austria solar
SOLAR HEAT IS FOREVER.

Klima- und Energie-Modellregionen
Wir gestalten die Energiewende

klima+ energie fonds

MANUAL
Public participation models for solar district heating

September 2018

This brochure was created for the GZ B770444 project, which was funded by the Climate and Energy Fund, “K & S Project - Public Participation Models for Solar District Heating”.

The project partners were:

KEM Energiebezirk Freistadt, KEM Eferding, KEM Traunviertler Alpenvorland, KEM Biosphärenpark Walsertal, ARGE Biomasse-Nahwärme, Nahwärme Eugendorf GmbH, nahwaerme.at Energiecontracting GmbH, S.O.L.I.D. Gesellschaft für Solarinstallation und Design mbH, Arbeitsgemeinschaft Erneuerbare Energie Vorarlberg, Energieagentur Obersteiermark, Klimabündnis Österreich GmbH

Imprint

Austria Solar - Association for the Promotion of Solar Thermal Energy
Mariahilferstraße 89/22, 1060 Vienna
Chairman: Robert Kanduth
Managing Director: Roger Hackstock

The Manual is available also online at www.solarwaerme.at

Contents

1. Purpose of this manual

Until now, the distribution of solar thermal systems has mainly been confined to small to medium-sized decentralised plants, installed in private housing and companies. With the development of large area collectors and the experience with large solar thermal plants in district heating, solar heating is also becoming increasingly attractive to municipal utilities, heating plants and large companies. In summer biomass district systems occasionally show problems with part-load operation. Compared to full-load operation, part-load operation results in lower efficiency, which should be avoided. Utilizing solar heat in the summer months therefore is an interesting alternative for heating plants, but high initial costs often obstruct the investment decision.

For large solar thermal systems, public participation models offer an alternative for financing, which has been implemented almost exclusively in photovoltaic systems and wind farms so far. In public participation private individuals are given the opportunity to acquire co-ownership of an energy plant for a small financial contribution. A transfer of these experience to solar thermal systems in heating grids would allow heating plant operators to invest in the supply of solar energy despite limited capital of their own. Offering the option of participation in the heating facility's solar plant could also have a positive impact on image and customer loyalty.

The aim of this manual is to present the possibilities and requirements of large-scale, public-funded solar thermal installations by way of practical examples. The manual serves as an instruction manual for plant operators, solar companies, service providers and representatives of climate and energy model regions and beyond. Thus, the large interest in public participation in photovoltaic systems and wind farms, which are always sold out within days, should be harnessed for large solar thermal plants in district heating.

2. Market potential for solar district heating

Large solar systems deliver the biggest contribution in summer, therefore summer months have the greatest market potential for the solar support of heating plants. A survey of representatives of the Landesverbände des Österreichischen Biomasseverbandes was carried out, to determine the potential of biomass heat plants that are operated throughout the year. According to their estimates,1,546 (73%) of 2,108 biomass heating plants run throughout the year. The highest proportion of these are in the Federal States of Styria, Upper Austria and lower Austria.

Federal State	Biomass heating plants with Summer operation	Biomass heating plants overall according to Bioenergieatlas 2016	Accuracy of the estimation as a percentage
	Number	Number	%
Burgenland	76	80	95
Lower Austria	280	560	50
Upper Austria	310	387	80
Styria	492	656	75
Salzburg	100	100	100
Carinthia	111	148	75
Tyrol	67	67	100
Vorarlberg	110	110	100
Total	1 546	2 108	

Source: ÖBMV Landesorganisationen, March 2018

Table 1: : Assessment of the potential of biomass heating plants with summer operation

Overall, according to a study by AEE INTEC, there are approximately 2,400 heating grids in Austria. In 2017, there were 32 solar-assisted heating grids, with a thermal capacity of around 27 MW (38,000 m² total overall surface), detected in the programme “Solare Großanlagen” of the Climate and Energy Fund. Of these, 24 plants are larger than 350 kW (500 m²). With a total of more than 1,500 biomass heating plants that operate in summer, there is a large untapped potential for the use of large-scale solar thermal plants. If the return flow temperatures in the heating grid could be reduced with appropriate efficiency measures of grid customers, over 50 % of the annual amount of energy in the grid could be covered by solar heating.

An assessment by experts, within the framework of the climate and energy strategy, revealed that in the long run up to 10 TWh of heat can be supplied by solar heating, with seasonal storage within district heating grids. Until 2030, 6 TWh could be utilized, with a saving of 1.4 million tonnes of greenhouse gases, which is five percent of the Austrian greenhouse gas target. Experts also calculated that the solar initiative would represent an investment of EUR 4.5 billion, which would create 2,500 permanent jobs.

