

Subject:	Simplification of the permitting process
Short description:	The simplification and standardisation of the bureaucratic procedures for the project development of district heating networks run on renewables can reduce time and costs while increasing the probability of project success and local acceptability.
Date of last update:	10.08.2023
Authors:	Giulio Buffo and Giulia Crespi, IREN; Riccardo Battisti, Ambiente Italia
Country:	Italy
Partners involved:	IREN, Ambiente Italia
Document download:	www.res-dhc.eu/

Initial situation

District heating networks are local infrastructures and, as such, are often subject to long, complex, intricate and sometimes unsuccessful permitting and bureaucratic procedures.

The situation can be even worse when the network uses renewable energy plants for heat generation, since such systems usually require large spaces for their construction, e.g. areas for the installation of collectors in a solar thermal system or excavations for geothermal wells. Other energy sources, furthermore, arouse local opposition because of their (real or presumed) impact on local air quality: This is the case of biomass, especially in some areas of the country where the problem is more acute.

Objectives

In order to facilitate the development of district heating networks run on renewables, therefore, it is necessary to implement a broad action on permits and bureaucratic procedures with the following objectives:

- Simplifying procedures, thus accelerating project development and implementation;
- Standardise the procedures themselves, obtaining certainty and reducing planning and implementation times and costs;
- Increasing the probability of project success;
- Through the above objectives, make projects more bankable (see also Factsheet I-5);
- Increasing the local acceptability of district heating networks and their generation facilities, also by highlighting the differences with some solutions, such as photovoltaics, which now suffer from large-scale contestation and opposition.



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Results

In line with the objectives set out above, in this action 4 reference factsheet in Italian language were produced. Each factsheet analyses one of the renewable energy technologies that can be integrated in district heating network, namely solar thermal, biomass, geothermal and waste heat.

The factsheets include: 1) Analysis of the current situation; 2) Presentation of the key barriers, especially related to the regulatory and legislative framework; 3) Real examples from Italy; 4) Lessons learned from abroad; 5) Practical actions for removing the barriers and implementation channels.

The final version of the factsheets was developed according to the comments and feedback received through the Regional Stakeholder Advisory Group (RSAG) managed by IREN and Ambiente Italia and including several market stakeholders dealing with district heating and cooling.

The complete factsheets in Italian are available upon request.

Lessons learned & Impact

The permitting issues are definitely a barrier for the development of new RES-DHC projects. In spite of that, this barrier can often be overcome not by a change in the legislation (a very burdensome and long-term objective) but rather with a correct information towards the decision makers such as, for example, the municipal or regional staff in charge of issuing the permits.

Impact

The main real impacts of this action can be summarised as follows:

- Increase of knowledge, skills and awareness of the involved stakeholders:
 - o Presentation, diffusion and discussion of the factsheets within the Italian RSAG;
 - o Promotion of all the factsheets through the publication of dedicated online articles on one of the most relevant Italian energy portal (almost 300,000 monthly unique visitors and around 700,000 monthly page visits; Statistics for 2022):
 - <https://www.qualenergia.it/pro/articoli/energia-solare-per-teleriscaldamento-semplificazione-autorizzativa/>
 - <https://www.qualenergia.it/articoli/energia-biomassa-per-teleriscaldamento-idee-semplificazione-autorizzativa/>
 - <https://www.qualenergia.it/pro/articoli/energia-geotermica-per-teleriscaldamento-semplificazione-autorizzativa/>



- <https://www.qualenergia.it/articoli/calore-recupero-per-teleriscaldamento-semplificazioni-autorizzative/>
- Re-publication, on AIRU website, of one of the above-mentioned articles:
<https://www.airu.it/calore-di-recupero-per-il-teleriscaldamento-e-semplificazioni-autorizzative/>
- Policy lobbying work:
 - AIRU, the Italian District Heating Association, is using this information for its political lobbying work towards the recently formed National Government;
 - The single factsheets are also being used by the corresponding sector associations for promoting district heating by renewables such as, for example, AIEL (the national wood energy association) and Solterm Italia, the emerging association for solar thermal.

