Evaluation of solar district heating opportunities in Bosnia and Herzegovina and Lithuania

Experiences from the EU H2020 Project Upgrade DH

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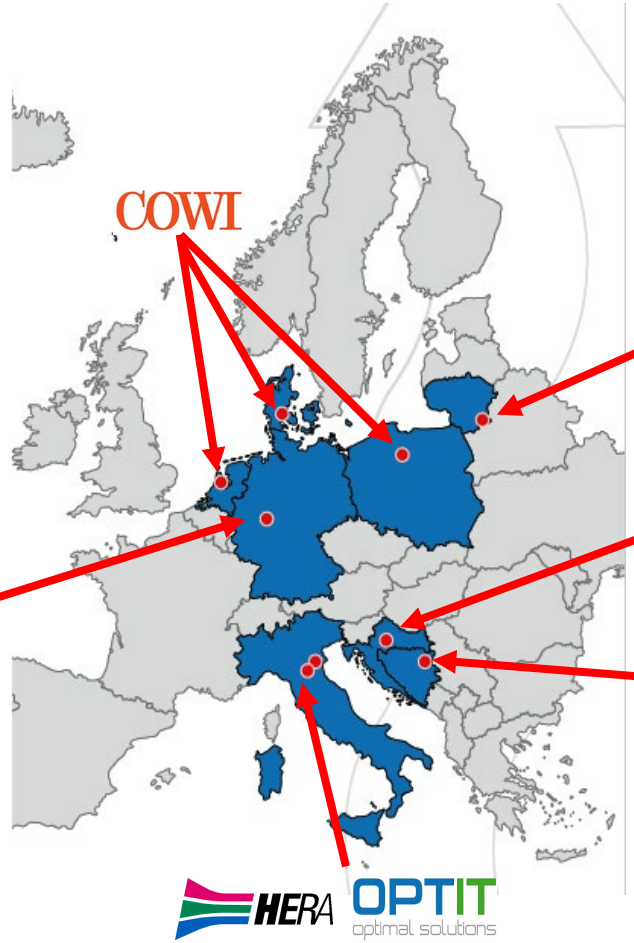
Agenda

- The EU H2020 Project Upgrade DH
- Introduction to Solar District Heating (SDH)
- Situation in Bosnia and Herzegovina
- Situation in Lithuania
- Conclusions

About the Upgrade DH project



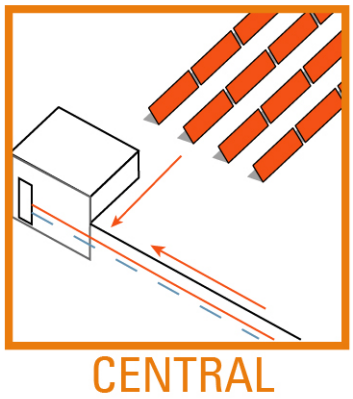
Improving existing DH networks in Europe:

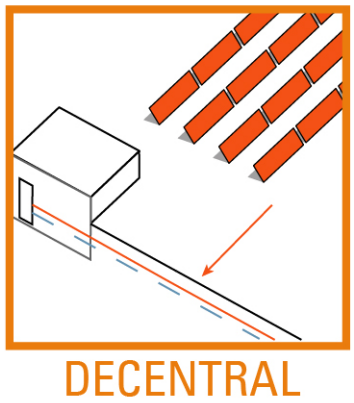
- Initiate the DH **upgrading process** for 8 systems up to the investment stage (Generation, Distribution, Use)
- Produce **Best Practices and Tools** Handbooks
- Develop regional / national action plans for DHN **retrofitting**
- **Replicate** the proposed solutions across Europe

