FROnT
FAIR RHC OPTIONS AND TRADE

FRONT – ESTIMATING RHC ENERGY COSTS

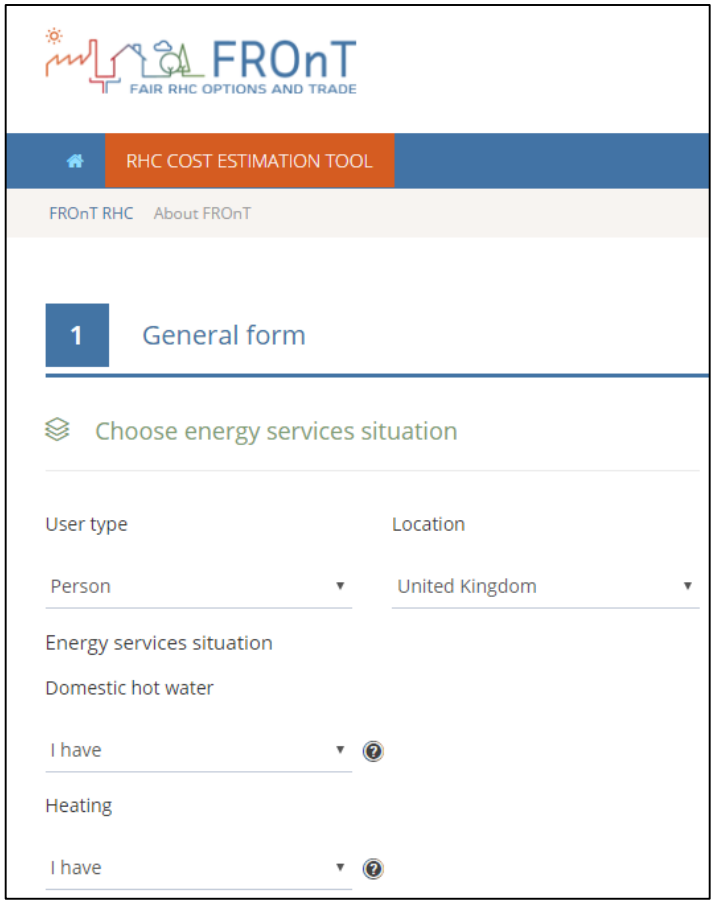
FRONT ONLINE TOOL

The tool developed in the framework of the FROnT project assesses the competitiveness of RHC technologies by comparing the levelised costs (LCoHC) associated to them with those related to conventional fossil fuels

Four RHC technologies are analyzed: biomass, solar thermal, air-source heat pump and ground-source heat pump

The analysis is carried out in six reference locations: Austria, The Netherlands, Poland, Portugal, Spain and the United Kingdom

