

# Presentation



Economic calculation  
tool for the target  
Communities  
CoolHeating training

# 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 **local** language
- Freely available at the [www.coolheating.eu](http://www.coolheating.eu)

# In the CoolHeating project

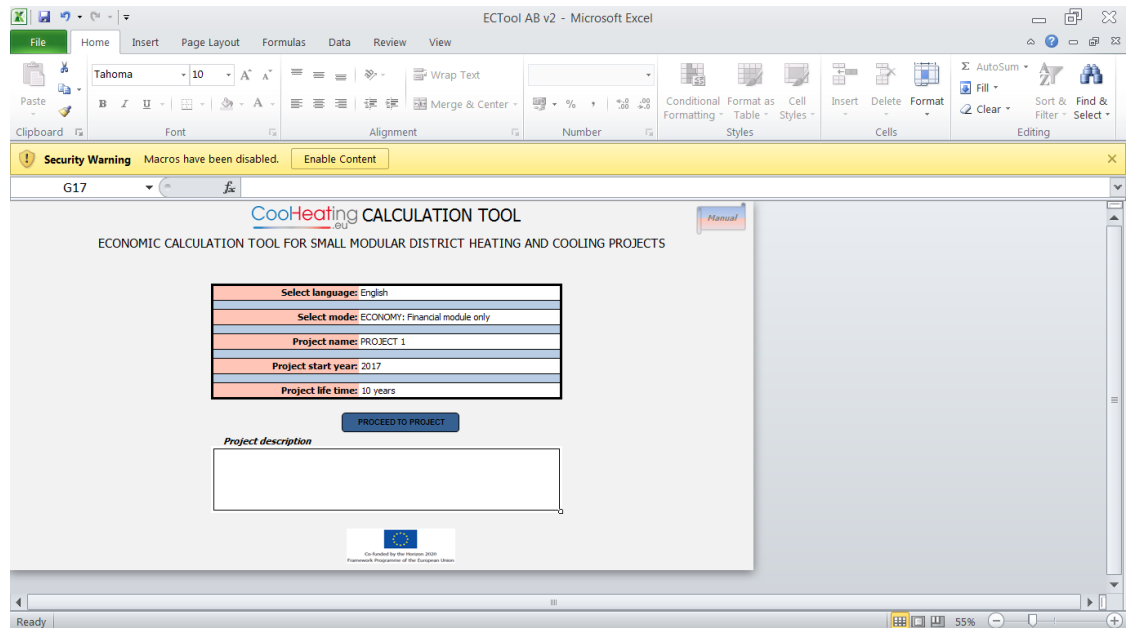
- The economic calculation tool will be used in order to prepare economic evaluation for the business models and technical concept developed for new DCH concepts in target communities
- The tool can also be used by third parties in evaluations of potential DHC projects
- Download available at the project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

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INPUT PARAMETERS PROJECT PERFORMANCE

Investment and financing Costs Revenues Other parameters

| 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% |  |

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# 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'. The interface includes 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 contains a table with columns for item name, value, percentage, and a percentage of investment field.

| 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% |  |

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# 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

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INPUT PARAMETERS PROJECT PERFORMANCE

Investment and financing Costs Revenues Other parameters

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    |

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# 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)

The screenshot displays the 'INPUT PARAMETERS' tab for 'ANNUAL REVENUES - REVENUE DEFINITION'. It is divided into 'Operating revenues' and 'Heat 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 income tax)

The screenshot displays the 'CoolHeating.eu' software interface. At the top, there are two main tabs: 'INPUT PARAMETERS' (selected) and 'PROJECT PERFORMANCE'. Below these, there are four sub-tabs: 'Investment and financing', 'Costs', 'Revenues', and 'Other parameters' (selected). The main content area is titled 'OTHER PROJECT PARAMETERS' and contains several input fields:

| OTHER PROJECT PARAMETERS                  |  |      |
|---|--|------|
| 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 text indicating that the project is '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

