	4,0	1,5	2,2	0,0

FINANCIAL ASSESSMENT

EPC PROJECT RATING

PROJECT RATING

B

PROJECT RATING 4

Sport Centre



Energy Performance Contract Potential

Financial savings:	38.159	€
Energy savings:	330.892	kWh/year
Energy savings percentage:	64,02	%
Carbon savings:	90.506	kgCO ₂ /year
Investment:	233.738	€
Equity percentage:	20,0	%
IRR:	19,6	%
NPV:	25.806	€
avg. DSCR:	1,3	
min. DSCR:	1,6	
Discounted payback:	5	years

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CONCLUSIONS

- With an investment of **233.738 €** the facility can save **64% of its total energy costs**, which represents **38.159 €/year**, by implementing the energy efficiency measures proposed in the project
- The simple payback of the investment of the abovementioned measures is of **8,1 years**
- Following the assessment, an EPC financial scenario of **80% debt** and **20% equity** with a duration of 10 years can be proposed
- Also in this case, there is a **65% tax credit** for the client during the first 10 years (6,5% of the investment can be recovered annually from the income tax payments)
- Under the proposed configuration, the Net Present Value for this project in the base scenario is 25.806 € and the IRR 19,6%, corresponding to a **B GREPCon Rating**

TRUST EPC SOUTH OVERVIEW OF THE PROJECT

The Project started in 2015 within the European Commission's Horizon 2020 programme
– *Finance for Sustainable Energy*

10 European Partners from 6 southern European countries



3 years of duration, until February 2018, with a budget of nearly 2M Euros

THANK YOU FOR YOUR ATTENTION

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