User interface



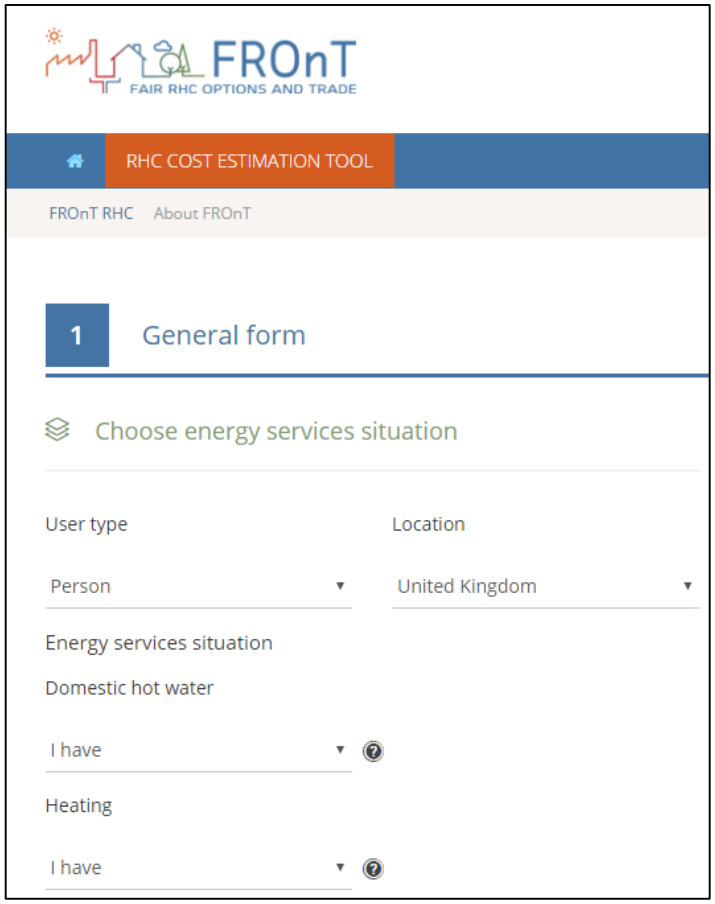
FRONT ONLINE TOOL

DISCLAIMER

The FROnT tool has been simplified to make it easy for end-users.

The calculations and results provided by the tool should be supplemented by real quotes from experts on the ground. An investment decision should not only be based on the results provided by the tool

User interface



PRESENTATION OF CALCULATION TOOL

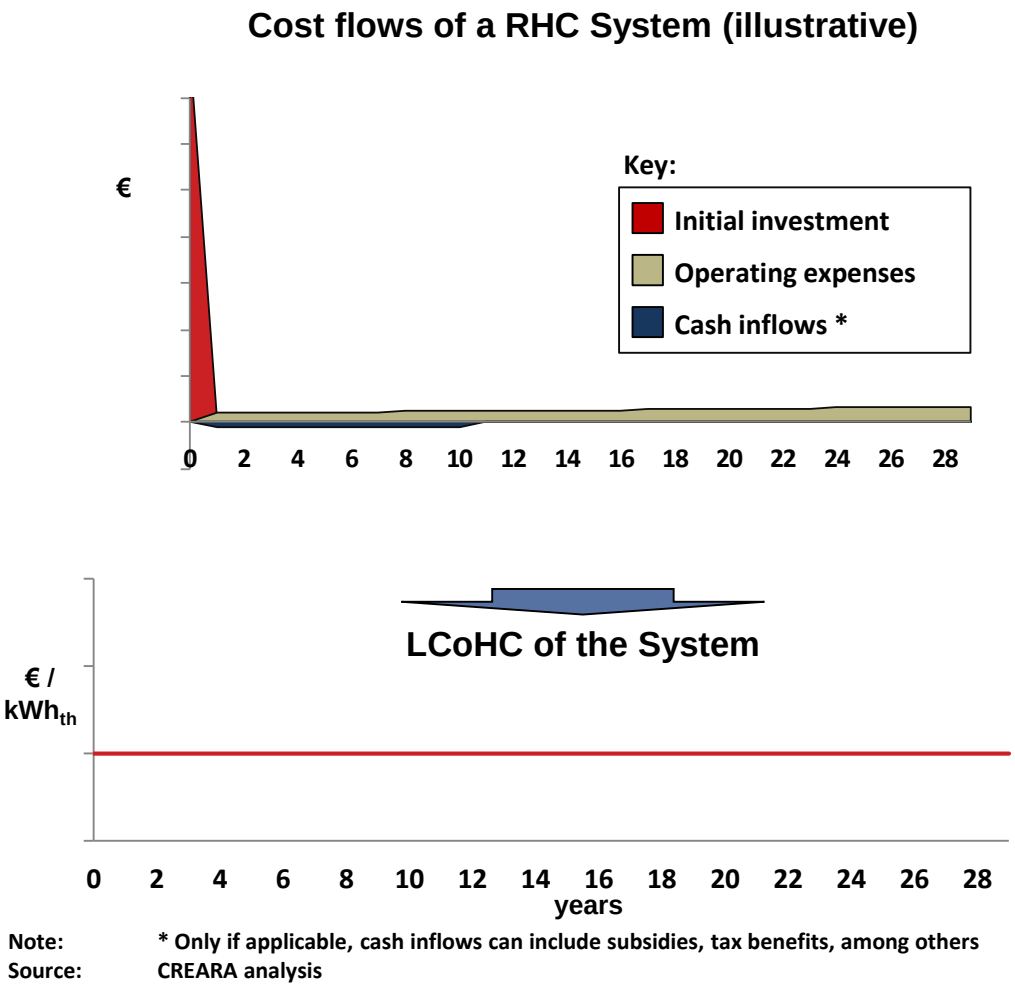
1. LCoHC and its parameters
2. Online tool
    I. Structure

