

Summary of Agile Pilot

Company name	Association of Electric Bicycles Lovers
Company location	Belgrade, Serbia
Domain	Sustainable mobility / E-mobility / Renewable energy
Municipality	Čukarica
Project period	July 2025 – March 2026
Solution	Within the framework of the INTERREG Danube Region project DRP0200367 – PilotInnCities, the Association of Electric Bicycle Enthusiasts (ULJEB) implemented the agile pilot SolarCycle Charge, an innovative off-grid charging solution designed to support sustainable urban mobility through the integration of renewable energy and electric bicycle infrastructure. The pilot resulted in the development, installation and validation of the first solar-powered charging station for electric bicycles in Serbia, located at Ada Ciganlija, one of Belgrade's largest recreational and cycling destinations. The solution operates entirely on renewable solar energy and does not require connection to the electricity grid, making it suitable for parks, cycling routes, tourist destinations and other public spaces where conventional charging infrastructure is unavailable or economically impractical. The charging station combines photovoltaic panels, battery energy storage and dedicated charging equipment into a modular system that can be easily adapted to different urban environments. Besides providing clean energy for charging electric bicycles, the solution serves as a visible demonstration of sustainable mobility and climate-friendly urban innovation. The system combines approximately 1.8 kWp of photovoltaic capacity, 10 kWh LiFePO4 battery storage, intelligent charging equipment and modular supporting infrastructure into an autonomous energy system capable of operating throughout the day without dependence on the public electricity network. The pilot installation provides four charging outlets for electric bicycles and was designed as a scalable solution that can be adapted to different urban environments and user demands. During the pilot period, the project successfully demonstrated the technical feasibility, operational reliability and user acceptance of autonomous solar-powered charging infrastructure. The implementation also confirmed that the concept can be replicated in municipalities, recreational areas, tourist destinations and commercial locations with only minor site-specific adaptations. The pilot contributed to stronger cooperation between civil society, local government, public utility companies and innovation organisations, while increasing public awareness of renewable energy, electric mobility and low-carbon transport solutions. Key figures • 1 fully operational pilot installation • 1 Serbian municipality/public utility company involved as pilot host • 100% renewable energy used for charging • 0 grid electricity required during operation • 3 implementation phases successfully completed • 15,000 EUR total pilot value • 3 stakeholder workshops/coordination meetings completed during implementation • 1 international presentation of the project at URBIS 2026 Smart Cities Conference
Stakeholders	The implementation of SolarCycle Charge required close cooperation between public institutions, civil society organisations, technical experts and end users.

	Association of Electric Bicycle Enthusiasts (ULJEB) acted as the solution provider and project coordinator, responsible for the overall implementation, technical coordination, communication activities and business model development. Digital Serbia Initiative acted as the contracting authority within the PilotInnCities programme, providing financial support, mentoring and continuous monitoring of project implementation. Public Utility Company Ada Ciganlija served as the pilot host, providing the implementation location and supporting coordination with local stakeholders and operational requirements. Filbo Eko and specialised technical partners contributed to the engineering design, procurement, installation and commissioning of the photovoltaic charging infrastructure. Additional stakeholders included: • City of Belgrade institutions; • local authorities; • electric bicycle users; • cyclists' associations; • visitors of Ada Ciganlija; • media organisations; • Smart City and sustainable mobility experts; • international PilotInnCities partners. The project also generated interest among municipalities, tourism organisations and organisations working on sustainable mobility, creating opportunities for future replication of the solution throughout Serbia and the wider Danube Region.
Lessons learned	The agile pilot generated valuable technical, organisational and business knowledge that will support future deployment of SolarCycle Charge. Key lessons learned include: • There is clear public demand for accessible charging infrastructure for electric bicycles. • Autonomous solar-powered charging stations can successfully operate without connection to the electricity grid while providing reliable charging services. • Early involvement of municipalities and public utility companies significantly accelerates implementation and improves project outcomes. • Administrative procedures related to installations in public spaces require considerably more time than technical implementation and should be considered during project planning. • Continuous communication with stakeholders improves acceptance of innovative solutions and facilitates future cooperation. • Real-life testing is essential for validating both technical performance and user behaviour. • Modular system architecture enables efficient adaptation to different urban environments and customer needs. • Pilot projects create valuable evidence that supports future commercialisation and investment decisions.
KPI 1	Number of charging sessions during the pilot period Measurement Number of completed charging sessions recorded during pilot operation. Expected target value Validation of the charging infrastructure through regular public use during the testing period. Achieved value Approximately 30 charging sessions were completed during the first seven weeks of operation.

