

# Upgraded SISMA SET (subsidy evaluation tool)

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## Background of the SISMA SET upgrade

- Within the framework of the SISMA project, a tool for energy and financial evaluation of energy efficiency measures was developed. The basic idea of the tool stems from the fact that for such measures or projects, the return period is usually longer and the internal rate of return (ISD) is low.
- In projects financed through energy contracting, the minimum rate of return is not precisely defined, but it is an empirical value based on the risk profile and yield for such measures or projects.



- Based on cooperation with energy service providers (ESCOs), financial institutions and other interested people, the lowest ISD can be defined, which is still acceptable for the project to be implemented. If for a project the profitability is not high enough, it is necessary to provide a certain amount from public funds (subsidy).
- In the framework of the ENERJ project, we decided to upgrade the SET tool in such a way that it would allow calculation for the so-called joint actions and will serve mainly energy managers dealing with public buildings as a support tool in the planning of joint actions.



## Application example

- In the first step, user provides basic information, such as: investor, building, address, heating degree days (HDD), description of the measure. In the second step, user enters data on the reference energy use and energy cost, the existing heat generator and defines the expected energy savings and the type of heat generator after the implementation of the measure

TOTAL:						3.500	
						[kD]	
#	Include in joint action?	PRIORITY	Comunity	Building na	Address	Heating degree days	Measure description
1	YES	I.		OB1		3.500	Energy management system instalation
2	YES	I.		OB1		3.500	Atic thermal insulation
3	YES	I.		OB1		3.500	Ligtning system retrofit with LED
4	YES	I.		OB2		3.500	Energy management system installation

2.155.687		4.787.734		236.662		296.626		5,2		5,8	
[kWh]	[kWh]	-	[€ VAT inc.]	[€ VAT incl.]	€/kWh	€/kWh	t CO <sub>2</sub>	%	%		
Electricit	Heating	Type of fuel	El. cost	Heat cost	El. price	Heat price	CO2 emissio	Electricity sav	Heat savings		
491.608	882.364	Natural Gas	50.933	46.798	0,104	0,05	417,4	0,0		7,0	
491.608	882.364	Natural Gas	50.933	46.798	0,104	0,05	417,4	0,0		14,5	
491.608	882.364	Natural Gas	50.933	46.798	0,104	0,05	417,4	16,1		0,0	
56.512	261.123	Fuel oil (extra	7.321	19.057	0,130	0,07	98,2	0,0		7,0	

- On the basis of the entered data, the tool calculates total energy savings, reduction of costs and emissions (CO<sub>2</sub>).

8	2.044.658	4.508.047				224.614	265.835	111.029	279.687	12.048	30.792	42.840	352	597.438	14	
	[kWh]	[kWh]	-	€/kWh	€/kWh	[€ VAT inc.]	[€ VAT incl.]	t CO <sub>2</sub>	[kWh]	[kWh]	[€ VAT inc.]	[€ VAT incl.]	[€ VAT incl.]	t CO <sub>2</sub>	[€ VAT incl.]	years
	El. use	Heat use	Type of fuel	El. cost	Heat cost	El. cost	Heat cost	CO2 emission	Electricity sav	Heat savings	Electricity sav	Heat savings	Total savings	CO2 emission redu	Investment	ROI
0	491.608	820.598	Wood chips	0,104	0,053	50.933	43.522	240,9	-	61.765	-	3.276	3.276	176	9.419,39	3
5	491.608	754.421	Natural Gas	0,104	0,053	50.933	40.012	391,8	-	127.943	-	6.786	6.786	26	84.020,00	12
0	412.459	882.364	Natural Gas	0,104	0,053	42.733	46.798	378,6	79.149	-	8.200	-	8.200	39	68.942,00	8
0	56.512	242.845	Natural Gas	0,130	0,059	7.321	14.328	76,3	-	18.279	-	4.729	4.729	22	14.838,75	3