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Subject:	Improving the incentive framework
Short description:	District heating from renewables is not adequately represented in the many incentive opportunities available in Italy. This action, therefore, aims to bridge this gap by proposing practical solutions for its correction.
Date of last update:	10.08.2023
Authors:	Giulia Crespi and Giulio Buffo, IREN; Riccardo Battisti, Ambiente Italia
Country:	Italy
Partners involved:	IREN, Ambiente Italia
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Initial situation

Italy has several funding opportunities for the construction, extension or improvement of energy plants: Conto Termico, Ecobonus, Superbonus, Renewable Energy Community incentive, etc.

Despite a good regulatory framework, however, both district heating and thermal renewable energy sources certainly suffer from less 'fame' than the electricity sector. All too often, therefore, these solutions remain excluded, totally or partially, from these support schemes, creating a market imbalance that should be redressed.

Objectives

Given the initial situation summarised above, therefore, the main objectives of this action can be summarised as follows:

- Improving the support framework for district heating from renewables by including incentive opportunities where there are clear shortcomings (see next section for details);
- Thanks to the objective mentioned in the previous point, make projects more bankable (see also Factsheet I-5).



Results

In line with the objectives set out above, a summary position factsheet on the incentive environment was produced. This factsheet includes the presentation of barriers and concrete proposals for overcoming them on different specific topics:

1. White Certificates
2. Conto Termico: Although some opportunities are already available (e.g. Solar thermal with gross surface < 2,500 m² also serving district heating networks), this tool does not cover all technologies available on the market. It excludes, for example, high-efficiency residential micro-cogeneration based on fuel cells.
3. Superbonus 110%: Apart for some mountain Municipalities not affected by EU infringement procedures, district heating is not included among the beneficiary measures.
4. Study of a specific reduced VAT rate for district heating from renewables, following the example of France.
5. Evaluation of support schemes for the initial investment, following the recent example of the BEW support programme in Germany.
6. Decree no. 102 for the promotion of DHC.
7. Tax credit for the user: Extension to all renewable energy technologies and waste heat (at the moment it only covers biomass and geothermal).

The complete factsheet in Italian is available upon request.

Lessons learned & Impact

DHC is still quite a small sector in Italy and, therefore, often under-represented in the key policy documents and support mechanisms.

Summarising the bottle-necks preventing DHC from being at a level playing field with other solutions, by collecting needs and opinions from the key market stakeholders, revealed to be a very effective procedure.

Impact

The most relevant impacts of this actions are as follows:

- Promotion of this sort of policy paper through dedicated online articles:
 - o On the Italian portal Qualenergia.it (almost 300,000 monthly unique visitors and around 700,000 monthly page visits; Statistics for 2022):



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<https://www.qualenergia.it/pro/articoli/teleriscaldamento-efficiente-quegli-incentivi-cosi-carenti/>

- On the official website of the Italian District Heating Association: <https://www.airu.it/il-teleriscaldamento-e%ef%ac%83ciente-e-quegli-incentivi-cosi-carenti/>
- One of the most concrete results of this action was the approval, though with a temporary character, of a lower VAT regime at 5% for DHC at the beginning of 2023;
- This factsheet was developed jointly with the RSAG through several interactions and a key role was played by AIRU, the Italian District Heating Association which is also using this information for its political lobbying work towards the recently formed National Government.

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Subject:	Information campaign on thermal energy communities
Short description:	Renewable energy communities are spreading quite quickly around Europe but mainly focusing on electricity; therefore, there is clear and urgent need for including the heating & cooling part in this new solution for the energy transition.
Date of last update:	10.08.2023
Authors:	Giulio Buffo and Giulia Crespi, IREN; Riccardo Battisti, Ambiente Italia
Country:	Italy
Partners involved:	IREN, Ambiente Italia
Document download:	www.res-dhc.eu/

Initial situation

The RED II EU Directive, as far as renewable energy communities (RECs) are concerned, was transposed at national level mainly considering only electricity.

