

City/region	Großschönau (Lower Austria)
Supporting partner	AIT

Map showing local heating and cooling demand and supply

	City only	Neighbourhood only	Individual installation		
			No details	Additional Info	Monitored data
H/C demand	X				
H/C infrastructure			X		
Sustainable H/C potential	Energy efficiency				
	Excess heat		X		
	Geothermal				
	Bio-energy				
	Solar thermal				

Heat demand (region - inside blue boundaries):
2012: 15.8 GWh/a
2025: 13.6 GWh/a

The economic potential for district heating for a connection rate of 90 % and a heat demand density of ≥ 10 GWh/km²a is about 10 GWh/a. With a connection rate of 45 % and a heat demand density of ≥ 20 GWh/km²a it is about 5 GWh/a.

The village centre of Großschönau which is connected to the DH network is located inside the blue rectangle.

The heating plant of Großschönau supplies the centre and in addition to the municipal facilities also businesses and households are connected through a distribution network.

The wood chip heating plant has an output of 500 kW, briefly up to 550 kW, was built in 1994 and has been since continuously in use.

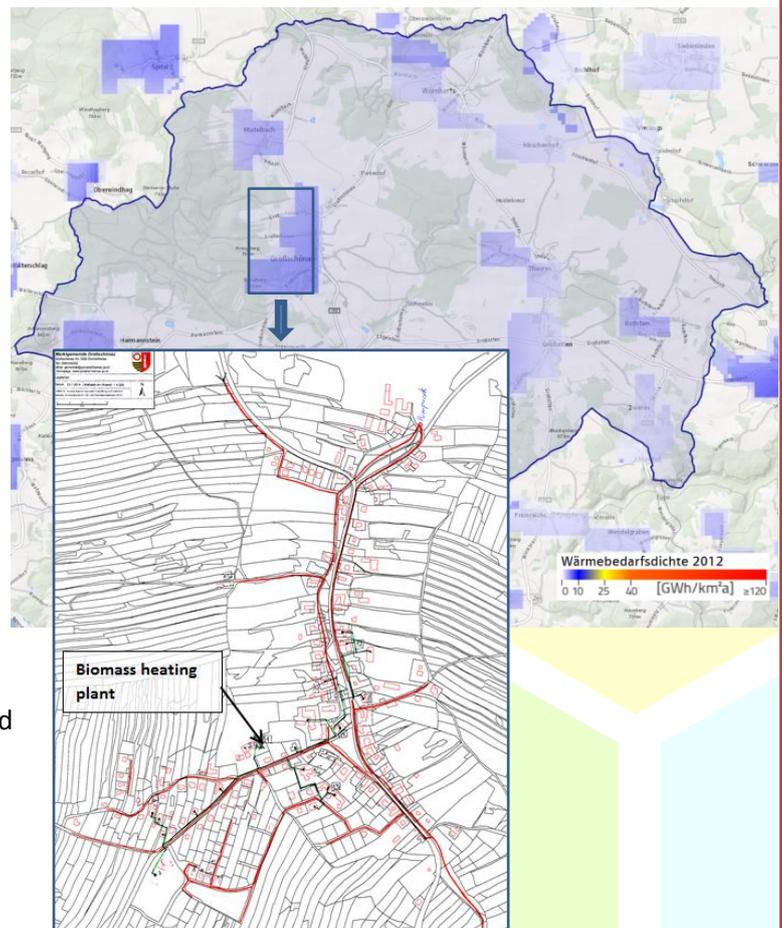


Figure 10: Heat requirement density of Großschönau in 2012 and district heating network of Großschönau with drawn in biomass plant location (Sources: <http://www.austrian-heatmap.gv.at/karte/>; Sonnenplatz Großschönau GmbH)

Current challenges - opportunities

The aim of the village of Großschönau is to develop concepts and strategies for sustainable energy supply for rural communities having a high degree of transferability to other regions.