#### JOINT ACTION CALCULATION BASELINE DATA:

Heat consumption baseline : 4.787.734,11 kWh/y

HDD baseline: 3.500 Kd

Electricity consumption baseline : 2.155.686,50 kWh/y

Estimated heat savings: 5,8 % 279.687,00 kWh/y 30.791,73 €/y

Estimated electricity savings: 5,2 % 111.028,83 kWh/y 12.047,94 €/y



**FINANCIAL CALCULATION PARAMETERS**

Investment	489.703,02	€		
Building design and construction fees	53.867,33	€	11%	%
Building site security costs	14.691,09	€	3%	%
VAT	122.817,52	€	22%	%
Total investment	681.078,96	€ VAT incl.		
Estimated savings on heat consumption:	30.791,73	€/y	5,84	%
Estimated cost savings on electric power:	12.047,94	€/y	5,15	%
Total savings:	42.839,67	€/y		
Duration of the Financial Plan	15	year		
General inflation rate	1,90	%		
Inflation rate of electricity prices	1,90	%		
Inflation rate of eating energy source	1,90	%		
NPV discount rate	5,00	%		
IRR *	10,00	%		
Subsidy:	326.917,90	€ VAT incl.	equivalent to	48,0 % of total investment

**PRIVATE COMPANY FINANCIAL DATA**

Loan amount:	0,00	€ VAT incl.	Loan period	15	years
			Annual Interest Rate	3,00	%
Own capital:	354.161,06	€ VAT incl.			

- In the final step, user sets additional attributes for the financial calculation such as the costs of project planning and management, the duration of the financial plan, inflation, the expected IRR, ...



- The financial plan is calculated. The user can also enter additional revenues or expenses on the project.

		INCOME STATEMENT														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Revenues	Sales revenue - concession fee	42.807	43.588	44.382	45.191	46.015	46.854	47.708	48.578	49.463	50.364	51.282	52.217	53.168	54.137	55.124
	Incentives															
	Cost of goods sold	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EBITDA	42.807	43.588	44.382	45.191	46.015	46.854	47.708	48.578	49.463	50.364	51.282	52.217	53.168	54.137	55.124
Expenses	Administrative and office expenses, maintenance and insurance costs															
	Normalization of expenditure at the inflation rate	1,00	1,02	1,04	1,06	1,08	1,10	1,12	1,14	1,16	1,18	1,21	1,23	1,25	1,28	1,30
	Normalized costs with inflation adjustment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Amortisation	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217
	Total operating expenses	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217	37.217
	Operating income	5.590	6.370	7.165	7.974	8.798	9.636	10.491	11.360	12.245	13.147	14.065	14.999	15.951	16.920	17.907
	Non-operating income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EBIT	5.590	6.370	7.165	7.974	8.798	9.636	10.491	11.360	12.245	13.147	14.065	14.999	15.951	16.920	17.907
	Financial income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	IBIE	5.590	6.370	7.165	7.974	8.798	9.636	10.491	11.360	12.245	13.147	14.065	14.999	15.951	16.920	17.907
	Interest expenses deductible	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EBT	5.590	6.370	7.165	7.974	8.798	9.636	10.491	11.360	12.245	13.147	14.065	14.999	15.951	16.920	17.907
	Income taxes	4.528	5.160	5.804	6.459	7.126	7.806	8.497	9.202	9.919	10.649	11.393	12.150	12.920	13.705	14.504
	Net income	1.062	1.210	1.361	1.515	1.672	1.831	1.993	2.158	2.327	2.498	2.672	2.850	3.031	3.215	3.402

- When a user enters all the necessary data to calculate the necessary subsidy and obtains a financial plan for the joint action, he can return to sheet 3 on the input interface for input of measures and using filters and the "Take action in the calculation" function, arbitrarily subtracts and adds individual actions while monitoring the impact on the financial indicators of the total investment. In this way, one can optimize the joint action according to the different goals or scenarios set.
- In this way, we can optimize the project to the extent that it is as balanced as possible from the expectations of all parties involved in the project, i.e. public institutions - investors, private equity (ESCO companies) and public institutions - donor incentives (subsidies).







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Thank you for your attention!

