

A3.4 Fine-tuning for transferring Financial evaluation tool

Financial schemes evaluation tool



CONTEXT

This tool is an improved version of the tool previously developed in the framework of the IMPULSE project.

One of the activities foreseen under the IMPULSE PLUS project was to implement the modifications and adjustments necessary to adapt the Financial tool to the specific contexts of the new receivers' territories, under a transnational and cooperative approach, and in line with EU energy directives (EPBD and EDD) amendments, as well as the new commitments set by the EU in the Renovation Wave Strategy and the European Green Deal.

OBJECTIVE

The objective of this financial schemes tool is to simulate possible financing of renovation plan calculated with PLUG-IN TOOL.

Two ways of financing the renovation plan are foreseen for the financial plan:

- The public body contracts one loan at the beginning whose amount is the total investment required for the entire renovation plan
- The public body contracts one loan per year over the duration of the renovation plan

The results are compared to energy bill baseline (if no works are done).

It can be used for a multiple simulation covering the possible evolution input data hypotheses, comparing up to 3 different combinations of data.



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IMPULSE PLUS - Financial Schemes tool

Activity A3.4: Fine-tuning for transferring

Project title/Acronym: Reaching new territories in the use of Integrated Management Support tools for Energy efficiency in Mediterranean Public buildings (IMPULSE PLUS)

Project ref.: 9MED20_2.1_M3_006

Priority Axis 2: Fostering low-carbon strategies and energy efficiency in specific MED territories: cities, islands and remote areas

Objective 2.1: To raise capacity for better management of energy in public buildings at transnational level

Developer: V.Valero

Partner organization: Valencia Institute of Building (IVE)

Below information is about IMPULSE that was implemented from November 2016 to July 2019

Interreg Mediterranean IMPULSE

Project co-financed by the European Regional Development Fund

AREA REGION SUD

Financial schemes

Annex to Deliverable D3.5.1

Cover Instructions Hypotheses Comb1 All in one loan + W Comb1 One loan + W per year Comb1 Comparison Comb2 All in one loan + W Comb2 One loan + W per year Comb2 Comparison Comb3 All in one loan + W

Accesibilidad: es necesario investigar

The Financing tool (excel file) consists of 13 sheets:

- Cover - basic information about project, activity and developers of tool.
- Instructions -how to use the Financial Schemes tool
- Hypotheses- the sheet where the user introduces input data from previous deliverables, general hypotheses to be considered and financial information.
- Set of 3 sheets (blue): Comb 1 All in one loan +W / Comb 1 One loan+W per year / Comb 1 Comparison - show the financial data for data (hypothesis) combination 1.
- Set of 3 sheets (pink): Comb 2 All in one loan +W / Comb 2 One loan+W per year / Comb 2 Comparison - show the financial data for data (hypothesis) combination 2.
- Set of 3 sheets (green): Comb 3 All in one loan +W / Comb 3 One loan+W per year / Comb 3 Comparison - show the financial data for data (hypothesis) combination 3.
- Comb 1, 2, 3 Comparison - graphically compares the data of combinations 1, 2 and 3 calculated.

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Project co-financed by the European
Regional Development Fund

This tool is an improved version of the tool previously developed in the framework of the IMPULSE project. One of the activities foreseen under the IMPULSE PLUS project was to implement the modifications and adjustments necessary to adapt the Financial tool to the specific contexts of the new receivers' territories, under a transnational and cooperative approach, and in line with EU energy directives (EPBD and EED) amendments, as well as the new commitments set by the EU in the Renovation Wave Strategy and the European Green Deal.

INSTRUCTIONS ON THE USE OF THE FINANCIAL SCHEMES TOOL

OBJECTIVE

The objective of this financial schemes tool is to simulate possible financing of renovation plan calculated with PLUG-IN TOOL. Two ways of financing the renovation plan are foreseen for the financial plan:

- The public body contracts one loan at the beginning whose amount is the total investment required for the entire renovation plan
- The public body contracts one loan per year over the duration of the renovation plan

The results are compared to energy bill baseline (if no works are done).