The heating & cooling sector, however, should not be out of this game and both the policy makers and the final energy users should be duly informed about this clear gap in the legislation.

Objectives

The objective of this action, therefore, is to bridge the gap described above, addressing different categories of market actors, and focusing on the possible role of heating & cooling within the structure of an energy community.

Results

In line with the objective set out above, the measure was developed through different promotional actions, also benefitting of the growing interest towards the topic of Renewable Energy Communities (RECs) in Italy, given the publication of specific regulations.

Another key aspect was the entrance of Ambiente Italia, one of the Italian partners of the RES-DHC consortium, as a member of the IFEC network, the Italian Forum of Energy Communities.

All the material in Italian produced during the information campaign is available upon request.



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Lessons learned & Impact

Though the topic of thermal RECs is not well known, many of the actors addressed through the above-described information actions showed to be very interested and open to this topic.

The best way to approach the target groups proved to be the use of real-life examples as a starting point: Talk about thermal RECs starting from real cases of communities using district heating systems to decarbonise their territory proved to be very effective in terms of communication.

Impact

Since the action focused on an information campaign, the impact can be summarized through the key promotion and diffusion actions carried out within the campaign:

- 2 Workshops on thermal energy communities;
- Promotion of the concept within the Italian annual conference on renewable energy communities, organized by IFEC;
- Synergy with the CONNECTHEAT LIFE project (<https://connectheat.ambienteitalia.it/>);
- 2 Promotional videos:
 - https://www.youtube.com/watch?v=B7qFqseR_TQ
 - <https://www.youtube.com/watch?v=N8BiOEETTy8>
- Presentation on thermal RECs in 2 RSAG meetings;
- Presentation in a workshop on REC organized by the Italian Municipality of Sangano (TO);
- Development of a policy document on thermal RECs;
- Article on possible policy measures for promoting thermal RECs on Qualenergia.it web portal (almost 300,000 monthly unique visitors and around 700,000 monthly page visits; Statistics for 2022): <https://www.qualenergia.it/articoli/rinnovabili-termiche-comunita-energetiche-quali-proposte-concrete/>;
- Use of a part of the policy document by the Italian District Heating Association (AIRU) to answer a national consultation process launched by GSE on RECs.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 952873.

Subject:	Thermal storages
Short description:	Thermal storages play a crucial role in the management of district heating networks, enabling to reduce the peak of thermal demand and to support greater integration of renewables in the heat production mix.
Date of last update:	10.08.2023
Authors:	Giulio Buffo and Giulia Crespi, IREN; Riccardo Battisti, Ambiente Italia
Country:	Italy
Partners involved:	IREN, Ambiente Italia
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Initial situation

Some renewable thermal energy sources are easily supplied and stored and only need technical measures to be used with high efficiency: the most obvious case is that of biomass boilers, which can guarantee better performance if operated at almost constant load. Other sources, however, such as solar energy, are clearly not programmable and may require a thermal buffer to be used optimally and for matching the heat demand. Moreover, in case of systems based on waste-to-energy systems as baseload, it could be interesting to install other generation units different from gas boilers (heat pumps combined with thermal storage solutions) to meet the peak load, reducing the need for integrative gas technologies.

Therefore, the role of thermal storages is fundamental to guarantee a correct management of district heating networks, enabling to meet the peak of thermal demand, especially in the morning, and to support greater integration of renewable energy sources in the heat production mix.

Objectives

Among the technological solutions supporting the decarbonization of the district heating networks, storage options play a crucial role. This action aims to study the applicability of different types of thermal storages to one of IREN's DH networks, together with the installation of new generation options, including heat pumps, preliminarily defining different layout of installation and integration with the network. The scope of the action includes the analysis of different scenarios of alternative heat supply solutions aiming at increasing the share of renewable energy sources in the heat supply mix and reducing the dependence of heat production from CHP and gas boilers, also considering future expansions of the system and existing hydraulic constraints of the network.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 952873.