Solar thermal energy in district heating networks

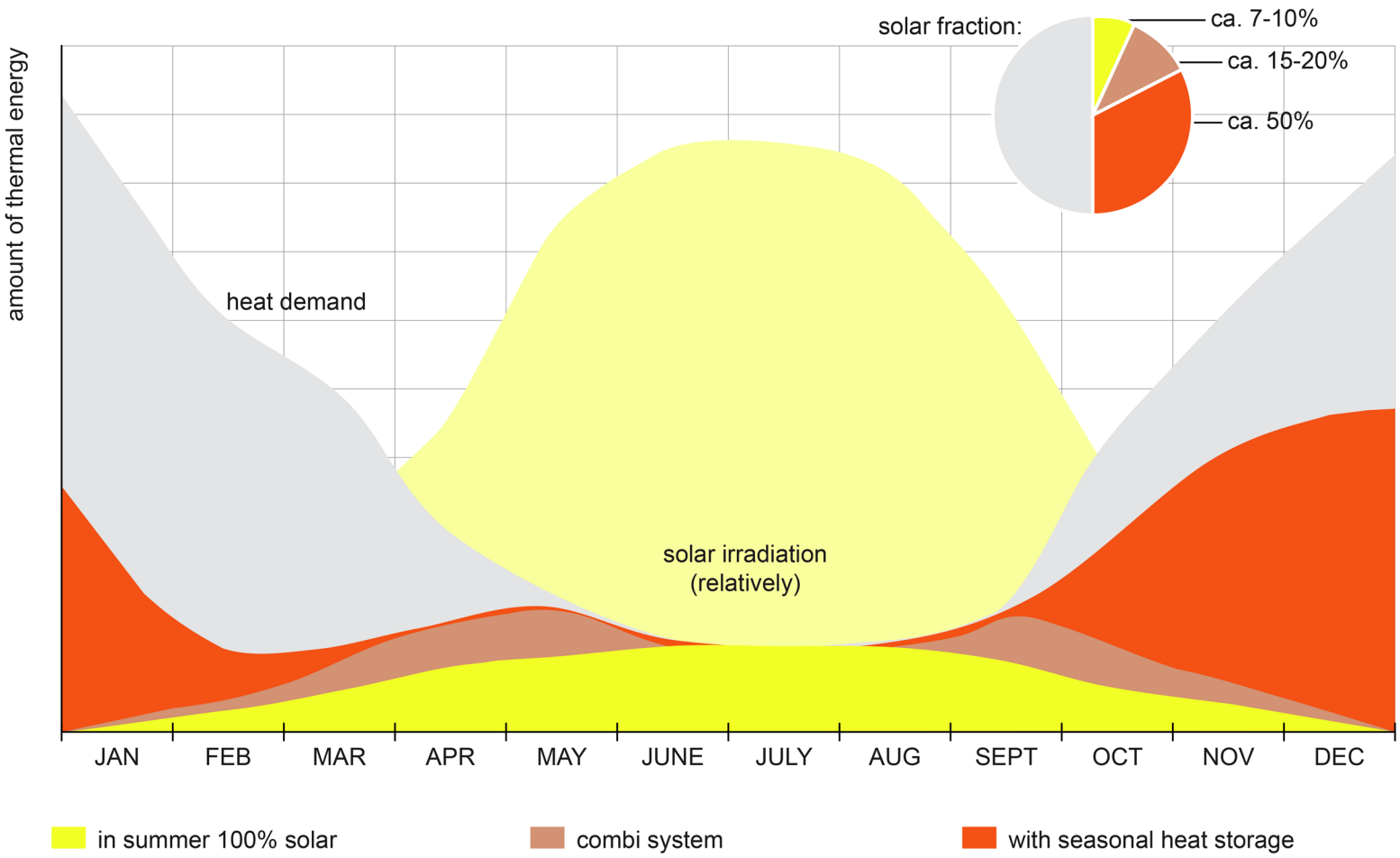
- Emission-free and really renewable
- Possible everywhere, high availability, however need for areas
- Mature and available on the market
- Power up to 100 MW
- Solar fraction up to 50 %
- Stable heat costs under 50 €/MWh, before incentives!