It can be used for a multiple simulation covering the possible evolution input data hypotheses, comparing up to 3 different combinations of data.

INSTRUCTIONS FOR EACH WORKSHEET

SHEET: Hypotheses

On the first sheet, different colored cells need to be completed according to your renovation plan:

- Yellow cells are results from previous deliverables (D3.4.1 and Plug-in tool) that need to be copy/pasted.
- Blue cells are general hypotheses about interest rate, inflation, ...
- Orange cells are financial information about your pilot city that needs to be completed for each year of SEAP duration.

Yellow cells - Results from previous deliverables

1.Total Energy Bill in field Hypotheses!H3
D3.4.1 KPI
Sheet: "Projection_Base-case"
Cost indicator: "Annual total energy-related operational cost" in NC/yr
Field: total for the whole initial sample - V114

2.Renovation plan
D3.5.1 PLUG-IN TOOL
Sheet: "PLAN"
Fields:
-Floor area retrofitted, annual investment, savings -currency = E4:X6 in field Hypotheses!D94:W96
-Savings -kWh= E8:X8 in field Hypotheses!D97:W97

Blue cells - General hypothesis

For your simulation, you need to estimate financial data during SEAP duration:

- Interest rate of the loan
- Energy discount rate

✓ Ahora puedes editar

Cover

Instructions

Hypotheses

Comb1 All in one loan + W

Comb1 One loan + W per year

Comb 1 Comparison

Comb2 All in one loan + W

Comb2 One loan + W per year

Comb 2 Comparison

Comb3 All in one loan + W

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Listo

Accesibilidad

Accesibilidad: es necesario investigar

77 %



The screenshot displays the 'Hypotheses' tab of a spreadsheet used for energy retrofit calculations. The interface includes a formula bar at the top and a grid of cells. Key features include:

- Input Parameters (Rows 1-10):** A table for 'Hypotheses' with columns for 'Comb 1', 'Comb 2', and 'Comb 3'. It lists parameters like 'Interest rate of the loan', 'Energy discount rate', 'Inflation / year (NC)', 'Annual increase of public body budget (%)', 'Loan duration / years in public body planning', 'Seap duration (calculated)', and 'Annual increase of loan rate'.
- Loan and Energy Bill Inputs (Rows 11-12):** A red box highlights the 'Data from D3.4.1' input, which includes 'Energy bill €/ year'.
- Investment and Budget (Rows 13-20):** A table showing 'Annual investment (D3.5.1 plugin)' and 'Budget of public body over Seap Duration(x)' for years 1 through 20. It also includes 'years = equity capital' and 'European subsidies'.
- Interest Rate of the Loan (Rows 21-23):** A table showing 'Interest rate of the loan (different each year)' for 'Comb 1', 'Comb 2', and 'Comb 3' across years 1 to 20.
- Investment and Recoverable VAT (Rows 24-26):** A table showing 'Investment (€ HT)' and 'Recoverable VAT (€)' for years 1 to 20.
- Data from plugin D3.5.1 (Rows 27-33):** A large yellow box highlights the 'Data from plugin D3.5.1' section, which includes 'Floor area retrofitted', 'Annual investment', 'Savings - currency', 'Savings - kWh', and 'Savings - NC / MWh' over 20 years.
- Branding and Logos (Rows 34-36):** The spreadsheet features logos for 'Interreg Mediterranean' and 'IMPULSE PLUS', along with text indicating 'Project co-financed by the European Regional Development Fund'.
- Navigation and Status (Bottom):** A status bar at the bottom shows the current tab 'Hypotheses' and other tabs like 'Cover', 'Instructions', 'Comb1 All in one loan + W', etc. A green checkmark icon is visible in the bottom right corner.

On the first sheet, different coloured cells need to be completed according to your renovation plan:

- **Yellow cells** are results from previous deliverables (D3.4.1 and Plug-in tool) that need to be copy/pasted.



