RENTCAL

European Rental Housing Framework for the Profitability Calculation of Energetic Retrofitting Investments

USER MANUAL RENTALCAL WEB-TOOL v2.0

This RentalCal Tool User Manual is part of the RentalCal - European Rental Housing Framework for the Profitability Calculation of Energetic Retrofitting Investments.

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ZUKUNFT BAU
FORSCHUNGSFÖRDERUNG

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1. INTRODUCTION TO THE RENTALCAL PROJECT

The project *RentalCal - European Rental Housing Framework for the Profitability Calculation of energetic Retrofitting Investments* is a research project carried out by 11 institutions in eight European countries (2015 – 2018). Over a project duration of 3 years, the participating markets for sustainable modernisation were analysed and compared. The results of the project were used for reports and the creation of a tool for evaluating the profitability of energy modernisation projects. The results are especially relevant for real estate owners, housing companies and housing associations, property managers, municipal administrators and energy consultants. RentalCal facilitates with the implementation of energy modernisation measures for rented residential properties by providing basics and tools for the calculation of the economic efficiency and thus contributes to the achievement of the EU climate targets.

The RentalCal Profitability Calculation Tool presented here (hereinafter also referred to as "Tool") is a major result of the RentalCal project. Funded by the German Government ("Zukunft Bau") an update of the RentalCal Tool was released in 2022 (v2.0) (http://www.rentalcal.eu).

The web-based software enables a structured and comprehensive economic efficiency calculation in connection with planned energy modernisation measures in rented housing construction. After recording (input) the respective input parameters and framework conditions of the relevant investment, the tool user receives a comprehensive analysis with regard to the economic advantage of the measure (output). This supports decision-making. Both quantitative and qualitative results are presented. The tool is versatile: In addition to owners and investors, it also supports (energy) consultants, politicians and other groups of players such as property managers and associations in the housing industry.

2. INTRODUCTION TO THE RENTALCAL TOOL

2.1. Functional Description

This web-based tool is based on a special form of economic efficiency calculation, namely the Visualisation of Financial Implications (VoFi). Especially in this scenario (energy modernisation), it makes it possible to model the economic efficiency in great detail. The calculation is based on the delta approach, which simply includes the change in cash flows in the economic efficiency assessment. In this way, the difference between cash flows before and after the energetic modernisation is considered in the calculation.

In addition to the direct cash flows of the property and the energetic motivations, essential differences to other financial mathematical approaches are that indirect payments can also be modelled. These include in particular the consideration of taxes, depreciation, amortisation and financing. Based on the investment costs of the energy-related modernisation, the return on equity of the investor for the capital employed is thus calculated and presented, considering possible rent increases, subsidy measures, changes in other management costs and much more.

For further information on the investment calculation in general and the calculation of a Visualisation of Financial Implications in particular, please refer to the video tutorial, which can be accessed at http://www.rentalcal.eu.

The RentalCal Tool is based on the simple principle of **input, processing and output**. Data is either entered directly by the user or selected from default values (see below: Databases). The user is guided through the work steps in a structured manner and at the end, the calculation results are presented to the user in a thematically structured and graphically prepared form. It is possible to download the Visualisation of Financial Implications as well as further calculation results in PDF format.

2.2. Software and Data Privacy

The RentalCal Tool can be started from any common **internet browser** (Mozilla Firefox, Google Chrome, Microsoft Edge, Apple Safari, etc.).

The RentalCal Tool or RentalCal Consortium does not request or archive any **personal or other meta-information/data.** The RentalCal Tool does not store, process or pass on the entered data, both input and output.

2.3. Terms of Use

The RentalCal Profitability Calculation Tool is provided to you without guaranteeing the correctness and completeness of the software or calculation results. The software, its documentation and the underlying data are provided **free of charge**. The terms of use must be **approved** before using the tool.

The project parties and the European Union shall **under no circumstances be liable** for any loss of data or **any other damage resulting** from the use of such data. No data or images of the tool may be passed on or published to third parties beyond the agreed use. Commercial use is strictly prohibited without the consent of the RentalCal Consortium.

Any use is at your **own risk**. All calculations are based on the data entered by the user or selection of data. No liability is assumed for the actual, exact occurrence of the determined results. The **plausibility** of entered data is checked by the programme only selectively. The **careful and correct input** of data by the user is therefore essential and mandatory. The results of the tool are intended in particular to support, but in no way replace **advice from specialist firms, energy consultants or other experts**. Investment decisions should under no circumstances be made solely on the basis of the calculation results of this software.

Neither the European Commission, nor the RentalCal Consortium, nor its members are obliged to make updates after the end of the project. The tool will be available on the servers of the RentalCal after completion of the project.

3. START OF RENTALCAL TOOL

3.1. Accessing the RentalCal Website

If you access the RentalCal website at http://www.rentalcal.eu/, you will be connected to the general RentalCal homepage (see Fig. 1). Here you can start the tool or you can view or download further information.

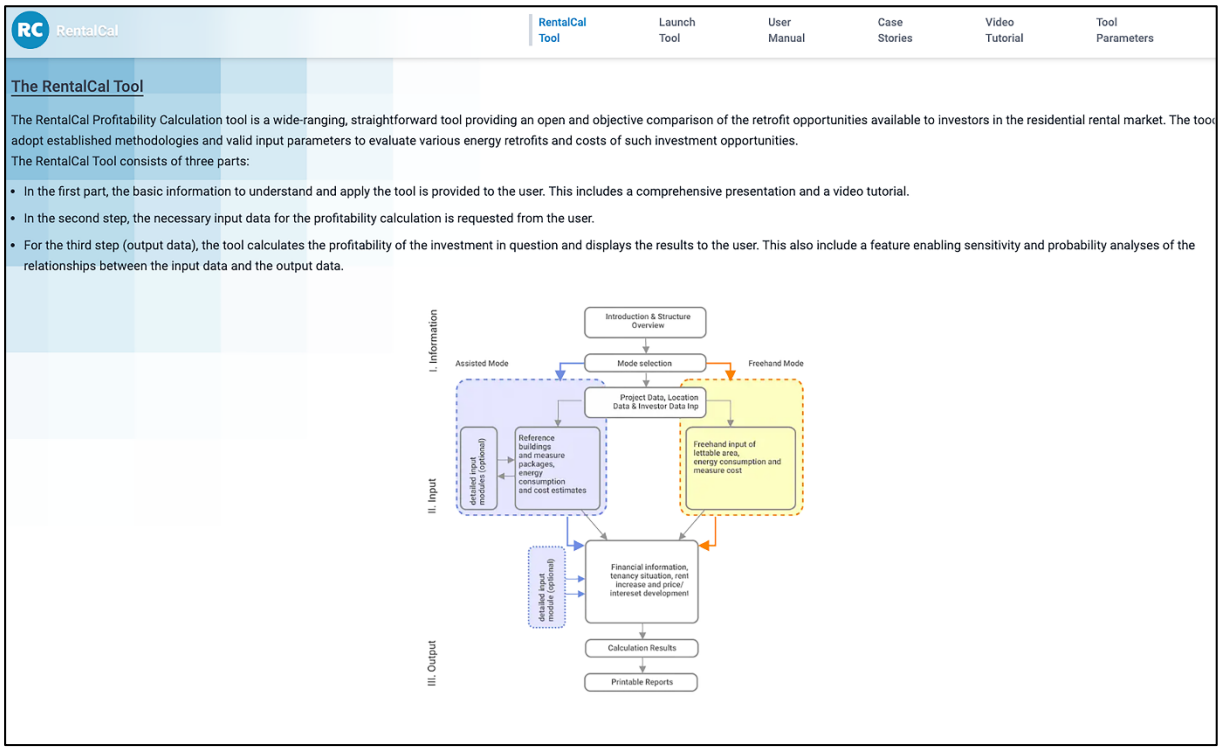


Figure 1: RentalCal Website

3.2. Basic Menu Navigation

The navigation follows common web-based applications and is intuitive to use. The menu or screen area is divided into several areas (see Fig. 2). This allows easy navigation through the software application. To navigate between individual info screens and to correct values, please use the blue buttons ("Continue", "Back") and the red one ("Restore default values") at the bottom of the respective input page (see Fig. 3).

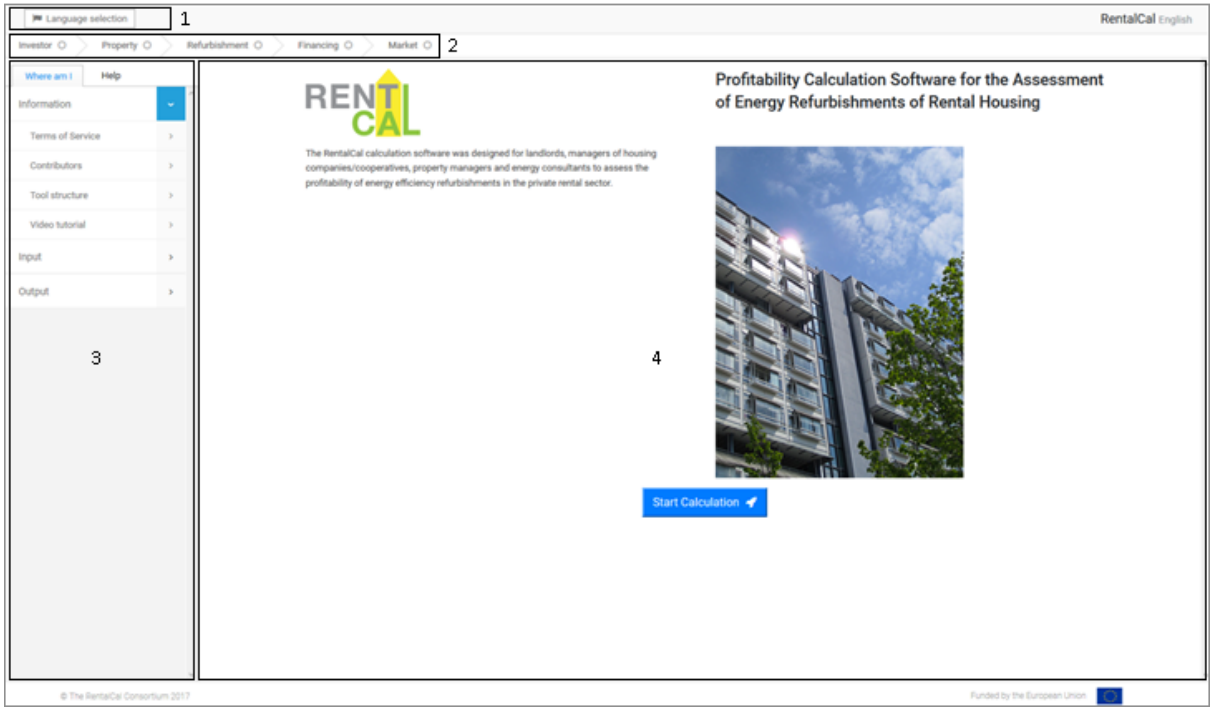


Figure 2: RentalCal Tool

Section 1: You can **select the language** (Danish, German, English, French, Polish, Spanish, Czech). The selected language can be seen in the upper right corner of the screen.

Section 2: The **tab structure** shows you which topic you are currently working in. The subject areas structure the workflow and represent the central steps of a decision-making process with regard to the implementation of energetic modernisation measures.

Section 3: This section displays the entire **subdivision** of the respective tab and the corresponding title of the main screen currently open (see Section 4). The user-friendliness and usability of the tool is supported by the so-called **help box** ("Help"), which you will find at the top of this area. Help can either be opened manually or activated by clicking on the green information fields in the main screen (see Chapter 4.3.). The user manual refers to the help boxes several times (for avoiding duplication). Corresponding places are marked with the following arrow symbol (→) in the user manual.

Section 4: The **main screen** is primarily designed as an input or output mask for data. The user can only make entries in this area of the screen. Scrolling may be necessary depending on the size of the corresponding input fields. You will recognise this in case you cannot see the "Continue" or "Back" buttons at the bottom of the screen.

3.3. Project Partners and Terms of Use

This screen (see Fig. 3) summarises the main contents of the RentalCal project. It is possible to display the **participating organisations** and a **video-tutorial**. To do this, click on "See Contributors". An additional **sub-module** opens. Click on "Back" to return to the initial screen (see Fig. 3).

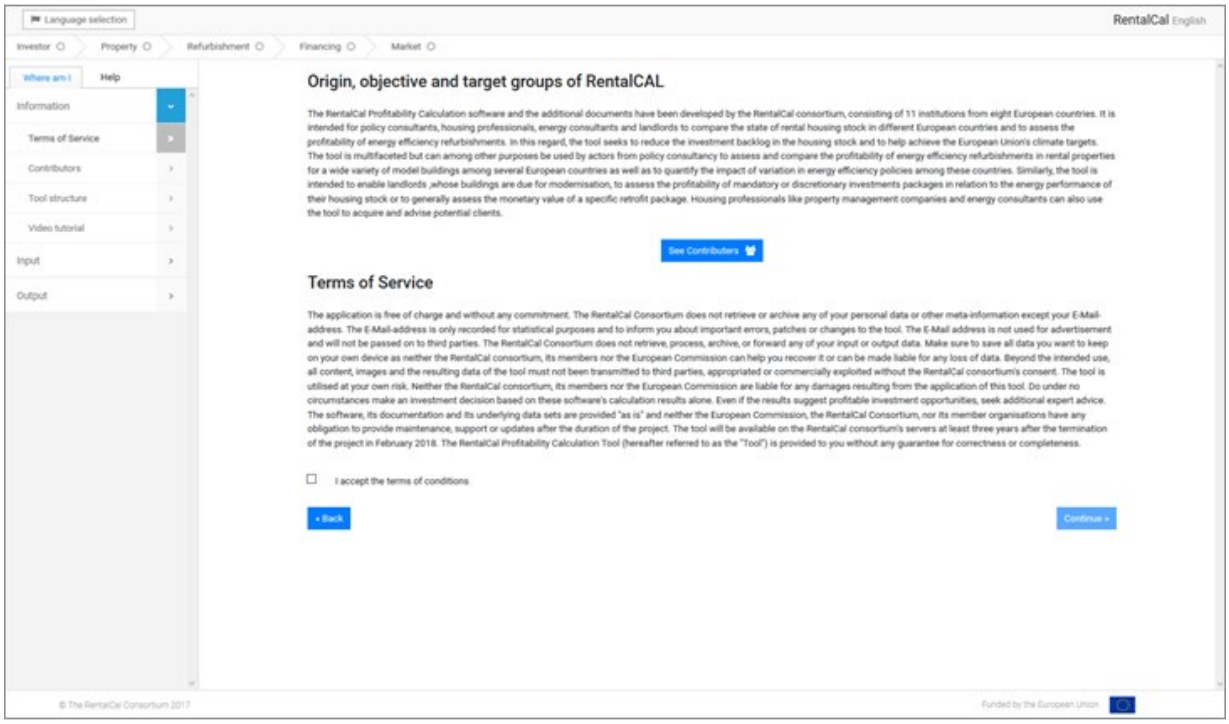


Figure 3: Project partners and terms of use

Please read the terms of use for the tool **carefully**. Please take the time to avoid misunderstandings. See Chapter 2.3. for more information. Then check the box next to "I accept the terms of use". The terms and conditions must be **explicitly accepted** for the use of the software. Then click on "Continue".

3.4. Tool Structure and Basic Functions

The basic structure and functions of the tool are summarised here (see Fig. 4). The RentalCal Tool was designed for **different user groups** (e. g. energy consultants, real estate owners). The schematic representation of the tool is shown in the diagramme on the right-hand side of the screen (see Fig. 4).

The tool can be run in two different modes. First, the **Assisted Mode** that is intended to serve users with less knowledge about energy efficiency and energy efficiency refurbishments in specific. Secondly, the **Freehand Mode** that give the user more flexibility in the input section, but requires more knowledge.