The analyses were developed in collaboration with the Danish project partner Planenergi. The study is confidential.

Results

In line with the objectives set out above, the development steps for this action are the followings:

1. Once selected the DH network for the study, the analysis of the current situation was developed, simulating a reference scenario, considering historical data and the main techno-economic parameters of generation units.
2. Then, alternative scenarios were defined, considering the possible combinations of existing plants and new installations of heat pumps and of thermal storages, both conventional buffer tanks and more innovative solutions (as pit seasonal storages). Optimization analyses were developed to identify, per each scenario, the optimal use of available systems, to achieve the lowest heat production cost and the highest reduction of CO₂ emissions. The scenarios were defined aiming to reduce gas consumption, decreasing the dependence on CHP and integrative gas boilers.

Lessons learned & Impact

Given the key role of thermal storage solutions in DH networks, the results of the preliminary study of applicability in one of IREN's DH network will be useful to carry out further investigations and assessments for the improvement of IREN's assets.

Impact

The final objective of this study is to increase the quota of renewables in the heat supply mix, including waste to heat solutions and other alternative heating units (as heat pumps). All scenarios, including the reference condition, were simulated considering planned expansions for the next years and existing hydraulic constraints of the network (including temperature levels).

The expected impact of this measure, therefore, is likely to happen over the next 2-3 years.

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Subject:	Bankability of projects
Short description:	In order to increase the bankability of renewable district heating projects, it is necessary to analyse key influencing factors and barriers, as well as means for overcoming them.
Date of last update:	10.08.2023
Authors:	Giulio Buffo and Giulia Crespi, IREN; Riccardo Battisti, Ambiente Italia
Country:	Italy
Partners involved:	IREN, Ambiente Italia
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Initial situation

One of the main barriers to an adequate development of renewable energy sources in district heating networks is the lack of knowledge of many of the actors involved, including banks and other potential financiers. This 'knowledge gap' refers mainly to the operation phase of the plants, in particular as regards energy producibility and its evolution over time, maintenance needs and related costs, risk management, etc.

It can be said that the initial situation was similar to what happened more than ten years ago with photovoltaics: with generous incentives available, there was a lack of data on actual production, reliability during operation, etc. At that time, banks quickly organised themselves to gather information on the actual production of photovoltaic systems, also setting up a due diligence service, either in-house or outsourced, to assess the bankability of projects in detail.

Objectives

Although not aiming to achieve in the thermal sector something similar to the evolution of photovoltaics, the first goal of this action is to collect and systematise data on the key factors influencing the bankability of RES DHC project.

A second objective, then, is to also highlight possible solutions to overcome the currently existing barriers to a widespread diffusion of RES DHC through an increase of their bankability.



Results and impact

In line with the objectives set out above, a summary document in Italian was developed, also thanks to the interaction with the RSAG members.

This document includes the following sections:

- Analysis of the current situation and of the bankability issue.
- Key factors influencing the bankability of RES-DHC projects.
- Types of incentive systems that can increase the bankability.
- Focus on waste heat projects.
- Tools and references.

In this context, it is particularly important to have reliable data about technology characteristics and performance figures: on this point, the document directly refers to the work carried out within Annex TS5 of the IEA DHC program, where technological data sheets were produced and made available to the public.

The summary document in Italian is available upon request.

Lessons learned

Bankability is a very complex issue, influenced by many different factors. Nevertheless, it is of utmost importance for the DHC sector to transfer the correct information to the financing bodies to ensure that this key barrier can be overcome.

Impact

The document summarizing this action was also promoted through the following article published on Qualenergia.it (almost 300,000 monthly unique visitors and around 700,000 monthly page visits; Statistics for 2022): <https://www.qualenergia.it/pro/articoli/rinnovabili-per-il-teleriscaldamento-e-bancabilita-dei-progetti/>

At the moment, several actions are under preparation, in cooperation with different category associations (above all AIRU, the Italian DH association), for disseminating this document and for overcoming the barriers there identified.

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