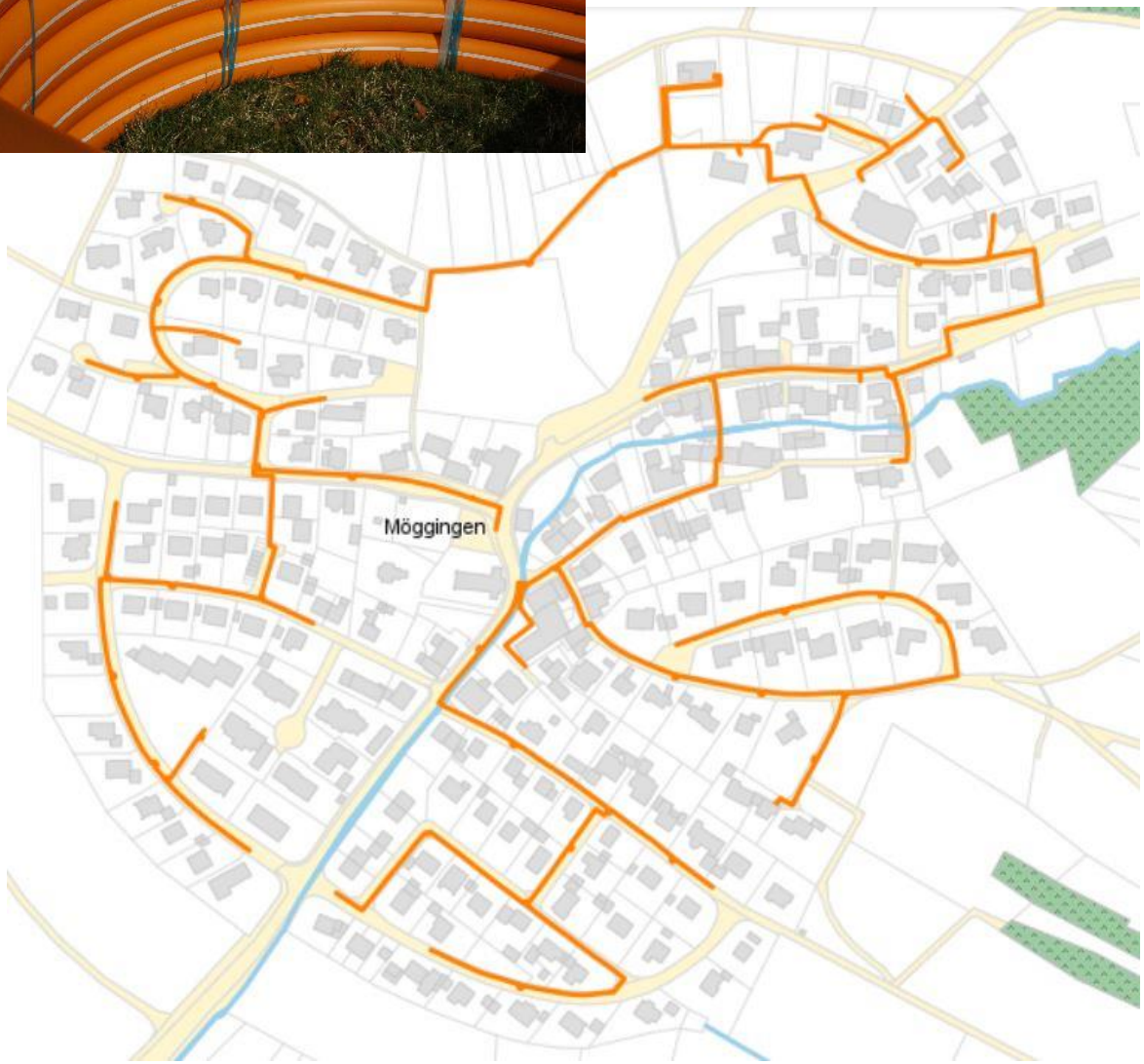
Cost structure and business model of a bioenergy village biogas plant with district heating

Volker Kromrey
Bodensee-Stiftung / Lake Constance Foundation
Programme Director Energy Transition