THE LCOHC OF A SYSTEM REPRESENTS THE CONSTANT AND HYPOTHETICAL COST OF HEAT/COLD GENERATION OF THAT SYSTEM OVER ITS LIFETIME

- **The LCoHC accounts for all costs associated with the RHC system over its life**
  - These include initial investment, O&M costs and corporate taxes, among others
- **It assumes a constant value per year and is expressed as cost per kWh_{th}**
- **It considers the return required from the investment, to discount future costs (and energy generation) to present**

CAVEAT

To assess the competitiveness of a given RHC technology, its LCoHC should be compared with the levelised cost of the alternative technology (i.e. accounting for the estimated future price increases)



Note: * Only if applicable, cash inflows can include subsidies, tax benefits, among others
Source: CREARA analysis

PRESENTATION OF CALCULATION TOOL

1. LCoHC and its parameters
2. Online tool
    I. Structure

FRONT ONLINE TOOL: STRUCTURE (1/4)

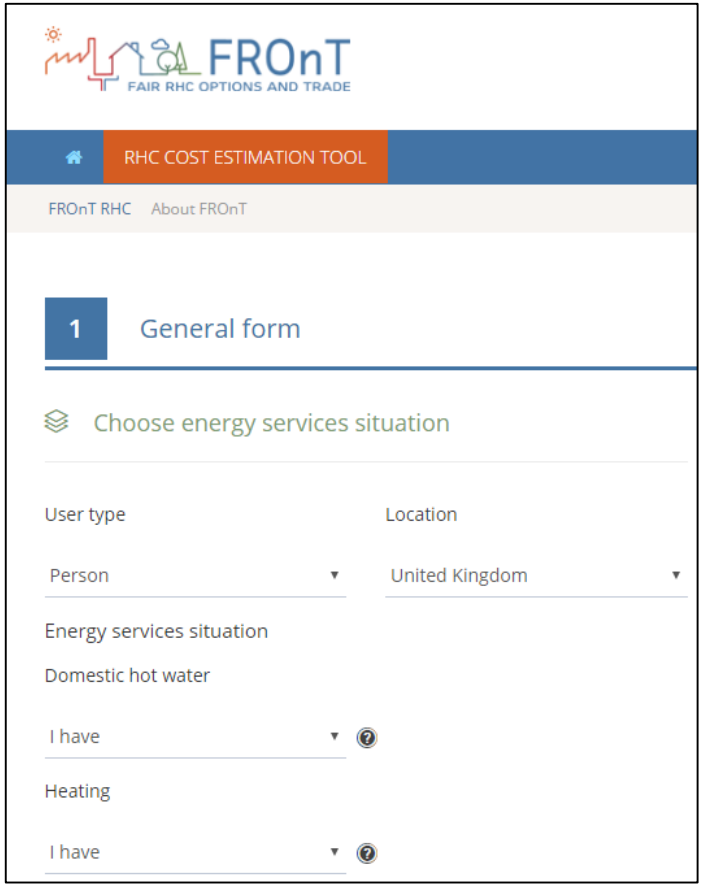
The online tool is divided intro three major sections:

1. **General information**

The user selects the location to analyze, the user type (person or corporation) and the energy services to include in the analysis.