Applications of solar district heating



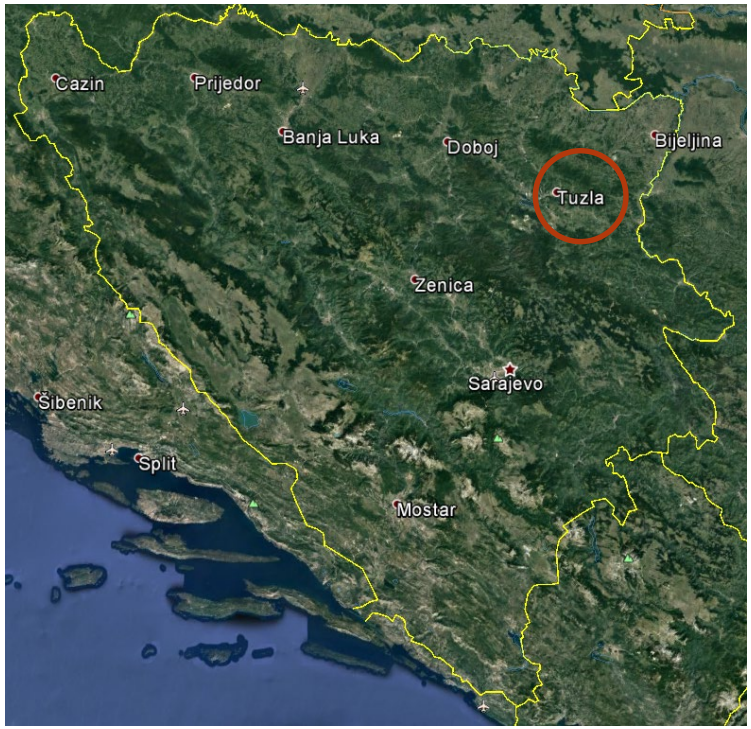


Solar irradiation and its use



District heating in Bosnia and Herzegovina

- 32 DH systems
- 1,823.78 MW installed thermal power
- 1,608,208 MWh (2017)
- 8 % heat supplied by DH
- coal 39%, natural gas 27%
- 20% pay per unit of energy
- Some newer biomass systems



Source: UNDP, MATTM

Challenges in the District Heating system Tuzla

- Technical:
  - Hydraulics difficulties (low share of thermostatic valves)
  - Limits achieved after redensification
  - Partly old substations
  - DH main pumps not frequency regulated
  - Turned off in summer
  - Private furnaces

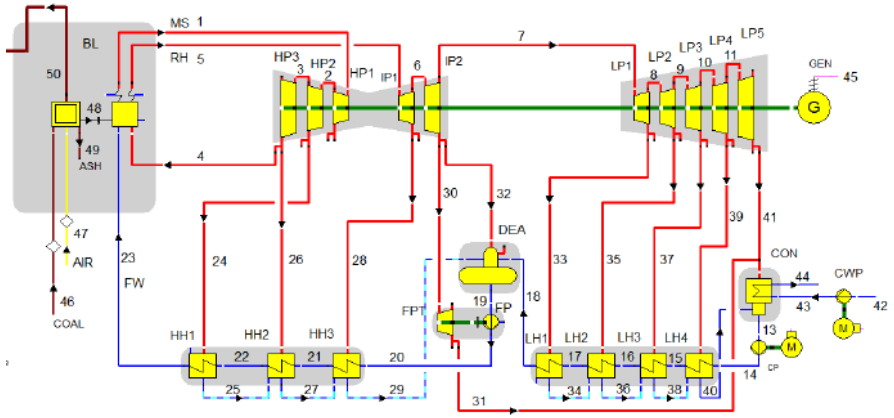
- Managerial
  - Billing system partly per heated area
  - Fully fuelled by fossil fuels

Thermal Power Plant Tuzla

- New block of 450 MWe in 2023
- DH supply only in summer
- About 365 000 MWh_t / year
- Average of 84 MW_t ; Maximum 143 MW_t
- Maximum DH starting temperature 125 °C (Design Primary 145/75°C)
- Pressure 17,5 / 6,5 bar

Centralized Solar Thermal application:

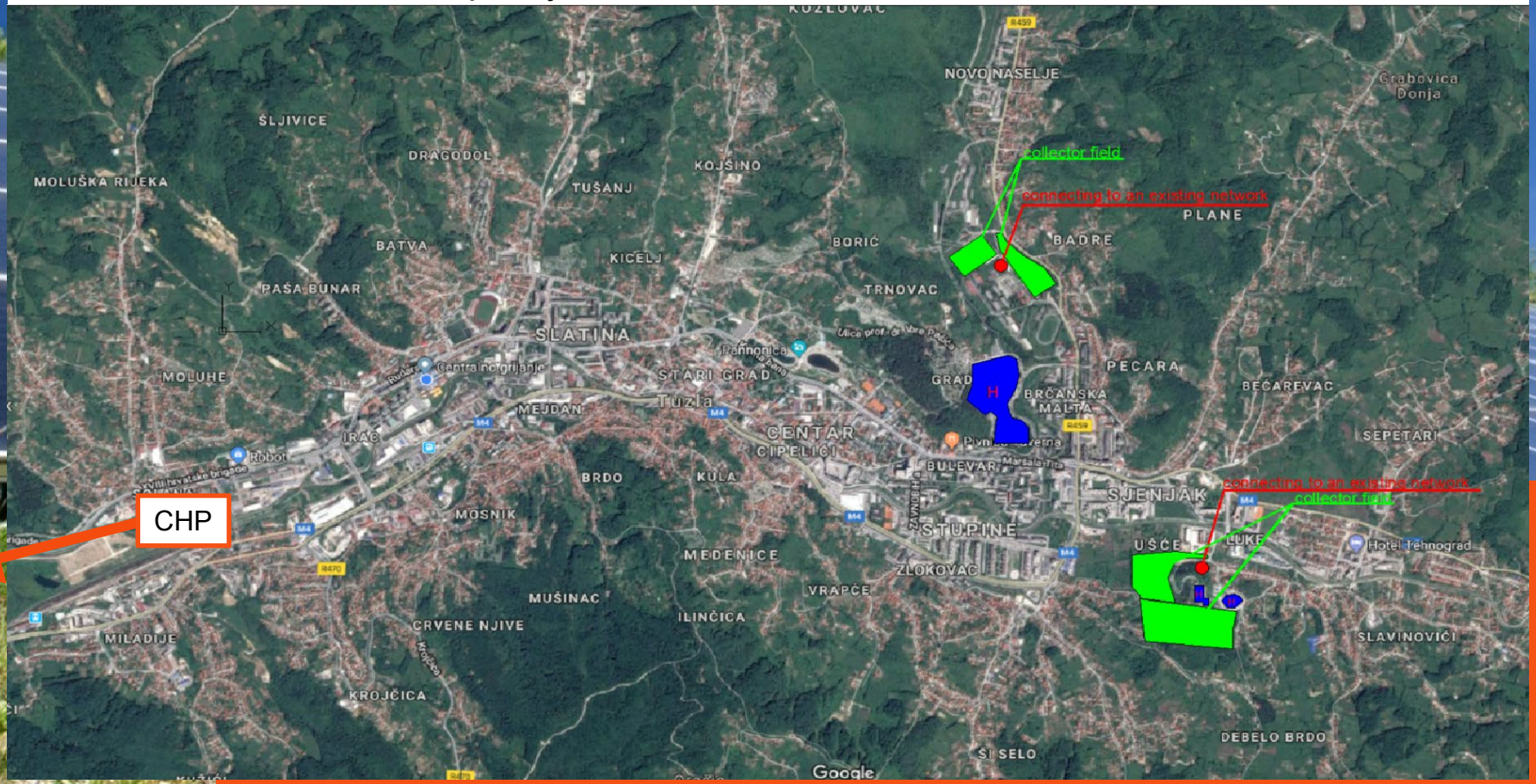
- Feedwater heating:
- No storage requirements
- No summer shut-down
- High collector yield



Source: Zhiping Yang

Distributed Solar Thermal Integration

- 23,580 users of DH (on 1,744,487 m² heated area)
- 178.8 km pipeline
- 238 MW installed capacity