3. Public participation models for solar district heating

There are various participation models that are suitable for public financing of solar thermal district heating. Basically, participation models may be distinguished by voting rights, risk-sharing and the type of disbursement. The manual, "Leitfaden zur erfolgreichen Umsetzung von finanziellen BürgerInnenbeteiligungen bei erneuerbaren Energien" by AEE INTEC, compiled in 2017 on behalf of the provincial government of Styria, provides a comprehensive description of possible forms of participation. Figure 1 provides an overview on forms of participation.

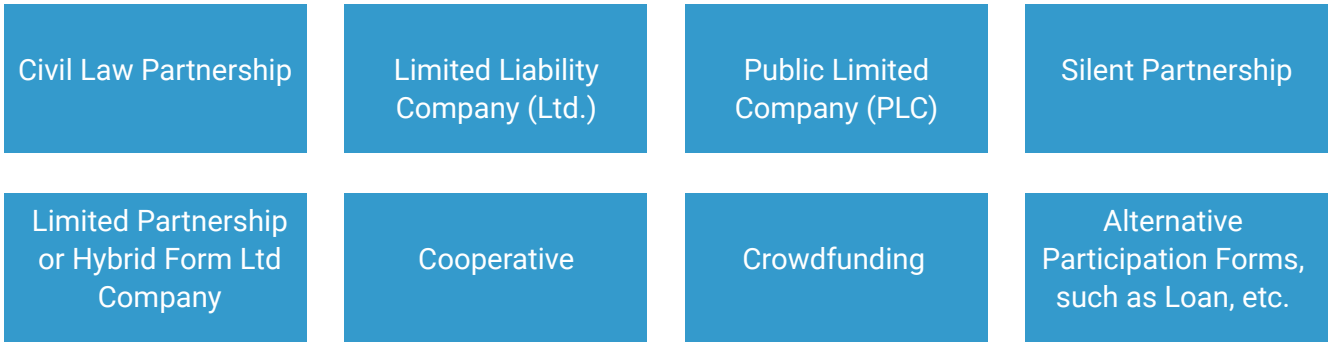


Figure 1: Overview on forms of participation

In order to identify the most appropriate public participation models for solar thermal plants in district heating, a workshop was conducted, attended by representatives of climate and energy model regions and operators of heating plants. The result was a focus on three most suitable forms of participation: Cooperatives, companies with limited liability (GmbH) and alternative forms of participation. The first two forms of participation are often the organisational form of heating plants. Discussions revealed that, for broader public financing, alternative forms of participation such as loans, voucher models or sale & lease back are very suitable. Often, however, there is a cooperative or GmbH behind it, which makes use of the alternative form of participation. The various options for financial participation in solar thermal plants in district heating will be shown in the following practical examples.

3.1 Loans

Loans are a popular form of participation for solar energy plants owned by citizens. The solar plant is built by a company, e.g. an operating company, which receives loans from private individuals. The repayment of the loan, with interest (annuity payments), takes place either annually or at the end of the contract period (due). In the latter case, only the interest is paid out every year. This form of financing is also referred to as crowdlending, because one entrepreneur borrows money from a large number of individuals. A "qualified subordination agreement" is concluded with the private creditors, which eliminates the need for the company (borrower) to have a banking licence. However, the private lenders assume the risk that their loans will not be repaid, and that they will receive no interest, in the event of a serious financial crisis, because other creditors, e.g. suppliers, will be first in line for repayments. The loan model is suitable for the financing of solar thermal systems in heating grids, regardless of the project size and the number

of plants. For an investment under EUR 1.5 million, no prospectus is required, because the alternative financing law applies, and this simplifies the administrative burden.

This form of loan participation can also be offered via a crowdfunding platform (e.g. greenrocket, Kickstarter, conda), which takes over the contractual and financial management in terms of the lenders. The inclusion of many citizens results in a high level of public attention and a positive image for the existing biomass local heating system, which is supplemented by a solar plant.

The loan, as a form of participation, is very well suited to the subsequent construction of a solar thermal plant in the heating grid, regardless of the project size and the number of people involved. The settlement can also take place via a crowdfunding platform.