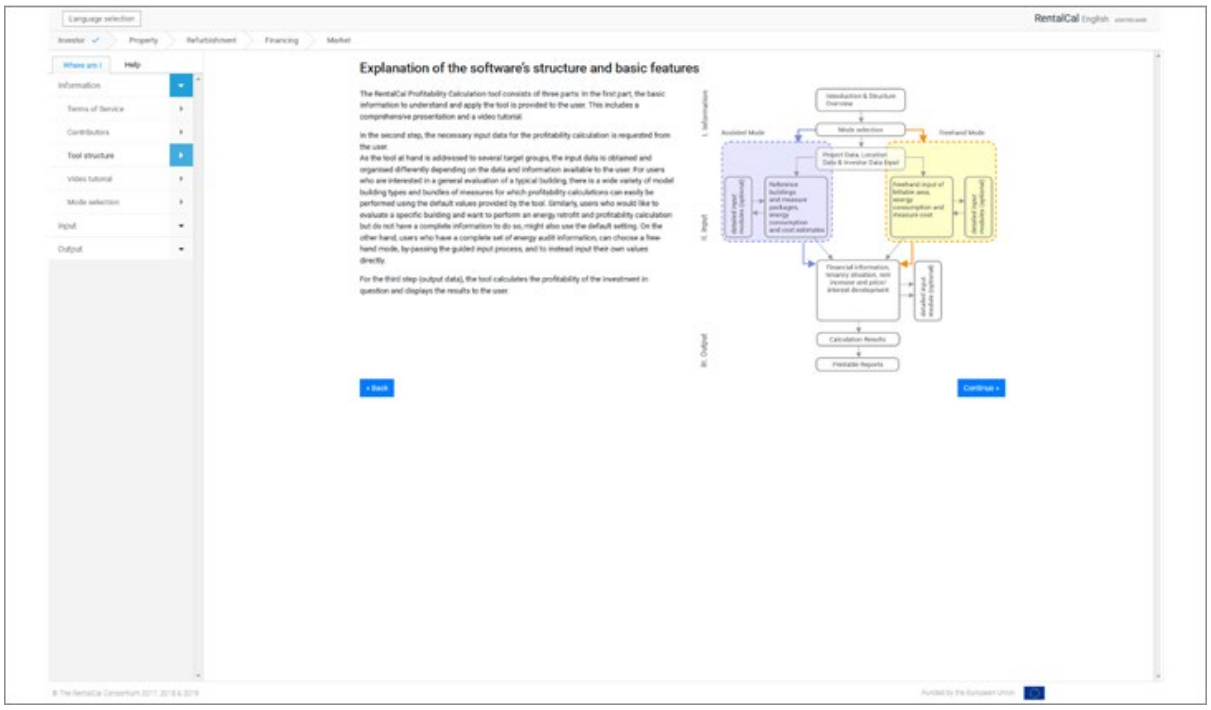


Figure 4: Tool structur

3.5. Mode Selection

As illustrated in 3.4., the tool is divided into two different streams according to the knowledge and data available for the user. In this screen, the two user groups are explained and data requirements for each mode can be downloaded and printed by clicking the respective buttons. After reading the information you need to choose one mode and continue by clicking on it. You will always see in which **mode you currently are** by looking in the upper right corner.

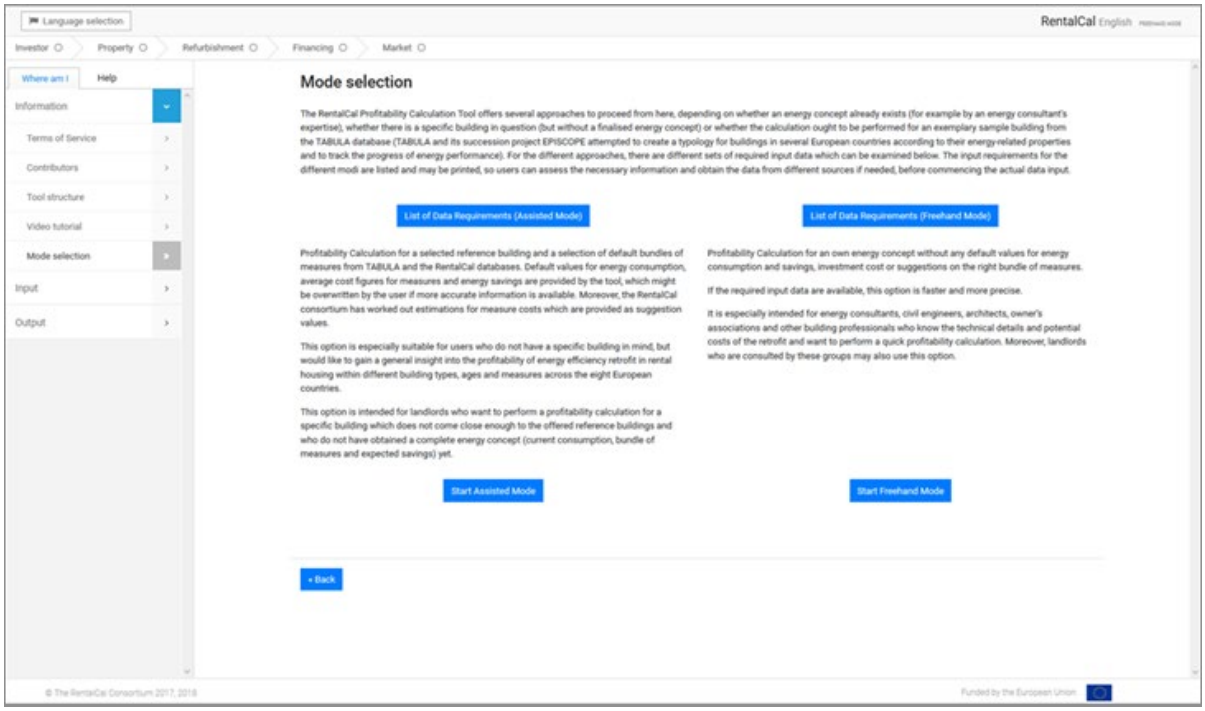


Figure 5: Mode selection

Mode Explanation:

The RentalCal Profitability Calculation Tool offers several approaches to proceed from here, depending on whether an energy concept already exists (for example by an energy consultant's expertise), whether there is a specific building in question (but without a finalised energy concept) or whether the calculation ought to be performed for an exemplary sample building from the TABULA database (TABULA and its follow-up project EPISCOPE attempted to create a typology for buildings in several European countries according to their energy-related properties and to track the progress of energy performance).

Assisted Mode:

The assisted mode is based on a selected reference building and a selection of default bundles of measures from TABULA and the RentalCal databases. Default values for energy consumption, average cost figures for measures and energy savings are provided by the tool, which might be overwritten by the user if more accurate information is available. Moreover, the RentalCal consortium has worked out estimations for measure costs which are provided as suggestion values.

This option is especially suitable for users who do not have a specific building in mind, but would like to gain a general insight into the profitability of energy efficiency retrofit in rental

housing within different building types, ages and measures across the eight European countries.

This option is intended for landlords who want to perform a profitability calculation for a specific building which does not come close enough to the offered reference buildings and who do not have obtained a complete energy concept (current consumption, bundle of measures and expected savings) yet. In the supported input mode, the submodules and sensitivity analysis are also available.

Freehand Mode:

The freehand mode is based on an own energy concept without any default values for energy consumption and savings, investment cost or suggestions on the right bundle of measures. If the required input data are available, this option is faster and more precise.

It is especially intended for energy consultants, civil engineers, architects, owner's associations and other building professionals who know the technical details and potential costs of the retrofit and want to perform a quick profitability calculation. Moreover, landlords who are consulted by these groups may also use this option. In the freehand mode, the submodules and sensitivity analysis are not available.

4. ENTRIES INTO THE RENTALCAL TOOL (INPUT)

You are now in the **input area** of the tool. All entries (exception: Project Description) are directly included in the calculation result.

In the following, different chapters are only used for freehand mode and assisted mode if the input screens differ significantly. *If the input screens do not differ or only slightly, the difference is explained in the text.*

4.1. General Project Data (Freehand and Assisted Mode)

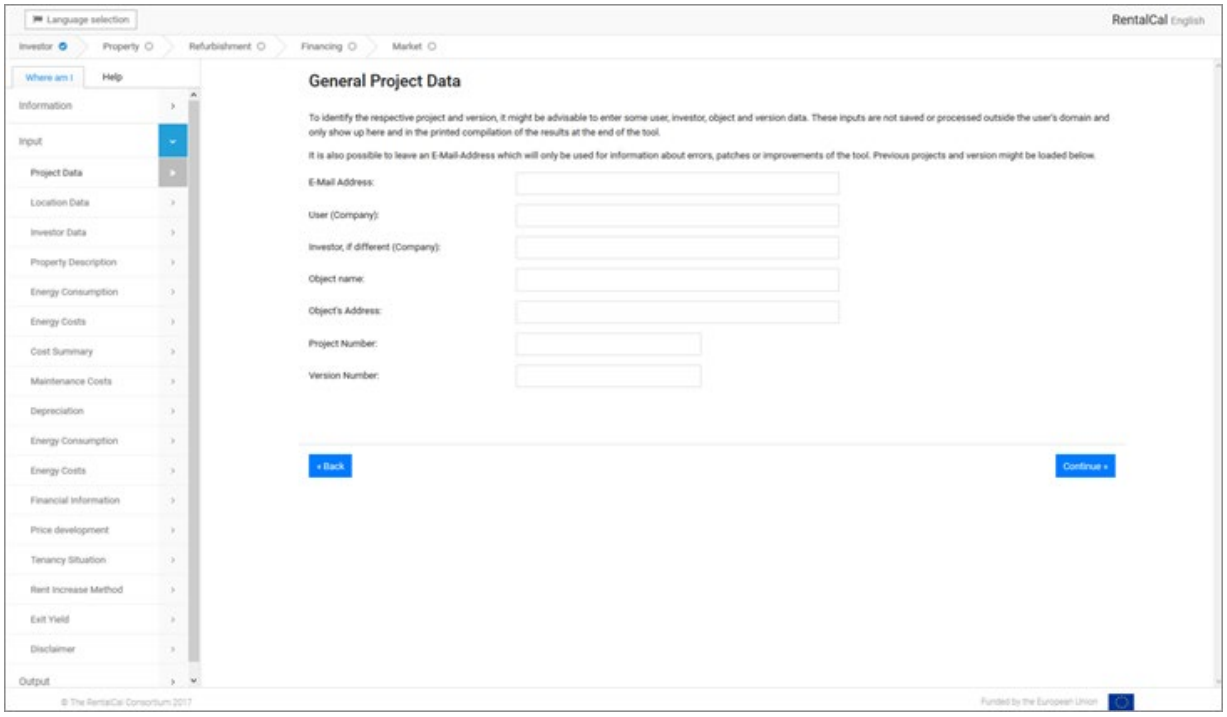


Figure 6: Project data

When using the tool for the first time, you will be asked to enter your project details at this point (see Fig. 6). It is not necessary to enter a **password**, as no data is stored on a RentalCal server.

4.2. Property Location (Freehand and Assisted Mode)

Please select the **location of your property** by selecting the respective country from a list. Please do not use your personal location if you operate from another country.

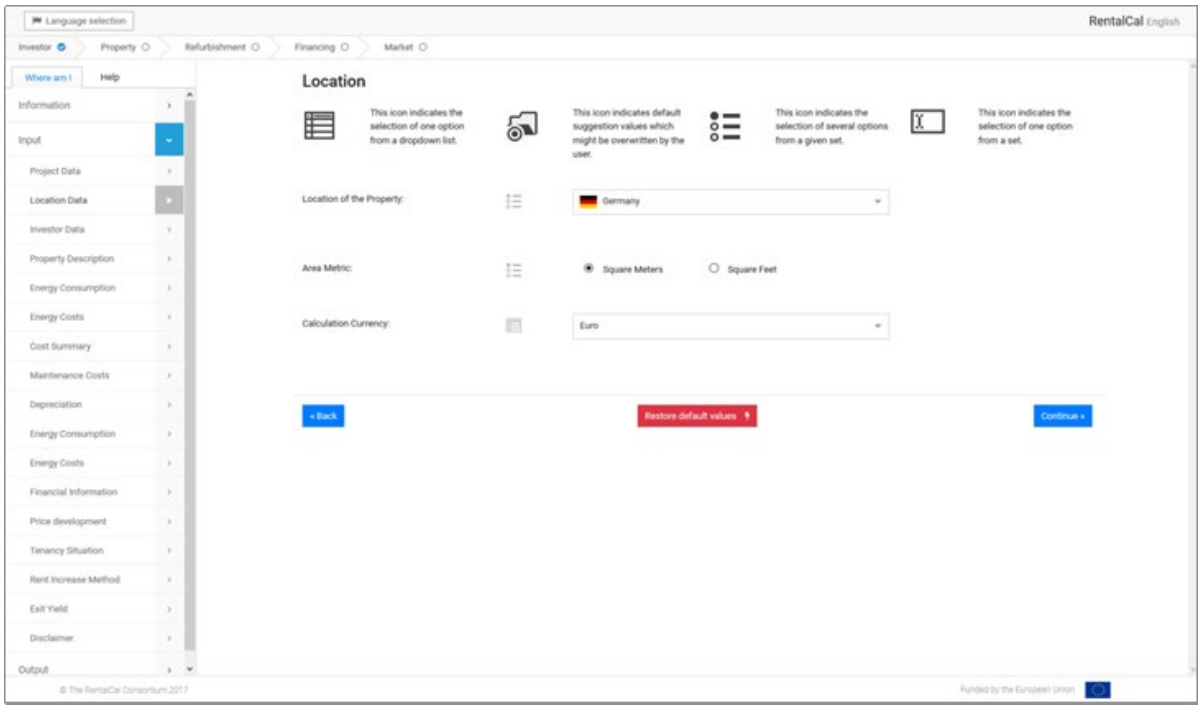


Figure 7:Property location

With the red "Restore default values" button, all entries on the corresponding page can be **reset** to the default setting. In most cases, a new entry is then necessary.

4.3. Investor Type and Corporate Structure (Freehand and Assisted Mode)

As already mentioned, the user has the possibility to display help texts for input. To do this, the user simply clicks on the **green button** or symbol with the cursor. The respective information text then opens in the left half of the menu (see Fig. 8). However, the user can also click on "Help" to display additional information.

Please fill in all fields. We would like to point out that the **calculation horizon** in particular can have a decisive influence on the profitability of energy modernisation. Since energy efficiency measures are still a long-term investment, too short periods under consideration can lead to an incorrect assessment of the profitability. Please also note that the chosen calculation horizon also plays a role for a possible sale (see Chapter 4.19.).

After entering or selecting all relevant data, you can continue. If you have not made an entry that is relevant for the calculation result, you will be informed before you can continue.

