



PRO-ENERGY

Promoting Energy Efficiency in Public Buildings of the Balkan Mediterranean Territory

Date: 26/9/2022

Where: Igoumenitsa





Pilot Actions

Objectives

- ❑ Implement pilot actions to promote energy efficiency in participating territories
- ❑ Ensure sustainability and replicability of project results



Pilot Actions

- ICT Platform
- Cost-Benefit Analysis Modeler
- Energy Performance Contracts
- Follow-up Plan



Integrated ICT Platform

- ❑ One of the main outputs of PRO-ENERGY
- ❑ Functional and technical specifications and requirements led to the development of the ICT platform
- ❑ Along with smart sensors it will form a system for energy efficiency interventions in public buildings



ICT Platform & System (1/2)

- ❑ One public building per area involved will be equipped with smart sensor systems
- ❑ The ICT platform will measure and analyse energy consumed at any given period of the day from different sources



ICT platform & System (2/2)

- ❑ Data and measurements (available to the wide public) will be integrate and analyzed, using specially designed ICT tools, algorithms, data analytics and statistical methods, thus producing the energy consumption profile of each building
- ❑ On the basis of those ratings each partner will engage every single public building into energy savings actions, through alerts, incentives and other forms of information, using automated push mechanisms derived by the ICT system.




Press and Information Office - Cyprus pilot building





Localization

The app supports multiple languages (Albanian, Bulgarian, English & Greek).
 A user can alter the app language by clicking on the respective flag.



Building Views



Dashboard

Monitoring the energy & other needs in buildings efficiently & intelligently.



Recommendations

Providing suggestions based on the analysis of the gathered data.



History


Historical data depicting the energy usage footprint over time.






Dashboard

Presents multiple high-level metrics, useful for optimizing energy efficiency & productivity.

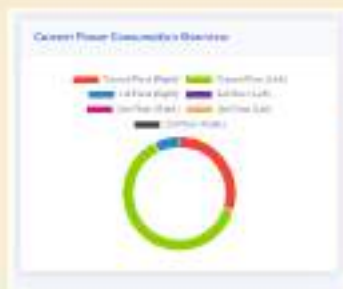


The average measurements of total volatile organic compounds, carbon dioxide, humidity and pressure within the building





The average measurements of total volatile organic compounds, carbon dioxide, humidity and pressure within the building




Depicts the rooms or sections of the building that currently consume most of the overall power

Recommendations

Displays real-time suggestions that derive from the raw data received from the building's sensors.



History

Enables users to select a sensor in order to observe how its values change over time.



Contact form

A user can provide feedback or just choose to communicate with the system administrators via the respective contact form that is available via the app sidebar.





Cost-Benefit Analysis Modeler (1/2)


- ❑ Evaluation energy investments and retrofits in public buildings
- ❑ Retrofits and investments will be planned using the cost-benefit analysis modeler to measure the net present value of energy efficiency interventions





Cost-Benefit Analysis Modeler (2/2)

❑ These investments will be implemented outside the PRO-ENERGY project (could be done with the use of energy performance contracting), but their results and impact (energy savings) shall be monitored and measured with the use of the ICT platform







Powered by 

CBA Inputs

Annual Energy Cost Savings ▶

Total Capital Expenditure ▶

Subsidy/Green Amount ▶

Over Financing ▶

Look Over Financing Data ▶

Capacity ▶

Project's Financial Structure

Subsidy/Green	N/A	-
Debt	N/A	-
Equity	N/A	-
Total	N/A	-

Loan finance at the end of Grace Period

Interest during Grace Period

Loan Inputs

Interest Rate

Maturity (years)

Loan Type (LTD)

Grace Period (Yes/No)

Grace Period (years)

Total Operating Expenses

Maintenance Costs

Staff Costs

Managerial Fees

Insurance Costs

Other Expenses

CBA Results

NPV (initially positive)	-
IRR	N/A
Payback (years)	-
BCR	N/A

Reduction in Energy Consumption (kWh/y)	-
Reduction of CO2 Emissions (t/y)	-

Show me the CBA Results Analysis
Get me back to Dashboard

Instructions for "Inputs" sheet

Input cells. Please fill in the data required by the CBA Modeler.

Output cells. The amounts are automatically calculated and are used for CBA purposes.

Total Operating Expenses

Maintenance Costs

Staff Costs

Managerial Fees

Insurance Costs

Other Expenses

Financial & Fiscal Inputs

Depreciation Rate

Inflation Rate

Energy Inflation Rate

Tax Rate

Discount Factor

Environmental Inputs

Reduction in Electricity Consumption (kWh/y)

Electricity CO2 Emissions Factor (kg CO2/kWh)

Reduction in Diesel Consumption (kWh/y)

Diesel CO2 Emissions Factor (kg CO2/kWh)