[illegible]

On the first sheet, different coloured cells need to be completed according to your renovation plan:

- Yellow cells are results from previous deliverables (D3.4.1 and Plug-in tool) that need to be copy/pasted.
- Blue cells are general hypotheses about interest rate, inflation,



The screenshot displays the 'Hypotheses' tab of a spreadsheet used for calculating the economic impact of energy efficiency measures. The spreadsheet is organized into several key sections:

- Input Parameters (Top):** This section includes fields for 'Interest rate of the loan', 'Energy discount rate', 'Inflation /year (NC)', 'Annual increase of public body budget (%)', 'Loan duration / years in public body planning', 'Seap duration (calculated)', and 'Annual increase of loan rate'. A red box highlights the 'Hypotheses' table, which contains data for 'Comb 1', 'Comb 2', and 'Comb 3'.
- Annual Investment and Budget (Middle):** This section shows the 'Annual investment (D3.5.1 plugin)' and 'Budget of public body over Seap Duration(x years) = equity capital' for various subsidies (European, National, Regional, White certificates) across 20 years. A red box highlights the 'Hypotheses' table, which contains data for 'Comb 1', 'Comb 2', and 'Comb 3'.
- Data from plugin D3.5.1 (Bottom):** This section shows the 'Data from plugin D3.5.1' for floor area retrofitted, annual investment, savings in currency, savings in kWh, savings in NC/MWh, and ROI across 20 years.

The spreadsheet also includes logos for Interreg Mediterranean and IMPULSE PLUS, and text indicating it is co-financed by the European Regional Development Fund.

On the first sheet, different coloured cells need to be completed according to your renovation plan:

- Yellow cells are results from previous deliverables (D3.4.1 and Plug-in tool) that need to be copy/pasted.
- Blue cells are general hypotheses about interest rate, inflation, ...
- **Orange cells** are financial information about your pilot city that needs to be completed for each year of SEAP duration.



Yellow cells - Results from previous deliverables

- **Total Energy Bill** is a result from the sheet “Projection_Base-case” of D3.4.1 KPI : total for the whole initial sample of the Cost indicator “Annual total energy-related operational cost” in NC/yr (Cell V114)

Projection of results from Ambassador to the initial testing sample of buildi								
Base-case								
Building No.	Building name	Building floor area (m2)	Public Building Typology	Retrofit scenario	Type of retrofit	Annual total energy-related operational cost		Cost indicators
								Annual electricity cost
						National Currency/m²/yr	National Currency/yr	National Currency/m²/yr
			PBT10				15277,55	15277,5457
			PBT11				19679,67	9068,8026
			PBT12				36231,61	32960,3197
			PBT13				0	0
			PBT14				0	0
			PBT15				0	0
			TOTAL FOR THE WHOLE INITIAL SAMPLE				847957,7	680168,176



Yellow cells - Results from previous deliverables

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Blue cells – General hypothesis

For your simulation, you need to estimate financial data during SEAP duration:

- Interest rate of the loan
- Energy discount rate
- inflation /year (NC)
- Annual increase of public body budget (%)
- Loan duration / years in public body planning – The duration cannot exceed 20 years
- Annual increase of loan rate (for multi-loan simulation you can either enter a different loan rate each year or increase every year your loan rate with this indicator)

Up to 3 combinations of data can be entered to compare different hypotheses simultaneously.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1							Data from D3.4.1																
2	Hypotheses		Comb 1	Comb 2	Comb 3		Energy bill €/ year																
3	Interest rate of the loan																						
4	Energy discount rate																						
5	Inflation /year (NC)																						
6	Annual increase of public body budget (%)																						
7	Loan duration / years in public body planning																						
8	Seap duration (calculated)		0	0	0																		
9	Annual increase of loan rate																						
10																							
11																							
12																							
13																							
14	Annual investment (D3.5.1 plugin)	Over 20 years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
15	Budget of public body over Seap Duration(x years) = equity capital																						
16	European subsidies																						
17	National subsidies																						
18	Regional subsidies																						
19	White certificates																						
20	Interest rate of the loan (different each year)		Comb 1	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
21			Comb 2	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
22			Comb 3	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
23																							
24	Investment (€ HT)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Recoverable VAT (€)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Investment (€ TTC)		0	0	0	0</																	

Orange cells - Your city financial information

The last entries regard your pilot city budget for building renovation and possible subsidies you need to estimate for each year investment.