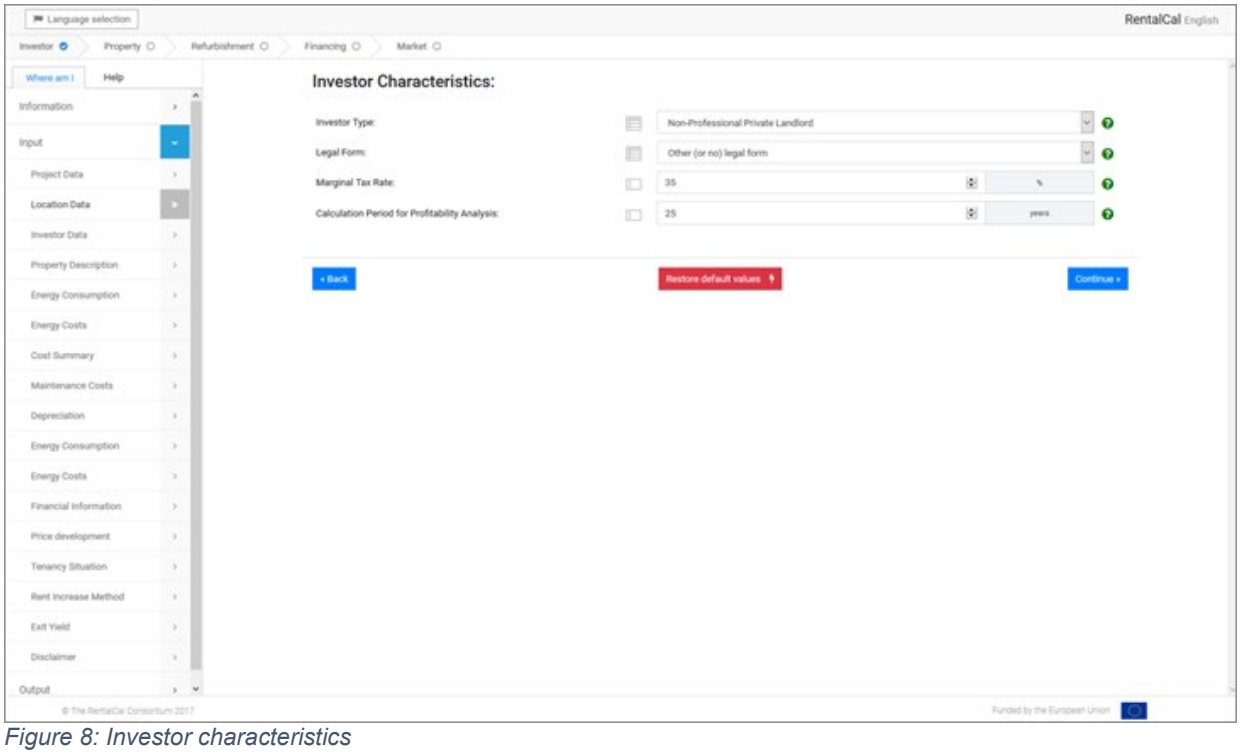


Figure 8: Investor characteristics

4.4. Property Description (Freehand Mode)

In freehand mode the lettable area is the central input data. When entering the lettable area, please note that the programme automatically activates the corresponding input field for your entry. The system first asks for the property type. If an entire building is selected (SFH/TH/MFH or AB) (→), the rentable floor space of the building should be registered. Entries for the living space of the apartment are therefore not possible. If a single dwelling (in MFH/AB) is selected as building type, nothing can be entered for the living space of the building. Then an entry is required for the living space of the apartment. Basically, cells with a grey background cannot be described. They are mostly used for the conversion of input values or, as in the above case, are enabled by a corresponding selection. Please enter the area as it is mentioned in the rental agreement with your tenant(s)/rental contract(s).

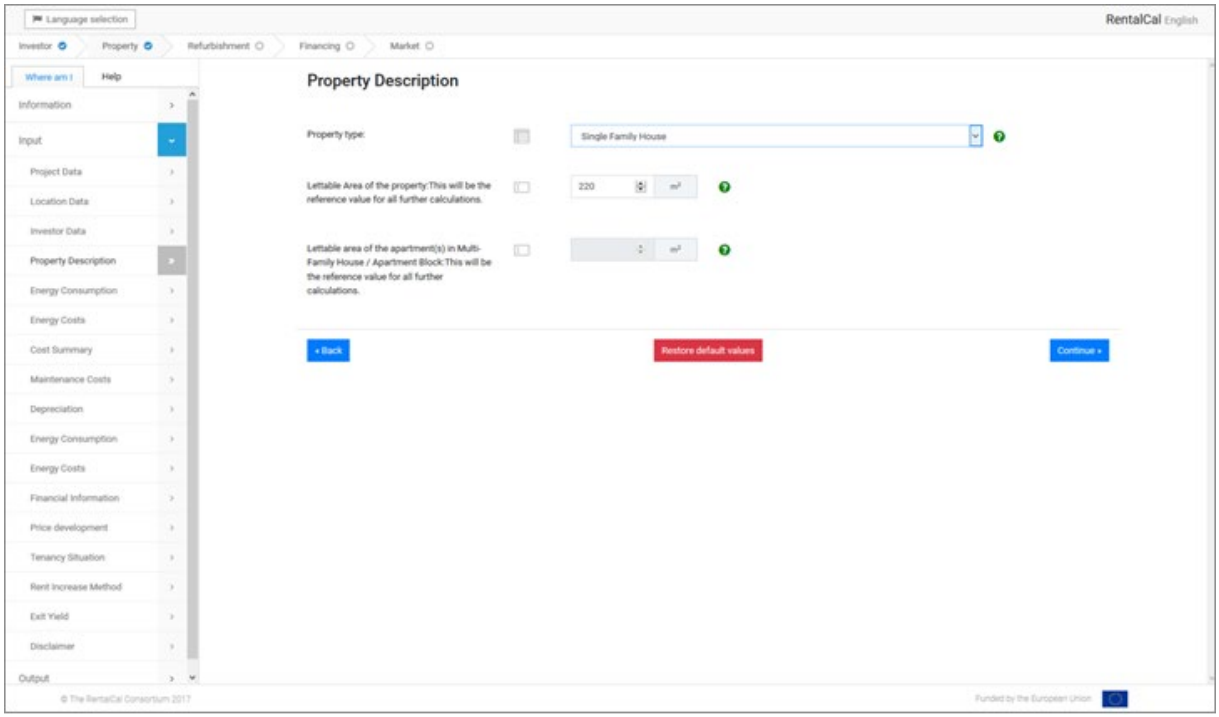


Figure 9: Property description (Freehand Mode)

4.5. Property Description (Assisted Mode)

The input mask for the property description in assisted mode differs significantly from freehand mode (see Fig. 10).

The system first asks for the **property type** and the **construction year class** offered by the TABULA database.

According to the **TABULA** concept (http://webtool.building-typology.eu) a national residential building stock is divided in size and age classes. By knowing the building type, a building could be classified into a building size class. The building size classes reflect different sizes and geometries of the building envelope. They are defined for each country separately often according to national statistics. In building practice sometimes sub-types exist.

By knowing the year of construction a building could be classified into a construction year class. The construction year classes reflect shifts in building practice and energy requirements by regulations. They are defined for each country separately often according to national statistics.

If the selected combination of property type and construction year class is part of the TABULA database, an example photo and some building data are presented on the screen. The **lettable area** of the example building from TABULA is used as default value. It can be **overwritten** by the user to adapt it to a specific building.

If the selected combination of property type and construction year class is not part of the TABULA database, the user is requested to select another property type or construction year class.

Please note that the analysis of a single apartment in a multi-family building is not possible in assisted mode because TABULA only provides energy balance calculations for a whole building.

Finally the tool asks for the **heat supply system** of the building (selected from a given set of common systems per country).

For each building type per country TABULA provides a set of exemplary energy supply systems. Per choice of a building type and a system type the existing state and energy performance level of a model building can be described. In RentalCal only those energy supply systems from TABULA that are most relevant for refurbishment in rental housing

were considered (a maximum of three possible system packages per building type but a minimum of one system package). In some cases these measures were also slightly adapted to better represent the rental housing stock.

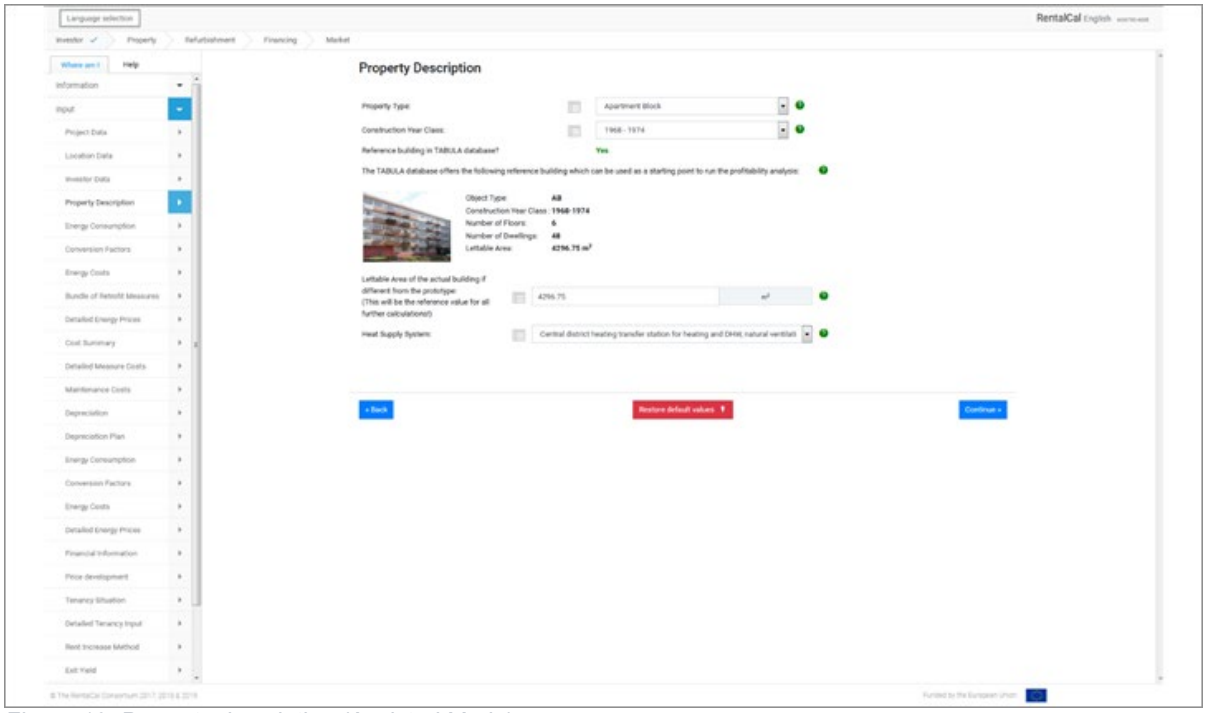


Figure 10: Property description (Assisted Mode)

4.6. Energy Consumption before Refurbishment (Freehand and Assisted Mode)

In the following input mask (see Fig. 11), all relevant information on energy consumption are queried **prior to modernisation**. Please note that this is an **annual data** entry. Corresponding information can be found in the annual accounts of your energy supplier. Please use the average value of the past years, if available, to compensate for weather-related fluctuations. Input fields of unused energy sources can be left blank (corresponds to an input of "0").

Assisted mode: All displayed energy consumption data are default values from the TABULA database. It can be overwritten by the user.

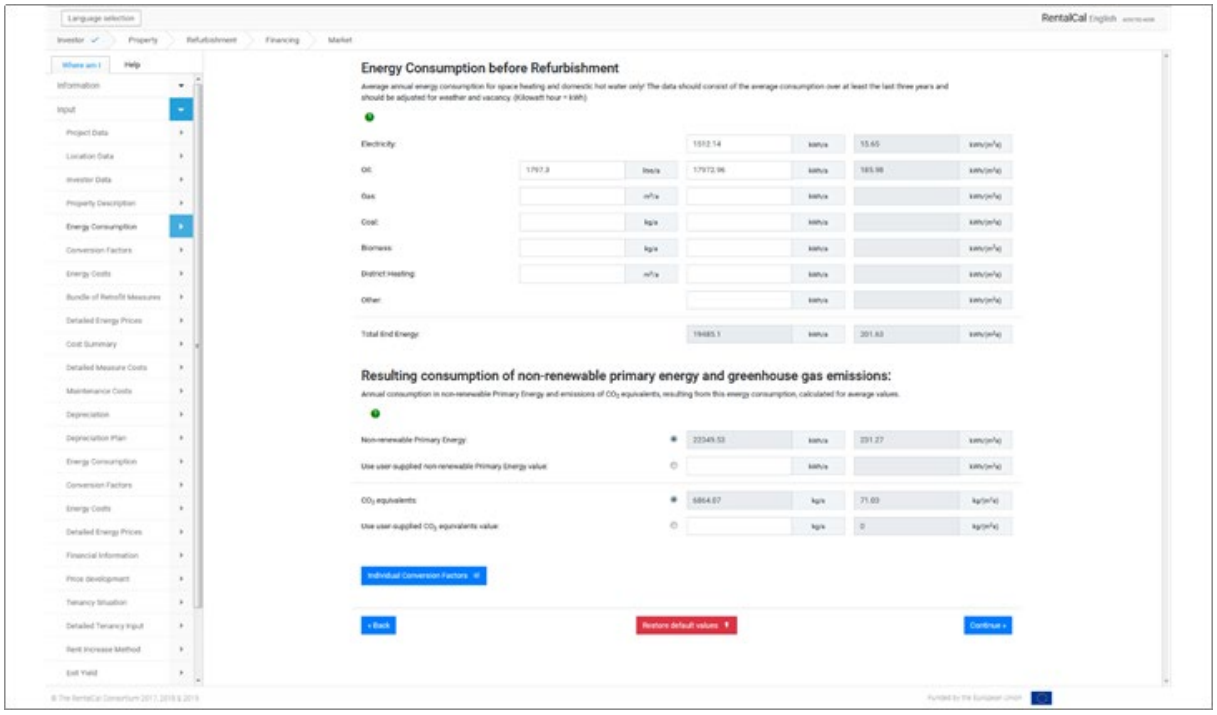


Figure 11: Energy consumption before refurbishment

The tool works with **stored conversion factors**, e.g. to convert the energy consumption of liters or m³ into kWh. Primary energy and CO2 factors are also stored in order to calculate primary energy consumption and CO2 emissions from energy consumption (end energy). The user has the possibility to enter individual values for primary energy consumption and CO2 emissions before refurbishment or to adapt the conversion factors by using the **sub-module** (“Individual Conversion Factors”).

4.7. Sub-Module Individual Conversion Factors (assisted mode only)

Standard values are stored in the tool for all conversion factors and energy sources. These values are used to carry out the calculations automatically. These are averages, i.e. the actual values can vary greatly in some cases.

For example, the demand for non-renewable primary energy to generate one kilowatt hour of electricity can vary greatly, depending on the energy mix on which it is based, or when green electricity is purchased. Primary energy requirements and greenhouse gas emissions in the supply of district heating can also differ greatly from the stored average values. In addition, the actual burning value used depends heavily on technical conditions and user behavior.

For these reasons, it may be advisable for the users of the tool to **overwrite the stored default values before and after retrofit** with individual specifications in order to achieve more precise results (see Fig. 12). Such values can be requested from the respective energy supplier, for example.

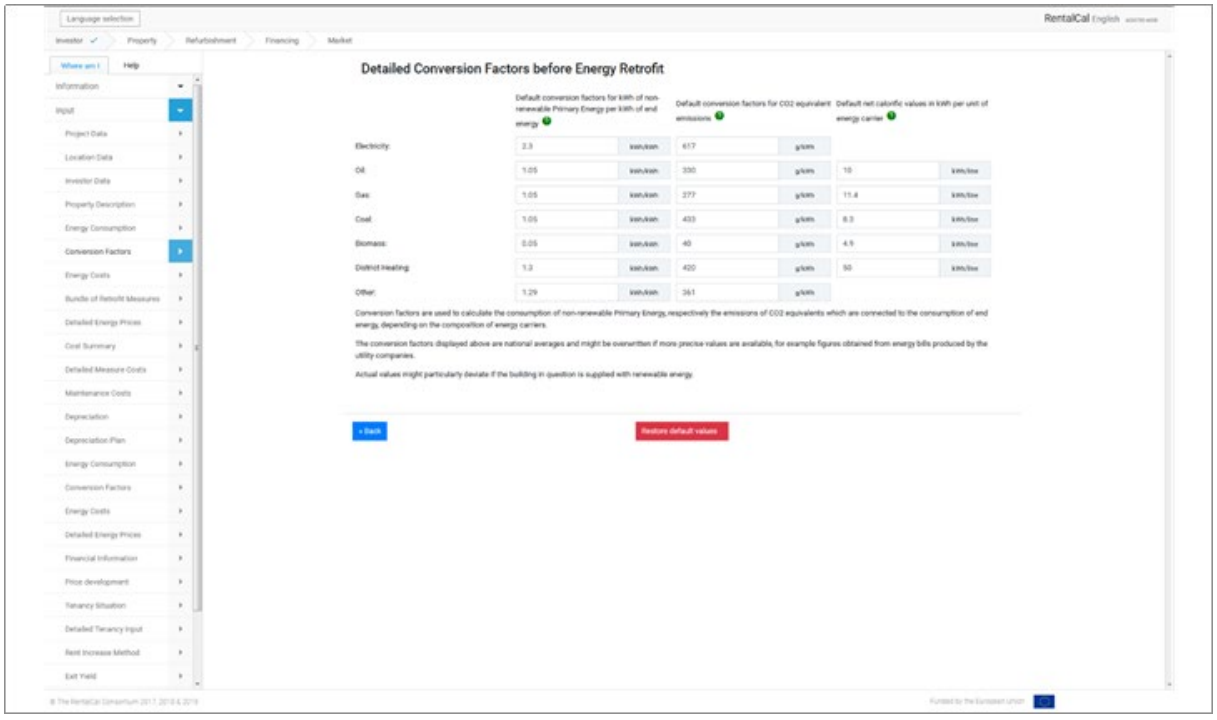


Figure 12: Sub-module: Individual conversion factors before energy retrofit

4.8. Energy Costs before Refurbishment (Freehand and Assisted Mode)

The calculation of the corresponding annual **energy costs** is based on current default values for **energy prices** per energy carrier (see Fig. 13). The default values for the average energy prices come from the RentalCal partners. The tool automatically calculates the energy cost from the stored energy prices on the basis of the energy consumption entered in Chapter 4.6.. The user can replace the default values with actual energy prices incurred in order to refine the calculation result or to adapt the energy prices by using the **sub-module** (“Detailed Energy Prices”).

