

# Presentation



Economic calculation tool  
for the target Communities  
CoolHeating training

**Elma Redzic**

JP Elektroprivreda BiH d.d. Sarajevo

Email: [e.redzic@elektroprivreda.ba](mailto:e.redzic@elektroprivreda.ba)

# Project CoolHeating

- The objective of CoolHeating is to support the implementation of "small modular renewable heating and cooling grids" for communities in South-Eastern Europe
- The project is aimed also at building capacities in the target communities and beyond, on technical and non-technical aspects
- To facilitate the deployment of improved business models and innovative financing schemes for mobilizing investments in small modular district heating and cooling systems

# Economic evaluation of potential DHC projects

- Knowledge and capacity in economic evaluation of potential DH projects and preparation of business plans has to be strengthened
- Easy to use tools for easy-to-understand-and produce but comprehensive economic evaluations are needed...
- ...especially for target groups with less knowledge and skills for economic evaluations and preparation of business plans

# The economic calculation tool

- An Excel spread sheet tool – anyone using MS Excel can access it
- Easy to use, with exact leas on what data has to be inserted
- Full financial part of the business plan
- In Bosnian language
- Freely available at the [www.coolheating.eu](http://www.coolheating.eu)

# In the CoolHeating project

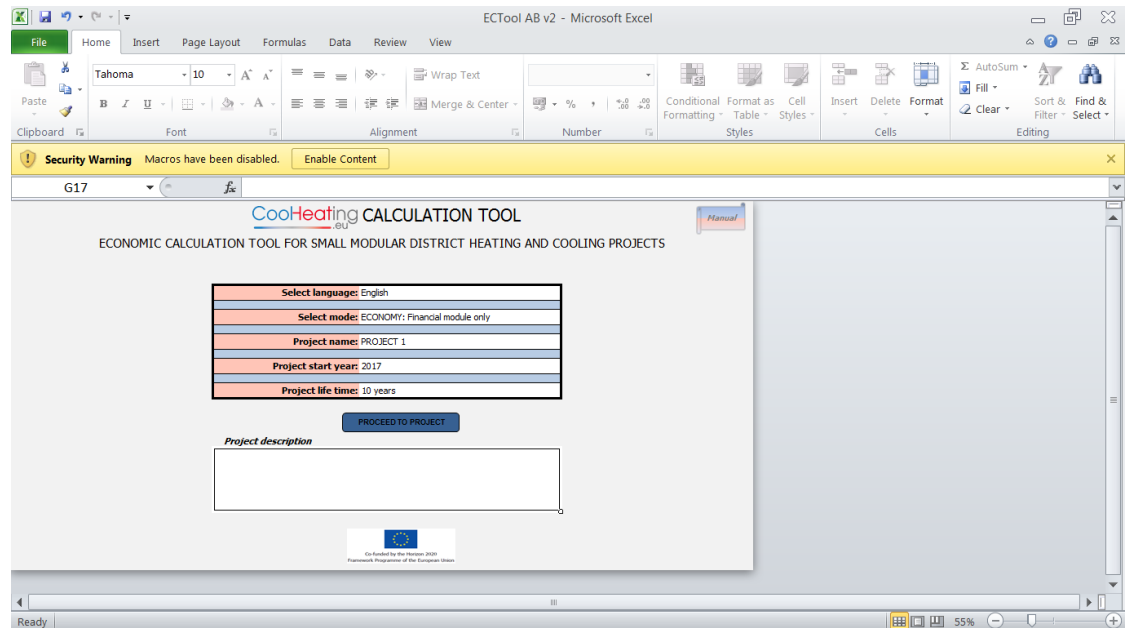
- The economic calculation tool will be used in order to prepare economic evaluation for the business models and technical concept developed for new DCH concepts in target communities
- The tool can also be used by third parties in evaluations of potential DHC projects
- Download available at the project website

# The economic calculation tool - basics

- Excel document includes macros and VBA programming
- Protected with a password in order to avoid unwanted and accidental modifications of the tool by the users
- The password for unlocking the file is included in the manual
- Users are advised to „enable Editing“ and „enable Macros“ if during opening of the tool Excel asks for confirmation about enabling these features
- Cells formatted in white color are editable by users. Cells of other colors are locked and are calculated by the tool

# Economic calculation tool - homepage

- Language used in the tool can be selected from English, German, Slovenian, Croatian, Bosnian, Serbian and Macedonian
- Basic information is included as Project name, Start year and Project life (all simulations in the tool will run for this duration)