Description

Legal form	Subordinated loans are governed by the alternative financing law. The need for a prospectus does not apply to investments up to EUR 1.5 million.
Shares	The borrower sets the amount for the minimum deposit, maximum amount per person, annual yield, duration and repayment models, and the conditions for premature withdrawal from the contract. Usually, the shares of a loan are offered in denominations of up to EUR 1,000 whereby multiple shares can be purchased.
Repayment and interest payments	The borrower sets the interest rate, which is usually about 3 % to 5 %. The repayment can be due annually (annuity payments) or upon maturity. Standard terms of subordinated loans are 10-15 years, occasionally more than 20 years.
Taxation	The disbursed returns of the subordinated loans is not subject to final taxation. The private lender is responsible for paying tax on them. For people whose income ensues purely from employment, the returns of the loan is tax free up to an amount of EUR 730, as autonomous earnings.
Liability	The lender shall be liable, with his deposit. Before signing the subordinated loan, he must be informed regarding assets, liabilities, financial position, profits and losses, future prospects and rights (e.g. the right to repayment, interest payment, right of termination, etc.). In the worst case, the total loss of the loan amount could be a threat to the subordinated loan.
Participation	There is no possibility for lender participation.

Practical Example

SOLID INVEST

Source: Picfly.at Thomas Eberhard

SOLAR INVESTMENT
Construction of large solar thermal systems, both at home and abroad, and optimisation of existing plants

LOCATIONS
Graz, Arizona, Singapore

PARTICIPANTS
355 private investors

MINIMUM SHARE
Euro 500

SUM OF TOTAL INVESTMENT
EUR 2.5 million

RUNTIME
min. 5 years

DISBURSEMENT
annual interest rate at 4% of the loan amount

INFORMATION
www.solid.at/invest/

3.2 Sale & lease back (with voucher model)

The participation form, sale & lease back, is basically a bundling of many purchase and rental contracts into a project. The constructor of the solar plant sells single collectors of the plant to citizens, and subsequently leases or rents it back from them. The implementation is relatively simple and can be customised. As a rule, a fixed leasing rate is agreed, which guarantees a fixed interest rate for private buyers of collectors.
Solar thermal plants are able to clearly assign the sold collectors to the individual buyers, which is a favourable prerequisite for this form of participation. At the end of the term, the operator buys back the collectors at an agreed price and continues to run the plant as a whole.

Repayment by voucher model

A possible repayment model for the purchase price is to give vouchers rather than cash payments. Usually, citizens give preference to cash repayments rather than the voucher model.

In order to lend favour to heat vouchers for solar thermal systems, a more attractive interest rate than for direct cash repayments, or other advantages, must be offered. Vouchers for goods or heat offer the operators of heating plants additional options for customer loyalty and create more public attention than pure cash payments.

The sale & lease back participation form is suitable for the subsequent construction of a solar thermal plant in the heating grid, because the collectors sold can easily be assigned to the individual private buyers.

Description	
Legal form	Sale & lease back is not a legal form, but rather a merging of many purchase and lease contracts. However, for the sale of the collectors, the operator needs a business licence for trading.
Shares	The purchase price for the collectors is set by the constructor of the solar plant. Several collectors can also be purchased.
Leasing rate and interest	The leasing rate is fixed in the contract, either as pure interest or including an aliquot repayment of the purchase price. After the end of the contract period, any possible residual value for the collectors must be repaid. The usual terms are 10-15 years.
Taxation	The repaid returns of sale & lease back is not subject to final taxation. The private lessor is responsible for paying the taxes. With the voucher model, the private lessor is not responsible for paying any taxes.
Liability	The constructor of the solar plant and the lessee bear full liability for the functioning of the plant, including any maintenance work required. In the contract with a private lessor, the term of the lease, the lease rate, the opt-out option and buy-back rights are pre-determined, as are maintenance and insurance.
Participation	The lessor is the owner of the collectors, but has no say with regard to participation. Specific allocation of the individual collectors to the lessors (e.g. via serial number) and easy disassembly of the collectors are important.

Practical Example

SOLARE NAHWÄRME EUGENDORF

Source: Nahwärme Eugendorf

SOLAR SYSTEM
540 kW thermal capacity (772 m²)
278 MWh annual thermal yield

CENTRAL HEATING BOILER
3.5 MW wood chip boiler

LOCATION
Stettnerstrasse 2, 5301 Eugendorf

YEAR OF CONSTRUCTION
2010

PARTICIPANTS
about 130 private and municipal investors, all are customers in the district heating network

MINIMUM SHARE
1 m² of collector surface for EUR 300

SUM OF TOTAL INVESTMENT
about EUR 160,000

RUNTIME
15 years

HEAT VOUCHER
350 kWh per m² collector are credited to the heating bill annually

INFORMATION
http://www.nahwaerme. net/cms/index.php/de/das-unternehmen/referenzprojekte/biomasse-nahwaerme/12-projektbeschreibung-biomasse/64-eugendorf

3.3 Cooperative

Cooperatives are one of the oldest forms of economic organisation. A central principle of the cooperative is communal self-help. Cooperatives are corporations with limited liability. The cooperative as a legal form focuses on cooperation projects and is not aimed towards maximizing profits. However, generation of profits is not excluded. The organs of the cooperative are a general assembly, an executive board and a supervisory board. The board of directors and the supervisory board are elected by the members of the cooperative. The effort and costs for the establishment of a cooperative are manageable. When there is a large number of members, the cooperative offers simple rules for entering and leaving the cooperative. The members of the cooperative have full rights of say.