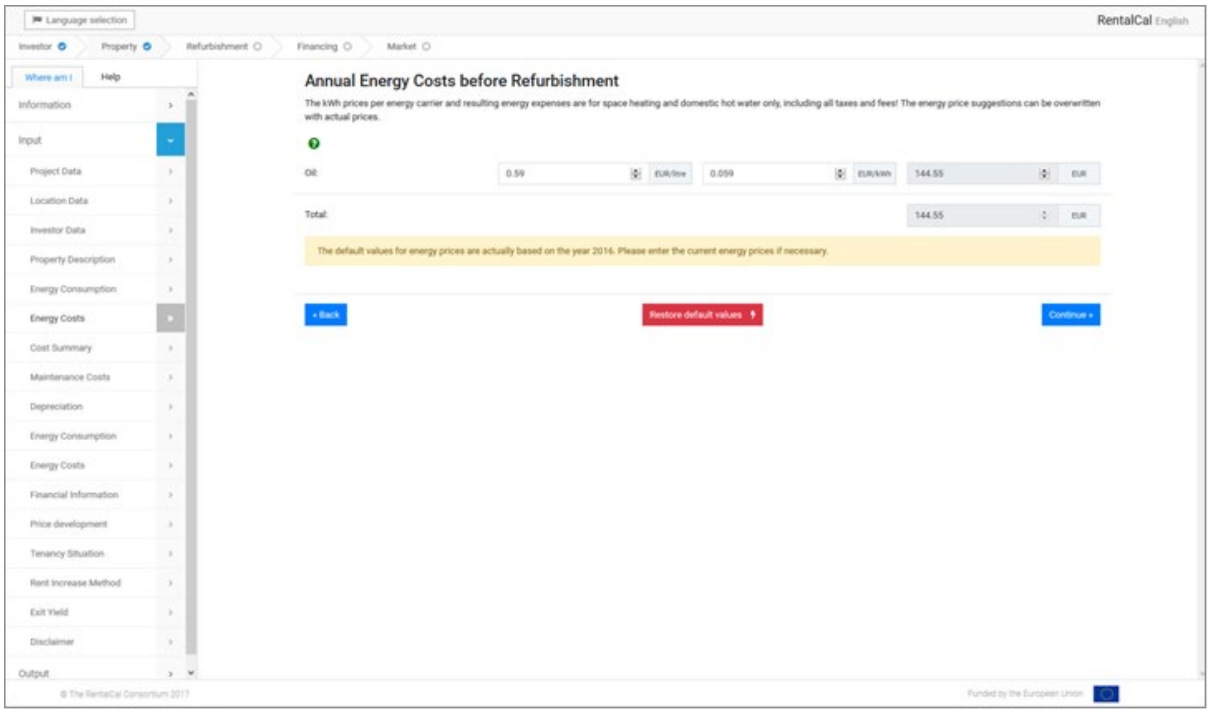


Figure 13: Energy costs before refurbishment

4.9. Sub-Module Detailed Energy Prices (assisted mode only)

Energy costs per kWh may vary noticeably for different consumption levels if there are large fixed or demand-based cost components. Thus, average prices may increase if the consumption decreases as a consequence of energy efficiency retrofit. Moreover, if the decrease in demand is not reported to the energy supplier, outdated costs are billed, exaggerating the total and average expenses. This problem might particularly occur with district heating, but also electricity supply. To account for changes in tariff structure and calculate precise average prices, **energy tariffs can be modelled individually both before and after retrofit** (see Fig. 14). Such values can be requested from the energy bills, for example.

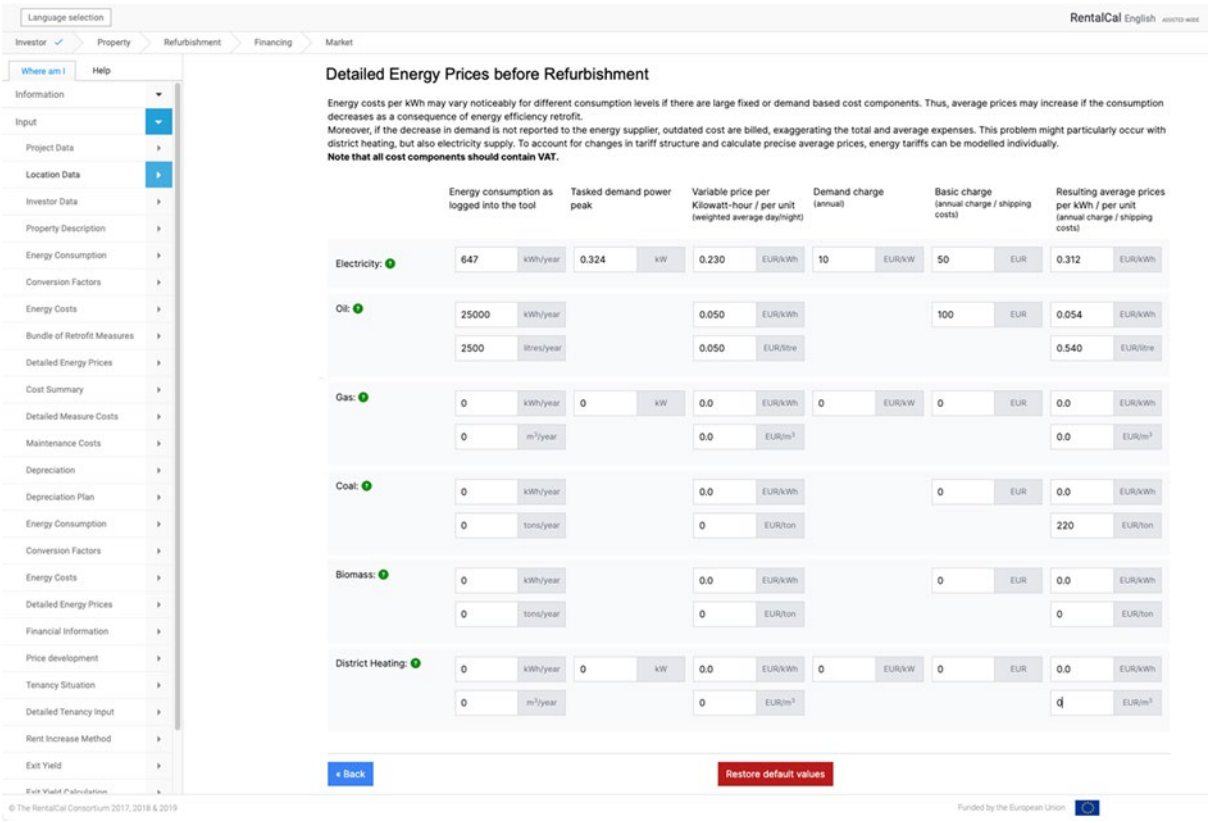


Figure 14: Detailed energy prices before energy retrofit

4.10. Bundle of Retrofit Measures (Assisted Mode only)

The assisted mode offers two pre-defined refurbishment packages from TABULA. The user can choose from a standard bundle ("**Standard Retrofit**"), oriented towards the respective countries' legal minimum requirements in the past years, and an advanced bundle ("**Advanced Retrofit**") with more ambitious measures. The single measures of the bundles are displayed in the middle section of the screen.

Note that the suggested bundle of measures will not necessarily fulfil the current national minimum requirements for energy efficiency refurbishments nor can it take other provisions under building law into account. Moreover, it is not guaranteed that the offered bundle of measures does not harm to the building structure, e.g. due to mould infestation. Seek advice from a professional energy consultant, architect or civil engineer before making any investment decision based on this tool alone!

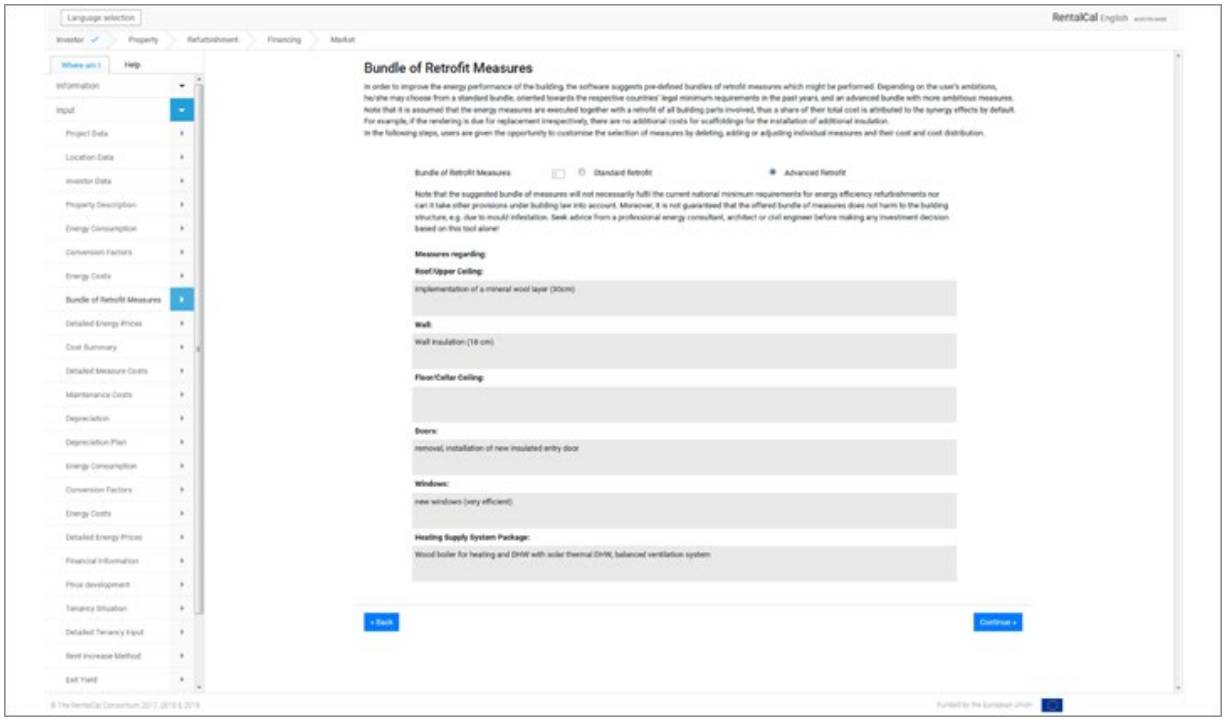


Figure 15: Bundle of retrofit measures (assisted mode only)

4.11. Investment Costs (Freehand and Assisted Mode)

Energy modernisation involves corresponding investment costs, which can be divided into different cost categories (see Fig. 15). For the calculation of profitability, only the **energy-related additional costs** of an investment are used (last column). Necessary costs for maintenance measures that are due (anyway required retrofit costs) must be deducted from the full costs of energy-related modernisation in order to determine the additional energy-related costs. The so-called "anyway required retrofit" costs are those costs that would have incurred with a "normal" modernisation to preserve the building. In the case of the energetic modernisation of the facade, this would be, for example, the cost of erecting an external scaffolding. If you need further information on the terms, please click here again on the green info bubbles (→).

Please note that all investment costs are stated as **net amount**. The conversion into gross amounts is carried out in the tool. Finally, you will be asked whether you are entitled to deduct input tax. If this is the case, the tool automatically uses the national tax rate.

Assisted mode: All displayed investment costs data are default values from the RentalCal database. It can be overwritten by the user.

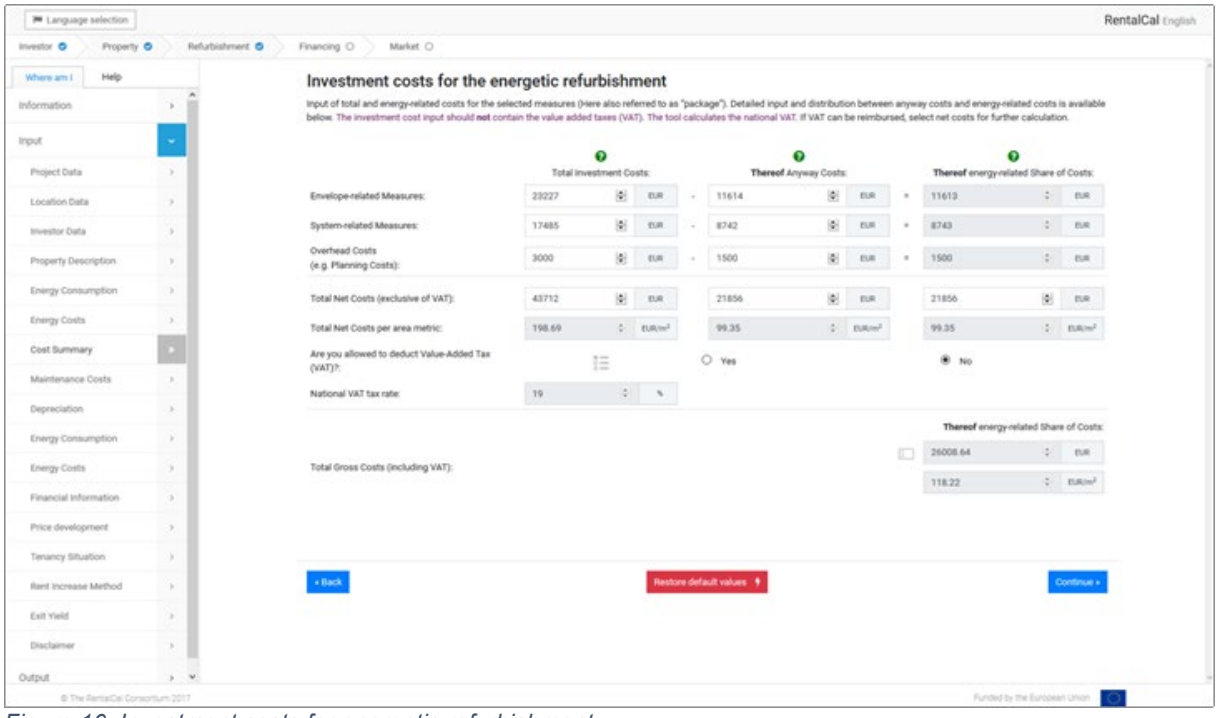


Figure 16: Investment costs for energetic refurbishment

4.12. Change in Maintenance, Inspection and Repair Costs (Freehand and Assisted Mode)

Costs for ongoing **inspection, maintenance and minor repairs** can change due to an energy efficient modernisation. It is possible to enter the costs before and after the modernisation. Only the difference between both is used for calculation in the tool. Please distinguish between reimbursable and non-reimbursable costs. Only **non-reimbursable costs** are relevant for the calculation. A more detailed explanation can be found in the info boxes (→).

