

State-of-the-art of CSO energy-efficient district retrofitting

Executive Summary



Executive Summary: Proficient D7.5 – State-of-the-art of CSO energy-efficient district retrofitting

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Publishable executive summary

The aim of the **Proficient** project, funded under the FP7 programme 'Energy efficient Buildings' (EeB) is to facilitate and promote Collective Self-Organised (CSO) housing for energy-efficient neighbourhoods. In CSO housing, a group of individuals organize themselves within a contractual agreement on a collective level for the realization of their settlement, either newly built or retrofitted. The target group of the project consists of end users on the demand side of products and services and SMEs on the supply side.

This report (Deliverable 7.5) describes the state-of-the-art of CSO energy efficient district retrofitting. Together with Deliverable 7.4 (energy efficient new districts), it describes a number of CSO projects. The difference between new construction and retrofitting is that in case of new construction, there is no pre-existing condition that dictates the direction of development. There is more freedom to cater to specific needs and to custom create according to wishes and desires. The decision making process however can take very long.

In case of retrofitting, there is an existing structure, existing end-users and sometimes existing connections between SME and building owners, e.g. in the form of a maintenance contract. The pre-existing conditions may limit the freedom of decision making. Individual home owners or tenants may have different opinions about what needs or need not to be done, while the existing structure may steer the retrofitting solutions in a certain direction.

This report describes the result of the first 18 months of the Proficient research, focussing on CSO case studies. The cases described are collected in collaboration with the different Proficient partners. They describe the state-of-the-art and serves as a reference point for the results of the Proficient research.

Case studies

Based on a process flowchart developed by WP1, WP1-6 have been asked to draft two questions per process-step they would like to ask to a CSO project that would help them with their research. All the questions have been gathered in a list containing 55 questions that has been presented to five CSO projects. The results of the questionnaire have subsequently been bundled and made available with the information grouped both per WP and per phase.

Following the first round of information gathering, with the help of a number of Proficient partners, additional information was gathered from a much larger group of case studies: 23 new-development case studies and 16 retrofit case studies. Not every case could be described with the same level of detail, but based on the information available, a general description was given, as well as an analysis of the most important factors that contributed to the case studies' success.

The cases can be divided into three categories:

1. Demonstration case studies
2. Observatory case studies as described in the Description of Work (DoW) of Proficient
3. Additional observatory case studies

Demonstration cases

The demonstration case studies are connected closely to Proficient as some of the participants in those projects are partners in Proficient. For this reason, more detailed information is available, and a certain amount of feedback can exist between the demonstration case studies and the results from Proficient work packages. Not all demonstration cases are able to provide the same amount of feedback, as not all projects are in the same developing stage. Some are close to being finished, others are ongoing or still in the start-up phase at the time of writing.

Two demonstration cases listed in the DoW are classified as district retrofitting: Zelená úsporám in Prague, Czech Republic, and Raab-Sol in Győr, Hungary.

Observatory cases

The observatory case studies are similar to literature studies. Relevant information is gathered from available sources, and used to give a general description of the specific projects. Although important to determine the current state-of-the-art of CSO energy efficient building projects, they have a lower status than demonstration projects, in the sense that they do not provide the feedback and validation of results that the demonstration case studies give.

The observatory case studies listed in the DoW are not all equally relevant to the Proficient research: not all fit the criteria of CSO housing. Despite the lesser relevance of some, all are listed with information about the specific project, as they might be helpful by giving a frame of reference or provide a link to other interesting information. The cases vary in size and type, and the information given is adjusted accordingly, based on the information available and the relevance of the case.

Additional observatory case studies

In addition to the demonstration and observatory case studies described in the DoW, information about a number of CSO projects in Europe has been collected by the Proficient partners, based on their own judgement and availability of information, and is described in the following paragraphs. Not every case has the same amount of information available, which is reflected in the descriptions.

Results

Within Proficient, the workload is split into eight work packages that focus on different topics. Of these eight work packages, six (WP1-WP6) deal with specific aspects of a CSO project: they deal with the process, or with technological aspects. Two WPs, WP7 and WP8, have a more general approach. WP7 is tasked with the demonstration aspect of Proficient, providing the link between the demonstration projects and the Proficient research projects, while WP8 is tasked with the dissemination and valorisation of the knowledge produced by the different WPs, providing the link between the 'outside world' and the Proficient research.

