

## DELIVERABLE T3.2.2

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**D.T3.2.2 – Pilot action reports**

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## D.T3.2.2: Pilot action reports

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

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## 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.T3.1.7 that pilot action in Koprivnica is a good practice, so it is a testimony to how such investments should be implemented.

<b>Name of the pilot action</b>	EE with OnePlace platform (PA6) in a kindergarten of Koprivnica
<b>Type of the pilot action</b>	Investment
<b>Location</b>	City of Koprivnica, Croatia
<b>Number of modernized buildings (with building's type)</b>	2 educational buildings
<b>Modernized area of the buildings</b>	1035,46 m <sup>2</sup> + 6681,31 m <sup>2</sup>
<b>Main problems in the buildings</b>	Excessive energy consumption Lack of proper control and energy management Unreasonable and irrational use of energy Lack of energy awareness among users of the buildings
<b>PA goals</b>	<ol style="list-style-type: none"> <li>1. increasing of energy efficiency and performance in public buildings</li> <li>2. energy consumption control and monitoring</li> <li>3. energy management demonstration</li> <li>4. education and promotion of energy efficient measures</li> </ol>
<b>Type of energy efficiency improvement method used</b>	<ul style="list-style-type: none"> <li>- installation of the intelligent energy management systems including measuring devices (smart meters) and software</li> <li>- integration of measuring variables such as energy and water consumption are also carried out in Croatian Energy Management Information System (ISGE)</li> </ul>
<b>Number of smart meters (with their purpose)</b>	<p>2 main electricity smart meters and 5 other electricity smart meters</p> <p>1 smart central water meter</p> <p>7 smart air quality meters (3x temperature meter, 2x CO2 meter and 2x humidity meter)</p> <p>4 smart gas meters</p>
<b>Pilot action duration</b>	01-10.2018
<b>Partners involved</b>	CoK, REAN
<b>People number involved to implement the PA</b>	10



<b>Investment value</b>	13 900 €
<b>Description/Details of the PA</b>	<p>The pilot action includes an investment in smart metering and monitoring system installation for demonstrating energy management and consumption control. The main electricity meter, central water meter and air quality meter are installed in the kindergarten. The connection of the gas meter is also implemented in this building. In the primary school, the purchased equipment contains the main electricity meter and 3 other electricity meters for sports hall, kitchen, distribution cabinet. Besides the water meter in boiler room and air quality meter are installed. The connection of two gas meters is made in the kitchen and boiler room. In addition, the integration of measuring variables such as external and internal temperature, CO<sub>2</sub> level (PPM) and humidity level are also carried out. All OnePlace modules are implemented to manage energy in the buildings.</p> <p>Braca Radic Elementary School and the Kindergarten Loptica were chosen because these two objects needed to went through refurbishment process and that was a chance to integrate smart metering system to track improvements in energy efficiency through process of refurbishment. Also, it was a chance to track possibilities for further energy efficiency improvements. Basically, the system includes measuring devices (smart meters) and software for displaying and comparing the results. Measuring devices include reed switch that collect information about electric energy, gas and water consumption as well as internal temperature and CO<sub>2</sub> level. Central unit processes and displays collected data within specially designed software in real-time. This investment provides numerous benefits such as monitoring, planning and control of energy and water consumption costs. Ultimately, the system enables better management of energy consumption, easier maintenance of facilities and financial savings. Furthermore, smart metering data are integrated in Croatian Energy Management Information System (ISGE).</p>
<b>Type and number of the stakeholders reached</b>	<p>Number of reached target groups in the framework of pilot action:</p> <p><b>General public</b> – 100+</p> <p><b>Local public authority</b> – 20+</p> <p><b>Regional public authority</b> – 20+</p> <p><b>Sectoral agency</b> – 20+</p> <p><b>Infrastructure and (public) service provider</b> – 10+</p> <p><b>Higher education and research</b> – 1+</p> <p><b>Education /training centre and school</b> – 10+</p> <p><b>SME</b> – 20+</p> <p><b>Business support organisation</b> -</p>
<b>Achieved effects/results</b>	<ul style="list-style-type: none"> <li>• Building users will gain experience in how smart metering works and how it should be monitored.</li> <li>• Monitoring, planning and control of energy and water consumption costs.</li> <li>• Increasing the comfort of the building use.</li> <li>• Easier operation of the building.</li> <li>• Promoting and disseminating knowledge about energy efficiency measures in buildings.</li> <li>• There is the potential to change society's bad energy habits by raising environmental awareness.</li> </ul>



	<ul style="list-style-type: none"> <li>The exchange of experiences and practices of carrying out similar investments in various political, social and technical conditions.</li> </ul>
<b>Satisfaction of users</b>	Building users are very pleased, especially principals of the two PA buildings and janitors who can now easily monitor energy consumption and take corrective actions if they notice any deviation.
<b>Possibility of replication</b>	The applied solutions will be replicated elsewhere in Croatian regions and beyond as a good practice to follow.
<b>Distinctive feature of the pilot action</b>	<ul style="list-style-type: none"> <li>– integration of smart metering in buildings with the national monitoring system</li> <li>– integral refurbishment of pilot buildings together with SM system implementation</li> <li>– great coordination between REAN’s technical team and city’s financial crew</li> </ul>
<b>Number of staff trainings</b>	2
<b>Number of promotional meetings – focus group meetings, seminars</b>	3 Focus group meetings, 6 progress meetings, seminar, national training, 2 PA articles, promotional meetings organized beyond the partnership

*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 pilot operation in Croatia is the only one to perform much more work than assumed due to the modernization of two buildings. Thus, its expectations and resulted in increased benefits compared to the originally intended plan with one building.

Furthermore, smart metering data are integrated in Croatian Energy Management Information System (ISGE), which will result in a comprehensive solution that will also be able to support other buildings connected to one common grid. This will allow control and monitoring of a larger area in terms of energy consumption.

The analysis of activities showed that all intended plans were implemented and exceeded expectations.

### 3. Conclusions

This study is a summary of the pilot action in Croatia. The main results are measurable benefits achieved in selected buildings, 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.T3.1.7, D.T3.2.1, Output 3.1 and PA6 fact sheet.