# Input parameters module

- All data needed for economic simulations is inserted in this module
- Please note in order to insert the needed data the DHC project has to obtain:
  - Basic technical layout and Investment costs
  - Energy needs
  - Heat consumers

The screenshot shows the 'INPUT PARAMETERS' module of the CoolHeating.eu software. The interface includes a navigation bar with 'INPUT PARAMETERS' and 'PROJECT PERFORMANCE' tabs, and sub-tabs for 'Investment and financing', 'Costs', 'Revenues', and 'Other parameters'. The main content area displays two tables: 'INVESTMENT AND FINANCING' and 'Financing sources'.

| INVESTMENT AND FINANCING                        |        |                 |       |
|---|--------|-----------------|-------|
| Investment cost                                 |        |                 |       |
| TOTAL   | 0,00   |                 | 0,00% |
| Equipment/Machinery                             |        |                 | 0,00% |
| Buildings and construction works                |        |                 | 0,00% |
| Plot  |        |                 | 0,00% |
| Project and investment documentation            |        |                 | 0,00% |
| Intangible assets (patents, licenses, software) |        |                 | 0,00% |
| Initial working capital                         | 0,00 € |                 | 0,00% |
|   |        | % of investment | 0%    |

| Financing sources    |        |  |       |
|----------------------|--------|--|-------|
| TOTAL                | 0,00   |  | 0,00% |
| Private equity       | 0,00 € |  | 0,00% |
| Bank loan 1          |        |  | 0,00% |
| Bank loan 2          |        |  | 0,00% |
| Bank loan 3          |        |  | 0,00% |
| Connection fees      |        |  | 0,00% |
| Investment subsidies |        |  | 0,00% |



# Input parameters - Investment and financing



- Breakdown of investment costs in €
- Financing sources are inserted (Equity, Subsidies, Loans and Connection fees)

The screenshot displays the 'INPUT PARAMETERS' tab for 'INVESTMENT AND FINANCING'. It features a navigation bar with 'INPUT PARAMETERS' and 'PROJECT PERFORMANCE' tabs, and a sub-navigation bar with 'Investment and financing', 'Costs', 'Revenues', and 'Other parameters' buttons. The main content area is divided into two sections: 'Investment cost' and 'Financing sources'. Each section has a 'TOTAL' row and several rows for specific categories, with input fields for values and percentages.

| INVESTMENT AND FINANCING                        |        |                 |       |
|---|--------|-----------------|-------|
| Investment cost                                 |        |                 |       |
| TOTAL   | 0,00   |                 | 0,00% |
| Equipment/Machinery                             |        |                 | 0,00% |
| Buildings and construction works                |        |                 | 0,00% |
| Plot  |        |                 | 0,00% |
| Project and investment documentation            |        |                 | 0,00% |
| Intangible assets (patents, licenses, software) |        |                 | 0,00% |
| Initial working capital                         | 0,00 € |                 | 0,00% |
|   |        | % of investment | 0%    |

| Financing sources    |        |  |       |
|----------------------|--------|--|-------|
| TOTAL                | 0,00   |  | 0,00% |
| Private equity       | 0,00 € |  | 0,00% |
| Bank loan 1          |        |  | 0,00% |
| Bank loan 2          |        |  | 0,00% |
| Bank loan 3          |        |  | 0,00% |
| Connection fees      |        |  | 0,00% |
| Investment subsidies |        |  | 0,00% |

  
  
Co-funded by the Horizon 2020 Framework Programme of the European Union

# Input parameters - Costs

Costs are inserted and simulated for the life time of the project (the tool includes a linear year 2 year cost change simulation)

- Operating costs (fuel costs)
- Service costs (Management, insurance and lease, Promotional activities, Other)
- Cost of labor

