

Renewable district heating in small local networks

Subject:	Renewable district heating in small local networks
Description:	This document describes the possible implementation of new small district heating networks completely running on renewable energy.
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Document download:	www.solar-district-heating.eu/

Summary description of the instrument

Region: Veneto

Partners involved: Ambiente Italia (SDHp2m partner), Region Veneto, Municipality of Feltre, Dolomiti Bellunesi Park.

Short description of the measure:

District heating density in Veneto is very limited, thus leaving room and opportunities especially for new initiatives in small centers. Such initiatives could be based on the combination of solar thermal and biomass, where the role of solar should be to reduce biomass consumption, thus controlling the air quality issue which is a very sensitive topic in both plain and mountain areas.

Initial situation

In the territory of Veneto Region, 7 district heating plants are in operation at the moment and 2 of them are installed in the two large cities of Verona and Vicenza. Therefore, only a small number of local grids is present, thus leaving room and opportunities for new initiatives.

The density of DH in the region is 3.1 m³ per inhabitant, a very small value if compared, for instance, with Piemonte: The value for Veneto is just 16% of the value for this region. Furthermore, recently, a study by the state-owned company GSE ('Gestore dei Sistemi Energetici') showed that the DH systems in operation in Veneto cannot be regarded as efficient according to the requirements of the EC Directive on energy efficiency.

Finally, many are the small cities and villages in the region, especially in the mountain areas, where, due to air quality issues, the use of solar thermal in small local district heating networks could decrease the biomass consumption and, therefore, increase the acceptance towards such solutions by users and Local Authorities.



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The combination of such boundary conditions makes Veneto a quite interesting place where to stimulate a market roll-out of SDH plants, especially through the development of small local networks where solar is combined with other renewable energies, such as biomass.

Objectives

The main objective of this measure is to involve potential developers of new district heating networks in small centers in the Veneto Region. This would also allow to meet the following objectives:

- Reduce the use of biomass, thus limiting the issues with air quality.
- If the initiatives are 'bottom up', that is led by a group of users / citizens, they could increase the acceptance and trust towards of DH as a 'green' and reliable heat supply option.
- Provide the users with heat characterised by security of supply and stability of price.
- Create a 'standard package' for some typical heat demand sizes, thus allowing an easy replication of the implemented solution and stimulating the market roll-out.

Measures and actions

In order to reach the above described objectives, several steps should be taken:

- Selection and involvement of the local actors representing the areas most suitable for the development of new small DH networks (through the support of the Regional Administration and of other local stakeholders, as described below).
- Organisation of a meeting with the local actors showing practical examples of such small networks in other countries, for instance through the German 'bioenergy villages' cases.
- Possible guided travel to the city of Varese to visit the only SDH plant in operation in Italy.
- Technical support, also through the coaching activities foreseen in the SDHp2m project, to the interested stakeholders for a first feasibility assessment.
- Standardisation of the 'DH package' and involvement of other potential developers for replication.

Barriers and opportunities

The first barrier, typical of renewable energy technology, is the high initial investment cost which, however, can be compensated by the remarkable opportunity of a relevant incentive available through the national support scheme of 'Conto Termico'. As a matter of fact, the size of these small local networks should be within the limit foreseen by the scheme for solar thermal, which is a maximum size of 2,500 m².



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Another relevant barrier is the complete lack of knowledge and of awareness of the potential of solar thermal to provide heat for applications different from the simple domestic hot water production. Usually neither Local Authorities, nor utilities and users are aware that this technology could be fruitfully used also in DH networks. This is the reason why, in the list of development steps reported above, a relevant part is dedicated to 'capacity building' of stakeholders by showing them practical examples of operating plants.

The availability of areas should not be a major issue, given the limited size of the plants, but their installation in sensitive places for the visual protection (mountain areas) could sometimes be a relevant barrier.

Main opportunities are the capacity of solar thermal of providing zero-emission heat, limiting the use of biomass and keeping under control the air quality issue, and the ever growing wish by the citizens to go towards self-sufficiency, by producing the energy they consume and using local renewable energies.

Results

Two channels have been opened so far to involve potential developers and stakeholders for small local DH networks:

- Through the Regional Administration, Municipalities which recently declared their interest in renewable DH should be contacted.
- The Municipality of Feltre, already working in other projects with Ambiente Italia, showed to be interested in this topic and it is also in close cooperation with AIEL, the Italian association for wood energy, thus preparing the ground for such combined DH networks. Through Feltre, then, the Dolomiti Bellunesi Park, including 15 Municipalities, will be involved in the initiative.

Additionally, Varese Risorse, the utility operating the Italian SDH plant in the City of Varese, is ready to host a guided tour to its plant with both a technical analysis and a report on the history of plant development, also including the permission issues.

Regarding the size of the small DH networks to be developed, even though it depends of course on the site-specific conditions, it can be assumed to be an investment of around 2–4 million Euro.

Lessons learned

Basic knowledge on how fruitfully solar thermal could provide thermal energy to DH networks, especially for small centers, still needs to be provided to both potential plant developers and users.



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The issue of land occupation is still a major concern of Local and Regional Authorities, mainly due to recent issues with photovoltaic plants. However, very often the problem is overestimated with respect to the actual sizes usually foreseen for such small local SDH initiatives.

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