The management is transferred to a board of directors, which is accountable to the general assembly. For larger cooperatives, the board of directors is also controlled by a supervisory board.

Cooperatives are suitable as a form of participation, regardless of whether the initiator is a heating supplier or a citizen. This legal form is beneficial for small to medium-sized heating grids with their own heating plant. The motivation of citizens to participate in such associations is often the fact that they would like to support the energy transition, although they do not have the possibility of a solar installation on their private roof.

The cooperative participation form is well suited to handling the subsequent construction of a solar thermal plant in the heating grid – either within the framework of the existing cooperative or by founding a new cooperative for the construction of the plant.

Description	
Legal form	Cooperatives are corporations with limited liability. The organs are the general assembly, the executive board and the supervisory board. The members of the management and supervisory boards are members of the cooperative.
Membership & shares	To become a member, one has to apply to the board of the cooperative. The minimum amount for a share (e.g. EUR 100) is defined by the statutes of the cooperative, the maximum number of shares per member may be limited or remains open. Similarly, a minimum holding period is set for the cooperative shares (e.g. three years).
Profit sharing	The members of the cooperative have a share in the profits and the capital. The general assembly decides on the distribution of earnings or the covering of losses.
Taxation	The cooperative is subject to corporate income tax, the payment to the members of the cooperative is subject to capital gains tax. The profit of the cooperative is calculated from the returns of the investment minus depreciation, maintenance, insurance and administrative costs of the cooperative. The profit is taxed before payment to the members of the cooperative, in the form of corporate tax, currently at 25 %.

Liability	Members are generally subject to a simple limited liability, i.e. if one has drawn EUR 1,000 cooperative shares, in the worst case one will lose EUR 2,000 (the EUR 1,000 deposit and an additional EUR 1,000, which, within the framework of the liability, one has to pay to the cooperative in the event of bankruptcy). Therefore, the liability for a member of the cooperative is limited. But, in the event of bankruptcy, members are only liable if not all obligations are covered.
Participation	At the general assembly, all members of the cooperative have a corresponding number of voting rights, according to their share in the cooperative.

Practical Example

FERNWÄRMEGENOSSENSCHAFT BOCKFLIESS (CUSTOMER COOPERATIVE)

Source: Fernwärme Bockfließ

For solar thermal systems, there are yet no examples of cooperatives

DISTRICT HEATING
2.5 MW straw-fired boiler
1.7 MW wood chip boiler
1.75 MW oil boiler (peak load)

LOCATION
Fernwärmeweg 1, 2213 Bockfließ

YEAR OF CONSTRUCTION
2013

PARTICIPANTS
385 members (customer cooperative of district heating customers)

MINIMUM SHARE
EUR 364 (cooperative share at new connection to district heating)

MINIMUM HOLDING PERIOD
10 years

SUM OF TOTAL INVESTMENT
EUR 6.5 million

INFORMATION
http://www.fernwaerme-bockfliess.at

3.4 Company with limited liability (GmbH)

The GmbH is a legal entity with its own legal identity. Through the acquisition of shares, one becomes a shareholder of the company and is basically involved in its profit and loss. The share capital consists of the shareholders' initial contributions. A CEO takes over the management of the company and is liable to the corporation. A supervisory board needs only to be appointed when certain financial and personal limits are exceeded. The transfer of shares is only possible by notarial act, which means increased management-related efforts and costs, if shares change hands.

The formation of a GmbH is useful only for a long-term investment perspective and a smaller number of participants. In the construction of a solar thermal plant through a heating supplier, which is run as a GmbH, participation is possible for third parties by transfer of shares. The initial establishment of a project company as a GmbH is suitable for the establishment of a plant, if the prospect exists, that in future more plants will be constructed.