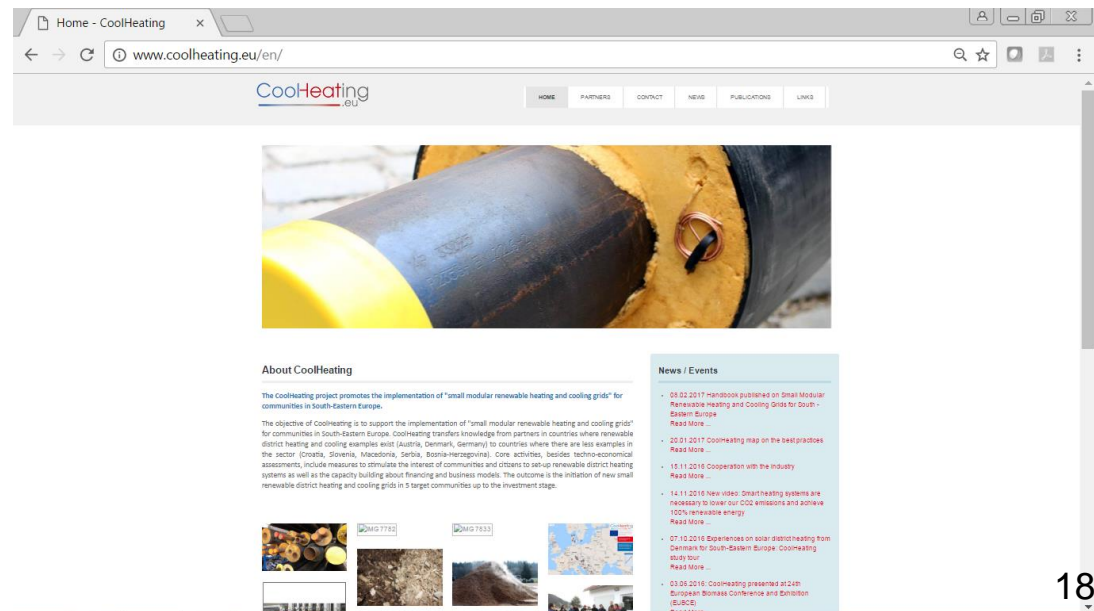


# Economic calculation tool

- 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>



Home - CoolHeating x

www.coolheating.eu/en/

CoolHeating.eu

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**About CoolHeating**

The CoolHeating project promotes the implementation of "small modular renewable heating and cooling grids" for communities in South-Eastern Europe.

The objective of CoolHeating is to support the implementation of "small modular renewable heating and cooling grids" for communities in South-Eastern Europe. CoolHeating transfers knowledge from partners in countries where renewable district heating and cooling examples exist (Austria, Denmark, Germany) to countries where there are less examples in the sector (Croatia, Slovenia, Macedonia, Serbia, Bosnia-Herzegovina). Core activities, besides techno-economical assessments, include measures to stimulate the interest of communities and citizens to set-up renewable district heating systems as well as the capacity building about financing and business models. The outcome is the initiation of new small renewable district heating and cooling grids in 5 target communities up to the investment stage.

**News / Events**

- 05.02.2017 Handbook published on Small Modular Renewable Heating and Cooling Grids for South-Eastern Europe  
Read More...
- 20.01.2017 CoolHeating map on the best practices  
Read More...
- 15.11.2016 Cooperation with the industry  
Read More...
- 14.11.2016 New video: Smart heating systems are necessary to lower our CO2 emissions and provide 100% renewable energy  
Read More...
- 07.10.2016 Experiences on solar district heating from Denmark for South-Eastern Europe: CoolHeating Web tour  
Read More...
- 03.08.2016: CoolHeating presents at 24th European Biomass Conference and Exhibition (EBC16)  
Read More...

# Thank you for your attention!



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