

## Financing model for large-scale solar thermal plants

Subject:	Financing Instrument (Factsheet D3.2)
Description:	Financing model for large-scale solar thermal plants
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Document download:	<a href="http://www.solar-district-heating.eu/en/knowledge-database/">www.solar-district-heating.eu/en/knowledge-database/</a>

### Summary description of the instrument

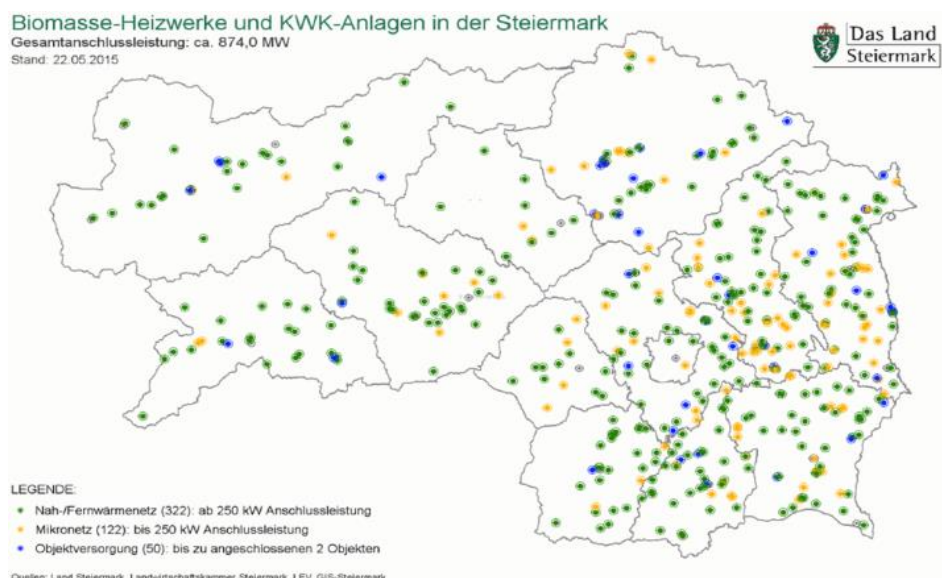
Region: Styria (Austria)

Partners involved: Province of Styria, AEE INTEC, SOLID

Short description of the measure: Establish a financing model for large-scale solar thermal plants.

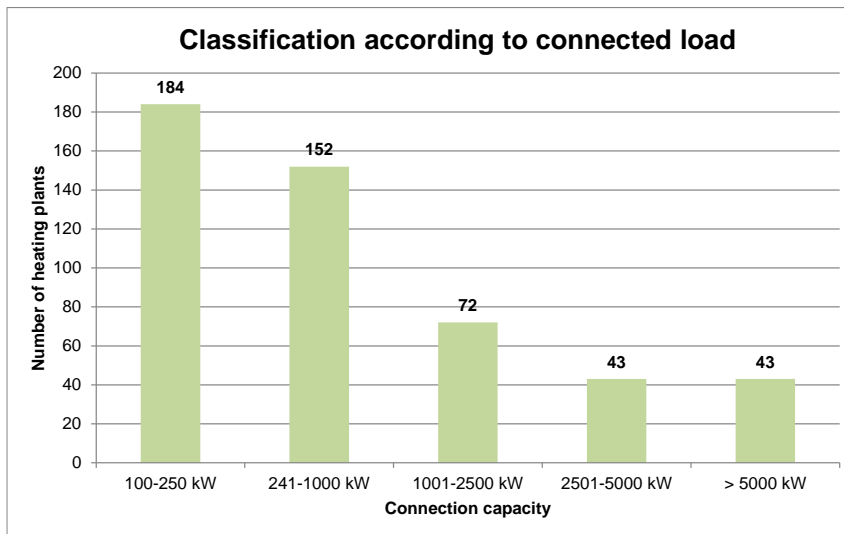
### Initial situation

Citizen participation models are simplified and established for the financing of wind power plants, photovoltaic plants or even business ideas for start-ups. At the same time, there are about 600 district heating plants in Styria. The total installed capacity is approx. 900 MW<sub>th</sub>. The majority of the plants are in the smaller capacity range and only 160 plants have an installed boiler capacity of more than 1.0 MW<sub>th</sub>.



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## Financing model for large-scale solar thermal plants



Most plants are operated with biomass and are owned by farmers' cooperatives. In this form of company, it is not quite easy to raise funds for new investments, such as the installation of a solar thermal system. The high initial investment in large-scale solar thermal plants is therefore seen as a major obstacle to broad market penetration. At present,

there are not sufficient incentives for investors and operators of heating networks to invest capital here, even though they can benefit of low operating and consumption-related costs in the long term.