- Budget of public body over SEAP Duration = equity capital
- European subsidies
- National subsidies
- Regional subsidies
- White certificates
- Interest rate of the loan (different each year) - you can use a different known value each year or use the formula with % annual increase of loan rate.



SHEETS: Comb 1 or 2 or 3 + "All in one loan + Works"

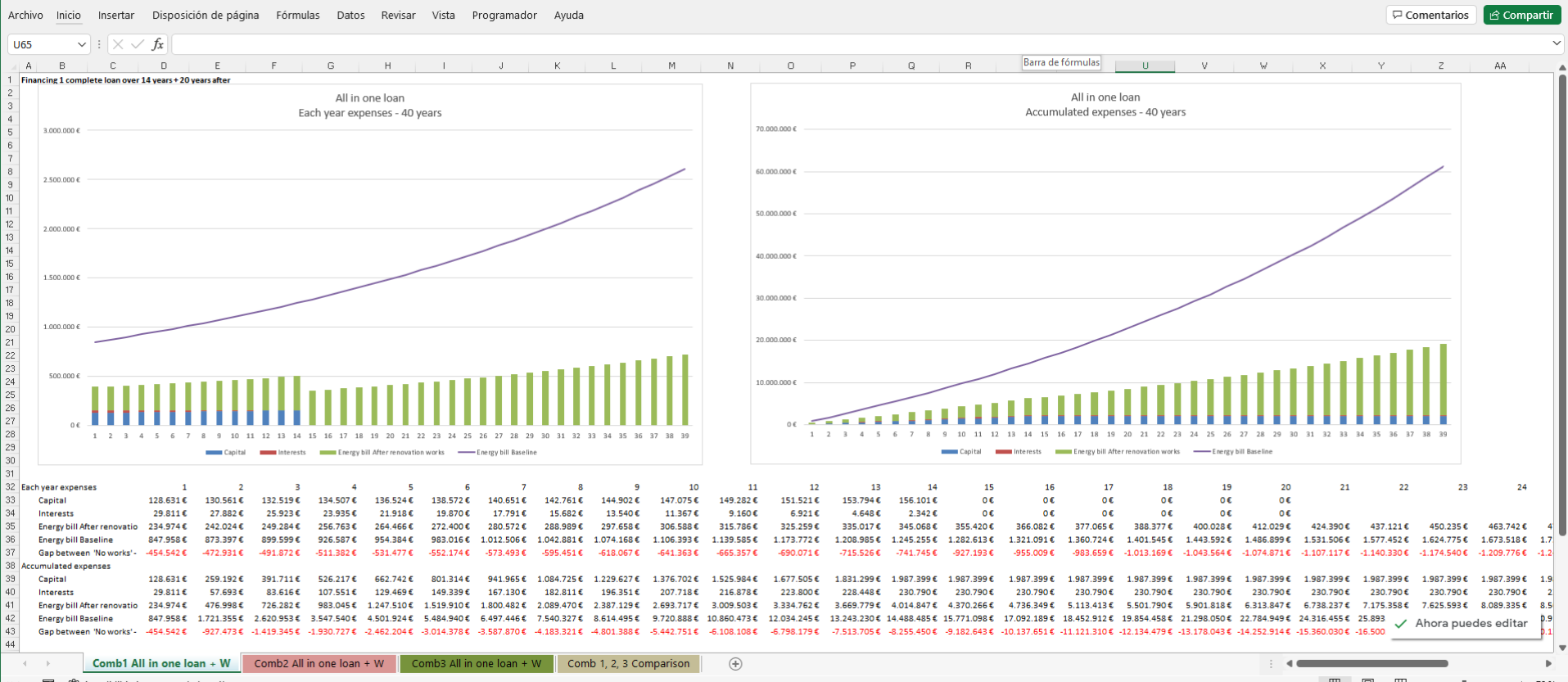
Each worksheet (Comb 1/2/3 All in one loan + Works) shows expense each year of SEAP through financing all renovation plan with one loan, depending on the hypothesis introduced in blue cells for each combination.