For broader public financing, the GmbH can be used as a legal entity in order to offer alternative forms of participation, such as loans, voucher models or sale & lease back, for the financing of the solar system

Only under certain conditions the GmbH participation form is suitable for the subsequent construction of a solar thermal plant in the heating grid. In practice, the existing organisational structure of the heating plant is a determining factor as to whether a GmbH is an appropriate solution. Basically, this form of participation is more suitable for project sizes from 3.5 MW (5,000 m² collector area).

Description	
Legal Form	A GmbH is a legal identity in its own right. The partners participate by investing their shares in the capital stock.
Shareholders & Shares	For the establishment, capital to the amount of EUR 35,000 must be available, of which at least half must be paid in cash. For the establishment of the GmbH, a partnership agreement, complete with a notarial deed and registration in the commercial register is required. Pursuant to the shareholder agreement, the participation can typically be terminated with one year's notice.
Disbursement	Only balance sheet profits shall be disbursed to the shareholders. There are no interest payments. The distribution of retained earnings is according to the ratios of the initial deposits. Losses are borne by the company. There is no reserve liability - unless this has been agreed in the partnership agreement.
Taxation	The profits made by the GmbH are subject to corporate income tax (currently 25 %). It these are disbursed to the shareholders, they are again subject to capital gains tax, currently at a rate of 27.5 %.

Liability	The shareholders are liable to the extent of their investment. Basically, only the company is liable with the entire company assets, there is no direct or personal liability of the shareholders.
Participation	Usually, one vote is counted for each EUR 10 of capital invested. However, in the shareholders' agreement, a different distribution of voting rights can be agreed upon.ssets, there is no direct or personal liability of the shareholders.

Practical Example

SOLARE NAHWÄRME ENERGIECONTRACTING GMBH

Source: Solare Nahwärme Energiecontracting GmbH

SOLAR SYSTEM
1.730 kW thermal capacity
(2,480 m²)
980 MWh annual thermal yield

LOCATION
Berlinerring 34, 8047 Graz

YEAR OF CONSTRUCTION
2007

PARTICIPANTS
4 shareholders

MINIMUM SHARE
Shareholder's capital investment

TOTAL PROJECT VALUE
EUR 1.1 million

DISBURSEMENT
None so far, profits have been reinvested, after 25 years, the ownership of the investment reverts to the owners of the apartments