To indicate the share of the annual maintenance, inspection and repair costs, which is non-reimbursable (i.e., attributable to the landlord/investor), the slider for allocating costs can be used.

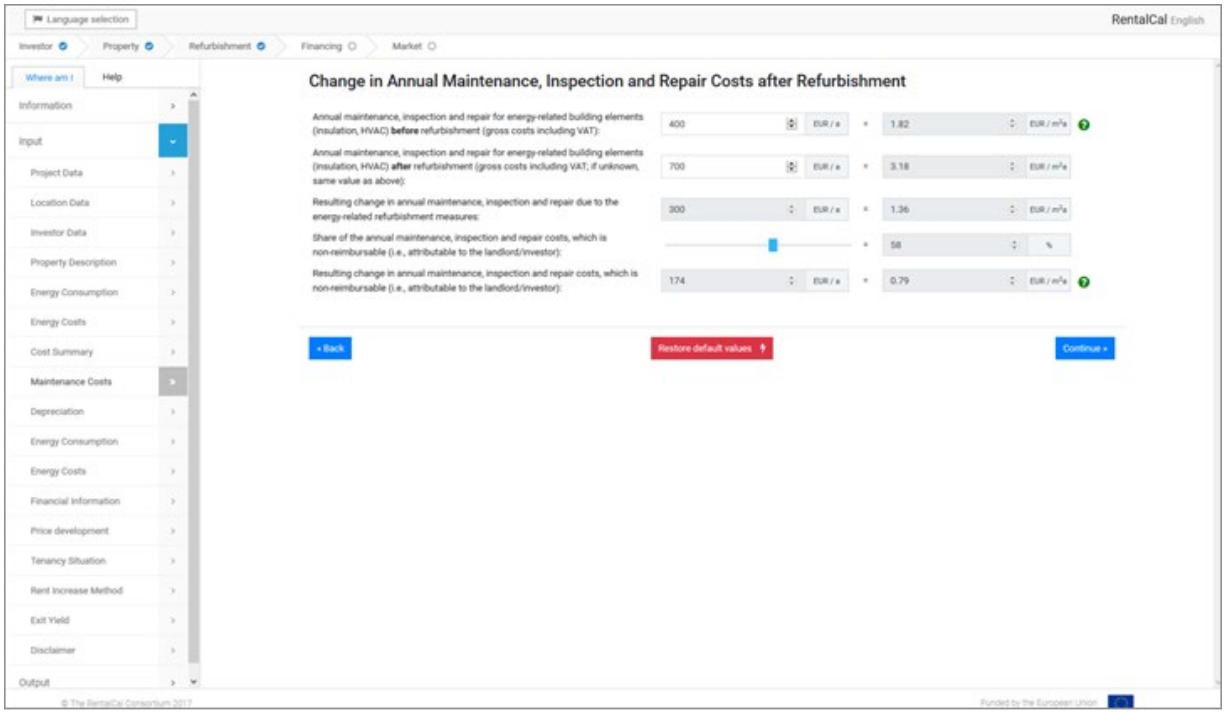


Figure 17: Changes in annual maintenance, inspection and repair costs

4.13. Depreciation (Freehand and Assisted Mode)

This input mask asks for a **depreciation rate** of the energy-efficiency investment.

Here we are referring to the **Economic Depreciation** as a measure of the decrease in value of an asset/investment over time. In this case, we would like to know how the value of the retrofit investment is depreciated over time.

An overwritable default value is presented from the RentalCal database. Please select a uniform depreciation rate for your investment. This is very important for the calculation of the tax payments.

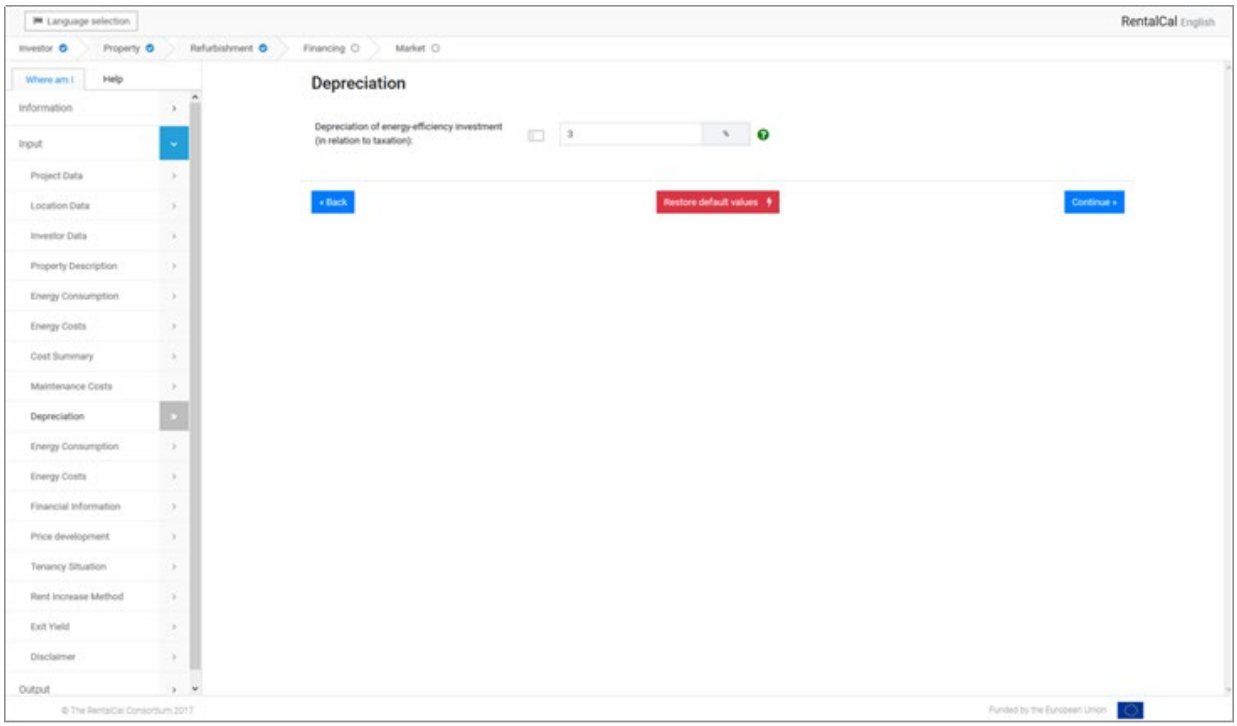


Figure 18: Depreciation

4.14. Energy consumption after Refurbishment (Freehand and Assisted Mode)

In the following input masks (see Figs. 18 and 19), all relevant information on **energy consumption** and energy costs **after modernisation** is requested. Please note that this entry is also on an annual basis. Corresponding information can be found in the energy concept. You can leave input fields of unused energy sources blank (corresponds to an input of "0").

Assisted mode: All displayed energy consumption data are default values from the TABULA database. It can be overwritten by the user.

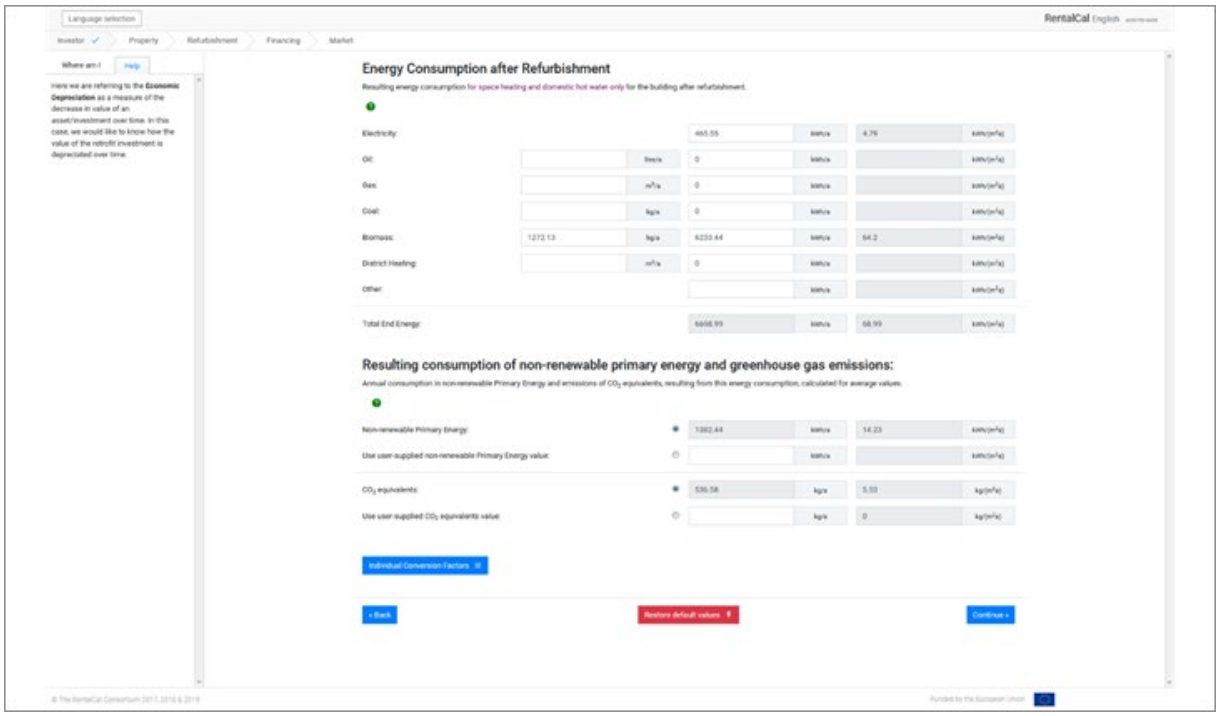


Figure 19: Energy consumption after refurbishment

Again the user has the possibility to enter individual values for primary energy consumption and CO2 emissions after refurbishment or to adapt the conversion factors by using the **sub-module** ("Individual Conversion Factors", see 4.7.).

4.15. Energy Costs after Refurbishment (Freehand and Assisted Mode)

When calculating the corresponding energy costs **after modernisation**, reference is made to default values for energy prices (see Fig. 19). The user can replace the default values with specific cost specifications to make the calculation result more precise.

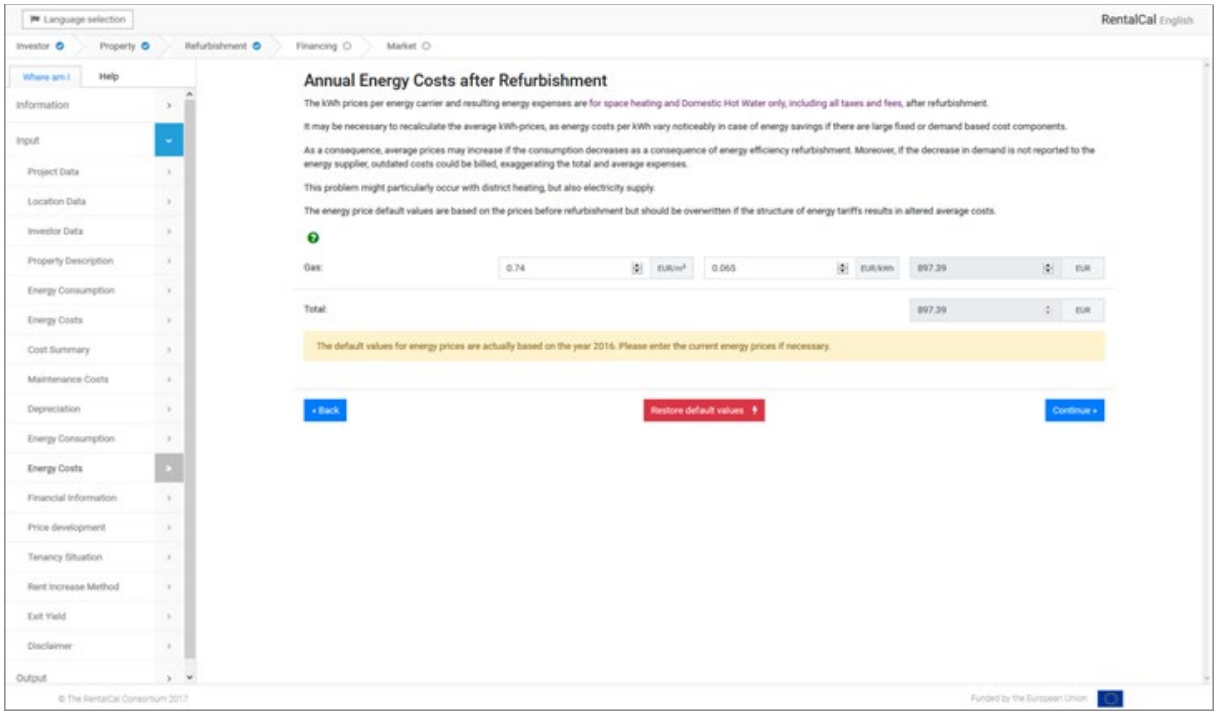


Figure 20: Energy costs after refurbishment

Again the user has the possibility to enter individual values for energy prices by using the **sub-module** (“Detailed Energy Prices”, see 4.9.).

4.16. Financial Information

Please fill in all input fields with appropriate values. **Undescribed** input fields automatically correspond to an **input of "0"**. The entry for "Term of the credit" must be an integer in the range from 1 to the maximum of the **observation period (limited to 30 years)**. Fields with gray background are fields that contain a calculated value that is displayed for information purposes. They cannot be overwritten.

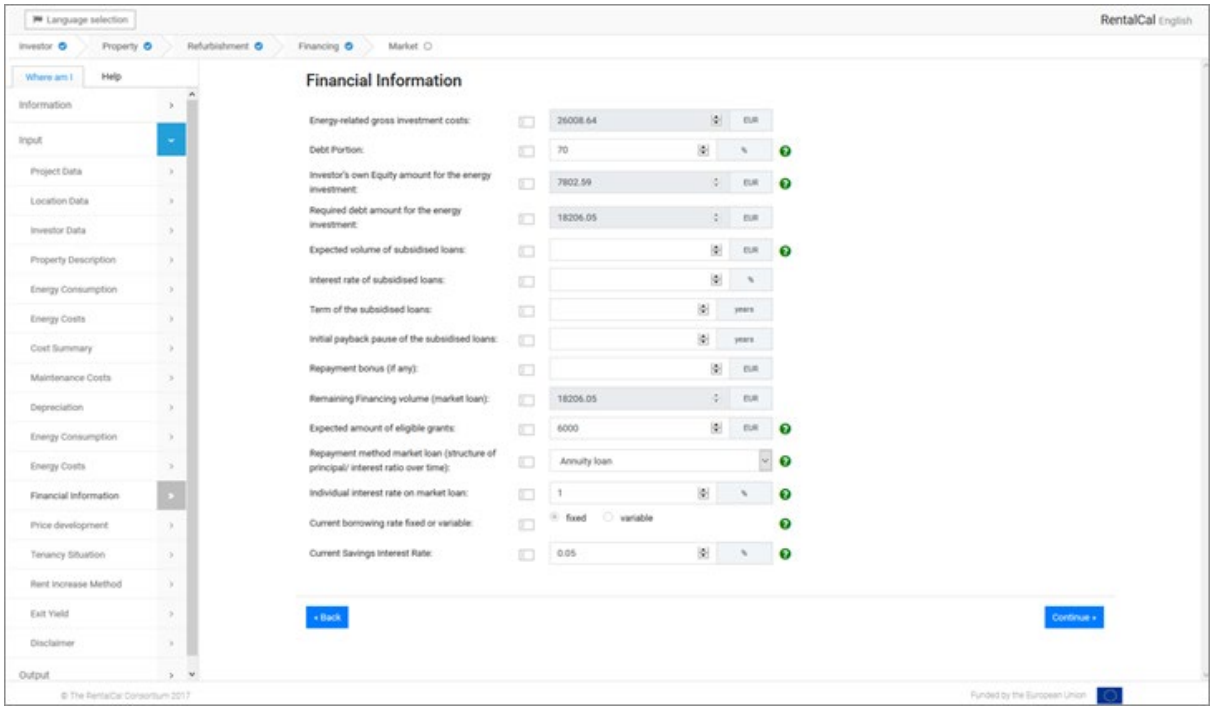


Figure 21: Financial information

4.17. Market Environment

Please enter your **market expectations** in this input mask (see Fig. 21). For example, you can find information on developments in the reports of the national central bank or the assessments of your bank advisor. Corresponding information texts are stored with the respective entries (→). The selection of scenarios is intended to facilitate input. Default values can be overwritten manually.