	Summary and analysis The recorded charging sessions confirmed both technical functionality and public interest in the solution. Although the pilot period was intentionally limited, the utilisation rate demonstrated that cyclists recognise the need for publicly available charging infrastructure and are willing to use renewable-energy-based charging services. Factors influencing the results The pilot represented the first installation of its kind in Serbia, meaning public awareness was still developing. Seasonal weather conditions, cycling frequency and promotional activities directly influenced utilisation.
KPI 2	Operational reliability of the charging system Measurement Continuous operation of the photovoltaic charging station during the pilot period. Expected target value Reliable autonomous operation without major technical failures. Achieved value The charging station successfully operated throughout the pilot period while maintaining reliable charging performance under real outdoor conditions. Summary and analysis The pilot validated the complete off-grid energy concept based on photovoltaic generation and battery storage. The solution demonstrated reliable energy production, storage and charging capability, confirming its suitability for deployment in public spaces without grid connection. Factors influencing the results Weather conditions, solar irradiation and seasonal variations influenced daily energy production but did not compromise the overall functionality of the system.
Evaluation of the business model focusing on its viability and potential for growth	ULJEB develops innovative solutions supporting sustainable urban mobility through the integration of renewable energy technologies, cycling infrastructure and Smart City concepts. The PilotInnCities project successfully validated the commercial potential of SolarCycle Charge by demonstrating technical feasibility, operational reliability and strong stakeholder interest. Validated strengths ● First-mover advantage in the Serbian market. ● High visibility due to installation in a major recreational area. ● Strong alignment with European Green Deal objectives. ● Modular and scalable technical solution. ● Low operating costs through renewable energy. ● Broad applicability across municipalities, parks, tourist destinations and commercial locations. Identified barriers ● Administrative approval procedures for public space installations. ● Need for greater market awareness regarding e-bike charging infrastructure. ● Dependence on public funding during early deployment stages. Planned adjustments ● Development of standardised product configurations. ● Introduction of remote monitoring services. ● Expansion of maintenance and after-sales services. ● Development of financing models for municipalities and private customers. External support required ● International networking.

	● Access to investors. ● Business mentoring. ● Market expansion support. ● Participation in European innovation programmes. Priority needs for scaling ● Product standardisation. ● Commercial partnerships. ● Marketing activities. ● International promotion. ● Demonstration projects in additional municipalities.
Impacts	The pilot produced measurable environmental, social and organisational impacts. Key impacts include: ● Successful deployment of the first solar-powered e-bike charging station in Serbia. ● Demonstration of a fully autonomous off-grid renewable energy solution. ● Increased visibility of sustainable urban mobility solutions. ● Around 30 successful charging sessions during the initial testing period. ● Increased public awareness through 7 media publications and TV appearances. ● Strengthened cooperation between civil society, municipalities and public utility companies. ● Validation of a scalable business model. ● Creation of a demonstrator suitable for replication throughout Serbia and the Danube Region. ● Contribution to decarbonisation of urban transport and promotion of renewable energy technologies.
Suggestions for future actions, especially focusing on sustainability and replication	● Replicate SolarCycle Charge in additional municipalities. ● Integrate charging stations into Sustainable Urban Mobility Plans (SUMPs). ● Develop standardised technical packages for different customer groups. ● Expand cooperation with tourism organisations and national parks. ● Strengthen public-private partnership models. ● Introduce remote monitoring and digital management services. ● Continue participation in European Smart City initiatives.
Next steps	● Commercial deployment of SolarCycle Charge across Serbia. ● Installation of demonstration stations in additional municipalities. ● Development of strategic partnerships with public institutions and private companies. ● Participation in European funding programmes. ● Expansion towards the wider Danube Region and EU markets. ● Continuous technical optimisation based on operational experience. ● Preparation for large-scale commercial production.
Provider's Reflection	PilotInnCities provided an exceptional opportunity to transform an innovative concept into a validated real-world solution. Beyond technical implementation, the programme enabled ULJEB to strengthen cooperation with municipalities, public utility companies and international innovation partners. The pilot confirmed that SolarCycle Charge addresses a genuine market need and established a strong foundation for future commercialisation and international expansion.
Municipality's Reflection	The pilot demonstrated that innovative renewable energy solutions can be successfully integrated into public recreational infrastructure while supporting sustainable mobility objectives. The installation contributes to the attractiveness of Ada Ciganlija and promotes

	environmentally responsible transport. Cooperation with the solution provider was efficient, and the pilot confirmed the potential for wider deployment of similar infrastructure across other public locations.
Expert's Reflection	The SolarCycle Charge pilot demonstrates how relatively small-scale innovation projects can generate valuable technical, environmental and societal impacts when implemented under real operating conditions. The pilot successfully validated an autonomous off-grid charging solution powered entirely by renewable energy, confirming that such infrastructure can reliably support the growing adoption of electric bicycles while reducing dependence on conventional energy sources. The combination of photovoltaic generation, battery storage and modular charging infrastructure represents a practical and scalable approach that can be adapted to various public spaces with minimal site-specific modifications. Beyond the technical aspects, the pilot highlighted the importance of early stakeholder engagement, continuous communication with public authorities and close cooperation between solution providers and end users. These elements proved equally important as the engineering solution itself and significantly contributed to the successful implementation of the pilot. From a broader perspective, SolarCycle Charge aligns well with current European priorities related to sustainable urban mobility, renewable energy integration and climate-neutral cities. The project provides a transferable model that can be replicated in municipalities, recreational areas, tourist destinations and cycling corridors across the Danube Region and beyond. The pilot confirmed that innovative urban mobility solutions become most valuable when they combine technical feasibility with practical usability, environmental benefits and a clear pathway towards long-term commercial sustainability.