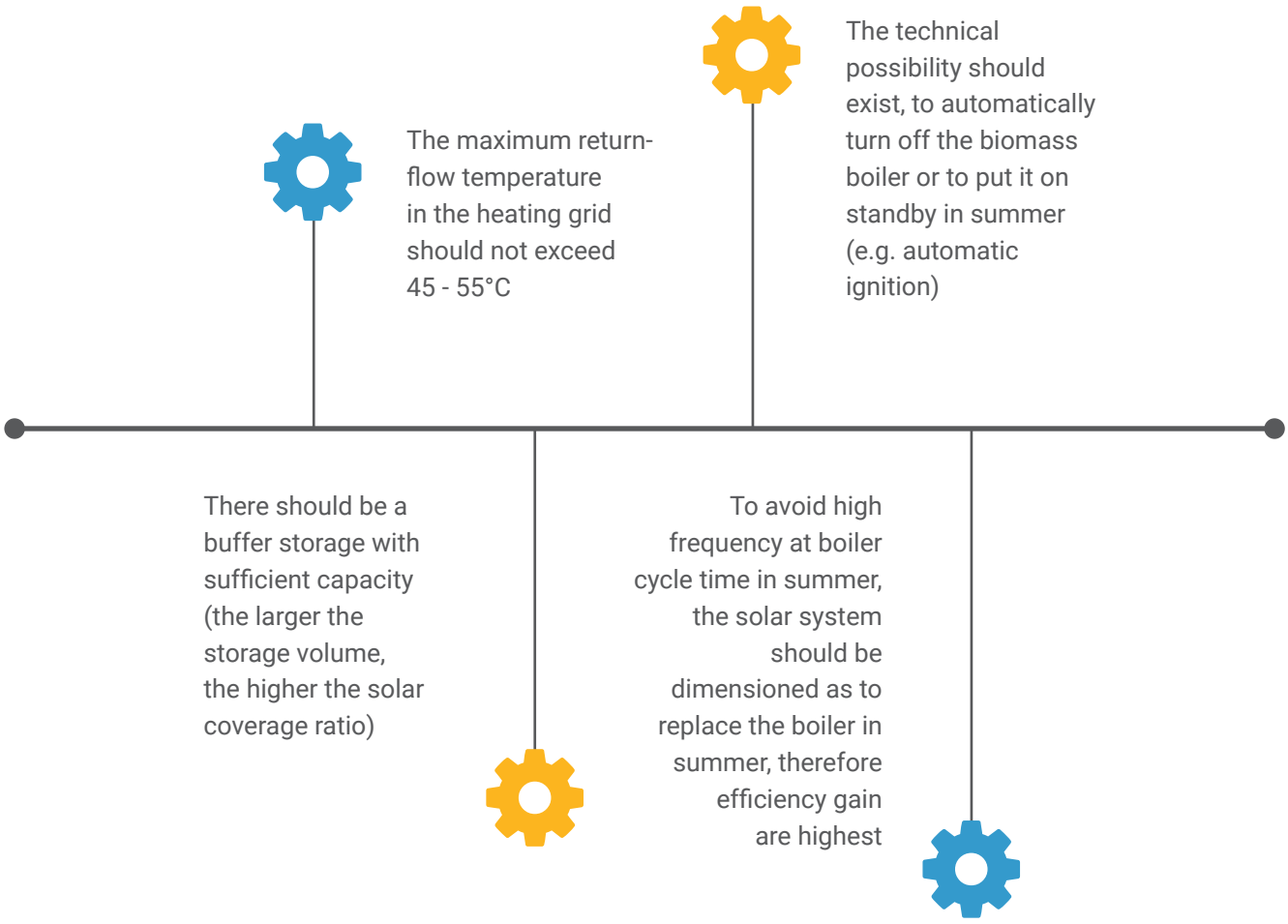
INFORMATION
www.nahwaerme.at

4. Technical requirements

The integration of solar thermal systems in heating grids has been practiced for 20 years, and today, it is state of the art. Large solar heating plants provide much higher yields than was the case 15 years ago. The efficiency of large-scale solar collectors has increased by more than 50 %. The technology has evolved significantly, together with large storage systems, in order to store heat in summer and use it in winter when needed by the heating grid.

To define the main technical requirements for the integration of a solar thermal plant, as part of a biomass district heating system, a survey and a workshop were conducted, attended by representatives of climate and energy model regions and operators of heating plants. The results are summarised below.

Main technical requirements



Large storages increase solar coverage

The crucial role of heat storage for solar coverage is evident in the fact that 5-15 % of the heat demand can be covered by solar energy, when no seasonal thermal storage is in place. In this scale, the solar plant will never be shut down due to stagnation, even in mid-summer, due to the limited contribution to the demand of the heating grid. In this case, the storage is designed by standardised formulas, the guideline is 50 litres storage per m² of collector area. At a coverage of over 20 %, the solar yield in summer is often higher than the energy demand of the customers. With a seasonal storage, these surpluses can be transferred to winter.

Location, assembly, hydraulics, control

Other technical requirements for solar integration into a heating grid are the location (sun exposure, shading, distance to the district heating grid, etc.) and the spatial possibility of integration to the heating grid, e.g. mounting of the collectors on the roof of the heating plant or the wood-chip store, or installation as an open air plant. With regard to the construction of an open air plant, a manual for open air photovoltaic systems was published by the Federal State of Styria in 2012, which provides an overview of conditions for the choice of location, from a spatial perspective, which is generally applicable to large-scale solar thermal installations The hydraulic integration of the solar plant usually happens between return-flow and forward-flow, or to increase the return-flow temperature in the heating grid. This also depends on whether the solar plant feeds the main power grid or a sub grid, which usually runs at lower temperatures.

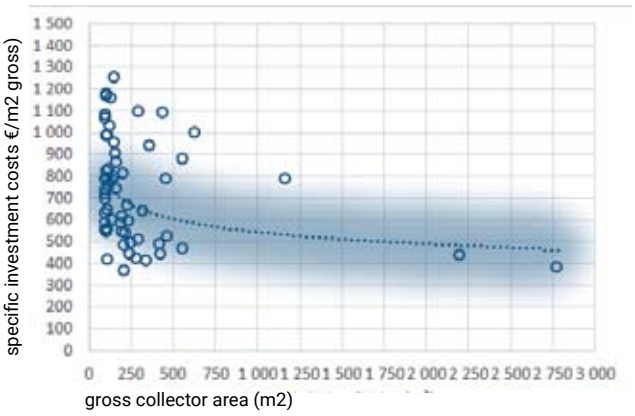
For details of the technical requirements, we refer to the manual of AEE INTEC for the “Umsetzung von finanziellen BürgerInnenbeteiligungen bei erneuerbaren Energien” which was compiled in 2017 on behalf of the government of the Federal State of Styria. In this manual, the requirements, characteristics and integration possibilities for solar thermal systems in biomass district heating grids are presented in detail and professionally grounded. More technical details on the integration of solar thermal energy in heating networks and detailed information of existing solar-supported heating networks have been published in the manual “Einbindung von Solarthermie in biomassebasierten Wärmenetzen”, which was published in 2018 in the project SDHtake-off. Both guidelines are quoted in Chapter 8, “Further reading”.

