

DELIVERABLE D.T4.3.2

Pilot action reports

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D.T4.3.2: Pilot action reports

Activity A.T4.3 Evaluation of pilot actions for EE improvements

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1. Introduction

The deliverable T4.3.2 belongs to the activity related to the evaluation of pilot actions for EE improvement (A.T4.3). In particular, for each executed pilot action, a document has been created reporting the information on how Pilot Action have been developed, what upstreamed and downstreamed TARGET-CE tools are used in the new pilot areas and what is the overseen outcome of performed Pilot Action.

This document present report on Pilot Action concluded in D.T4.2.1 and performed by PP7 WEIZ in TARGET-CE project.

2. Pilot Action Objectives

Summarize your pilot project in a concrete statement giving a target and timeframe

a) Pilot Action Location

The implemented pilot actions took place in the whole area of the municipality of Weiz and in three specific public/office buildings of the W.E.I.Z. campus (W.E.I.Z. 1-3).

The capitalised project BOOSTEE-CE involved all buildings of the municipality Weiz.

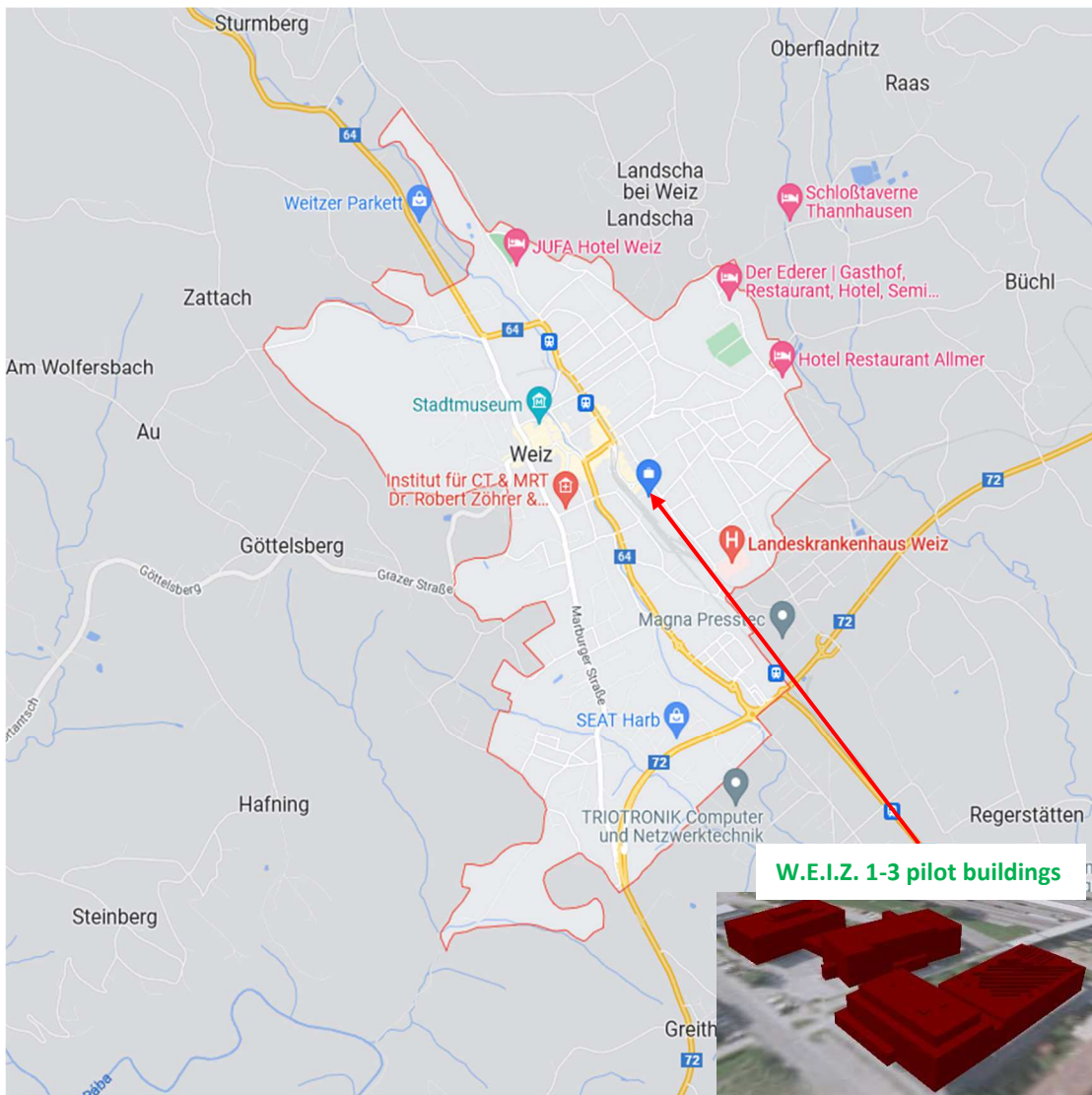


Figure 1: Pilot action area and pilot building location



b) Pilot Action Buildings

Below, an overview of the pilot buildings is given.

