Interreg

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Danube Transnational Programme

CSSC LAB

Regional Action Plan for Energy Storage and Sector Coupling Montenegro

Version Final

A stream of cooperation

The CSSC Lab project summary

The CSSC LAB project is being funded within the third call of the INTERREG DANUBE TRANSNATIONAL Programme of the European Commission, under the specific objective SO 3.2: Improve energy security and energy efficiency. It aims to contribute to the energy security and energy efficiency of the region by supporting the development of joint regional storage and distribution solutions and strategies for increasing energy efficiency and renewable energy usage.

The CSSC project targets medium-sized and smaller target cities in the Danube area, aiming to accelerate the up-take of energy storage and sector coupling solutions. To build up the capacities of municipalities and related city actors to assess, define and implement concrete implementation projects, the CSSC Lab project will:

- develop a set of model solution for typical urban CSSC use cases, together with a toolkit for the assessment of potential CSSC applications in terms of energy efficiency indicators, operational requirements, related business models and financing solutions
- a comprehensive capacity building programme for municipalities with local basic and advanced trainings, complementary webinars and individual city coaching sessions will be developed and piloted
- pilot investments will be established in four demo-centers in different locations in the project region to demonstrate the feasibility and performance of typical CSSC solutions
- a series of study visits and demo sessions will allow city representatives from all parts of the project region to learn from practical demo-cases implemented under Danube region framework conditions.

About this document

This document is part of OT.1 within T1.1 of the CSSC Lab project and will contribute to SO3. This document was prepared by Innovation and entrepreneurship centre Tehnopolis in cooperation with regional partners and Alba Local Energy Agency - ALEA – work package lead partner.

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1. General Information

Country:	Montenegro
Region:	Niksic
Responsible partner(s):	Innovation and entrepreneurship centre Tehnopolis (PP16)

2. Aim of the Regional Action Plan

Identification of the current state of of consumption and production of electricity and energy in the area of the Municipality, as well as roughly, define a plan for future energy needs; identification of the potential for more efficient use, distribution, and energy production and energy, as well as the use of its own natural resources to meet energy needs of energy production in the municipality of Niksic; defining activities taking into account the current state of development priorities of the Municipality, potential and planned future consumption, are steps towards a sustainable energy development on the territory of the municipality.

3. CHAPTER 1: European, national and regional context

Energy Law - This law determines energy activities, regulates the conditions and manner of their performance for quality and safety supplies end customers with energy, encourages the production of energy from renewable sources and highly efficient cogeneration, and the way of organization and management of the electricity and gas market, as well as other issues of importance for energy.
Law on efficient use of energy - This law regulates the manner of efficient use of energy, measures to improve energy efficiency and other issues of importance for energy efficiency in final consumption.

Energy Development Strategy of Montenegro until 2025- as a starting point for the European model of sustainable and strategic development of its energy sector, for the adoption of other legislation and institutional support for the successful implementation of its own energy policy in the integration of the state into the European and wider international framework and certainly as a basis. The Strategy, as one of the highest state, acts, within Montenegro, has a key development dimension, as in the process of defining spatial development, providing conditions for

sustainable development of the ecological state, as well as in the domain of energy and economic dimensions as significant components of the contribution to the growth of GDP, and in the process of inevitable constructive communication between all interested segments of Montenegrin society. The implementation of the Strategy also expects increased investor interest and an increase in the volume of direct foreign investment in the energy sector of Montenegro.