| ANNUAL COSTS - COST DEFINITION |                |                            |                           |               |          |      |      |      |      |      |      |
|--------------------------------|----------------|----------------------------|---------------------------|---------------|----------|------|------|------|------|------|------|
| Operating costs                |                |                            |                           |               |          |      |      |      |      |      |      |
| Cost of biomass                |                |                            |                           |               |          |      |      |      |      |      |      |
| Type of biomass                | Wood chips     | Water content              | 0%                        | Heating value | 18 Mj/kg |      |      |      |      |      |      |
| Price                          | €/t            | 0,00 €/MWh                 | PRICE constant y2y change | No            |          |      |      |      |      |      |      |
| Volume                         | t/year         | VOLUME constant y2y change |                           | No            |          |      |      |      |      |      |      |
| Biomass                        | Year           | 2017                       | 2018                      | 2019          | 2020     | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|                                | Price in €/MWh | 0,00                       |                           |               |          |      |      |      |      |      |      |
|                                | Volume in MWh  | 0,00                       |                           |               |          |      |      |      |      |      |      |
|                                | Cost in €      | 0                          | 0                         | 0             | 0        | 0    | 0    | 0    | 0    | 0    | 0    |
| Cost of natural gas            |                |                            |                           |               |          |      |      |      |      |      |      |
| Price                          | €/m3           | 0,00 €/MWh                 | PRICE constant y2y change | No            |          |      |      |      |      |      |      |
| Volume                         | m3/year        | VOLUME constant y2y change |                           | No            |          |      |      |      |      |      |      |
| Natural gas                    | Year           | 2017                       | 2018                      | 2019          | 2020     | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|                                | Price in €/m3  | 0,00                       |                           |               |          |      |      |      |      |      |      |
|                                | Volume in m3   | 0,00                       |                           |               |          |      |      |      |      |      |      |
|                                | Cost in €      | 0                          | 0                         | 0             | 0        | 0    | 0    | 0    | 0    | 0    | 0    |

# Input parameters - Revenues

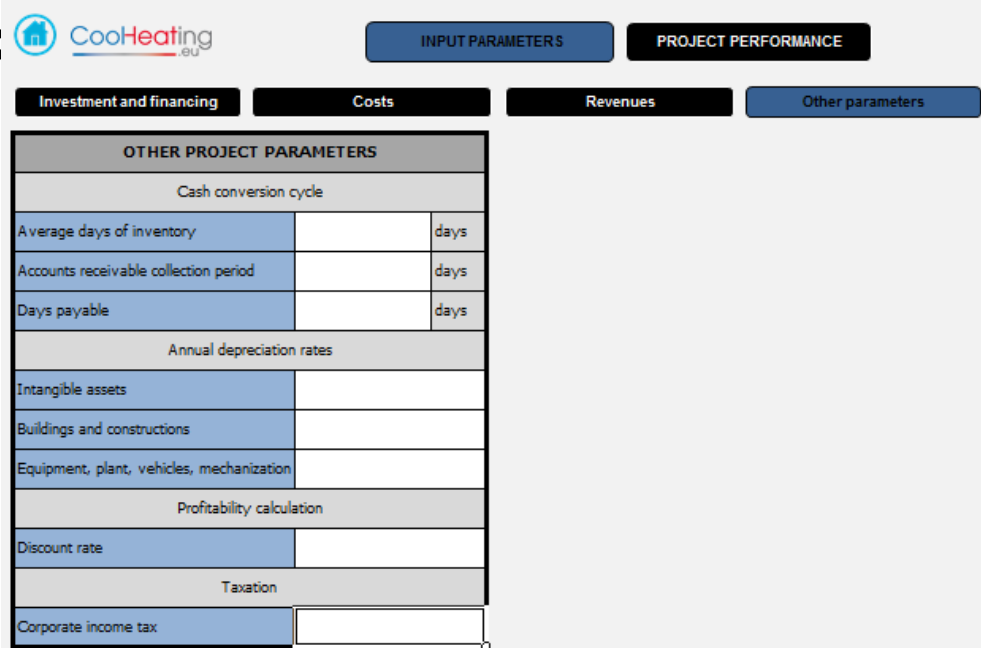
Revenues from different sources are inserted for the project life time (the tool includes a linear year 2 year revenue change simulation)

- Revenues from sold electricity
- Sold heat (includes 3 possible heat sales models)
- Other revenues (financial and other revenues)