For the three pilot action buildings a detailed description with all technical information is provided in the deliverable “D.T4.1.2 Pilot action preparation – WEIZ” and “D.T4.1.2 Pilot action preparation appendix – WEIZ”.

No.	Name of building	Type of building (school, public utility etc.)	Tools used in PA buildings	Scope of tool usage (<i>what will be done by using the tool (training, visualizations, behaviour change etc.)</i>)
1	W.E.I.Z. 1	office building / tertiary building	<ul style="list-style-type: none"> - BOOSTEE-CE (Highly detailed level of building data) - eCentral Living EPC Tool 	<ul style="list-style-type: none"> - Visualisation and query of energy audits - evaluation of NZEB status (and measures to implement) - Implementation of building data into 3DEMS
2	W.E.I.Z. 2	office building / tertiary building	<ul style="list-style-type: none"> - BOOSTEE-CE (Highly detailed level of building data) - eCentral Living EPC Tool 	<ul style="list-style-type: none"> - Visualisation and query of energy audits - evaluation of NZEB status (and measures to implement) - Implementation of building data into 3DEMS
3	W.E.I.Z. 3	office building / educational building	<ul style="list-style-type: none"> - BOOSTEE-CE (Highly detailed level of building data) - eCentral Living EPC Tool 	<ul style="list-style-type: none"> - Visualisation and query of energy audits - evaluation of NZEB status (and measures to implement) - Implementation of building data into 3DEMS

The use of the BOOSTEE-CE: 3DEMS – OnePlace platform consisted in the visualisation on LOD2 for the three pilot buildings (LOD1 was visualised for all buildings in Weiz).

For the eCentral Living EPC tool the energy audit data of the three pilot buildings was used to see if there is potential for improvements on the energy rating of the building through low-cost measures which were automatically calculated in the Online Interactive Tool.



Figure 2: Pilot building W.E.I.Z. 1



Figure 3: Pilot building W.E.I.Z. 2



Figure 4: Pilot building W.E.I.Z. 3



Figure 5: W.E.I.Z. Campus

c) Pilot Action Timeframe

For the three pilot buildings general building data was already available at the beginning of the project. For the implementation a high level of detail (through energy certificates, detailed building dimensions, ...) was gathered in a first project phase and described in the Deliverable “D.T4.1.2 Pilot action preparation – WEIZ”. This high-level detail data of the pilot buildings and the normal level detail data of the buildings from the municipality Weiz was provided as input for the 3DEMS tool. Also, for the eCentral living EPC tool data from the energy certificates was input into the system.

In the next project phase, the necessary equipment for the energy management system was installed and the necessary programming done. The gathered energy related building data of almost all buildings in the municipality Weiz was cleansed and updated. This data was then analysed and prepared for the energy database programming.

d) Other EE measures used in Pilot Action

For the three W.E.I.Z. pilot buildings an energy management tool was implemented which collects data of the used and produced electrical energy within these buildings. This energy data is visualised and provides a necessary overview of the energy usage in and around the pilot buildings. And this tool also helps to optimise energy consumption in the pilot building by improving the energy consumption of self-produced electrical energy.

The second EE measure implemented as a pilot action is a comprehensive database which combines energy data of almost all buildings in the Weiz area. With the collected energy data (and possible future add-ons with other relevant urban planning information such as: mobility data) this platform can help energy and city planners and other relevant stakeholders to identify weaknesses and exploit unused potentials through a holistic view on the energy data.



3. Pilot Action Indicators

Objective	Target indicator	Reached indicator
Improve energy efficiency in the three W.E.I.Z. pilot buildings and summarise all relevant energy data of buildings within the area of the municipality of Weiz	Increase self-consumption of in-house produced electric energy by 50%	Currently the self-consumption of produced electric energy is at 100% on workdays (future developments intend to install an additional PV system to increase the buildings autarky rate even more)
Summarise all relevant energy data of buildings within the area of the municipality of Weiz	Keep the database up to date with all the newest building data (at least on annually)	As the database was established in the last phase of the project and all available data was implemented currently the indicator is reached (the next evaluation will be done in the beginning of the year 2023)

4. Pilot Action impact

The impact on the economy of the city through the implemented pilot actions is difficult to measure or to determine. For the three pilot buildings the increase in self-consumption of produced electric energy is surely an economic factor but with the rise of energy prices it is more about the ecological impacts than the economical. But with the energy management system an increase in awareness for better energy efficient measures in public buildings can be seen (for example: it is already planned to increase the PV capacity to further increase the autarky rate of the three pilot buildings). For the second pilot action “energy data platform of the buildings in the municipality of Weiz” it is more about the combining all relevant energy data into one source so that municipality staff and/or city planners and other stakeholders are always up to date on relevant data and can plan next steps in developing and expanding buildings and infrastructure more efficiently. Therefore, the economic impact of this second pilot action is not a top priority.