Contractual Inputs

Construction Works Period (years) ▶

Operations Period (years) ▶

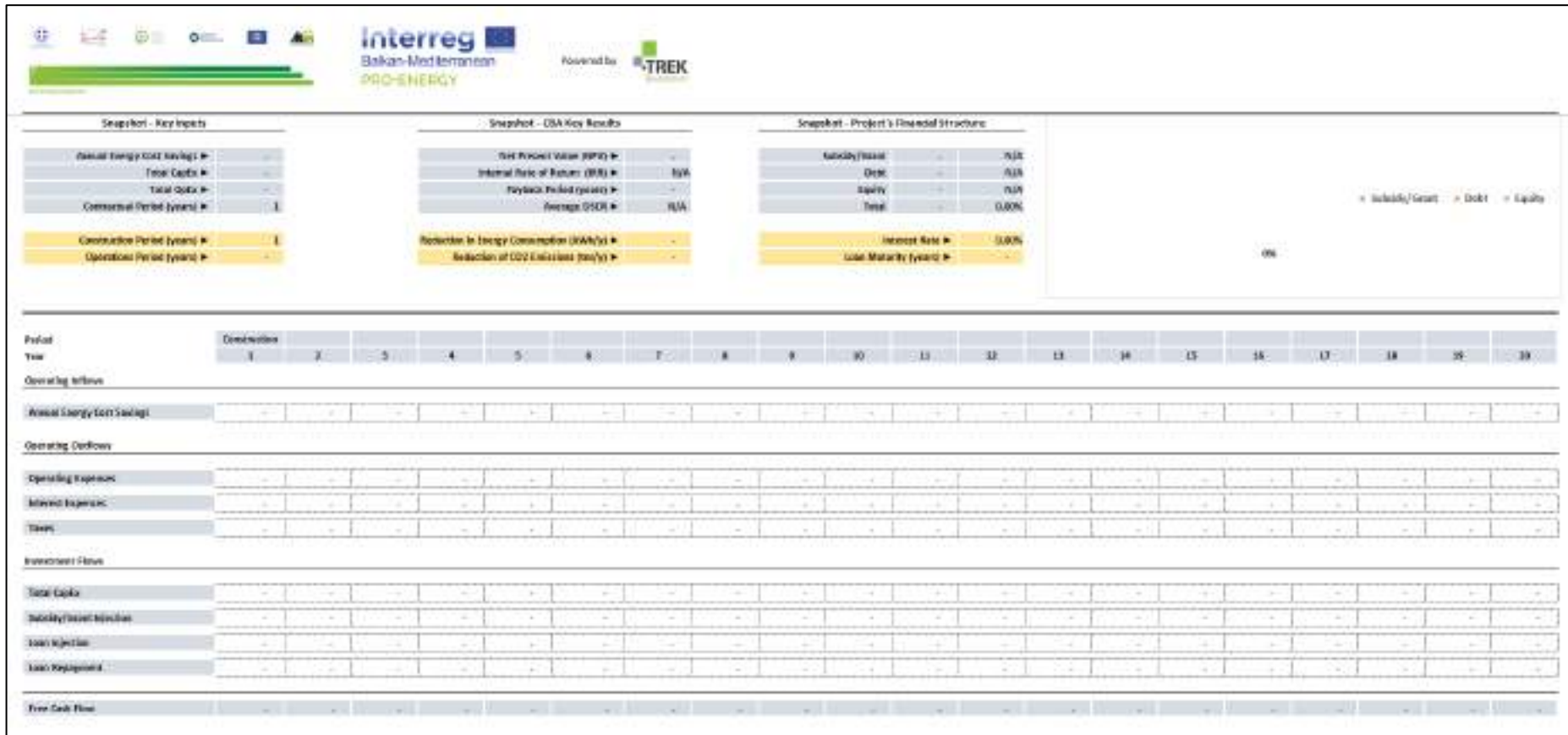
Total Contractual Period (years) ▶

Inputs

pro-energy-project.eu



Dashboard





Analysis (1/2)

	0	1	2	3	4	5	6	7	8	9	00	01	02	03	04	05	06	07	08	09	
Key Performance Indicators																					
NPV (€)	-																				
IRR (EO)																					
Payback Period (years)																					
CO2e (average)																					
Investment P&L																					
Revenues																					
Energy Cost Savings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Expenses (KWh)																					
Maintenance Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Staff Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Management Fees	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insurance Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total OpEx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBITDA																					
Total Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBIT																					
Total Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBT																					
Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Income																					



Analysis (2/2)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Net Cash Flow																					
Net Income																					
Taxes / Depreciation (+)																					
Loan Repayment (-)																					
Capital Expenditure																					
Subsidy/Grant Income																					
Loan Interest																					
Free Cash Flow (FCF)																					
Derivative P&L																					
Discount Factor	1,00																				
Discounted Cash Flow (DCF)																					
Derivative DCF																					
Payback Analysis																					
Cumulative DCF (CDCF)																					
Positive DCF years																					
Debt Service																					
Debt Service Cover Ratio (DSCR)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A





Energy performance Contracts (1/2)

- ❑ Another tool for the promotion of energy efficiency interventions
- ❑ It is a form of ‘creative financing’ that allows funding energy upgrades from cost reductions
- ❑ One EPC per project area



Energy performance Contracts (2/2)

□ EPC arrangements were prepared between project partners and energy service companies (ESCOs) who will implement interventions (retrofits etc.) in the selected pilot public buildings to deliver energy efficiency and will use the stream of income from the cost savings to repay the costs of investments



Follow-up Plan (1/2)

- ❑ Analysis of project achievements and extent to which the objectives will have been met
- ❑ Methodological tools for the replicability of actions and methodologies produced during the project
- ❑ Definition of the strategy for the sustainability of the project along with mission, goals and required resources



Follow-up Plan (2/2)

- ❑ Identification of potential funding opportunities for sustainability of project results based on three scenarios (best, worst case, most realistic scenario)
- ❑ Suggestions for extending project activities and for developing a new project to continue the work done in PRO-ENERGY