The national action plan for the use of energy from renewable sources until 2020 - defines the dynamics of natural resource use, as well as the planned use of technologies needed to meet the national target of energy consumption.
The national target for the use of energy from renewable sources, which represents the share of energy from renewable sources in total gross final energy consumption, was set for Montenegro in accordance with the Decision (2012/04 / MC-EnC of 18 October 2012) adopted on 10 meeting of the Ministerial Council of the Energy Community. The mentioned Decision obliges Montenegro to implement Directive 2009/28 / EC on the promotion of the use of energy from renewable sources in its legislative system, as well as the obligation to achieve the national target of 33% by 2020.
This Action Plan envisages a slightly higher use of energy from renewable sources in Montenegro in relation to the established national target, which can be realized with the following assumptions:

- all planned infrastructure projects related to renewable energy sources will be implemented in accordance with the dynamics and characteristics of production (MW, GWh), as envisaged by the Energy Development Strategy of Montenegro until 2030;
- all planned measures for the introduction of renewable energy sources in the final consumption sector will be implemented.

Existing and planned, financial and regulatory measures to achieve the goals for the use of energy from renewable sources covered by the Action Plan are:

- incentive price for electricity produced in plants using renewable energy sources and energy plants for highly efficient cogeneration (plants of privileged producers);
- priority in the delivery of total electricity produced in the plants of eligible producers to the transmission or distribution system;
- exemption from charging for balancing services for eligible manufacturers by system operators;

- mandatory minimum share of electricity from renewable energy sources in the total electricity supply taken over by each electricity supplier;
- guarantees of origin;
- support policies and programs to promote the use of renewable energy sources in the heating and cooling sectors;
- obligation for new facilities in certain climate zones to cover a certain quota of their annual needs for sanitary hot water from systems using renewable energy sources (solar systems);
- support programs for greater use of renewable energy sources in the household sector and other sectors (interest-free credit lines, etc.);
- program of subsidies in some municipalities for the installation of solar systems in new buildings through the reduction of fees for equipping communal land;
- policies and support programs to promote the use of renewable energy sources in transport (including the obligation to place biofuels on the market).

The National Action Plan defines concrete measures to meet the requirements of Directive 2009/28 / EC.

4. CHAPTER 2: Engagement of decision makers and other key stakeholders in the region

Local energy plan through a comprehensive review of current consumption and production of electricity and energy, and discusses the possibilities for more efficient supply of energy, its distribution and use, define actions for improving the local energy. A local energy plan represents a legal obligation of local governments in accordance with the Law on Energy, but also the opportunity to use the principles defined in the Energy Development Energy Policy of Montenegro until 2030 and the Energy Development Strategy of Montenegro until 2025 recognize concrete activities that can be realized at each of the local governments. A local energy plan has been prepared for a period of ten years.

Local energy plan at the level of local governments transferred three priorities of Energy Development defined by the Energy Policy of Montenegro until 2030, as follows: security of energy supply, sustainable energy development and the development of a competitive energy market. A local energy plan is a link between priorities and strategic objectives defined at the national level and the realization of concrete activities that contribute to achieving the same level of the municipality.

Several stakeholder groups have been identified for the regional action plan: the mayor and municipal representatives, the national energy

company (EPCG)-with headquarters in Nikšić, and regional small and medium-sized enterprises and households.

5. CHAPTER 3: SWOT analysis of the regional context

PARTICIPATORY SWOT ANALISYS OF THE REGIONAL CONTEXT IN BRINGING CSSC APPLICATIONS INTO REAL CASES	
INTERNAL FACTORS	
Strengths	**Weaknesses**
• Investments in the development of grids; • Connection with EU power grid; • Developed awareness of the benefits of building renewable energy capacity.	• Currently lacking policies on sector coupling and energy storage; • Slow development of appropriate policies; • Not-yet-well-organized support schemes for CSSC investments; • The need for energy storage hasn't been recognized by all key actors.
EXTERNAL FACTORS	
Opportunities	**Threats**
• To support the development of national policies/strategies for CSSC; • Opportunity for further development of usage of new technologies; • Significant capacity for production from renewable energy sources (solar energy, wind, hydropower).	• Slow adjustment of financial support programs to the development of the CSSC; • Low interest to implement CSSC solutions by potential investors; • Cost of CSSC solutions.

