

DELIVERABLE T3.2.2

D.T3.2.2 – Pilot action reports

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A.T3.2 Evaluation of pilot actions for EE improvement

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Authors		
	Name (organization)	Name, e-mail
WP leader	Mazovia Energy Agency (MAE), PP5	Aleksandra Luks, a.luks@mae.com.pl
Contributing participants	Municipality of Judenburg (JUD), PP10 Energy Agency Upper Styria (EAO), PP11	Helfried Kreiter, h.kreiter@judenburg.at Eva Volkar, e.volkar@judenburg.at Christian Moser, c.moser@judenburg.at Gernot Baerenthaler, gernot.baerenthaler@eao.st



1. Introduction and aims

This document is a post-investment report describing the pilot action. This determines the results of the investment and other accompanying activities.

The aim of this document is to present the achievements of the implemented measures and their usefulness.

2. PA report

This chapter presents in tabular form all interesting information about the pilot action. The table below is the business card of the pilot. It contains attractive information that not only shows the course and achievements of the pilot action but can also be a tip for people interested in similar energy efficiency improvement measures or owning similar buildings. It was demonstrated in document D.T3.1.3 that the pilot action in Judenburg is a good practice, so it is a testimony to how such investments should be implemented.

Name of the pilot action	PA2 in a school complex (primary, comprehensive/polytech and sports hall) in Judenburg-Lindfeld
Type of the pilot action	Investment
Location	Judenburg, Austria
Number of modernized buildings (with building's type)	4 educational buildings
Modernized area of the buildings	6057 m ² + 1762,80 m ² + 2700 m ²
Main problems in the buildings	Insulation of the buildings (walls, roofs) is low The components of distribution network are not perfectly fitted There is no automatic regulation for the heating system
PA goals	<ol style="list-style-type: none"> 1. improvement of the heating system 2. monitoring buildings' data 3. increasing the comfort of the buildings' use 4. easier operation of the buildings 5. promoting and disseminating knowledge about energy efficiency measures in buildings
Type of energy efficiency improvement method used	<ul style="list-style-type: none"> - improvement in the hydraulic system of the heating system for better regulation of water flow rates on radiators and room temperature regulation - reconstruction of the hydraulic distribution, pumps and valves - new smart regulation and control for heating and electricity - partly thermal insulation on outside walls and rooftop, improvement of window connections to avoid draft - replacement of lights by new efficient LED lights
Number of smart meters (with their purpose)	3 smart meters for electricity 1 smart meter for district heating
Pilot action duration	2018-2021
Partners involved	JUD, EAO
People number involved to implement the PA	representatives from Municipality of Judenburg and Energy Agency Upper Styria



Investment value	250 000 €
Description/Details of the PA	<p>The pilot action includes an investment in improvement in the hydraulic system of the heating system for better regulation of water flow rates on radiators and room temperature regulation, reconstruction of the hydraulic distribution, pumps and valves, new smart regulation and control for heating and electricity, partly thermal insulation of outside walls and rooftop, improvement of window connections to avoid draft and replacement of lights by new efficient LED lights. The complementary task is staff training about energy efficient use. In addition, the OnePlace platform is tested. The pilot action is implemented in the school complex Lindfeld in Judenburg which consists of four separate buildings and is supplied with district heating from one central distribution point.</p> <p>The smart metering includes the heat-smart meter (model SHARKY 775) installed by the district heating supplier, at the heat delivery station at the entrance of the building, before the heat exchanger. It can measure and store detailed load profiles. Data can be read out and analysed at a quarterly hour basis, so detailed analysis of the consumption in short term resolution is possible. The total heat consumption is metered at the heat transmission station. The heat consumption is spread up to the different building parts by a heat load calculation of the different building parts.</p> <p>Other metering tools are three smart meters which were installed by the electricity grid supplier Stadtwerke Judenburg in three main parts of the buildings: NMS1 (school building 1), NMS2 (school building 2) and sports hall. The data are read out by the ESCO Stadtwerke and submitted to EAO, EAO analyse the detailed load curves at a quarterly hour basis. Heat and electricity data are collected and then reported to the environmental department and integrated into the municipality's energy monitoring. The intelligent remote energy smart meters enable automatic data transmission on energy consumption. In addition, it can monitor energy consumption on an ongoing basis, which in turn allows for managing this consumption and reduce electricity bills. Control of the level of energy consumption allows for optimizing the level of contracted power, which in turn generates savings.</p>
Type and number of the stakeholders reached	<p>Number of reached target groups in the framework of pilot action:</p> <p>General public -500 Local public authority -160 Regional public authority -3 Sectoral agency - 30 Infrastructure and (public) service provider -5 Higher education and research - 13 Education /training centre and school -26 SME -25 Business support organisation -3</p> <p>Numbers for municipal magazine: edition 6,000 copies to every household and company</p>
Achieved effects/results	<ul style="list-style-type: none"> • Creation of a best practice for energy and cost - saving based on smart metering and energy auditing.



	<ul style="list-style-type: none"> • Data collection every month for detailed energy analysis of the previous situation as well as benchmarking and controlling the effort after improvements in the energy efficiency. • Improving energy efficiency in Judenburg. • Building users will gain experience in how smart metering works and how it should be monitored. • Reduction of energy consumption - 250.000 kWh will be achieved in 2022. • Financial savings - 30.000 € will be achieved in 2022. • Change in people's behavior by raising awareness • Increasing the comfort of the building use. • Easier operation of the building. • The exchange of experiences and practices of carrying out similar investments in various political, social and technical conditions. • Promoting and disseminating knowledge about energy efficiency measures in buildings.
Satisfaction of users	The users hope that controlling the heating system will become easier and additional energy will be saved.
Possibility of replication	The case of the pilot action in Judenburg is an example for many Austrian small and medium towns because many school buildings were built in the 1960s and '70s and have the same energy standard as in Judenburg.
Distinctive feature of the pilot action	<ul style="list-style-type: none"> – modern intelligent metering systems were used to detect failures and increasing energy consumption at an early stage to save energy and costs – comprehensive renovation of buildings, which will result in better benefits – using contracting as a financing method
Number of staff trainings	2
Number of promotional meetings – focus group meetings, seminars	<p>4 focus group meetings 2 info-days 3 presentations at study visits 1 workshop at conference 1 award ceremony</p> <p>1 publication in municipal magazine (edition: 6,600 copies)</p>

Table 1: Pilot action business card

The results presented above clearly show that the pilot action has brought and will bring so many benefits that one can speak of success. The scale of the project is huge hence it requires a lot of investment funds but generates equally large savings and significant results.

The analysis of activities showed that all intended plans were/will be implemented and exceed expectations. Additional works have been identified such as improvement in the hydraulic system of the heating system for better regulation of water flow rates on radiators and room temperature regulation, reconstruction of the hydraulic distribution, pumps and valves, partly thermal insulation on outside walls and rooftop, improvement of window connections to avoid draft and replacement of lights by new efficient LED lights. It can therefore be said that the pilot action in Judenburg will achieve more indicators than expected.



3. Conclusions

This study is a summary of the pilot action in Austria. The main results are measurable benefits achieved in selected buildings, including cost and energy savings. In addition, it can be concluded that the OnePlace platform is useful for preparing, conducting and monitoring EE investments as a tool supporting the entire investment process.

The identified replication possibilities of the pilot action in other buildings or locations as well as the transfer of acquired knowledge and experience prove that the pilot can be successfully continued and developed.

The information contained in this document is based on deliverable D.T3.1.3, D.T3.2.1, Output 3.1 and PA2 fact sheet.