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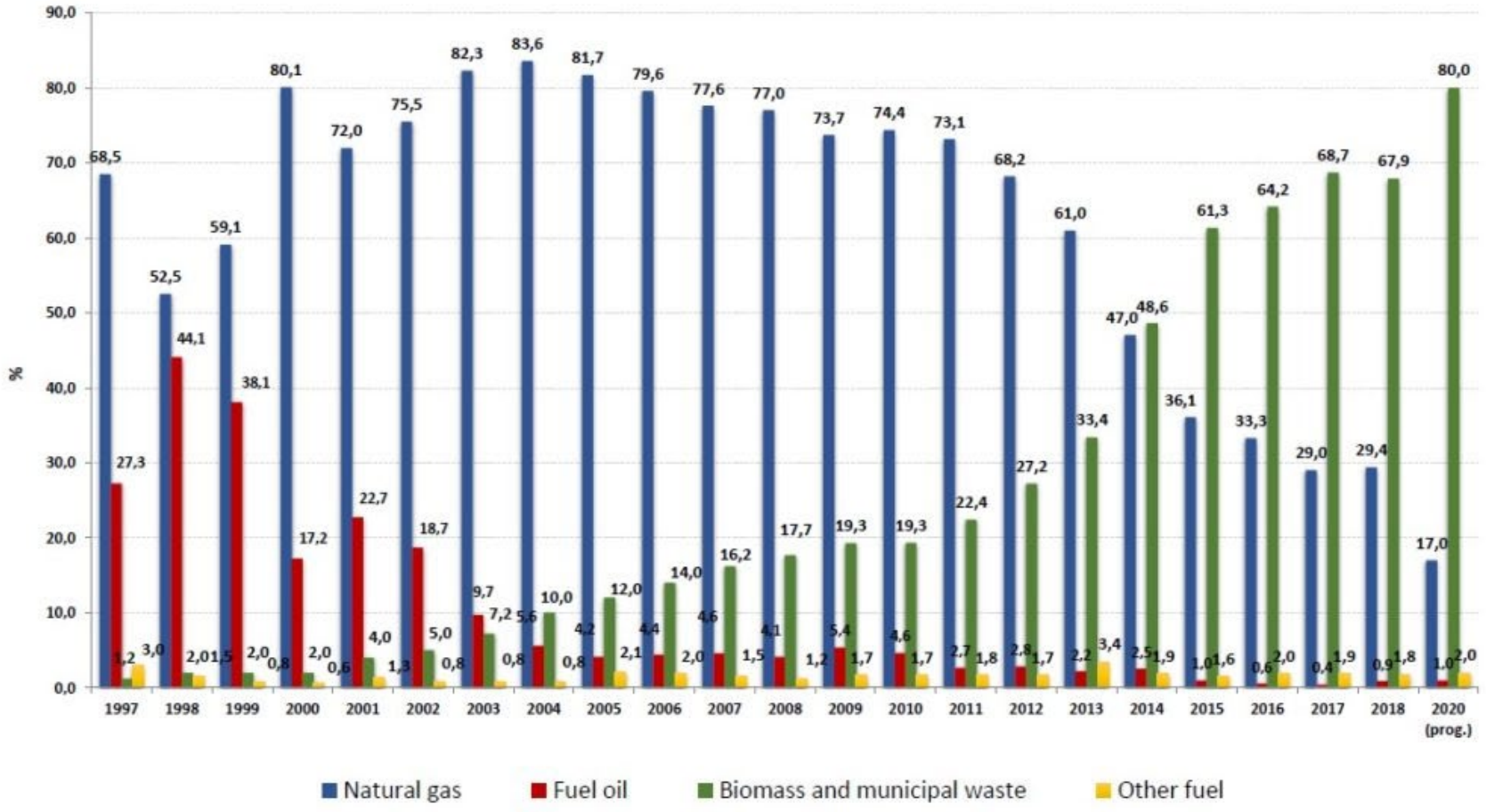
District heating in Lithuania

- 57% of citizens served by DH (Denmark: 61%, Germany 12%)
- 9,026 GWh heat production
- ~6,500 MW Gas
- ~1,500 MW Biomass
- 2,872 km DH network (~357 Networks)
- Reducing pipeline renewal due to lower EU support