### Objectives

Within the framework of this work package, a model for financing solar thermal systems for large-scale solar power plants based on citizen participation would be developed. To reach this goal, the financial, company and contract framework conditions are to be worked out and, if possible, implemented in practice.

The first examples should eventually give owners or operators of local heating supply systems the incentive to invest in large-scale solar thermal systems or could subsequently also be implemented in other segments (residential multi-family buildings).

### Measures and actions

In the first step, the technical and economic prerequisites for the use of solar energy would be determined by experiences with large-scale solar plants and biomass heating plants. In the second step, an alternative financing option to the usual loan financing is examined by selecting a participation model. If the operator then decides to implement the solar thermal system, the project team is available during the financing phase (citizen participation and application for funding) and the implementation phase.



## Financing model for large-scale solar thermal plants

### Barriers and opportunities

The possible hurdles for the implementation of this business model lie in the generally high initial investment in solar thermal systems, the demand for security and the low returns on the investment that can be achieved because of the current low energy costs. Furthermore, the initial time and money required to set up the respective citizen participation should be kept as low as possible. In addition, the effort needed to take into account legal framework conditions from the Banking Act, tax law and the obligation to publish a prospectus must also be taken into account.

Citizen participation offers for the inhabitants and heat users the possibility of becoming partners in their own heat supply and of profiting at the same time as a customer from stable solar heat production costs. The heating plant operators can lower their fuel costs and do not have to invest for it hardly or at all.

### Results

It can be stated that because of the warm winters of recent years, the turnover of heating plant operators has fallen sharply, which means that the willingness to invest in new plants is low. For this reason, a comprehensive guideline for the implementation of different citizen participation models was developed, which offers assistance to the operators. The two tables show the advantages and disadvantages of direct and indirect participation models, especially for austrian framework conditions.

Tab. 1: Direct participation models

	Limited company	Stock corporation	LC&Co LP	Cooperative
Advantages	Liability is limited.			
	Voting right, proportional to the shareholding ratio		Voting right, restricted for limited partner	Voting rights per member
				low administrative effort
	Basically no obligation to publish a brochure			
	Suitable for a portfolio of plants			
		A large number of people can participate.		
		Low start-up costs		
		Simple transfer of shares		
Disadvantages	There is no fixed interest rate, only profit sharing.			
	high administrative effort			
	partial obligation to publish a brochure	obligation to publish a brochure		
	Complex transfer of shares		Complex transfer of shares	
	High effort for purchase/sale		Moderate effort for purchase/sale	
	High start-up costs			
	Useful for a single plant			



## Financing model for large-scale solar thermal plants

Tab. 2: Indirect participation models

	Loan application, Crowdfunding, Crowdlending	Sale and Leaseback	Voucher application	Reward-/Donate-based Crowdfunding
Advantages	Liability is limited.			
	There is a fixed interest rate over the term.			
	Low administrative and implementation costs.			
	Basically no obligation to publish a brochure			
	High participation			High participation
	No banking law, qualified subordinated loan			
	The purchase/sale of shares is predetermined by a fixed term.			
Disadvantages	Basically no co-determination possible			
	Suitable for single plants			
				No sale, deposit is a donation
				No interest, only material remuneration
		Number of participants limited		

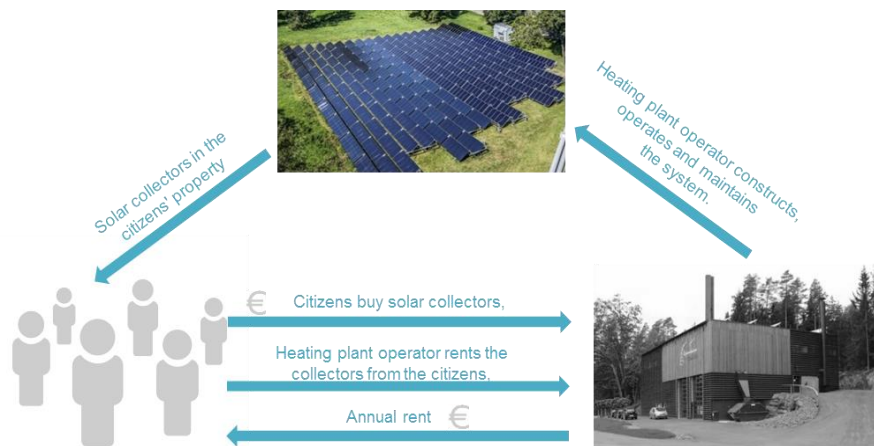
Three models are suitable for the predominantly cooperative heat network operators: **sale-and-lease-back applications, loan applications and voucher applications**. The reasons for this are that it is not necessary to set up a company of one's own and therefore there are no high administrative costs, no high start-up costs, as well as co-determination rights, profit sharing and transfer rights for the shares.