The tool calculates loan capital and interests every year and the energy bill after renovation works.

It can be compared graphically and with the results table to energy bill baseline (no renovation works, only updated with inflation each year).

The **"each year expenses"** chart shows generally that the renovation plan (with works + loan capital and interests + energy bill after works) presents fewer annual expenses than energy bill baseline (energy bill updated with inflation each year) within a few years.

The **"accumulated expenses"** chart shows the accumulated expenses of the renovation work project and the energy bill baseline, and the gap between the two situations at the end of the borrowing. Generally, the balance-sheet is balanced before the end of the loan.



SHEETS: Comb 1 or 2 or 3 + "One loan + Works per year"

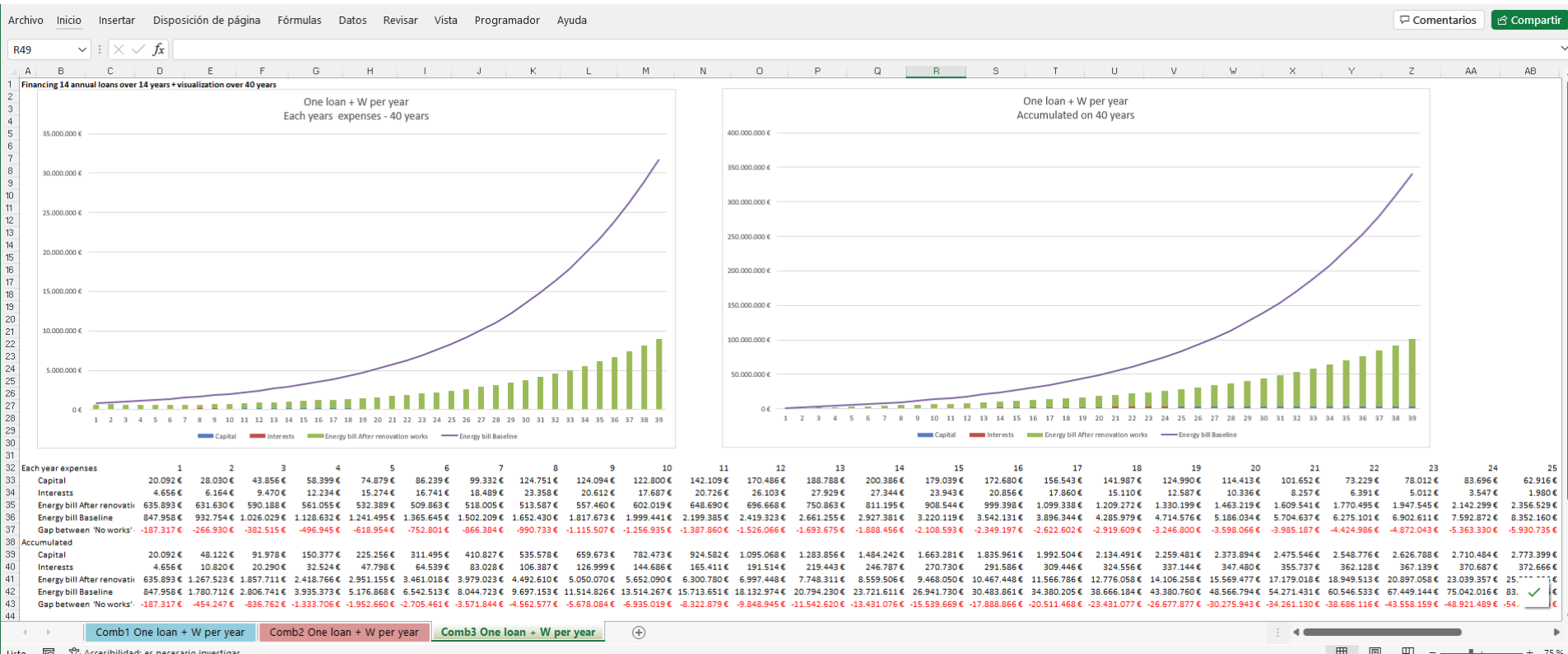
Each worksheet (Comb 1/2/3 One loan + Works per year) shows expense each year of SEAP through financing renovation plan gradually with multiple loans and doing parts of renovation plan every year depending on the hypothesis introduced in blue cells for each combination.

