

## Best-Practice Policy, Legal Framework or Financing Instrument

Subject:	Market Support Instrument
Description:	Solar Thermal Plants in Multiple Dwellings
Date:	20.11.2018
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### Summary description of the instrument

Region: Thuringia, Germany (A-Region)

Partners involved: Project Partner, experts, regional stakeholder

Short description of the measure: Solar thermal plants in multiple dwelling / 'Tenant Heat' – development of a working concept to stimulate and intensify investments in solar thermal plants in multiple dwelling for warm water and space heat production

### Initial situation

Thuringia may contribute to the international stated climate protection targets at local level. Therefore, it is necessary to promote the "Thermal Energy Transition" as an essential part of the "Energy Transition" on political level. To take advantage of the greenhouse gas emission reduction potentials the heating sector bears for a "Thermal Energy Transition" Thuringia is pursuing a double-strategy: not only the overall heat demand should be reduced, but the share of renewable energies and efficient technologies on the heat supply should be increased as well. An examination showed that the regional heat supply system in Thuringia is dominated amongst by natural gas and oil boilers also by district heating systems and is rather heterogeneous. Moreover, the examination showed that in 2010 the share of renewable energies on the heat supply in Thuringia already has been significantly higher than in Germany. About 21.5% of district heating energy was produced from renewable energies in 2015.

An essential part of this heat from renewable energies has been supplied by biomass, which potentials in Thuringia are nearly exploited. However, the potentials of other renewable energies, such as geothermal and solar thermal energy are not tapped yet.



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Due to this, and Thuringia's settlement structure with lots of rural areas, combining biomass and solar thermal in district heating systems could be one promising approach to increase the share of renewable energies within the heating sector. Furthermore, Thuringia's cities have a high share of multiple dwelling units, where integration of solar thermal collectors on their roof areas would be possible. About 75% of existing multiple dwelling in Thuringia are already connected to public or company-owned district heating grid. In contrast, about 25% of existing multiple dwelling units in Thuringia are connected to a gas grid. Intense refurbishment in building stock has taken place already 20 to 25 years ago and due to this, a new phase of refurbishment should come up soon.

### Objectives

According to the development of the Thuringian Climate Law, the Integrated Energy and Climate Strategy as well as the Regional Heat Strategy, which will highlight the importance of heat supply with renewable energies for energy transition, the share of renewable energies on heat production in Thuringia should get increased. Especially for solar district heating projects in cities the finding of appropriate areas for installing the solar collectors is difficult. However, multiple dwellings often dispose large, unexploited roof areas close to intense heat demand. For this reason, investments in solar thermal plants for multiple dwelling units should be stimulated.

In Germany the 'tenant power' model, where tenants could profit from installations in photovoltaic plants for direct use of renewable power already is well established. Especially according to the high share of people who rent their flats and houses, increasing cost for heat supply in general and due to this the high social dimension of heat supply, possibilities of implementing an analogical 'tenant heat' model and solar thermal plants for multiple dwellings has been examined.

### Measures and actions

A working concept to stimulate and intensify investments in solar thermal plants in multiple dwelling units for warm water and space heat production has been elaborated. It should build a basis for further activities of TMUEN to foster investments in solar thermal plants in multiple dwelling units. For this purpose, an intense analysis of the initial situation has been made. First, there was an analysis of the regional framework conditions for multiple dwellings as well as of national and regional policy, legal framework conditions and financing and funding opportunities.

Moreover, the results of target group specific working sessions has been evaluated and summarized according to these aspects.



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In parallel, there were discussions with project partners and further experts to solar thermal in multiple dwelling.

Finally, the results of these analyses concerning the possibilities of intensifying the investments in solar thermal plants for warm water and space heat production in multiple dwelling were summarized as confidential working concept. Furthermore, two concepts for further target group specific working sessions were elaborated and prepared.