| ANNUAL REVENUES - REVENUE DEFINITION                  |                                |          |      |      |      |      |                            |      |      |      |      |    |
|---|--------------------------------|----------|------|------|------|------|----------------------------|------|------|------|------|----|
| Operating revenues                                    |                                |          |      |      |      |      |                            |      |      |      |      |    |
| Electricity revenues                                  |                                |          |      |      |      |      |                            |      |      |      |      |    |
| Average electricity price                             |                                | €/MWh    |      |      |      |      | PRICE constant y2y change  |      |      |      |      | No |
| Volume  |                                | MWh/year |      |      |      |      | VOLUME constant y2y change |      |      |      |      | No |
| Electricity   | Year                           | 2017     | 2018 | 2019 | 2020 | 2021 | 2022                       | 2023 | 2024 | 2025 | 2026 |    |
|   | Price in €/MWh                 | 0.00     |      |      |      |      |                            |      |      |      |      |    |
|   | Volume in MWh                  | 0.00     |      |      |      |      |                            |      |      |      |      |    |
|   | Revenues in €                  | 0        | 0    | 0    | 0    | 0    | 0                          | 0    | 0    | 0    | 0    |    |
| Heat revenues   |                                |          |      |      |      |      |                            |      |      |      |      |    |
| Heat price model                                      | Direct input of the heat price |          |      |      |      |      |                            |      |      |      |      |    |
| Thermal energy price - Direct input of the heat price |                                |          |      |      |      |      |                            |      |      |      |      |    |
| Average heat price                                    |                                | €/MWh    |      |      |      |      | PRICE constant y2y change  |      |      |      |      | No |
| Total amount of heat sold                             |                                | MWh/year |      |      |      |      | VOLUME constant y2y change |      |      |      |      | No |
| Heat  | Year                           | 2017     | 2018 | 2019 | 2020 | 2021 | 2022                       | 2023 | 2024 | 2025 | 2026 |    |
|   | Price in €/MWh                 | 0.00     |      |      |      |      |                            |      |      |      |      |    |
|   | Volume in MWh                  | 0.00     |      |      |      |      |                            |      |      |      |      |    |
|   | Revenues in €                  | 0        | 0    | 0    | 0    | 0    | 0                          | 0    | 0    | 0    | 0    |    |

# Input parameters - Other parameters

- Cash conversion cycle
- Annual depreciation rates
- Profitability calculation (Discount rate)
- Taxation (Corporate inc



The screenshot shows the 'CoolHeating.eu' software interface. At the top, there are two main tabs: 'INPUT PARAMETERS' (selected) and 'PROJECT PERFORMANCE'. Below these are four sub-tabs: 'Investment and financing', 'Costs', 'Revenues', and 'Other parameters' (selected). The 'Other parameters' tab contains a form titled 'OTHER PROJECT PARAMETERS' with the following sections:

- Cash conversion cycle**
  - Average days of inventory:  days
  - Accounts receivable collection period:  days
  - Days payable:  days
- Annual depreciation rates**
  - Intangible assets:
  - Buildings and constructions:
  - Equipment, plant, vehicles, mechanization:
- Profitability calculation**
  - Discount rate:
- Taxation**
  - Corporate income tax:

At the bottom of the interface, there is a logo for the European Union and the text: 'Co-funded by the Horizon 2020 Framework Programme of the European Union'.

# Project performance

- This module consists of calculations, simulations and sensitivity analysis figures, based on the input parameters

**Projected investment cost in €**

| Projected investment cost in €                 | Value    | Share %     |
|--|----------|-------------|
| 1. Buildings and construction works            | 0        | 0,0%        |
| 2. Plot  | 0        | 0,0%        |
| 3. Equipment/Machinery                         | 0        | 0,0%        |
| <b>A. PROPERTY, PLANT AND EQUIPMENT</b>        | <b>0</b> | <b>0,0%</b> |
| <b>B. PROJECT AND INVESTMENT DOCUMENTATION</b> | <b>0</b> | <b>0,0%</b> |
| <b>C. INTANGIBLE ASSETS</b>                    | <b>0</b> | <b>0,0%</b> |
| <b>D. INVESTMENT COST (A+B+C)</b>              | <b>0</b> | <b>0,0%</b> |
| <b>E. INITIAL WORKING CAPITAL</b>              | <b>0</b> | <b>0,0%</b> |
| <b>F. TOTAL INVESTMENT COST (D+E)</b>          | <b>0</b> | <b>0,0%</b> |

**Sources of investment cost financing in €**

| Sources of investment cost financing in € | Value    | Share %     |
|---|----------|-------------|
| <b>A. PRIVATE EQUITY</b>                  | <b>0</b> | <b>0,0%</b> |
| <b>B. BANK LOANS</b>                      | <b>0</b> | <b>0,0%</b> |

# Project performance - overview

## Investment and financing

- Investment and financing includes an overview of the project investment costs and the sources of financing the respective investment costs

## Revenues

- Structure of total planned incomes that will be generated in the project life-time

## Costs

- Structure of total estimated costs incurred in the project life-time

## Assets

- Development of the project properties and resources

# Project performance - overview

## Liabilities and Equity

- An overview of the obligations connected to financing the project assets and development of the value (capital) of the project for its owners
- 