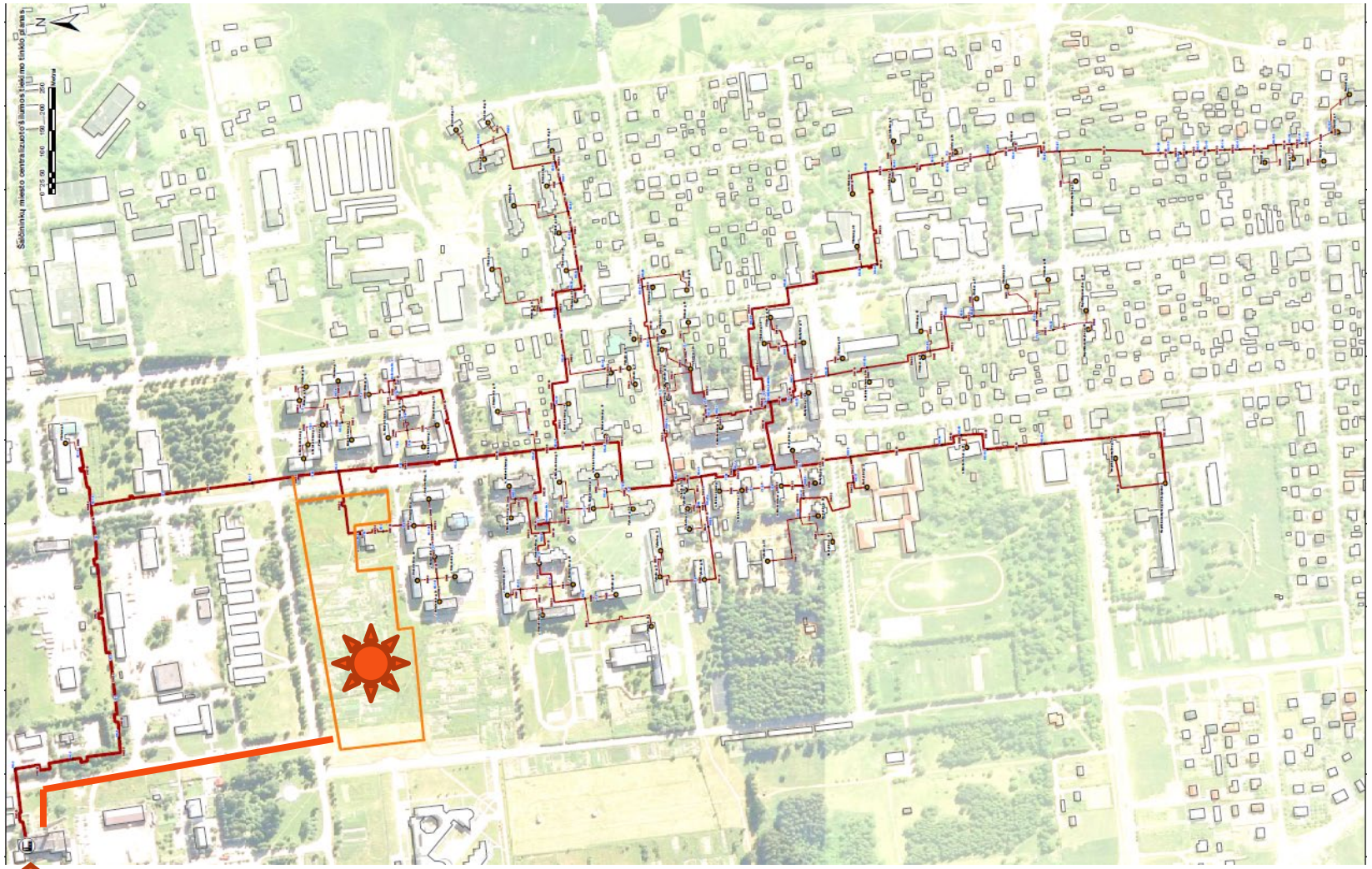
Sources: Lithuanian DH Association, EuroHeat&Power