### Barriers and opportunities

Cooperation with regional stakeholders and several experts concerning the implementation of solar thermal plants in multiple dwelling was really fruitful. In general, a huge willingness for further cooperation and intense work for increasing the share of renewable energies for warm water and space heat production in multiple dwelling has been recognized.

Several organizational and technical barriers for the implementation of solar thermal plants in multiple dwelling could have been identified. Whilst technical aspects such as a low carrying capacity of the roofs could build a (economical) key criterion for not implementing solar thermal plants in multiple dwelling, several organization barriers could be discussed intensely. It is worth to focus on possible business models and correlating aspects of taxes due to requirements from the Heating Cost Ordinance ("Heizkostenverordnung"). If housing cooperatives are implementing a solar thermal plant, investments might be shifted to the rent only for 11% per year. Meanwhile, solar heat production costs can't be taken into account for heat invoices according to heat consumption. Selling heat to tenants would shift housing cooperatives into the role of a supplier, which has to take care of special taxes. From all these, the 'investor-user-dilemma' comes up and there is no existing invoicing-method for housing cooperatives.

Installation of solar thermal plants in multiple dwellings is worth especially in new buildings. According to high standards for new buildings, usually building technology which is advantageous for solar thermal plants due to low flow temperatures of the heating systems is implemented. For existing multiple dwelling implementing solar thermal collectors of roof areas might be very cost- or labor-intensive, which is why solar thermal is not preferred for building stock. Nevertheless, in Germany there are many projects, which show that solar thermal in multiple dwelling is possible in many ways and might be economically feasible.

### Results

A working concept could have been developed, that is summarizing the current process, is listing barriers and opportunities and is showing further approaches to work on solar thermal for multiple dwellings.



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- Implementation of solar thermal plants in multiple dwelling is possible. A 'tenant heat' model could help to relieve tenants from increasing heating costs on the one hand and to increase the value of building stock on the other hand.
- Key aspect is about financing a solar thermal plant.
- There is no existing invoicing method for housing cooperatives but it would depend on requirements from the Heating Cost Ordinance and taxation rules.
- Amongst the 'tenant heat' model, the possibilities of 'flat-rate-rents' have been discussed. Within this model, cost for heat supply is included within the monthly rent, independent from heat consumption. Projects with this kind of business model are foreseen to be developed in the future by housing cooperatives, especially in correlation with sector coupling.
- Whilst looking for an adequate business model for solar thermal in multiple dwelling, the topic of contracting was discussed intensely as well. Within this model, regional heat suppliers such as municipal utilities assume responsibility for operation and maintenance of solar thermal plants installed on multiple dwelling roof areas. Prospectively, due to this the share of renewable energies within the local district heating systems might get increased. Intense discussions with all stakeholders involved would be necessary.

Moreover, two concepts for working sessions in 2019 have been developed for relevant target groups, which aim at an increasing of capacity building concerning technical and organizational aspects of solar thermal plants in multiple dwellings on the one hand and on the other hand initialization of solar (district) heating projects in urban areas.

Finally, the topic of contracting for solar thermal in multiple dwelling was taken into account for the last SDHp2m-workshop, where about 30 participants took part. As a whole, due to the elaboration of the working concept, sensitization for solar thermal in multiple dwelling took place. Further cooperation with regional stakeholders and experts is foreseen.

In parallel, a concept for revision of the funding program "Solar Invest" was developed. Aspects of the implementation of solar thermal in multiple dwelling could have been taken into account for that. For example it is planned to support technical maintenance services and adaptation of existing solar thermal plants in multiple dwelling within the funding program in the near future. Furthermore, feasibility studies dealing with solar (district) heating should receive funding, too.

### Lessons learned

Heat transition with renewable energies needs an intense cooperation of different stakeholders. Especially for projects in multiple dwellings framework conditions are challenging due to the national legislation. Still,



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the potentials for renewable energies such as solar for the production of warm water and space heat as well as for district heating are huge.

For this reason it is necessary to continue working on that. Especially national legislation and its expected adaptations will be of great interest, while Thuringia will contribute and vote for renewable energies.

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