5. Economic requirements

A growing interest in large-scale solar thermal plants, by municipal utilities and heating plant operators, has been observed in recent years. Megawatt plants in district heating grids in Austria and Germany already show heat production costs of less than 5 cents/kWh. Mainly open air facilities over 3.5 MW thermal capacity (5,000 m² collector area) show favourable low heat prices, at this scale economy of scale is starting to take effect.

In a survey and a workshop with representatives of climate and energy model regions and operators of heating plants, the most important economic requirements for the integration of solar thermal plants in biomass district heating systems in summer were discussed. From the perspective of heating plant operators, an attractive heating price from solar plants in the range of 3-6 cents/kWh was mentioned as precondition. At these prices, it could be attractive to supplement the summer operation of the district heating system with solar, or to take on completely if the technical requirements are matched (see previous chapter).

The most important economic characteristics for solar large-scale thermal plants are the investment costs, the operating costs and the costs of financing and funding of the system. With this data, the profitability and the heat production costs of the system can be calculated. Regarding the investment costs, the economic analysis of data from the research to the large-scale programme of the Climate and Energy Fund shows significant reductions of the specific costs per square metre when the size of the plant increases.



Source: Leitfaden zur erfolgreichen Umsetzung von finanziellen BürgerInnenbeteiligungen bei erneuerbaren Energien, 2017

Figure 2: Specific costs per square meter with increasing size of solar plant

Investment costs cover not only collectors, also assembly, hydraulic and planning costs are included. If a heat storage is installed, preparatory ground work increases costs of the investment. Around 1 % of the investment cost is calculated as the cost of maintenance and service for large installations. A technically professionally grounded assessment of the cost parameters, based on case studies, can be found in the “Leitfaden der AEE INTEC zur Umsetzung von finanziellen BürgerInnenbeteiligungen bei erneuerbaren Energien (2017)”, see Further Reading in Chapter 8.

6. Funding opportunities

Large-scale solar plants in district heating systems are supported by the Federal Government, in the form of investment subsidies. The funding by the Climate and Energy Fund is published annually, projects to the Kommunalkredit Public Consulting (KPC) can be submitted continuously. These grants help to reduce the heat production costs considerably, thus 3-6 cents/kWh required by heating plant operators can be achieved.

Environmental support in Austria "Solar thermal systems for companies" of the KPC

In this funding programme, solar installations with collector surface areas over 100 m² are supported (70 kW heat production). The funding rate is about 20 % of the investment cost for the solar system. The funding can be utilised by companies, associations and religious denominations. The submission must be made prior to the installation of the solar system.

Information about the funding programme, "Solar thermal systems for companies":

https://www.umweltfoerderung.at/betriebe/thermische-solaranlagen/navigator/waerme/thermische-solaranlagen-100-qm-4.html

Funding programme, "Solar thermal - large-scale solar plants" by Climate and Energy Fund

In this programme, over 200 large plants were supported with EUR 33 million since 2010. Most of the projects were submitted in the area of "Solar assisted district heating". The plants range in size from 100 to 10,000 m^2 of collector area (70 kW to 7 MW thermal capacity). The funding rate is max. 50 % of the investment cost of the solar system. The applications are assessed by an expert committee and selected for participation in the monitoring programme. Data is monitored for at least one year, to obtain knowledge to the potential of optimisation of solar plants.

Information about the funding programme "Solar thermal - large-scale solar systems"

https://www.klimafonds.gv.at/call/solarthermie-solare-grossanlagen/

Provincial state funding

In some states, additional funding to federal funding is granted for the installation of solar thermal systems. Depending on the State, 20 % to 40 % of the federal funding is granted. In some states the solar system must be installed in a commercial building. Federal and states grant can be combined, to the maximum funding intensity according to EU law. The maximum possible funding is dependent on the location of the investment (e.g. EU regional development areas), the size of the company (higher rate for small and medium-sized enterprises) and the characteristics of the investment (priority funding).

Overview and contact persons to state funding

https://www.wko.at/service/umwelt-energie/Betriebliche_Umweltfoerderung_in_den_Bundeslaendern.html

7. Consulting for public participation

This manual is intended as a guideline for heating plant operators, solar companies, service providers and representatives of climate and energy model regions, to public participation in large-scale solar plants assisting district heating systems. In case of planning such a system, we recommend to contact representatives of climate and energy model regions and service providers, who have experience with public participation in energy systems. In the following partners with experience in public participation are listed, who also contributed to the creation of the manual.