## Income statement

- An overview of the projects revenues and expenses during the projected period
- 

## Balance sheet

- A summary of project assets, liabilities and capital, reflecting what the project will own and owe and the amounts invested by owners
- 

## Cash-flow statement

- A record that shows the actual flows of cash in and out of the business

# Project performance - overview

## Profitability

- A forecast of the projects financial performance and its ability to generate earnings compared to the invested capital and costs incurred in the project life time
- 

## Project summary

- A summary of key aspects comprised in all previous sections of the project performance module

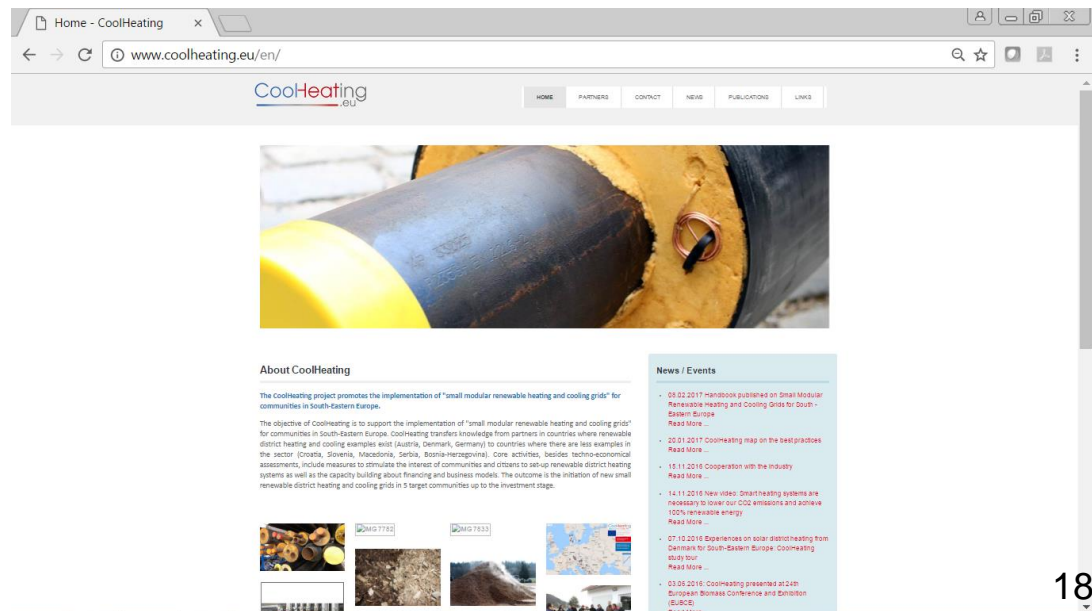


# Economic calculation tool

- In order to use the tool users need:
  - Basic knowledge of economy
  - Layout of the DHC idea to assess investment costs and financing options including possible subsidies
  - DHC project costs (fuel needs and prices)
  - Revenues generated (heat sales and heat price, possible electricity sales)
- The tool enables a creation of the banking case by easily modifying and analyzing different parameters
  - More private equity vs. more debt
  - Higher heat price vs. higher connection fees
  - Creation of the banking case

# Economic calculation tool

- In your language
- Project partners will provide support for Economic calculation tool users
- Free download available at <http://www.coolheating.eu>



The screenshot shows the homepage of the CoolHeating.eu website. The browser address bar displays "www.coolheating.eu/en/". The website header includes the "CoolHeating.eu" logo and a navigation menu with links for HOME, PARTNERS, CONTACT, NEWS, PUBLICATIONS, and LINKS. A large image of a yellow and black pipe is featured prominently. Below this, the "About CoolHeating" section describes the project's goal of implementing "small modular renewable heating and cooling grids" in South-Eastern Europe. The "News / Events" section lists several recent updates, including a handbook published in October 2017, a map of best practices in October 2017, and a video about smart heating systems from November 2016. At the bottom, there are several small thumbnail images representing different project sites and components.

# Thank you for your attention!



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691679. The sole responsibility for the content of this report lies with the authors. It does not necessarily reflect the opinion of the European Union nor of the Innovation and Networks Executive Agency (INEA). Neither the INEA nor the European Commission are responsible for any use that may be made of the information contained therein.

Contact:

**Elma Redzic**

JP Elektroprivreda BiH d.d. Sarajevo (EPBiH)

Tel: + 387 (0) 33 751 863

Email: [e.redzic@elektroprivreda.ba](mailto:e.redzic@elektroprivreda.ba)