**Sale and leaseback (SLB) participation** models bundle a large number of purchase and rental contracts.

The operator sells parts of the plant to citizens and leases them back again. In the agreement for the handling and the leasing business, all details about interest, duration, rights and obligations of the operator as well as of the citizen are to be specified.

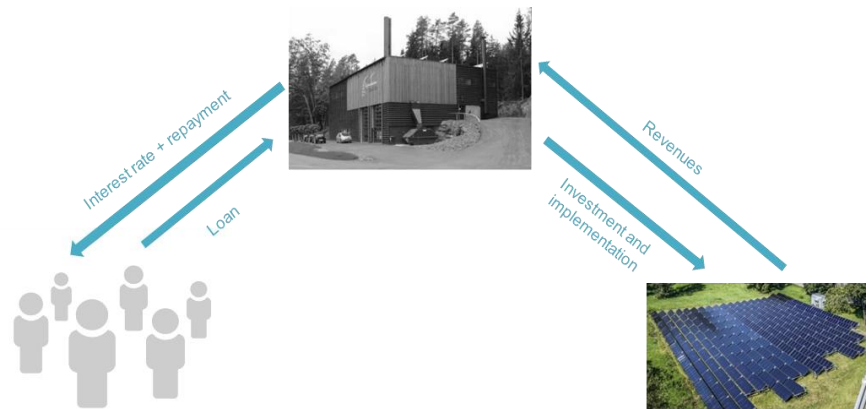
A SLB model can easily be implemented administratively,

and it is not necessary to observe the Banking Act due to the participation in precisely assignable collector areas. The citizen invests in renewable technologies and receives a secure return on the invested capital over the agreed term and assumes no liability beyond that. The operator uses it to finance the integration of a solar thermal system, and may thus be able to retain customers and still freely dispose of the system and the company itself. The model can be implemented well for individual investments, regardless of the size of the project, with low costs for the operator and the citizens.



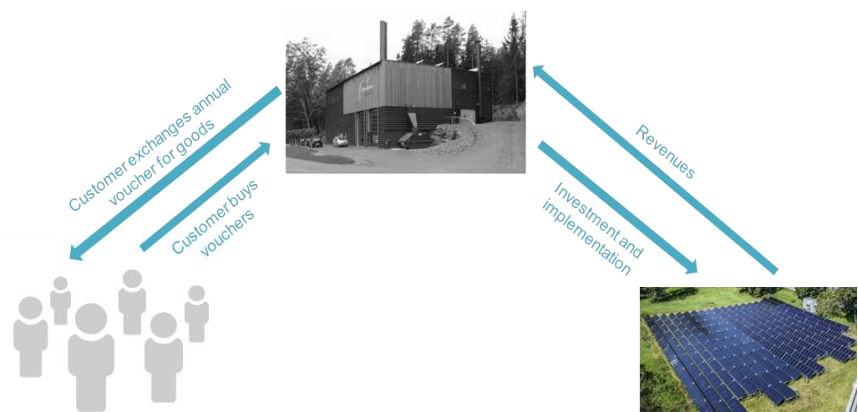
## Financing model for large-scale solar thermal plants

**Loan models** can be implemented in cooperation with a bank or without it as a subordinated loan. The citizen grants a credit to the operator for a specific purpose, which can be precisely assigned by the serial number of the collectors. In return, a fixed interest rate is paid on the capital, and the deposit is repaid on an ongoing basis as an annuity or at the end of the agreed term.



Loan models are easy to implement regardless of the size of the project, the investment volume and the number of participants. The obligation to publish a prospectus and the Banking Act do not apply in the case of cooperation with the bank or the application of a qualified subordinated loan. The citizen receives a current fixed interest rate, has no liability and invests predominantly in a regional project, which possibly provides its heat supply. The operator can finance his plant and does not lose any decision-making power in the company and over the plant itself.

Similar to loan models, **voucher models** can be assigned exactly via the serial number of the collectors. The citizen now receives no monetary interest, but the annual repayment including surcharge in the form of goods or heat credits. It is either a simple contract or an earmarked voucher purchase. This form of financing is particularly suitable for small investment projects. A prerequisite for the application of the heat credit would be that the citizen involved is also a customer of the heat network. As an advantage, the effect of the customer acquisition, customer connection and model effect for the public of the operator can be moved into the foreground.



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### Lessons learned

The forms of participation are known to most operators, whereby support for implementation and processing should be specifically promoted. The key points can be clarified in a free initial consultation for operators, for example in the context of the examination of the technical implementation possibilities of a solar thermal system for the heating network. Furthermore, it would be advantageous to be able to offer advice that supports the operator in the contractual and legal structuring of the system.

Due to the additional costs, the use of crowdfunding platforms should be analyzed for the operator.

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