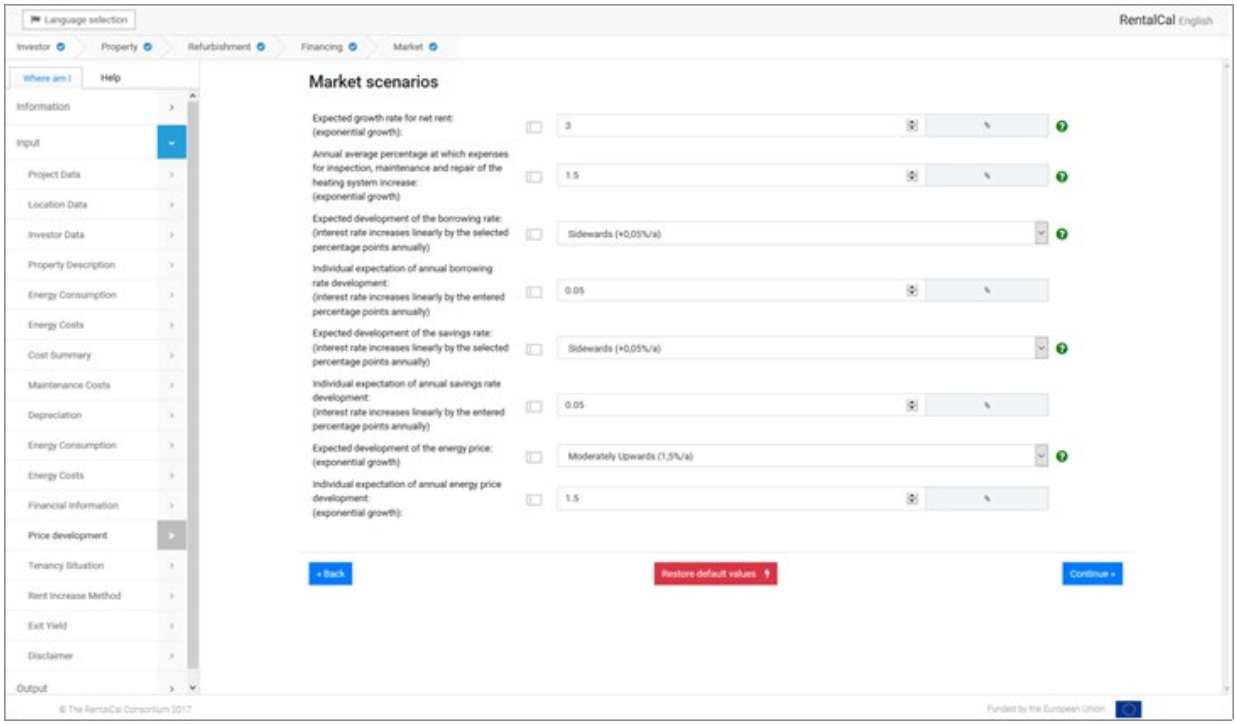


Figure 22: Market scenarios

4.18. Rental Structure

At this point, you are asked to enter the rent (EUR/m²) and the actual billing method (gross/net rent). Please use the rent indicated in your lease contract(s). Additionally, indicate the current vacancy and the expected long-term vacancy after modernisation. (see Fig. 22)

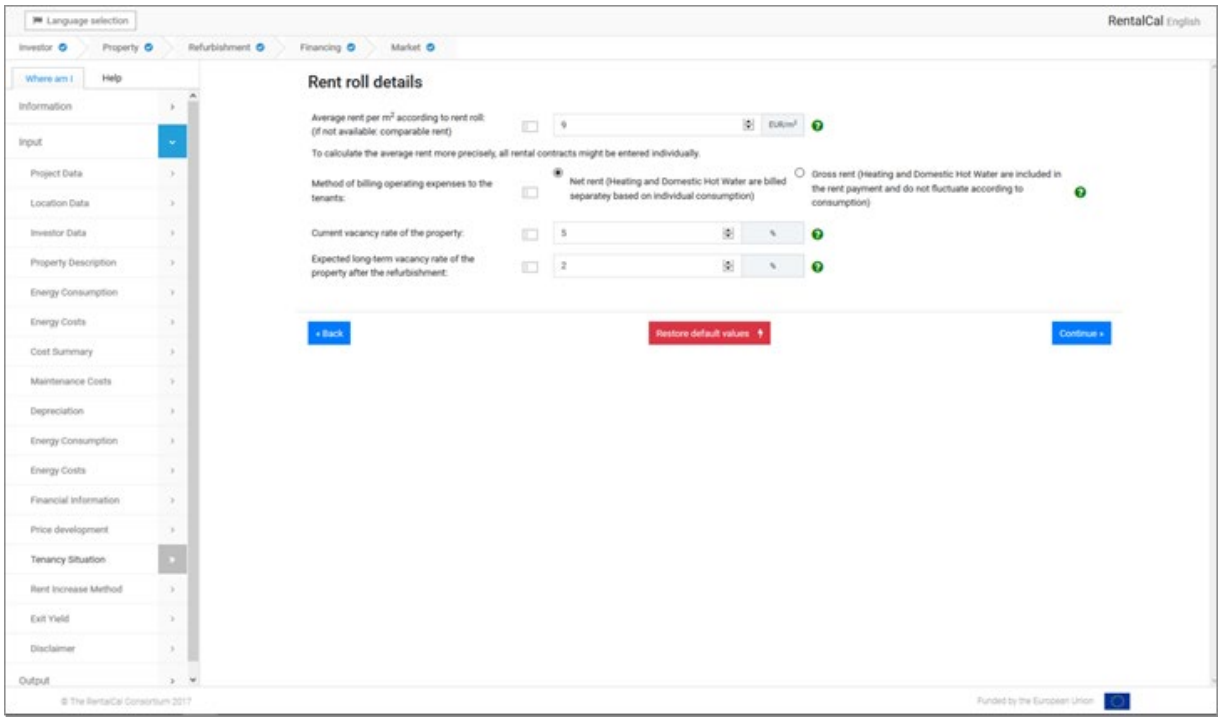


Figure 23: Rent roll details

4.19. Types of rent increase

Depending on the selection of the rent increase method, the corresponding entry fields are activated or automatically filled with the corresponding input values. For an explanation of the individual methods, please refer to the info boxes (→). Note that only the selected method is used.

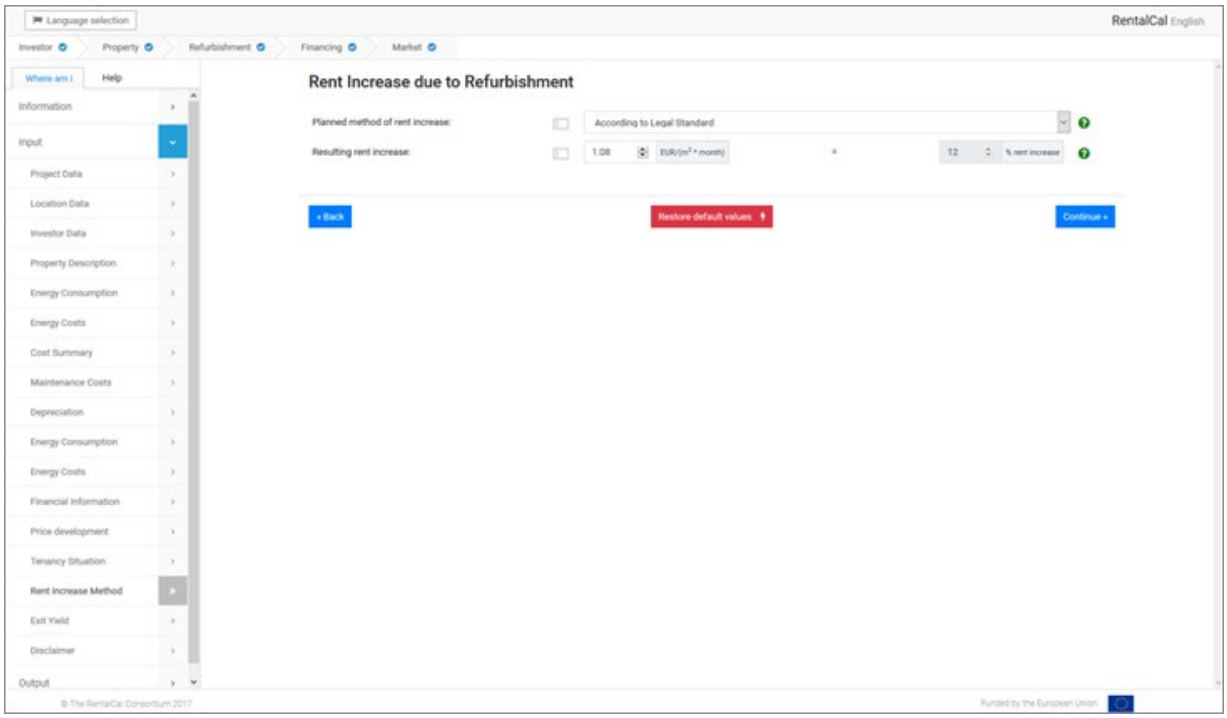


Figure 24: Rent increase due to refurbishment

4.20. Capital Gains from Sale

The RentalCal tool allows you to integrate a planned sale into the calculation of the economic efficiency of an energy modernisation. It is assumed that the sale of the property will take place in the **last period** of the observation period. For more information on the selection of the analysis period, refer to Chapter 4.3.. The gain in value from modernisation is thus reflected in the sales price. In the real estate language, the corresponding value is calculated using an exit yield or initial yield. You can find more information in the corresponding help boxes (→). If you intend to sell, please select "Yes". Then select the initial yield, a buyer would provide you with (→). The overwritable default value for the initial yield for the buyer is part of the RentalCal database. It consists of a country-specific prime yield and a risk premium that represents a low risk of the property (e.g. location risk). If you would like to specify your entry, please use the **sub-module** ("Exit Yield Calculation"). Otherwise, click on continue to go to the **output pages**. The input by the user is hereby finished.

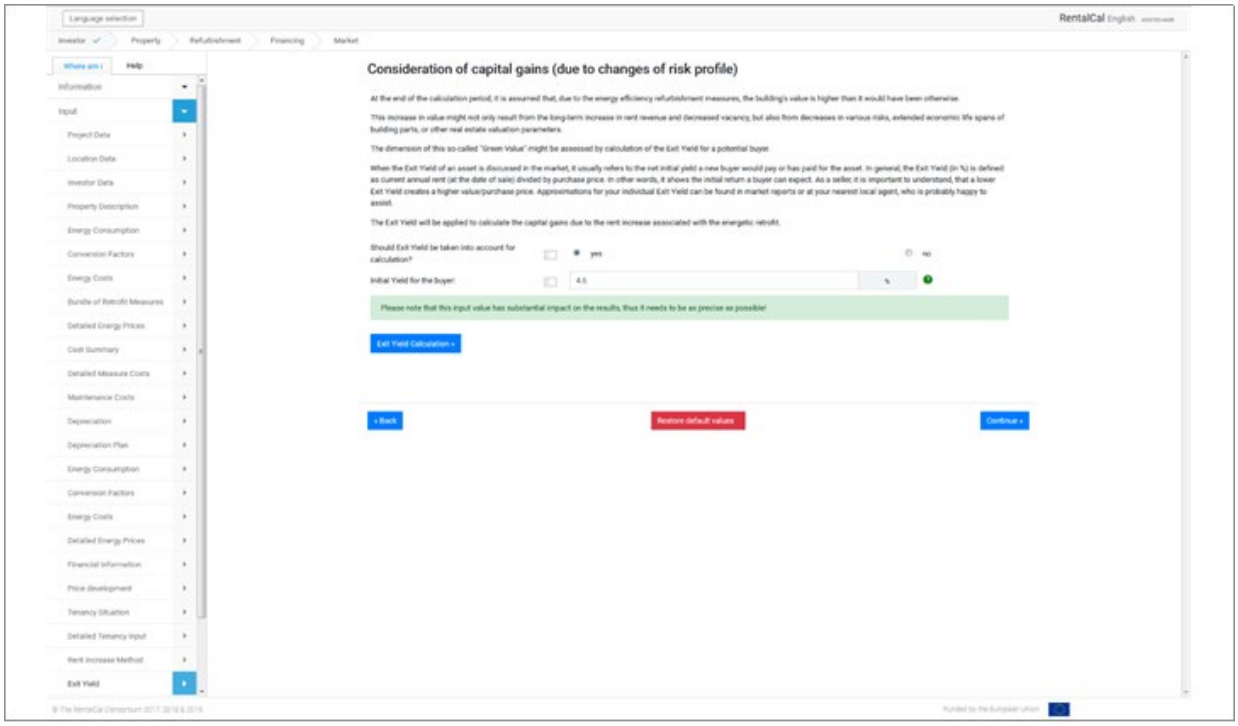


Figure 25: Consideration of capital gains

4.21. Sub-Module Exit Yield Calculation (assisted mode only)

Since it is very difficult for experts to estimate the additional sales revenue without further assistance, the tool uses the evaluation of the risk profile of your property after modernization (**Exit Yield**). Here, you will be asked how you think the risk changes with modernization. If you have any problems with the terminology, please read the help boxes (→).

The Exit Yield is split up in different components. This is due to the fact that Yields in general are dependent on the underlying risk. Therefore, the Exit Yield expresses the required return for a given level of risk. An asset is subject to several different risks, which are explained in the info bubbles. Risks can be different for each asset, but all assets are subject to a so called Prime Yield, which displays the return to bear the risk of an asset that has the lowest risk of all (Prime Risk). Those assets are also known as Prime Assets. They are seated in the best location, are fully let and accommodate tenants with highest creditworthiness. Prime Yields are not calculated by individuals, but market reports can be used to extract a suitable figure.

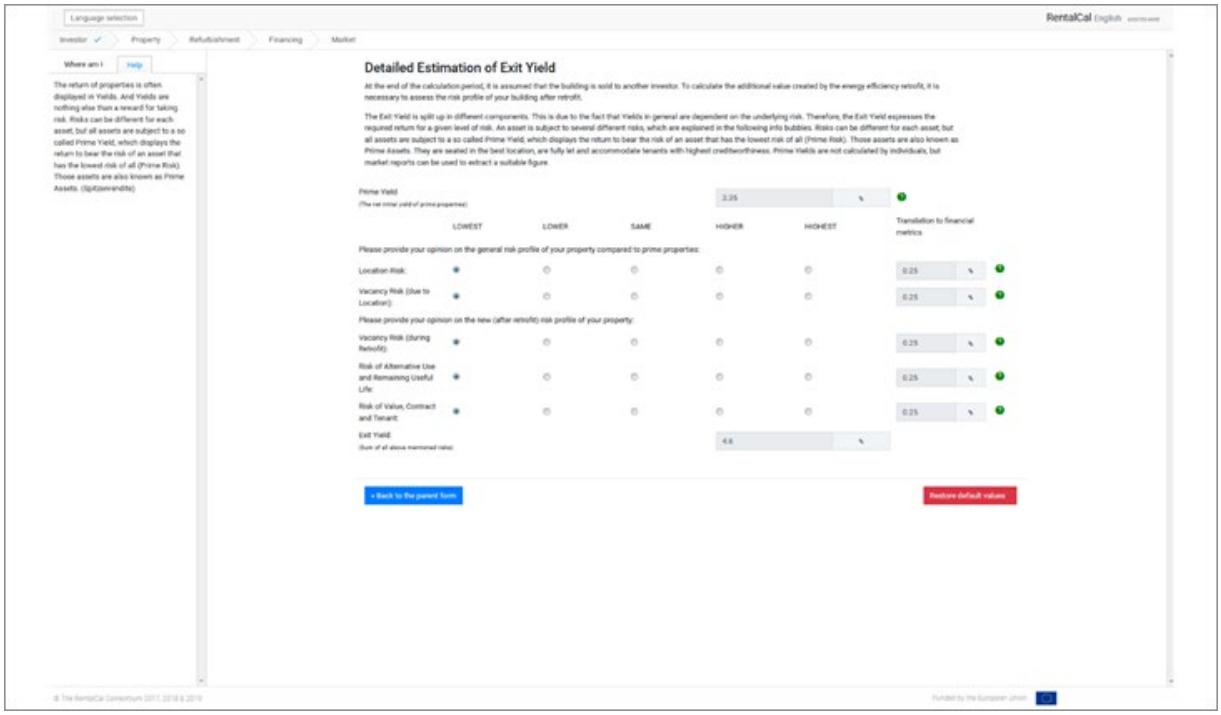


Figure 26: Sub-Modul: Exit yield estimation

5. PRESENTATION OF RENTALCAL TOOL RESULTS (OUTPUT)

No data can be overwritten in the output area. Only the display of the results can be adjusted by the user. After the display of the results on the desktop, all results can be downloaded individually or as a conglomerate in PDF format.