Contact for advice on public participation for solar district heating:

Energieagentur Obersteiermark GmbH

DI Josef Bärnthaler
CEO
Holzinnovationszentrum 1a
8740 Zeltweg

EMail: josef.baernthaler@eao.st
Tel. +43-3577-26664 23

EXPERIENCE
Support in the establishment and implementation of several public participation projects

Energiegenossenschaft Region Eferding eGen

Herbert Pölzlberger
Manager of model region
Josef-Mitter-Platz 2
4070 Eferding

EMail: poelzlberger@regef.at
Tel. +43-7272-500531

EXPERIENCE
Support in establishing an energy cooperative for public participation projects

Energie Bezirk Freistadt

Norbert Miesenberger
Manager of model region
Götschka 5
4212 Neumarkt im Mühlkreis

EMail: norbert.miesenberger@energiebezirk.at
Tel. +43-7942-75432/72

EXPERIENCE
Support for the establishment of "Regionales Sonnenkraftwerk Helios Sonnenstrom GmbH"

Leader Region Traunviertler Alpenvorland

Christian Wolbring
Manager of model region
Kirchenplatz 5
4594 Wolfern

EMail: energie@leader-alpenvorland.at
Tel. +43-7257-70331

EXPERIENCE
Support in establishing a public participation project in PV

Nahwärme Eugendorf GmbH

Josef Neuhofer
CEO
Stettnerstraße 15
5301 Eugendorf

EMail: j.neuhofer@nahwaerme.at
Tel. +43 676 524 38 90

EXPERIENCE
Founding of the first public participation in solar district heating in Austria

nahwaerme.at Energiecontracting GmbH

Harald Kaufmann
CEO
Gewerbering 14
8054 Graz/Pirka

EMail: h.kaufmann@nahwaerme.at
Tel: +43-316-244259

EXPERIENCE
Implementation of public participation in PV plants at biomass district heating systems

S.O.L.I.D. Gesellschaft für Solarinstallation und Design mbH

Christian Holter
CEO
Puchstrasse 85
8020 Graz

EMail: c.holter@solid.at
Tel. +43-316-292840 0

EXPERIENCE
Implementation of public participation in solar district heating

Arbeitsgemeinschaft Erneuerbare Energie Vorarlberg

Johann Punzenberger
CEO
Hof 19
6861 Alberschwende

EMail: office@aeev.at
Tel. +43 664 8866 7424

EXPERIENCE
Implementation of public participation in financing renewable energy projects, voluntary CO2 compensation payments for regional climate protection projects

Energiepark Bruck/Leitha

Norbert Koller
Manager of model region
Fischamender Str. 12
2460 Bruck/Leitha

EMail: n.koller@energiepark.at
Tel. +43 2162 68100-21

EXPERIENCE
Implementation of various public participation projects in the field of wind power (since 2000) / Manual on PV public participation for municipalities in the Römerland Carnuntum leader region (2017)

8. Further reading

Streicher, W. et al. (2006): Dezentrale Energieerzeugung für Fernwärme, Projektbericht des Instituts für Wärmetechnik TU Graz, Graz.

Kaufmann, J. (2013): BürgerInnenbeteiligung bei steirischen Photovoltaikanlagen, Broschüre der Arbeiterkammer Steiermark, Graz.

Amt der Steiermärkischen Landesregierung (Hrsg.) (2017): Leitfaden zur erfolgreichen Umsetzung von finanziellen BürgerInnenbeteiligungen bei erneuerbaren Energien, Graz.

FMA-Finanzmarktaufsicht (2016): Leitfaden zu Bürgerbeteiligungsmodellen und alternative Finanzierungen, Wien

Land Steiermark (Hrsg.) (2012): Photovoltaik Freiflächenanlagen – Leitfaden für Raumplanungsverfahren, Langfassung, Graz

Consortium SDHtake-off (2018): Einbindung von Solarthermie in biomassebasierten Wärmenetzen, Leitfaden im Projekt SDHtake-off, gefördert vom Forschungs- und Innovationsprogramm Horizon 2020 der europäischen Union, Brüssel

Energiepark Bruck/Leitha (2017): Photovoltaik - Bürgerbeteiligung, Ein Leitfaden für Gemeinden der Region Römerland Carnuntum, LEADER-Projekt: EnergieReiches Römerland Carnuntum Phase 1 / 2016-2017