5. Pilot Action problems and opportunities

In the implementation phase of the pilot actions in Weiz some problems occurred but could be managed with an acceptable delay. For example, the implementation of the equipment for the energy management system fell in a COVID-19 lockdown phase but was also an opportunity as in the pilot office buildings personnel was reduced to a minimal size and therefore the planning of electrical shutdowns in the buildings could be done easier with less complications. For the second pilot action, the energy data platform, there



was a delay in the procurement and awarding of contract as the costs for programming such a platform exceeded the project budget. Therefore the initial requirements for the energy platform were reduced and it was built in modular fashion, so that extensions and further functions can be implemented more easily.

6. Involvement of stakeholders and collaboration

For the first pilot action, the energy management system, the most relevant stakeholder (W.E.I.Z. Immobilien GmbH) was included into the process as they are the building owners and management. Combined with an external technician who previously has already done installations in the pilot buildings a harmonious implementation of the pilot action could be ensured.

For the second pilot action, the energy data platform, relevant stakeholders from the municipality (building authority, office for environment and mobility, technicians) were included in the planning of the platform. The offers for the first planned concept for the platform exceeded the budget so in coordination with the stakeholders a reduction of requirements was agreed on and a stipulation in the contract for the external expert was to build the platform in a modular way so that for future developments additional functionalities can be implemented easier.

In WPC activities (stakeholder workshops and coffee-with-mayors) local public authorities, SME's, research centres and the general public were informed about the project progress and the development of the pilot actions.

7. Pilot Action risk mitigation

Risk mitigation for the pilot actions in Weiz was only necessary on minimal level. As the pilot buildings are office buildings the equipment installation necessary for implementation of the energy management system could be done during weekends where the workforce in the buildings was minimal so disruptions to the electric energy system were not relevant. Also, the risk of exceeding the project budget for the energy data platform was solved by splitting the parts into a modular based system. Therefore, the platform is based on an expandable foundation that can be upgraded with modules to new energy-related information that cannot even be foreseen yet.

8. Lessons learnt

Creating a framework for easy implementable energy efficiency measures that will be accepted by all stakeholders, especially local authorities, can be challenging. Therefore, a constant exchange within the stakeholder group is relevant. Also, as learned from the pilot action energy data platform, collecting and maintaining data is difficult, time and resource consuming. However, if a solid foundation is created and the staff of the relevant local authorities are willing to work with new systems, the task of keeping an up-to-date energy database can help not only municipal officials but also other actors (e.g., district heating in Weiz) so that they can plan in advance where changes should be made, and resources deployed.



9. Recommendations for future possible actions

For the implemented pilot action “energy management system” there is already a planned action to increase the capacity of the PV system and to optimise the usage of the electrical storage. Such solutions can function as an example and provide important inputs for other public buildings which want to optimise their self-consumption of produced electrical energy. As for the pilot action “energy data platform”, as it was designed in a modular way the functions should be adaptable to other cities, municipalities or even regions, given that the needed energy related data of buildings is already available and structured. Preparing the necessary energy building data for such a tool from zero is a lot of work and for small municipalities this might not be a priority as there are neither the personnel nor the financial resources available.

The exchange between stakeholders involved should also be further strengthened, as new ideas and solutions are always being developed and a constructive outside view can always improve a project. Also, the communication to the general public with new methods of engagement can provide important inputs for pilot actions.

10. Conclusions

The implementation of pilot actions “energy management system” for the three Weiz pilot buildings (W.E.I.Z. 1-3) and the “energy data platform” for the buildings of the municipality of Weiz was possible without mayor problems. The preliminary data from the introduced “energy management system” already shows an increase in self-consumption of the self-produced energy from RES. This already resulted in further ideas to increase the PV capacity within the buildings of the Weiz campus to further increase their autarky rate.

The straightforward implementation of the “energy data platform” was made possible by good preparatory work, as most of the necessary energy data from all households in the municipality had already been collected in various forms. The biggest challenge was to put all this existing data into one form. The base for a simple solution to manage energy related data of buildings within the municipality is given. Now it is up to the municipal employees to use the created instrument and use its advantages. Overall, it can be said that the implemented pilot actions reached their goals and on the basis of this results, there is no reason why further investments to implement more energy efficiency measures should not be made.