5.1. Disclaimer

Before you can access the calculation results (output) and evaluations, you must agree again to the conditions of use described in detail in Chapter 2.3. After pressing the "Confirm" button, you reach the output area.

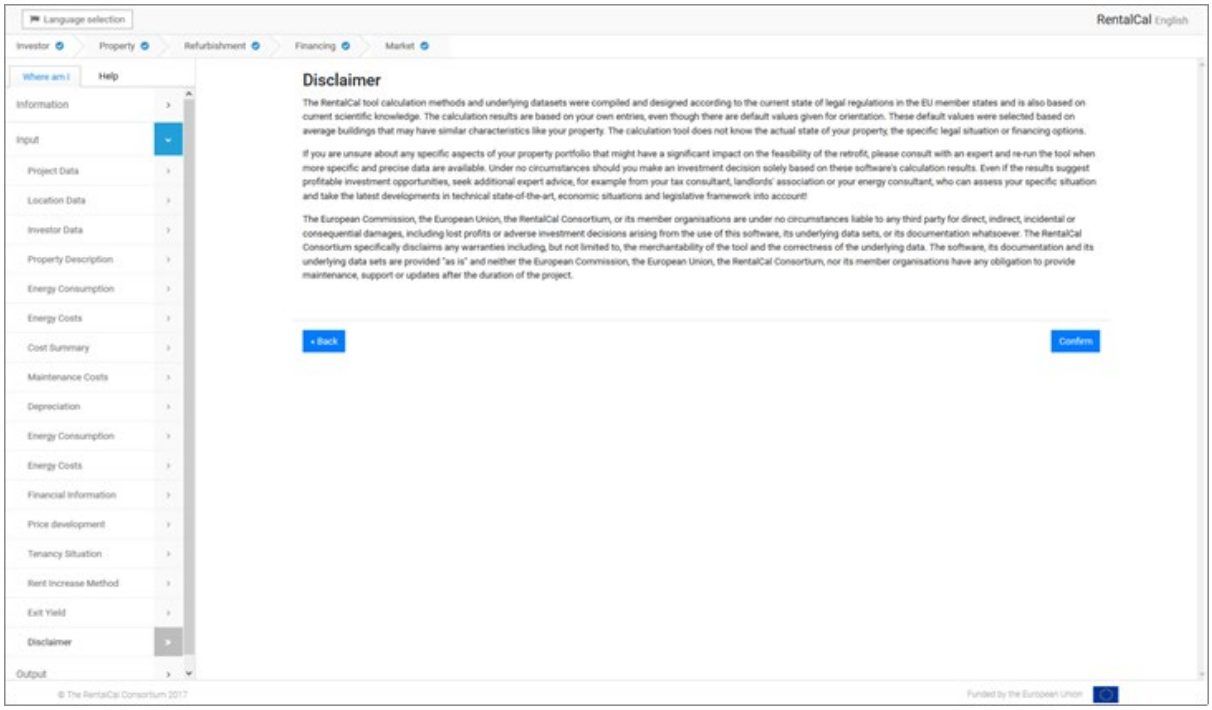


Figure 27: Disclaimer

5.2. Investor-Perspective (Selected KPIs)

Depending on the type of investor, most relevant indicators (KPIs) are selected for the user. If you are interested in further KPIs and rates of change, please click on "Display all Investor KPIs". The corresponding **sub-module** with further indicators appears. From here you can also switch to the display of the entire VoFI. To do this, click on "Go to VoFI".

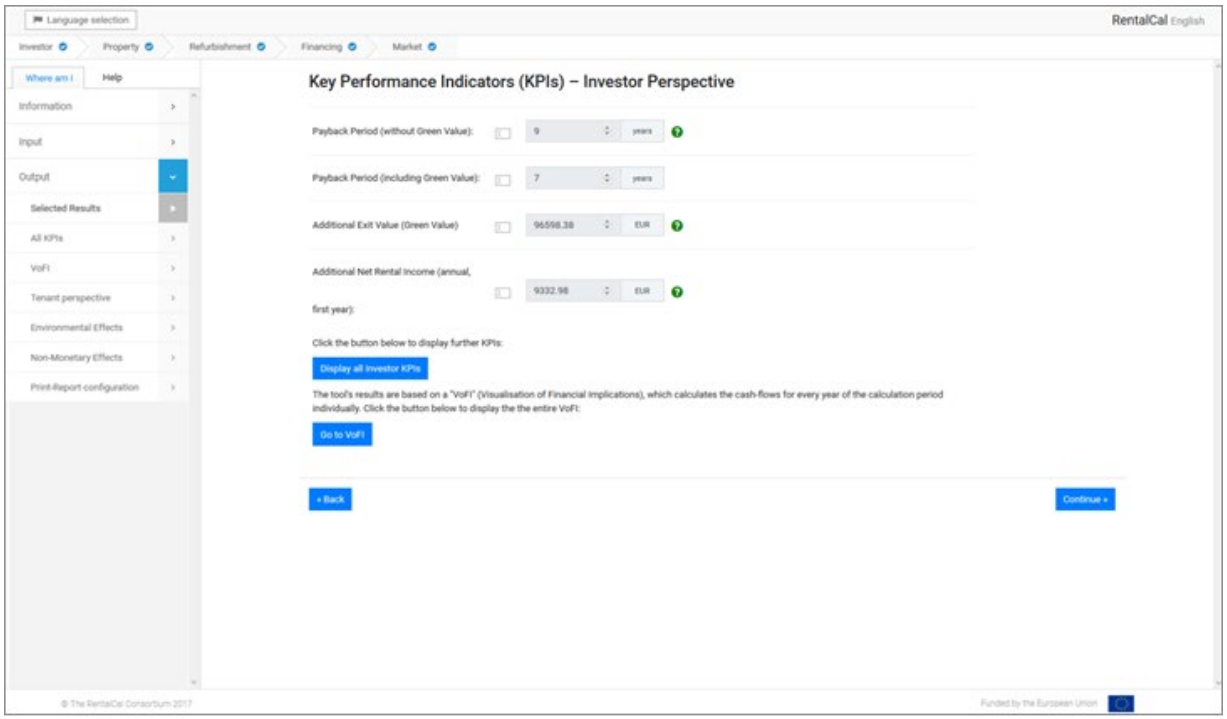


Figure 28: Key Performance Indicators (KPIs) - Investor Perspective

5.3. Investor Perspective (All KPIs)

The sub-module shows all results calculated by the tool (from the investor's point of view).

After viewing, please click on "Back" to continue with the display of the results.

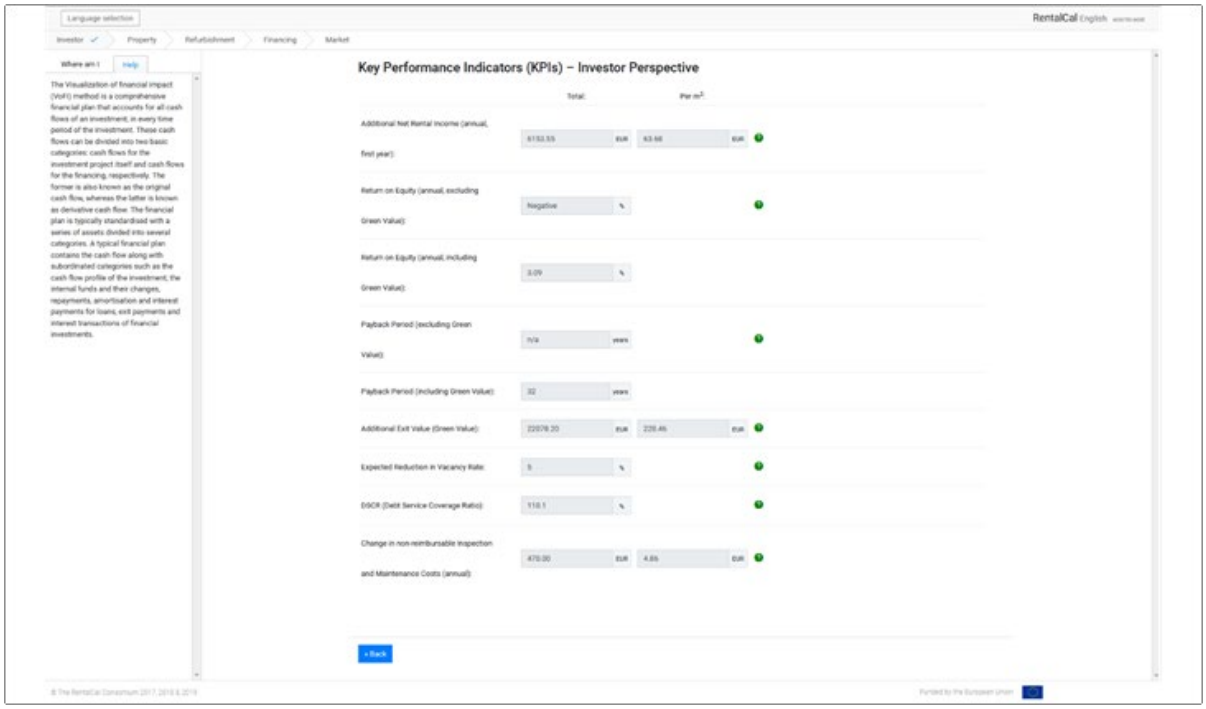
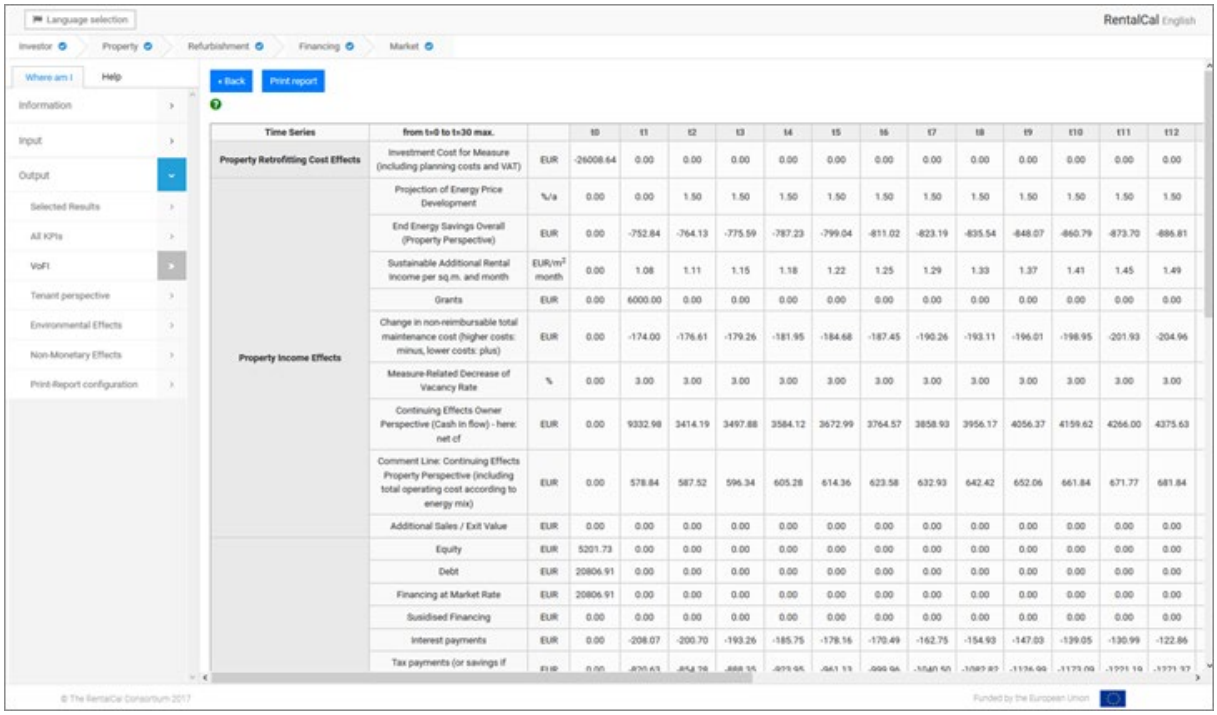


Figure 29: Additional KPIs - Investor Perspective

5.4. Representation of the Visualisation of Financial Implications

Since a complete presentation of the Visualisation of Financial Implications (VoFi) on most screens will not be possible, please use the scrolling elements for navigation. At this point you have the possibility to download the calculation of the Visualisation of Financial Implications. If you want to print the Visualisation of Financial Implications, we recommend the A3 format. To return to the regular workflow, please press "Back".



Time Series	from t=0 to t=30 max.		t0	t1	t2	t3	t4	t5	t6	t7	t8	t9	t10	t11	t12
Property Retrofitting Cost Effects	Investment Cost for Measure (including planning costs and VAT)	EUR	-26008.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Property Income Effects	Projection of Energy Price Development	%/a	0.00	0.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	End Energy Savings Overall (Property Perspective)	EUR	0.00	-752.84	-764.13	-775.59	-787.23	-799.04	-811.02	-823.19	-835.54	-848.07	-860.79	-873.70	-886.81
	Sustainable Additional Rental Income per sq.m. and month	EUR/m² month	0.00	1.08	1.11	1.15	1.18	1.22	1.25	1.29	1.33	1.37	1.41	1.45	1.49
	Grants	EUR	0.00	6000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Change in non-reimbursable total maintenance cost (higher costs: minus, lower costs: plus)	EUR	0.00	-174.00	-176.61	-179.26	-181.95	-184.68	-187.45	-190.26	-193.11	-196.01	-198.95	-201.93	-204.96
	Measure-Related Decrease of Vacancy Rate	%	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Continuing Effects Owner Perspective (Cash in flow) - here: net cf	EUR	0.00	9332.98	3414.19	3497.88	3584.12	3672.99	3764.57	3858.93	3956.17	4056.37	4159.62	4266.00	4375.63
	Comment Line: Continuing Effects Property Perspective (including total operating cost according to energy mix)	EUR	0.00	578.84	587.52	596.34	605.28	614.36	623.58	632.93	642.42	652.06	661.84	671.77	681.84
	Additional Sales / Exit Value	EUR	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
	Equity	EUR	5201.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Debt	EUR	20806.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Financing at Market Rate	EUR	20806.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Susidised Financing	EUR	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
	Interest payments	EUR	0.00	-208.07	-200.70	-193.26	-185.75	-178.16	-170.49	-162.75	-154.93	-147.03	-139.05	-130.99	-122.86
	Tax payments (or savings if	EUR	0.00	-870.63	-854.78	-838.35	-821.35	-803.77	-785.60	-766.85	-747.50	-727.56	-707.01	-685.86	-664.09

Figure 30: VoFi representation

5.5. Tenant Perspective

The tool not only looks at the investor perspective but also examines the impact on tenant burden. The user can select between several different metrics (Rent display). Absolute as well as relative changes can be seen in the presentation. No changes in values are allowed (grey boxes).