The tool calculates each loans capital and interests every year and the energy bill after renovation works.

It can be compared graphically and with the results table to energy bill baseline (no renovation works, only updated with inflation each year).

The **"each year expenses" chart** shows generally that the renovation plan (with works + multiple loans capital and interests + energy bill after works) presents fewer annual expenses than energy bill baseline (energy bill updated with inflation each year) within a few years.

The **"accumulated expenses" chart** shows the accumulated expenses of the renovation work project and the energy bill baseline, and the gap between the two situations at the end of the borrowing. Generally, the balance-sheet is balanced before the end of the loan.



SHEETS: Comb 1 or 2 or 3 + Comparison

Each worksheet (Comb 1/2/3 Comparison) aims at comparing each financing through SEAP duration depending on the hypothesis introduced in blue cells for each combination.

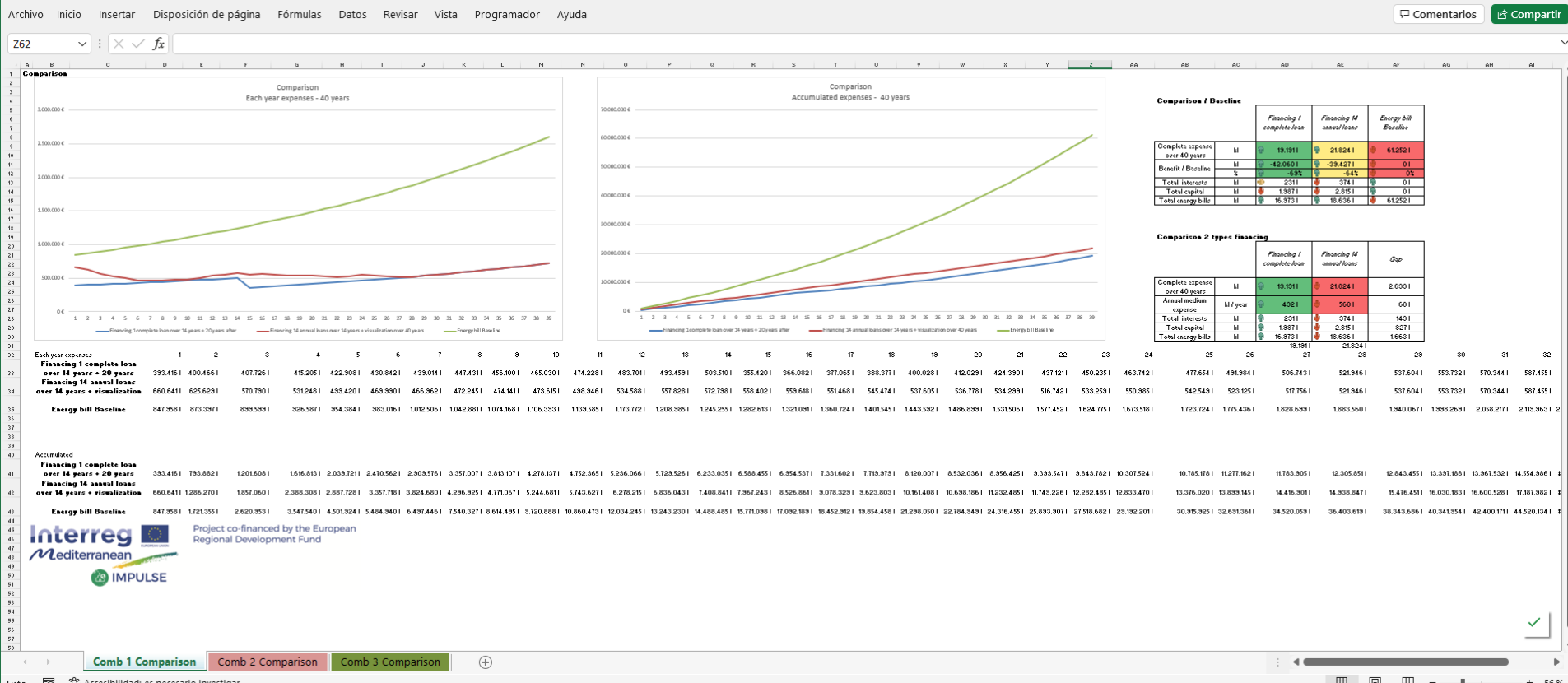
It presents calculated total expenditures (capital + interest + energy bill after renovation works) every year and accumulated with both financing and also energy bill baseline.