The more general approach gives WP7 the unique opportunity to look at case and/or demonstration studies as a whole, instead of a collection of separate elements. Through this helicopter view, many

cases can be compared side by side, to determine not only what separates them from each other, but also what the commonalities are, and what factors play a role in the success of a case study.

The helicopter view also entitles WP7 to take a more distant look at the case studies. Because there are many cases, and there are many different topics that play a role, it is difficult to take every individual aspect separately, assess it, and weigh it against another individual aspect. WPs 1 through 5 focus on the individual aspects, grouped into the five topics each individual WP focusses on. WP7 takes a different approach by taking a step back and looking beyond the little details. The underlying elements that form the driving forces behind successful CSO projects become visible.

Error! Reference source not found. lists in a condensed form the most important drivers behind the different case studies described.

Table 1: driving forces behind case studies

Project	Project drivers
Zelená úsporám, CZ	Home owners association contracted consultant
Raab-Sol, HU	Corporation collaborated with ESCO. Municipality financially involved, good communication with residents
Zagreb project, HU	Housing association contracted consultancy. Government and, municipality funding. Consultancy leading. Good communication with tenants.
Energy leap, NL	Government program
MMM, NL	Government, housing corporations, construction and installation sector and energy companies collaboration initiative
Kies-groen-licht, NL	SME initiative
E.nu, NL	SME initiative
ZEB, NO	Research centre for Zero Emission Buildings
Hook Norton, UK	Local community association to promote energy saving through competitive financial construction, backed by government funded revolving fund
Low Carbon Living Ladock, UK	Government program, community led initiative
PETRA, UK	Tenants initiative, local government funding
Edward Woods Estate, UK	Local government project, good communication with residents
Myhrerenga Borettslag, NO	Tenants initiative, housing association and government funded
Volmarijnstraat, NL	Tenants initiative, housing association provided process, technical and financial support/backing
Wilhelmina Warehouse, NL	Municipality initiative, supported by end-users association and professional process consultant

Success factors for projects are dependent on the type of project. A distinction between different projects can be made based on the actor that took first initiative. As a result, the projects can be split into three main driving forces:

1. Government initiated projects
2. SME initiated projects
3. End-user initiated projects

Government initiated projects mostly originate from programs where a (local, national or even European) governments finances EeB (Energy efficient Buildings) projects. Based on the case studies, funds available for EeB retrofitting projects from the government are spent on either:

- Subsidy to reduce cost for technical measures. Usually, the subsidy covers part of the cost.
- Programs to increase innovation and knowledge of EeB in the building industry
- Programs to stimulate the development of new market concepts aimed at building owners
- Creation of a revolving fund to provide cheap loans for EeB projects

SME initiated projects are characterised by a consortium of a number of different businesses, that combine to offer process managers, technical consultants, installation companies and contractors and sometimes even financial services, thus offering a one-stop-service for clients.

End-user initiated projects are characterised by a home owners association that represents a (large) group of end-users. The board of the association acts as commissioner for the energy efficiency measures, while potential solutions and measures are discussed with home owners at meetings, before final decisions are made.

Conclusion

Demonstration and observation projects in the category of retrofitting illustrate the great potential of CSO- type of retrofitting intervention in the existing built environment. . The energy performance of the buildings increase, one is able to remain in one's social network, maintaining the cohesion in the neighbourhood, the architectural appearance of these projects improve significantly, and above all, the living quality for residents goes up in service level and comfort. A well organised intervention in an existing neighbourhood often results in a positive impact on its direct surrounding.

The overall EU picture teaches us, there are many differences in housing typologies, legal and organisation circumstances, conditions to take into account, and best practises proven to work in particular cases. Different business models and retrofitting methods have been applied throughout Europe, in order to improve the quality of the houses, improve energy efficiency, and involve residents in with the organisation and planning for the future of their houses.

End-users might be supported better by providing good guidance materials, to inform them upfront of the process flow, some potential difficulties, and experience from other projects. It should be clear and realistic what to expect, in order to avoid disappointments along the process or at the end.

This is exactly where the role of professional mediators comes in. With the right experience and cooperation, they can organise the best fit solutions for the end-users, mediating between the professionally organised authorities on the one side, and the non-professional end-users in the end.