6.CHAPTER 4: ACTIONS

Action 1	**Solari 3000+ Solari 500+**
Brief description	Solari 3000+ for households and Solari 500+ for individuals and legal entities up to 30kW are projects of EPCG. They include the installation of three thousand photovoltaic systems on the roofs of individual residential buildings, or 500 systems on small businesses and public institutions and companies. Interested customers, from both consumption categories, who meet the conditions necessary for the valorization of solar energy, by participating in projects have the opportunity to become customers of electricity producers, who will cover their own needs, and sell any surplus to the national electricity company. Photovoltaic systems have state-of-the-art technology to convert solar into electricity, as well as to use renewable energy sources to partially replace fossil fuels and reduce emissions. Therefore, they represent an adequate solution both in the directives of the European Union and in the legislation of the state of Montenegro. EPCG is the holder of project activities, and the Eco Fund is a financial partner that provides a grant to the Project Beneficiary in the amount of 20% of the contracted value of the investment. The Ministry of Ecology, Spatial Planning and Urbanism, the Ministry of Capital Investments, as well as local self-government, CEDIS, are involved in the realization of the project.
Activities/ Implementation steps	Successfully tenders for the project Solari 3000+ and Solari 500+ for the procurement of monocrystalline photovoltaic modules and substructure of the photovoltaic system, as well as for inverters and smart meter three-phase meters. By concluding contracts with bidders, all preconditions have been created for the rapid start of work on the implementation of the Solari 3000+ and Solari 500+ projects.

Timeframe	2022-2023
Estimated costs	30.000.000,00 EUR
Estimated impact/results	The user in the project becomes the owner of a small solar power plant, which has the capacity to approximately meet its electricity needs. The positive effects of the project are multiple, both from the financial aspect for households, businesses, individuals and EPCG, and from the aspect of the expectations of the international community in order to reduce emissions and increase the use of renewable energy sources.
Actors involved	EPCG, Eco Fund, Ministry of Ecology, Spatial Planning and Urbanism, Ministry of Capital Investments, CEDIS, local authorities.

Action 2	**Landfill remediation**
Brief description	The plan is to cover the landfill, which covers about two hectares, with a special three-component material (trisoplast), which will reduce waste emissions and the impact on the environment to zero, and then install equipment for methane extraction and a plant for producing electricity from that gas. After closing the landfill and coating it with a specific three-component material (trisoplast) equipment (which would turn waste into electricity) for gas (methane) extraction at the landfill will be installed. The extraction of methane will take, as assumed with regard to the estimated amount of waste disposed of (650,000 tons), 15 years.
Activities/ Implementation steps	The decision of the local parliament; necessary changes to the local spatial plan; necessary changes to the regional spatial plan; initiating the procedure for giving consent for the necessary permits; preliminary research will give all the parameters for the main project of remediation.
Timeframe	2022

Estimated costs	15.000.000,00 EUR
Financing sources	Municipality of Nikšić, Tritech Natural
Estimated impact/results	After the remediation of carbon dioxide (CO2) evaporation, it would not be reduced to a minimum, but it would not exist at all. The risk of impact on land and groundwater will be completely eliminated.
Actors involved	Municipality of Nikšić, Flipping company Belgrade, Tritech Natural Netherlands

Action 3	**Sanation of residential buildings**
Brief description	In the Nikšić Municipal program of rehabilitation of residential buildings with flat roofs the goal is to renovate the facades and roofs in accordance with energy efficiency standards. The plan is to solve the problem with flat roofs by upgrading the floors where technical possibilities of buildings allow, and where they do not allow building a sloping roof. In that case, solar panels will be installed on the roof. The investment will pay off at the expense of the sale of electricity, and the tenants will be able to finish the facades.
Activities/ Implementation steps	Insight into construction projects; feasibility study; decision of the local parliament; initiated procedure for issuing the necessary building permits
Timeframe	2022
Estimated costs	50.000,00 – 100.000,00 EUR EUR per building, depending on size.
Financing sources	Municipality of Nikšić, investors
Estimated impact/results	Improved aesthetic/visual appearance of the city solved the problem with flat roofs of buildings, residential buildings compliant with the requirements and standards of energy efficiency and improved housing conditions.
Actors involved	Municipality of Nikšić, investors (construction companies).