District heating in Möggingen

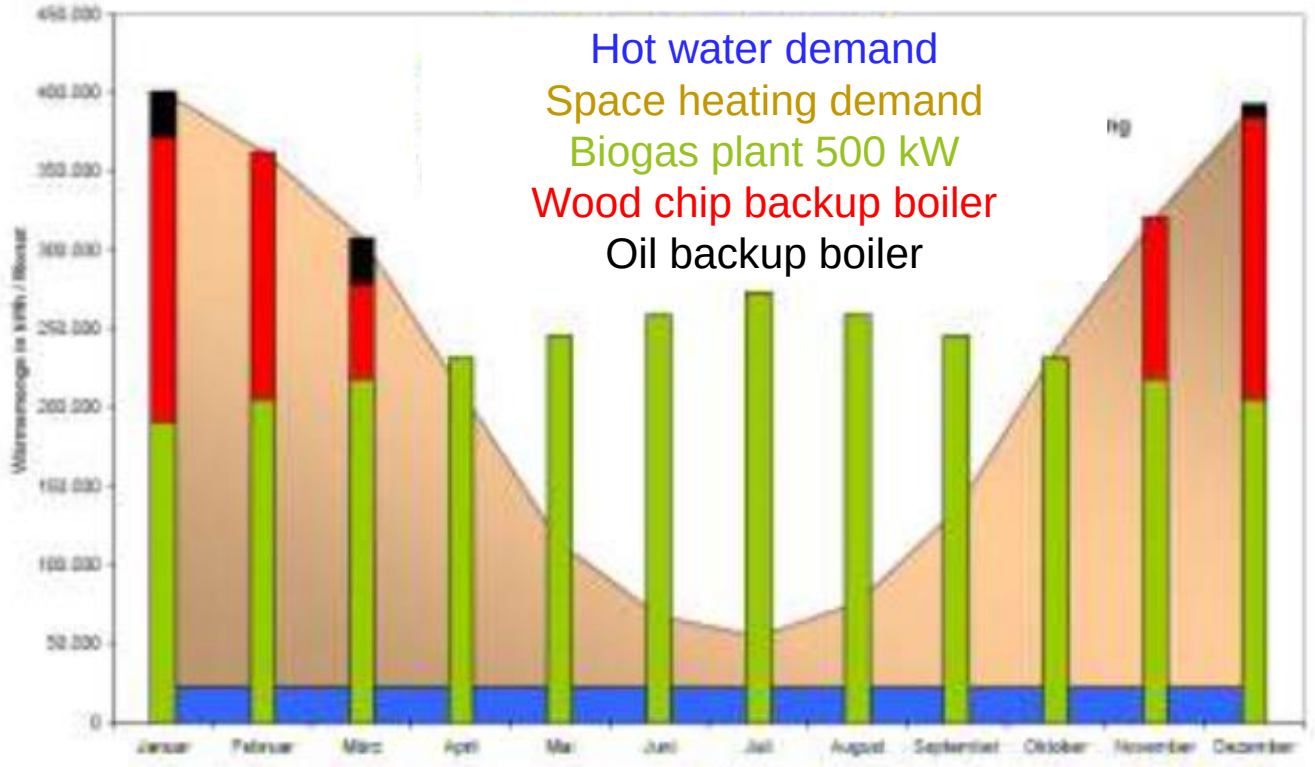
District heating in Möggingen



Heat demand and offering

	Annual average
Heat input	3.500 MW th
From biogas	62 %
From wood chips	38 %
Electricity from biogas	2 mio kWh el

Annual demand and supply of thermal energy



District heating in Möggingen

- Biogas CHP 250 kW el
- Wood chip burner 1.2 MW
- 1 km micro gas pipe from biogas plant to heating center
- 5 km heat pipes from heating center to 142 households

- 3.5 mio € invest for heating center and pipes
- 1.1 mio € invest for biogas plant (biogas farmer)

Financing

- Local energy supplier
- Bank loans (attractive conditions from state bank kfw)
- Community (profit-participation certificate)

- Remuneration for heat energy from customers

Business model

- **Farm based biogas plant**
  - Feed-in tariff 14.58 ct/kWh el
  - 2 ct/kWh th or price for raw biogas

- **District heating by local energy provider (municipal utility company)**
  - **Baseload price per household 300 €/year**
  - **Price for connection to the grid (depending on the timing)**
  - **Working price 10.56 ct/kWh th**

$$10{,}56 \ \ ct/kWh_{th} = 9{,}00 \ \ ct/kWh_{th} \times \left(0{,}7 \frac{7{,}13}{6{,}30} + 0{,}2 \frac{123{,}56}{93{,}28} + 0{,}1 \frac{110{,}4}{95{,}27} \right)$$

→ **13,56 ct/kWh th mixed price for customer**

Bodensee Stiftung

COALESCCE
Interreg Europe

European Union
European Regional
Development Fund

Thank you for your interest!

volker.kromrey@bodensee-stiftung.org