SEEDS

Cost-effective and replicable RES-integrated electrified heating and cooling systems for improved energy efficiency and demand response.

REPORT WORKSHOP: COLLECTIVE HEAT IN URBAN CONTEXT

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INTRODUCTION

For the workshop, attendees were divided into groups. Everyone was given the opportunity to introduce themselves and present the challenges and opportunities experienced in the implementation of collective sustainability projects. The following report compiles the opinions of those present. In doing so, it focuses primarily on the problems (after all, they were asked to put the challenges on the table), giving the report a rather pessimistic undertone. This does not reflect the great enthusiasm and the strong drive and energy clearly present among all participants. We hope that SEEDS will be able to contribute to the solutions.

WHERE TO START?

Before identifying good opportunities, consider whether the energy demand can be reduced (including through behavioral change) before starting projects.

Finding good opportunities starts with identifying promising sites, which requires a clear initiator. At this stage, high study costs are often an obstacle because these have no guaranteed return on investment, and consequently, it is difficult to find funding for them. Thus, today, not even all the low-hanging fruit is exploited. In general, the solution proposed is for the government to take on a role whereby that first threshold, namely the detection of feasible cases, is overcome. For example, heat plans are already being drawn up by local governments (often supported by provincial departments.

THE ORGANIZATIONAL COMPLEXITY

Participants acknowledge that the SEEDS pilot project has its complexity (e.g. heritage), but also cite that these projects are actually more feasible than average because of their relatively simple decision-making structure: after all, they are managed by a unique owner (social housing company Mintus). The high degree of private ownership, the complexity of collective management, and the individualistic view of ownership generally pose a major challenge for collective projects. Typically, initiatives target a scale larger than that of the pilot projects (only 10-20 buildings), with a greater variety of ownership structures. All pieces of the puzzle need to fall into place before a project can be executed.

Collective solutions are considered an important catalyst for energy transition but are only financially viable if there are enough customers (e.g. 80%) to ensure sufficient heat demand density. Convincing individual owners is therefore crucial. A useful instrument here is the creation of personas, to approach owners in the right way. One can also start with large consumers to build a good financial case. There is a lot of uncertainty about the division of roles between different organizations. For example, private parties as Energy Service Companies (ESCO's), may not build and operate heat networks and installations on public property, construct and operate them. Regularly, the installation of solutions also comes into conflict with the heritage and public domain interests. The number of stakeholders is typically very large, which makes a smooth approach and communication difficult.

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The complexity requires strong direction. In other words, there is a need for transition managers who take the overall direction and inform and encourage stakeholders where necessary.

THE COST ISSUE

Financing also poses a challenge, with the cheap gas price being the 'elephant in the room'. Obtaining (pre)financing for energy suppliers is difficult, with the high investment cost in particular (CAPEX) weighing through, even if the total cost of ownership (TCO) is not too bad. Especially payback periods of longer than 10 years deter investors. A refinement of TCO calculation methodologies, in which the potential to optimize operating costs based on a collective system is analyzed in more detail, could potentially bring relief. There is therefore a need for new financing methods to overcome high investment costs. An important role is also the pilot projects that, based on good examples (proven concepts), can reduce risk premiums in financing.

Maintenance costs should not be underestimated in plant design. More complex installations can lead to greater efficiency, but this does not always outweigh the higher maintenance costs. However, maintenance is generally much easier to perform on collective installations.

End users fear higher energy tariffs, even with the "Nothing more than else" principle. This principle states that the tariff for the collective solution should be lower than the estimated cost of an individual air-sourced heat pump. Moreover, current financial incentives at the Belgian level are fragmented and vary per region, mainly individually oriented, while collective incentives are lacking.

The cost of doing nothing is always greater than investing in energy transition. However, there is no method to include co-benefits in the business case. The societal benefits as a result of fossil-free heating on a large scale lead, for example, to avoiding costs (e.g., health). Today, however, this is not included in the business case.

DESIGN CHOICES IN A LIMITED SPACE

Bottlenecks also emerge during the design phases. Especially in historic city centers, where space is scarce, rolling out infrastructure such as pipelines and geothermal drilling poses a challenge. Expropriations are expensive and also evoke a lot of negative reactions. It is essential to always involve the public domain department sufficiently early in the process.

The lead time of design processes is long. This can lead to missed opportunities: due to uncertainty and the mismatch in timing, owners (often middle class) start looking for other, individual solutions. These residents will not then connect to the collective solution. However, the vulnerable families who do not have the resources to invest in individual solutions today will remain left. The cost of the collective systems cannot then rest solely on the shoulders of those left behind. To reduce lead time, better information flow and knowledge sharing is essential. In this way, coupling opportunities can be taken into account when reconstructing the infrastructure.

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Grid design also involves choices (e.g., temperature regime) that affect the connection opportunities of homes. Thus, accountability must be taken for future renovations and heat demands.

A LOOK TO THE FUTURE

There is concern about dependence on one energy supplier (the ESCO), which could lead to a monopoly and a problem if this supplier disappears. In terms of sustainability, a life cycle analysis (LCA) of heat pumps should be developed to demonstrate the benefits.

Cooling is becoming increasingly important and should be included in designs to propose future-proof solutions. It should be noted that the potential of geothermal energy is not unlimited. Overarching strategies are needed, also to connect different clusters in a later phase to be connected.

As a final topic, policy was discussed. Attendees argue that current policies in Belgium are focused on individual solutions (such as subsidies for individual heat pumps). There is no obligation to connect to collective heat networks. There is also no mandatory disconnection of gas for existing buildings, which leads to unfair competition. In addition, there is often a call to shift taxation from electricity to gas. The "polluter pays" principle is the only correct one.

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