Heat source development



Source: LSTA

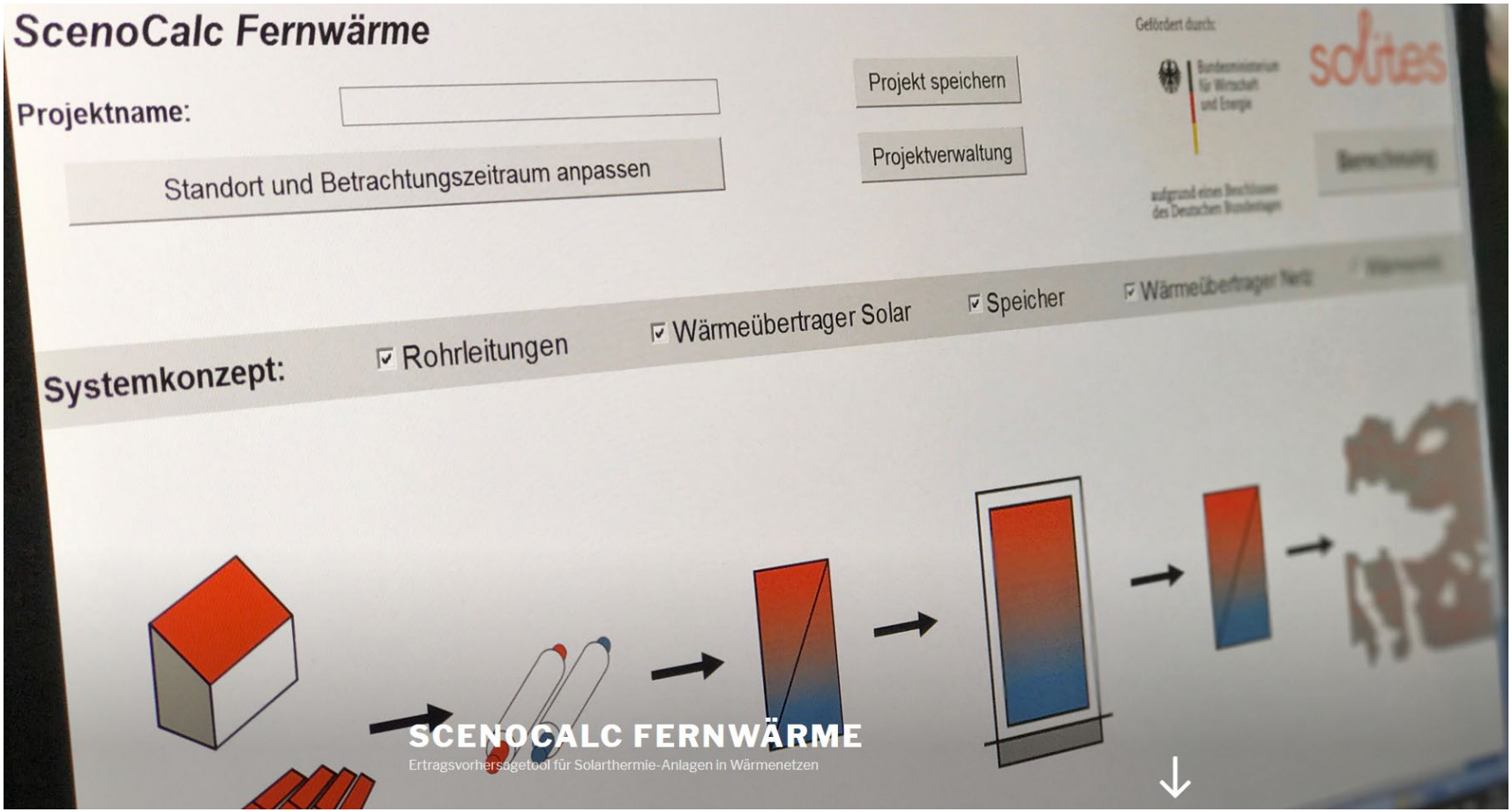
The demonstration case



Source: LSTA

Tools for Solar District Heating (SDH)

https://www.solar-district-heating.eu/en/tools/



Challenges for the demonstration case

In case of investment:

- Subsidies for CO_2 emission reduction
- Projects that increase the DH price are not permitted

Source: Baltpool

Solar thermal integration in:

Bosnia and Herzegovina

- 2nd priority (after hydraulics)
- Central integration promising
- Decentral integration time consuming

Lithuania

- Good general conditions
- Legislation obstacles if cheap Biomass is already applied
- Potential in networks that do not yet use biomass

Thank you for your attention!

Questions?
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