For supplying the DH network with a wood chip heating plant 30 % more biomass is burned as locally grows. In summer, the system serves only for supplying hot water. Efficiency potentials are suspected here. Connected are all municipal buildings, commercial establishments (guest house, grocery store, car workshops ...), rectory, different housing complexes, etc. A central buffer storage does not exist. On the roof of the public school a solar thermal system is installed which supplies the own needs of the school. Furthermore, on some private homes solar thermal systems are installed to cover part of the needs. All of them are not connected to the DH network.

You will find a concrete plant in about 1 km distance, a wood-working company near the village and a local meat producing company, which may offer residual heat. A nearby water treatment plant can serve as heat source for a heat pump for decentralized integration.

Relevant stakeholder for this project and mainly addressed in the STRATEGO project is the research and competence centre Sonnenplatz Großschönau. One of its managing directors is also the manager of one of 99 climate and energy model regions in Austria. This enables the possibility of using this network for multiplying the findings of the project.

Identified project

The main target is to optimize the whole DH system with the focus on economic and ecologic feasibility.

The following potentials should be taken into account:

- Residual heat (direct integration)
- Residual heat (integration via heat pump)
- Solar thermal (centralized integration)
- Solar thermal (decentralized integration)
- Booster heat pumps

Business model

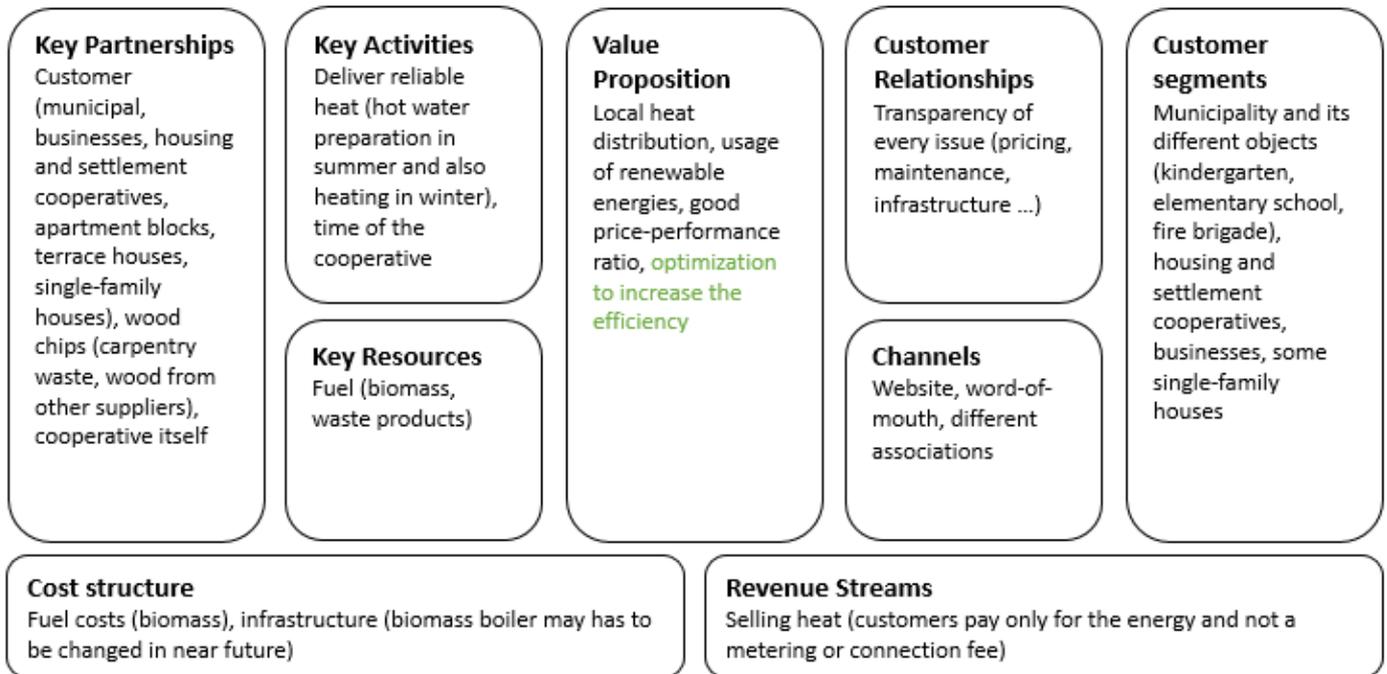


Figure 11: Business model of Großschönau (Source: own visualisation)

Key Partnerships

The customers, which consist of the municipality, some businesses, housing and settlement cooperatives, apartment blocks, terrace- and single-family houses, are one of the main key partners of Großschönau. Another big role plays the cooperative itself and biomass procurement. The biomass (in form of wood chips) is mostly provided within the municipality, through the waste of a carpentry and wood from other different suppliers (e.g. timber owners).

