# O.T3.2 & D.C3.4 PILOT FACT SHEET

## Pilot implementation of a smart multimodal electric mobility station

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| **Project index number and acronym** | CE1100 LOW-CARB |
| **Lead partner** | PP1 - Leipzig Transport Company (LVB) |
| Output number and title | T3.2 Smart multimodal mobility station |
| **Deliverable number and title** | O.T3.2 & D.C3.4 Output Pilot Fact Sheet |
| **Responsible partner(s)** (PP name and number) | PP 6 Koprivnica |
| **Project website** | www.interreg-central.eu/low-carb |
| **Delivery date** | 30/11/2020 |
| **Status** | Public |

| **Summary description of the pilot action (including investment, if applicable) explaining its experimental nature and demonstration character** |
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The pilot action i.e. the investment, "Smart" multimodal station Koprivnica is a public bus station that is used by users and the operator of the public transport systems of the City of Koprivnica. The station consists of the following elements:

1.) Plato of 70 m2 where two e-buses and five e-bikes can be stored
2.) Overhead construction that carries the photovoltaic system
3.) Photovoltaic system located at the overhead construction
4.) Battery storage system located in the middle of the station
5.) Fully integrated software system that integrates various public transport systems
6.) Five chargers for e-bikes
7.) Two AC chargers for electric vehicles
8.) Software management system that controls the usage of the stored energy and of the whole system.

The photovoltaic power system feeds the energy produced into a battery storage system. The energy stored in the battery storage system feeds the energy, in parts of the day when power is not available to the consumers, to the AC chargers, e-bikes and other equipment that is mounted on the station. As stated, the station has a set of 5 e-bike charging stations and two AC chargers that are an integral part of the station.

The station is not fully autonomous, it has a connection to the electricity grid to provide electricity when it is not available from the energy storage system. As a major element of the station, it incorporates a tailor made software system that is replacing all of the existing systems, or partially integrate them into one unique system that prepares the public transport system of the City of Koprivnica for the extension into the FUA area, with the focus of keeping track of how the different elements of the public transport system are functioning, cost figures, preparation for MaaS services and many other features that are important for the public transport operator of a small public transport system in a small city.

With this measure, the aim is to increase the usage of renewables, which is in Croatia on a very low level, make our public transport with a minimum of CO2 emissions and to develop a

demonstration example of a station that could be used in future public transport operations of small and medium sized cities in Croatia and in the wider region.

This station is innovative in many ways, but the most important ones are:

- First multimodal station in Croatia, that combines the usage of electric buses and e-bikes at one place
- First station used in public transport, i.e. first charging system in public transport that uses on-the-place produced renewable energy and uses it to power electric vehicles used in public transport.
- First system in Croatia that incorporates different public transport systems, public bikes, public e-bikes, and electric buses, and integrates them into one functional system that is managed by one operator and one management system.

This station demonstrates the possibility of using on-the-spot produced energy from renewable energy sources and spending the energy, backed up by the battery storage system, when there is no energy from the sun available. This demonstrates the usage of energy produced from renewables when there are no possibilities to produce the energy from the sun, eliminating the main problem with renewable energy production, how to store energy that can be produced in one part of the day and use it when it is needed.

## NUTS region(s) concerned by the pilot action (relevant NUTS level)

The NUTS region that is concerned by the smart multimodal station is the Sub-region (NUTS 3), HR045 Koprivnicko-krizevacka zupanija i.e., the functional urban area of the City of Koprivnica. The term of Functional urban areas in Croatia is not used at all. According to the Croatian Law on regional development, Croatia has the central state, cities, municipalities and counties i.e. NUTS 3 sub-regions. The Functional urban area of the City of Koprivnica is an area that is not formally recognized but lies on the natural flow of citizen in that region and the connections that exist, from the City of Koprivnica to each individual municipality and vice versa.

| Investment costs (EUR), if applicable |
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| The total cost of the investment was 349.000,00 HRK (46.530,00 €). Partially, 244.000,00 HRK (32.530,00 €) was spent on the equipment and installing the equipment and 105.000,00 HRK (14.000,00 €) was spent on the construction works. 51.929,98 |

| Expected impact and benefits of the pilot action for the concerned territory and target groups and leverage of additional funds (if applicable) |
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| The pilot is being used now for the operations of the public transport system of the City of Koprivnica. All elements of the "smart" multimodal station, the software, e-bikes and charging systems, are an essential part of the public transport system.<br><br>The main user of the system is the municipal utility company Komunalac which is the sole operator of all three systems, taking the public e-bike system for the Krampus l.t.d. This change was one of the main outcomes of the LOW-CARB project, where a need for a single transport operator was expressed. This system will be used in the future by the municipal utility company Komunalac.<br><br>The concept of the station is transferable to the functional urban area of the City of Koprivnica and will make the possible expansion more cost effective. |

## Sustainability of the pilot action results and transferability to other territories and stakeholders.

The system is representing a good way how to improve the public transport system in a small City which has a small public transport system with issues in managing the system. The establishment of a clear transport operator, unified and integrated software system and innovative and connected equipment will result in a reliable and cost-effective system. Due to that fact, the public transport system elements, public bikes, public e-bikes, and public e-buses are all free of charge for the citizens of the City of Koprivnica.

The facts mentioned above could be used by any small to medium sized City in Europe, especially in Central Europe, where similar problems exist. The smart multimodal station could be easily replicated to the functional urban are of the City, the software solutions could easily accept new elements of the system, i.e. new equipment like, like new terminals, new bikes and e-bikes and new e-buses that could be operated at the functional urban area.

Since small and medium sized cities present a major part of the European urban landscape, the replication effect is rather large.

## Lessons learned and added value of transnational cooperation of the pilot action implementation (including investment, if applicable)

The findings that we have gathered from this part of the activities were that a centrally run transport system is much more effective and especially in combination with a software system that allows better tracking of the basic elements of the system, like number of users, patterns of usage, costs of usage, occupancy of bike and e-bikes, charging status of the buses, single operator interface and, what is most important, the possibility to upgrade the system with new buses, e-bikes, bikes, terminals for bikes and ebike i.e. the expansion into the functional urban area of the City of Koprivnica. Koprivnica, like other small cities, experiences more resistance to change than big cities, and it can be too challenging to finance, implement and demonstrate an innovative measure alone. The transnational context of LOW-CARB enabled the city to prepare, implement and evaluate a very innovative pilot action, to learn from the partners how to handle innovative tenders, e.g., and to pass its own learnings on to others.

**Contribution to/ compliance with:**

- **relevant regulatory requirements**
- **sustainable development - environmental effects. In case of risk of negative effects, mitigation measures introduced**
- **horizontal principles such as equal opportunities and non-descrimination**

The testing has showed that the buses could use 5 – 10 % of the energy produced at the site for charging from the photovoltaic panels and used for charging the buses overnight. The exact percentage of the share of the locally produced electricity consumed at the site is expected to be up to 10%. The key performance indicator in this case are the CO2 emissions reductions that are expected to go down on a yearly basis up to 10%.

There are no relevant regulatory requirements connected with this investment. The investment is a simple building and does not require building permits or similar.

**References to relevant deliverables (e.g. pilot action report, studies), investment factsheet and web-links**
**If applicable, additional documentation, pictures or images to be provided as annex**

Below: pictures of the smart multimodal mobility station.



Please also refer to:

- D.T3.4.1-D.T3.4.3 Preparation, implementation and evaluation reports,
- LOW-CARB pilot handbook (available in all central European languages)
- I2 pilot investment factsheet Koprivnica