The “**each year expenses**” chart shows generally that the renovation plan with “all in one loan”- financing presents fewer annual expenses after the loan is repaid in year 14. The “One loan + renovation works per year” -financing curve overlap the “all in one loan” at the end of the last loan (in the case above, in year 28).

The “**accumulated expenses**” chart shows the accumulated expenses of the renovation work project with both financing and the energy bill baseline, and the gap between each situation at the end of the borrowing. Generally, the balance-sheet is balanced before the end of the loan and the multi-loans.

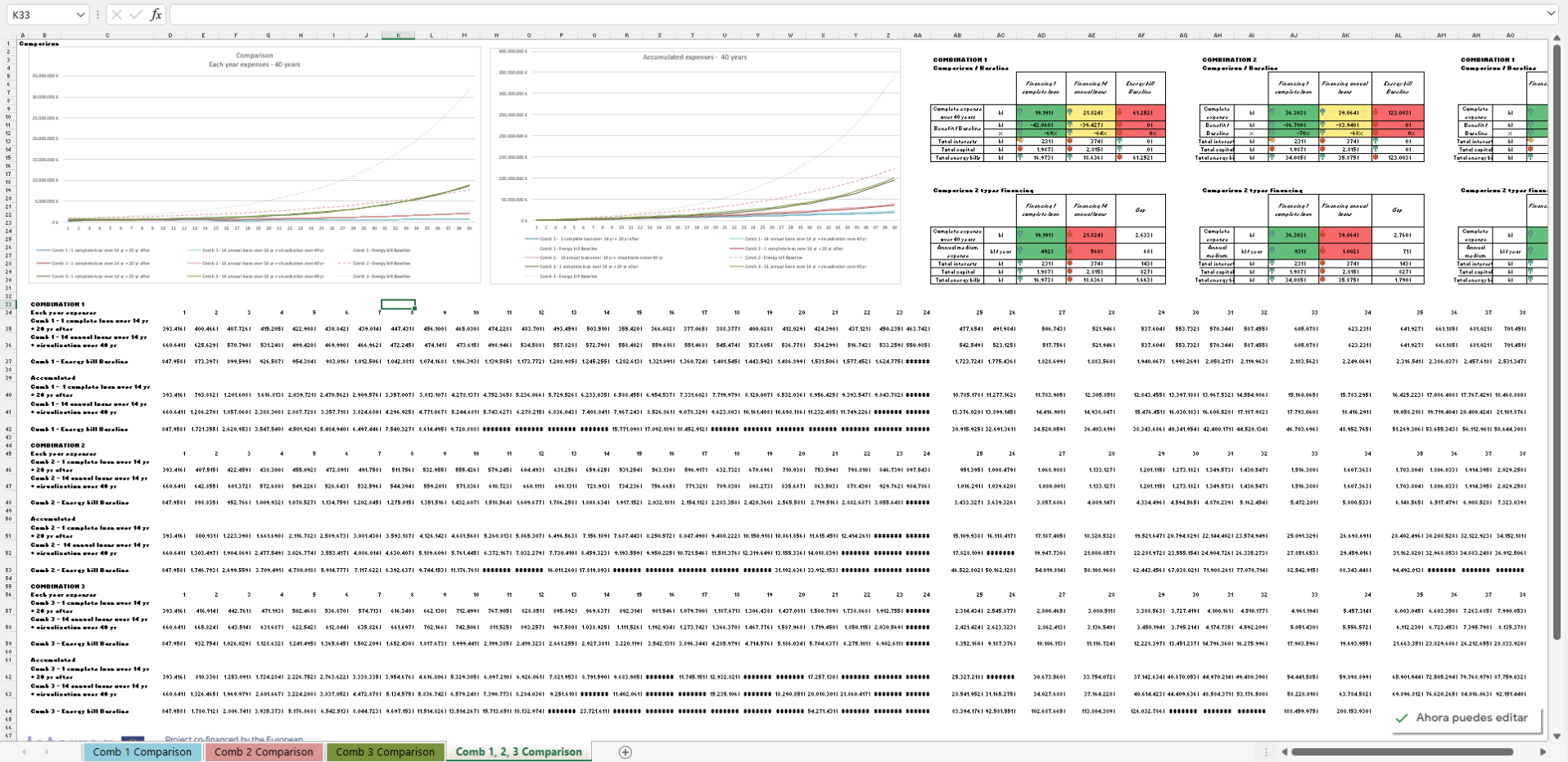
The following tables sums up total expenditures for 3 situations:

- Financing with 1 complete loan
- Financing with X (depends on SEAP duration) annual loans
- Energy bill Baseline if no renovation works are done



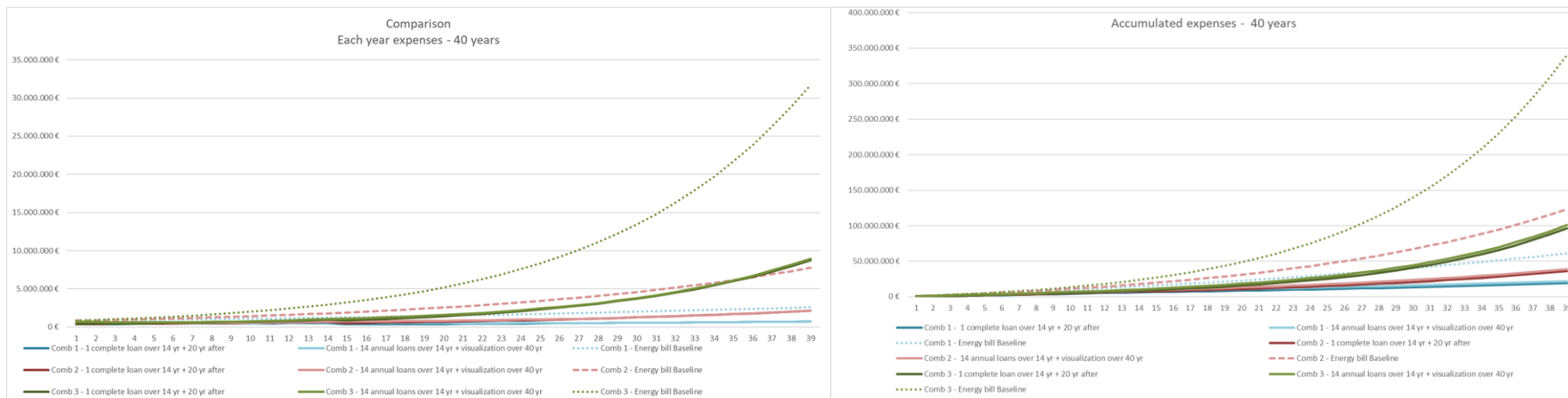
SHEET: Comb 1,2, 3 Comparison

This sheet aims to compare the financing, over the duration of the SEAP, for the hypotheses, up to 3 possible combinations, set out in the hypotheses tab. It presents calculated total expenditures (capital + interest + energy bill after renovation works) every year and accumulated with both financing and also energy bill baseline, for the up to three input data combinations introduced in hypothesis tab.



SHEET: Comb 1,2, 3 Comparison

Both graphs, “each year expenses” and “accumulated expenses” charts, simultaneously show the results obtained for *Comb 1 Comparison*, *Comb 2 Comparison* and *Comb 3 Comparison*.



Thank you

Vera Valero Escribano,
vvalero@five.es

Valencia Institute of Building

More info:

- <https://impulse.interreg-med.eu/>
- <http://www.five.es/project/impulse/>
- https://youtu.be/wltHh_w-iWE
- <https://youtu.be/XFu-FQB7hUk>