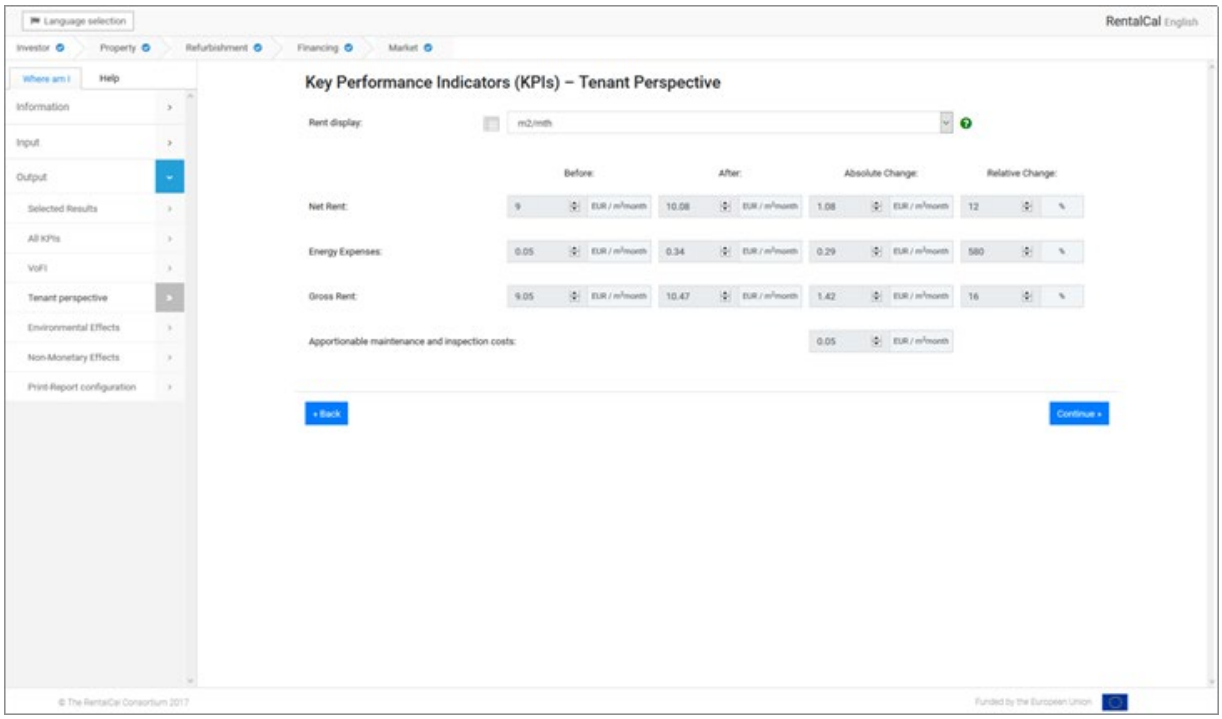


Figure 31: KPIs - Tenant Perspective

5.6. Environmental and Resource Perspective

The tool shows you a comparison of energy consumption inputs (before and after modernisation) and their effects on environmental parameters. Absolute and relative changes are displayed.

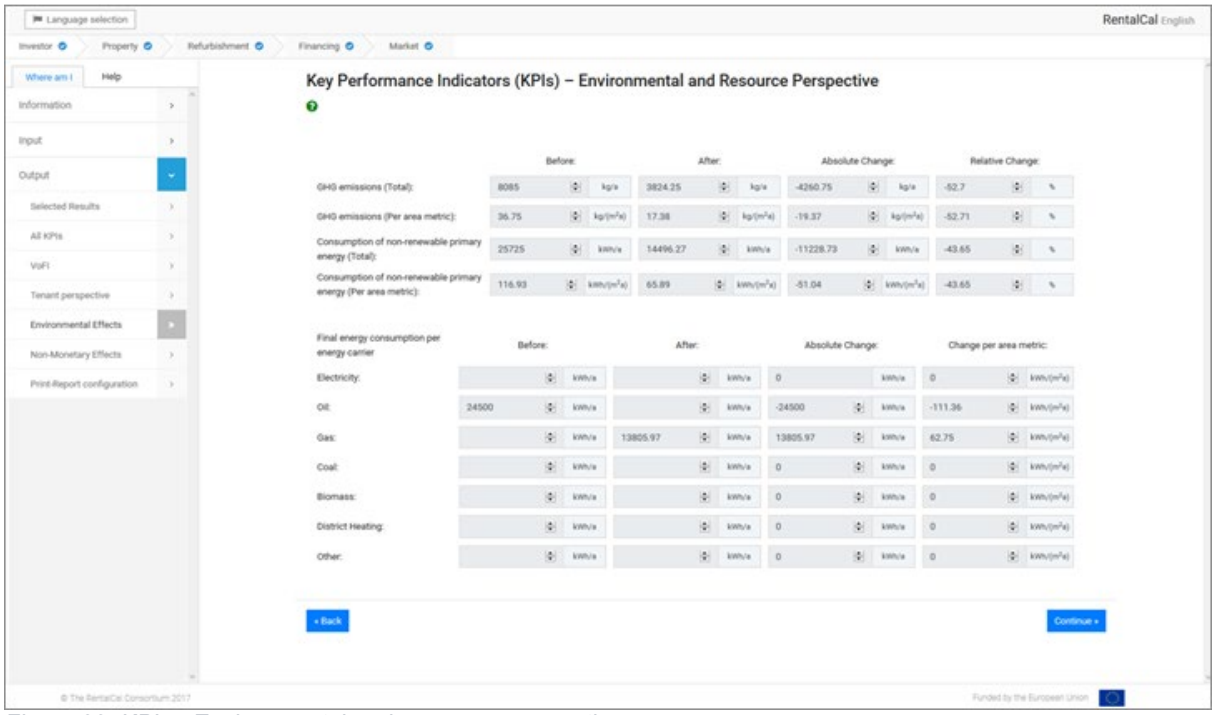


Figure 32: KPIs - Environmental and resource perspective

5.7. Additional non-monetary Impacts of the Refurbishment

The effects of improving the energetic quality of the European rental housing stock go far beyond the immediate reduction of the final energy consumption, decreased heating costs and the reduction of primary energy consumption and GHG emissions.

Improving the energetic performance of the existing building stock is likely to contribute to other impacts and benefits, which are so far often difficult to monetize. This raises the question which benefit can be attributed to which actor and how these benefits could possibly influence the economic approach, respectively be expressed economically.

Finally the tool presents a set of possible **non-monetray impacts** after refurbishment.

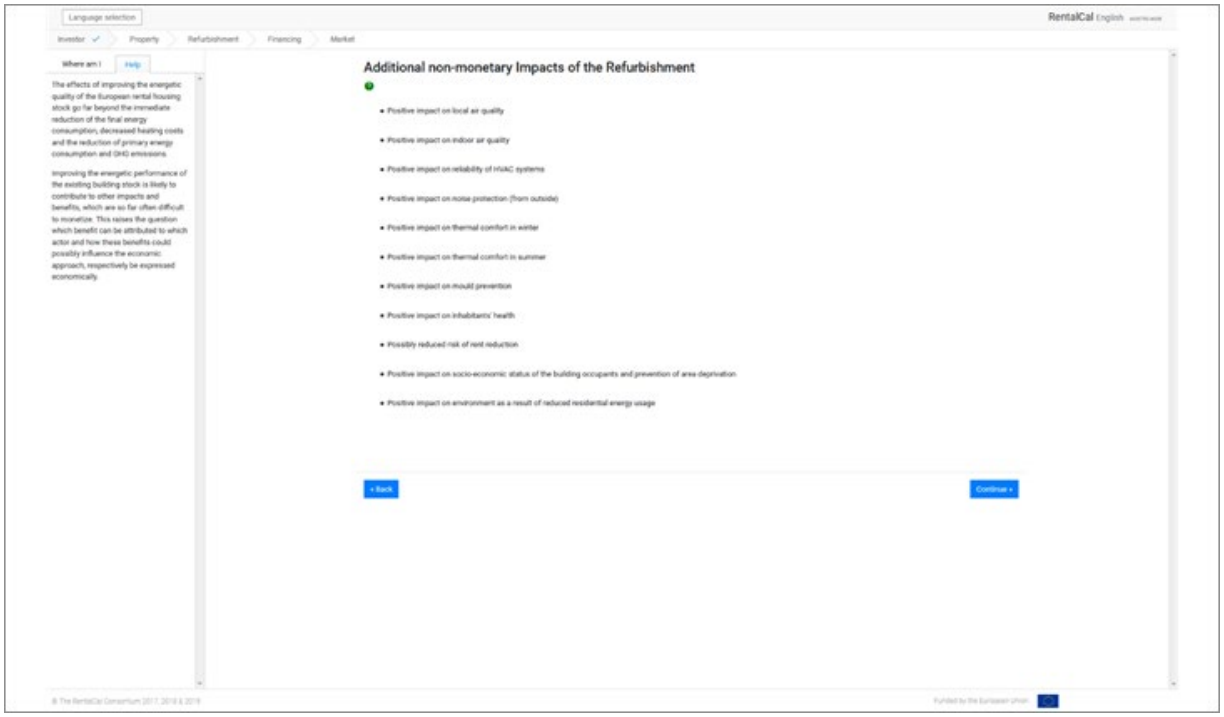


Figure 33: Additional non-monetary impacts

5.8. Sensitivity Analysis (assisted mode only)

With regards to the investment cost, the tool risk module calculates the sensitivity of the equity return based on pre-estimated changes in the investment cost. These estimated changes (delta) in the investment cost parameters are expressed in the risk module as percentage changes from the existing investment cost used in the scenario. The sensitivity results are therefore expressed in increments of 5% changes in both directions from the existing input amount and range between minus 20% to plus 20%. Furthermore, the rent increase due to energetic refurbishment is also expressed in increments of 5% changes in both directions from the existing input amount and range between minus 20% to plus 20%. Furthermore tax rate sensitivity parameters are fixed between 0% and 60% to present all probable upper and lower bounds of potential changes in the income tax. Similarly, the loan-to-value ratio for the investment is also fixed between 0% and 90% to capture a wide range of potential scenarios that vary in increments of 10%. Finally, the expected vacancy rate upper and lower bound parameters are set at 12% and 0% respectively, to capture the extremes of potential changes in occupancy, during changes in the financial cycle.

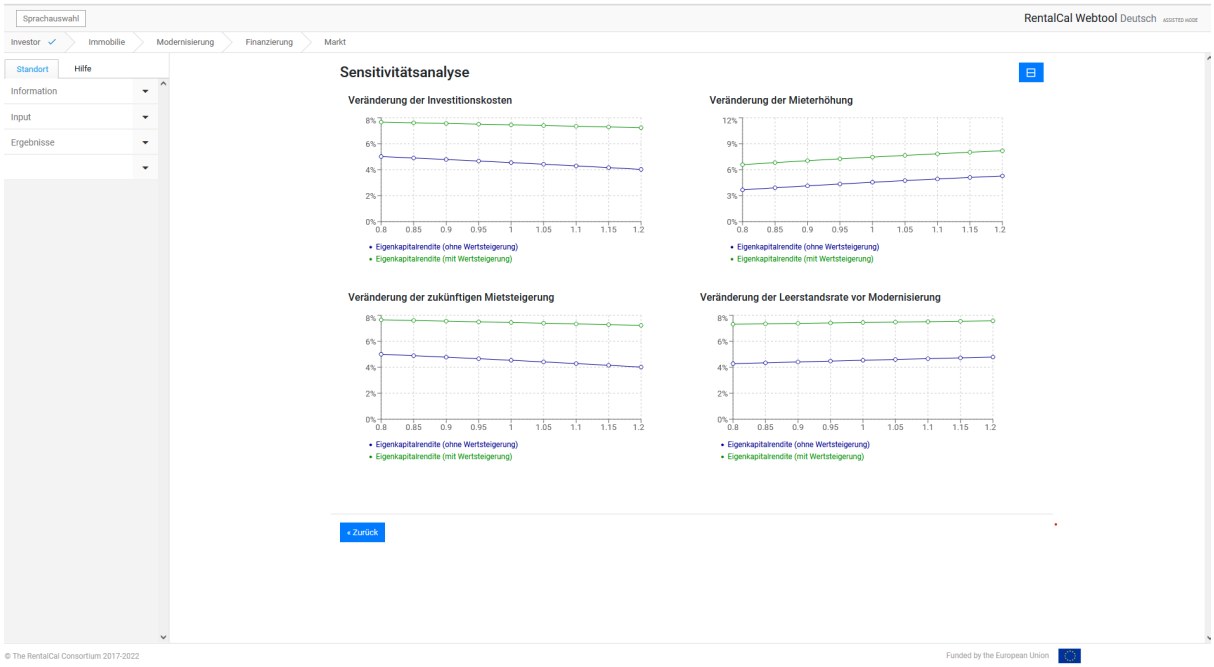


Figure 34: Sensitivity analysis

5.9. Print-Report Configuration

By clicking on the respective blue buttons, the printable PDFs are displayed. For readability reasons, it is recommended to print the VoFI report on A3.

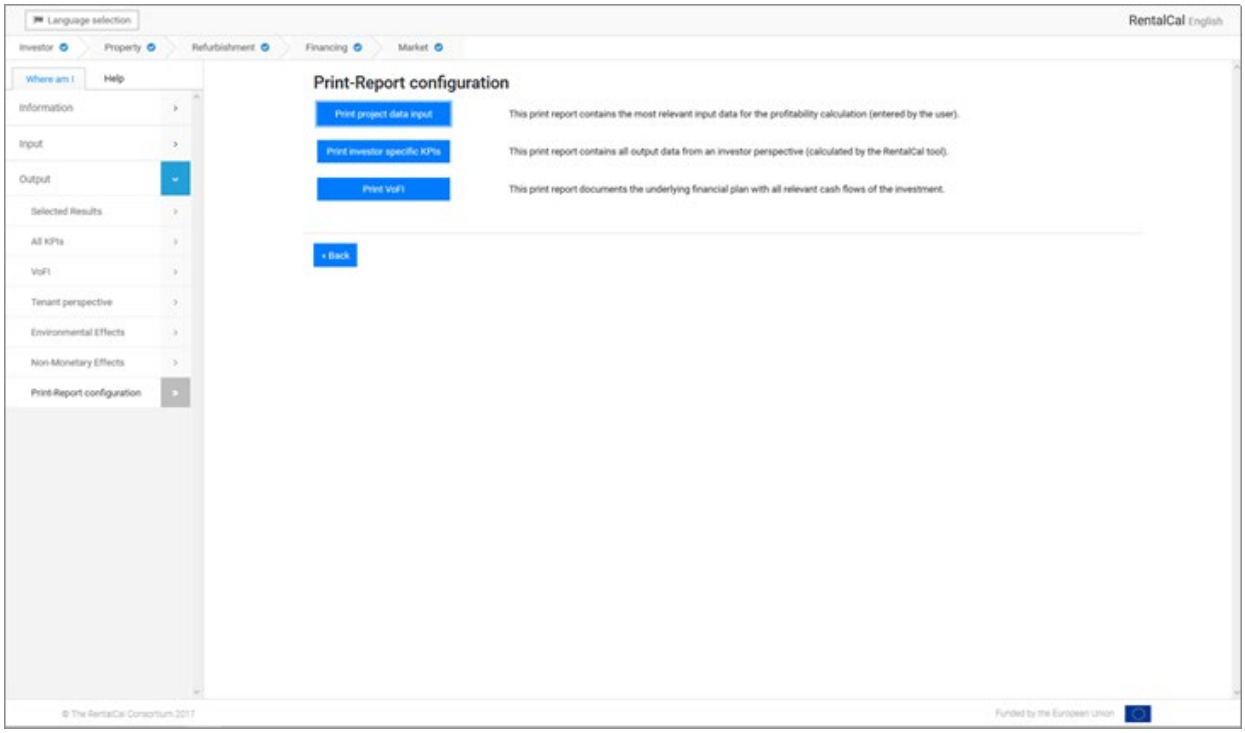


Figure 35: Print-report configuration

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