Key activities

Reliable heat distribution is the highest priority in the DH-grid of Großschönau. In summer the heat is used for hot water preparation and in winter also for heating the buildings. That means, the grid is operated over the whole year. Although the grid has high losses in summer, it is necessary to deliver heat, because of the domestic hot water preparation and a local butcher is also connected to the network and needs heat for food hygiene through the whole year. The cooperative spends a lot of time for energy consulting and other services concerning energy which they do in common for free.

Key resources

The most important resource is biomass as fuel to produce the heat.

Value Proposition

The main duty is to deliver the customer with sufficient heat with the right temperature at each connection point. The DH-grid operator in Großschönau does this since its start in 1995 through renewable energies. Since over 20 years, the customers get reliable heat with a good price-performance ratio. For example, the customers pay only for the consumed energy and not a metering fee, which would be standard in Austria.

The new business model:

As the operation in summer is not efficient due to the high heat losses. The stakeholders of Großschönau are working on strategies and options to optimize the grid. Therefore, Großschönau is also included in some research projects to find solutions and improve the efficiency. The aim is to reduce the costs of operation and therefore also the costs for the customers.

Cost structure

The highest costs result from the biomass procurement and the needed infrastructure (at least the boiler has to be changed during the upcoming years as it is in operation since 1995). Some waste biomass is offered from different suppliers for free – only the transport costs have to be paid. It has to be mentioned, that no personnel costs exist, because the members of the cooperative commonly work voluntary (e.g. if a fault happens). Although, the grid is not economic during summer operation on the one hand because of the high network losses and on the other hand due to high return line temperature and the effect, that the boiler has to be operated in stand-by mode even if the grid requires high performance / temperature.

Customer relationship

Transparency towards the customers is a central issue and one of the success factors of Großschönau. The grid operator offers full insight to their customers to all topics. This begins at disclosing the expenses for fuel procurement, infrastructure and maintenance and ends at the customer pricing.

Channels

The most (local) customers know Großschönau as it was the first biomass plant in Austria which was located in a public building and connected to a heating grid. Since this innovative step, Großschönau is integrated in different associations and research projects. Furthermore, its activities are disseminated via word-of-mouth and through the website.

Customer segments

The customers are mostly municipal buildings. The local kindergarten, elementary school and the fire brigade is connected to the grid. Moreover, housing and settlement cooperatives are big customers as well as different businesses and some single-family houses.

Revenue streams

As they decided to offer as fair prices as possible, they only earn money from selling heat which is delivered to the customers without a metering fee or a fixed price which is related to the connection power.

Results of the stakeholder meeting

Date	07/02/2014
Participants	Sonnenplatz Großschönau GmbH, AIT
The general situation of the heating grid was explained and the existing problems. Großschönau has to struggle with expanding their grid (no capacity to connect new customers) and efficiency problems especially in summer-period. Due to this problems, it was discussed to integrate local alternative energies and how the grid-connection could happen. This was also the foundation stone for a follower project and further cooperation in order to investigate these integration which should be replicable for other regions.	

Input into the local heating and cooling plan

For the village Großschönau no local heating and cooling plan exists because the area is too small to do efforts in such plans. But they continuously check if new buildings could be connected to the grid and do a lot attempts to enhance the efficiency and to include waste heat and alternative energies. As Großschönau was a target region in the STRATEGO project, they strengthen their activities and is now a project partner in the national funded project “heat_portfolio” in which the integration of alternative energies (waste heat, solar thermal, heat pumps ...) in existing heating grids is investigated.