Three energy services are available in the tool: domestic hot water, space heating and space cooling (as a desired service)

Step 1 of FROnT tool



FRONT ONLINE TOOL: STRUCTURE (2/4)

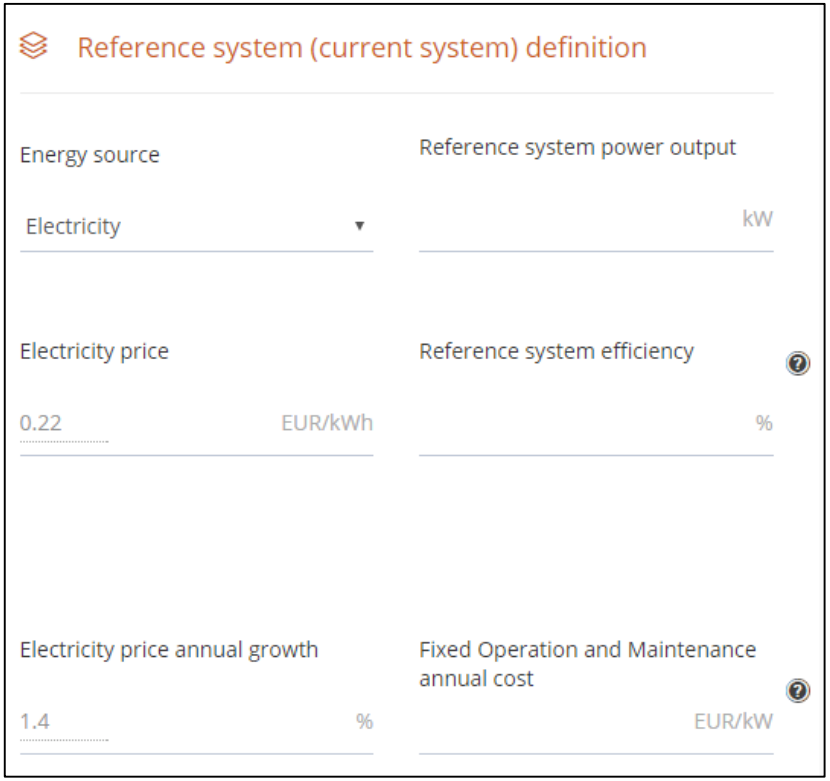
The online tool is divided intro three major sections:

1. **Current system definition**

The user is asked to fill in several key inputs related to his current (non-renewable) system

The tool includes both guidance and default values, when applicable, to ease the task

Step 1 of FROnT tool



FRONT ONLINE TOOL: STRUCTURE (3/4)

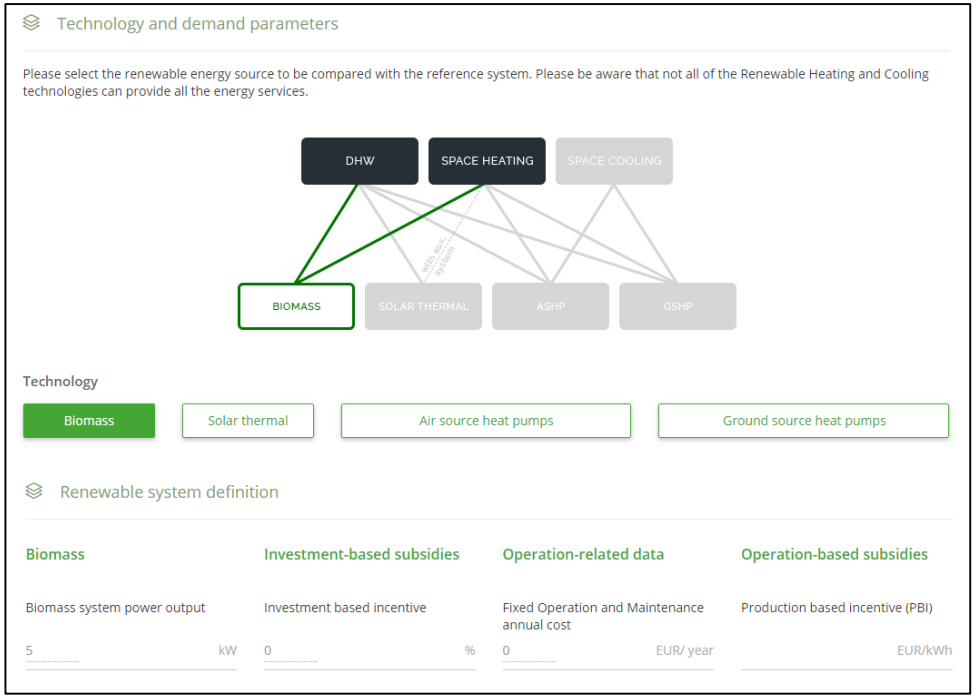
The online tool is divided intro three major sections:

2. **Renewable system definition**

First, the user chooses the RHC technology to assess from those available according to the energy services selection

Then, information regarding the renewable system to be installed is requested. Guidance and default values for those inputs are included when relevant

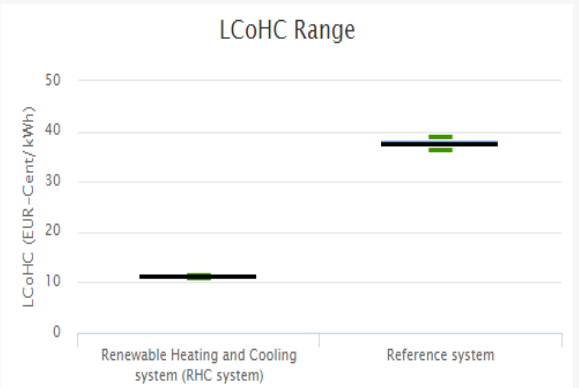
Step 2 of FROnT tool



FRONT ONLINE TOOL: STRUCTURE (4/4) OUTPUT

Three different outputs are provided:

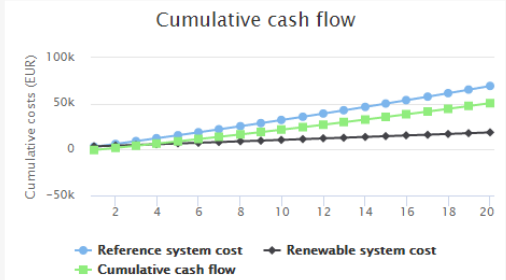
Renewable LCOHC	11.23	EUR -cent/kWh
Ref. system LCOHC	37.62	EUR -cent/kWh



LCoHC

- Two LCoHC values are given for the RHC system considering, or not, the residual value.
- Ref. system LCoHC is given for comparison purposes.
- The results are shown as well in a chart, including a range representing the sensitivity analysis results.

Simple payback time	1	years
Net Present Value (NPV)	29606.97	EUR
Net Present Value (incl. residual value)	29606.97	EUR
Internal Rate of Return (IRR)	84.6	%
Internal Rate of Return (incl. residual value)	84.6	%



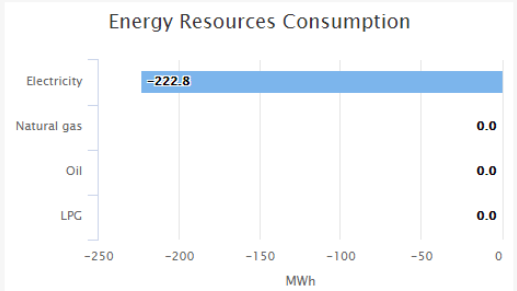
Financial output

Three parameters are provided:

- Simple payback time
- Net present value (NPV)
- Internal rate of return (IRR)

Additionally, the cumulative cash flow is shown in a chart.

Greenhouse gases emissions reduction	79.55	Tonnes CO2
Electricity consumption difference	-222.82	MWh
Natural gas consumption difference	0	MWh
Oil consumption difference	0	MWh
LPG consumption difference	0	MWh



Environmental output

- Greenhouse gases emissions reduction
- Energy resources consumption: A negative value means a consumption reduction and a positive value an means an increase (both in the table and chart).

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