Action 4	**Solar park**
Brief description	The construction and installation of a solar park on the plateau of the House of Revolution is announced as a demonstration of the use of renewable energy sources, which will consist of a solar tree, five smart benches and a solar parking canopy.
Activities/ Implementation steps	Initiating the procedure for obtaining the necessary permits; developing an architectural solution; realization of the conceptual design.
Timeframe	July 2022
Estimated costs	40.000,00 EUR
Financing sources	Municipality of Nikšić, INER project (which is supported through the IPA Interreg CBC Croatia-Bosnia and Herzegovina-Montenegro).
Estimated impact/results	Filling the space of the inner city with quality content; showing an example of the use of renewable energy sources; raising citizens' awareness of the benefits of using renewable energy sources.
Actors involved	Municipality of Nikšić, Agency for Local Democracy Nikšić, INER

Action 5	**Wind farm Gvozd**
Brief description	Since 2018, the Electric Power Company of Montenegro (EPCG) launched new investment cycles that envisage the diversification of electricity production, which will primarily be based on the use of alternative technologies of renewable energy sources, primarily solar and wind. Bearing the above in mind, the construction plan of the Gvozd wind power plant includes the phased construction and commissioning of the following components: a total of 13 wind turbines, a 110/33 kV transformer station at the project location, reconstruction of existing transformer

	station 110/33 kV, construction of a single transmission line 110 kV with a length of 3125 m, construction of a single transmission line 110 kV with a length of 14730 meters and reconstruction of the transformer station 110/35 kV. For the needs of the future wind power plant, the construction of traffic infrastructure is foreseen, i.e. the renovation of existing and the construction of new roads, with the aim of connecting individual wind turbines.
Activities/ Implementation steps	Exploratory geological works have been carried out. On the basis of the created conceptual project, the technical conditions for obtaining a building permit were created. After the completion of the project and obtaining the construction permit, it is expected that the construction work on the wind farm will begin soon, with an estimated construction period of 18 months, after which six months of trial operation are planned. Electric Power Company of Montenegro (EPCG) received a preliminary offer from the European Bank for Reconstruction and Development (EBRD) to finance the construction of the Gvozd wind farm. According to that offer, EPCG announced, the Gvozd wind farm project will be financed from credit funds (to the extent of 70%), with favorable commercial conditions. The remaining 30% of the investment will be financed by EPCG from its own sources.
Timeframe	2022-2024
Estimated costs	Approximately 60.000.000,00 EUR
Financing sources	EPCG, EBRD
Estimated impact/results	The importance of building wind power plant and benefit to the community can be expressed through the following parameters: development of economy, technological development, energy diversification and security of electrical energy supply, increase of domestic energy production

	and reduction of imported energy, reduction of CO2 emissions, involvement of local contractors during construction of wind power plant, employment of local population for maintenance of wind power plant, improvement of local infrastructure. Installed power of the Gvozd wind farm will be 55 MWh, expected annual production will be about 150 GWh, and it will provide energy for around 25,000 households. The importance of the planned can be seen even better in the light of interesting fact: On the September 17th 2022, according to the data of the Association for Wind Energy in Europe "WindEurope", Montenegro was the third country in Europe according to the percentage of energy obtained from wind farms. Two Montenegrin wind farms, Možura and Krnovo, satisfied 36 percent of Montenegrin's total electricity needs on that day. (Montenegro currently has the Krnovo wind farm, with an installed capacity of 72 MW, and the Možura wind farm, with a capacity of 46 MW, in the power system.)
Actors involved	EPCG, EBRD, CEDIS, CGES, Ministry of Ecology, Spatial Planning and Urbanism, Municipality of Nikšić