



Regional Action Plan for Energy Storage and Sector Coupling Cahul District, Republic of Moldova

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 Cross-border Cooperation and European Integration Agency in cooperation with regional partners and Alba Local Energy Agency - ALEA – work package lead partner.

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1. General Information

Country:	Republic of Moldova
Region:	Cahul District (and relevant stakeholders at national level)
Responsible partner(s):	Cross-border Cooperation and European Integration Agency

2. Aim of the Regional Action Plan

The aim of this Action Plan is to acknowledge stakeholders in Moldova, especially in Cahul region but also national stakeholders relevant to the CSSC Lab project topics, on the necessity and opportunities to support and implement RES and CSSC applications. This Regional Action Plan will also offer some best practices from EU member state countries that could be adopted in Moldova as well.

3. CHAPTER 1: European, national and regional context

Moldovan legislation is not yet harmonized to the EU directives in the field of RES, EE and CSSC but there are steps already undertaken in that direction. The vision of the Republic of Moldova in the field of energy system development is set out in the Energy Strategy of the Republic of Moldova 2030 (GD no. 102 of 05.02.2013).

The main objectives of this strategic document are:

1. Security of energy supply.
2. Creating competitive markets and their regional and European integration.
3. Environmental sustainability and combating climate change.

The main policies and Laws in the field of Energy Efficiency and Renewable Energy developed in the Republic of Moldova are the following ones:

1. Law on energy No. 174 of 21.09.2017;
2. Law on electricity No. 107 of 27.05.2016;
3. Law on thermal energy and promotion of cogeneration No. 92 of 29.05.2014;
4. Law for the accession to the Energy Community Treaty, No.117 of 23.12.2009;
5. Law on promoting the use of energy from renewable sources No. 10 of 2016 with amendments dated March 25, 2018;

6. Law on energy efficiency No. 139 of 07/19/2018;
7. National Action Plan in the field of renewable energy: 2013-2020.
1. Government Decision No. 1073 of 27.12.2013 (AMENDED GD327 of 17.04.18, MO126-132 / 20.04.18 art.369).
8. Government Decision no. 401 of 08.12.2021 on the approval of capacity limits, maximum quotas and capacity categories in the field of electricity from renewable sources until 2025
9. Decision no. 1051 of 08.11.2018 for the approval of the Regulation on the qualification and registration of installers of boilers, furnaces or stoves based on biomass, solar photovoltaic and thermal systems, shallow geothermal systems and heat pumps
10. Government Decision no. 896 of 21.07.2016 for the approval of the Regulation on the procedure for certifying the energy performance of buildings and building units
11. Government Decision no. 698 of 27.12.2019 on the approval of the National Action Plan in the field of energy efficiency for the years 2019-2021
12. Government Decision no. 409 of 16.06.2015 Decision on the energy roadmaps for the period 2015-2030
13. LAW OF THE REPUBLIC OF MOLDOVA on energy conservation No.1136-XIV of 13.07.2000
14. The regulation on the liberalization of the electricity market is expected to be adopted.

The institutional framework in the field of EE and renewable energy:

1. Central public authorities and the specific subdivisions (Ministry of Economy, Ministry of Regional Development, Ministry of Environment, etc.).
2. Autonomous agencies: National Agency for Energy Regulation (ANRE), Energy Efficiency Agency (EEA).
3. Academic and scientific institutions (Institute of Energy of the Science Academy of Moldova, Technical University of Moldova, etc.).

Available financing opportunities for CSSC applications implementation

There are some funding opportunities in Moldova related to EE and REs although no specific financing instrument exists explicitly for CSSC applications. But some of these applications could be financed as part of a RES or EE investment. It is worth mentioning that many of the funding programs are not continuous but rather one time calls. Below a short presentation of potential funding sources existing in Moldova.

The major types of fund available are:

- grants and credits from national agencies such as the Agency for Energy Efficiency

- grants from foreign institutions, such as IFAD, EBRD, World Bank, SIDA (Swedish International Development Cooperation Agency), UNDP, Japan International Cooperation Agency etc.
- private sources of companies and some individuals

Some of the credit instruments were created by some of the institutions mentioned above with the partnership of local banks in Moldova.

Most of the grants or preferential credits offered focus on several domains:

- Improve energy efficiency, such as investments in renovation of heating systems, the insulation of walls, ceilings, pipes and the replacement of energy-efficient doors and windows, as well as the replacement of old bulbs with modern LEDs.
- Small scale investments in renewables such as photovoltaics and biomass heating.

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

The bilateral meetings and events organised by ACTIE with regional and local stakeholders showed that there is an ever increasing interest in the topics of EE and RES, partially due to the international context of the unfolding energy crisis. There are several measures that have been implemented in Moldova aiming to improve energy efficiency, for the introduction of RES and to increase energy independence of the country. Still, there is very little knowledge regarding the energy storage and sector coupling sectors. The national institutions related to the energy sector (such as the Institute of Energetics or the Agency for Energy Efficiency) are aware of the CSSC topics although even at their level little has been done so far. Besides financial issues, one of the reasons is the fact that a very tiny percentage of Moldovan energy supply comes from RES so the major effort is now to increase the investments in renewables rather than in CSSC applications which is the next logical step. Still, there are some actions that have been undertaken. For example most of the District council administrations have a new position - Energy efficiency specialist. They will have the mission to coordinate at local level all the activities related to energy management and energy efficiency. They don't have the implementation of CSSC application as their main task but they could be involved in these activities as well, including the acknowledgement of the larger public and local stakeholders regarding CSSC.

5. CHAPTER 3: SWOT analysis of the regional context

PARTICIPATORY SWOT ANALYSIS OF THE REGIONAL CONTEXT IN BRINGING CSSC APPLICATIONS INTO REAL CASES	
INTERNAL FACTORS	
Strengths	Weaknesses
<ul style="list-style-type: none"> • Energy efficiency, energy conservation and use of renewable energy sources - a priority and a strategic objective of the energy policy in the Republic of Moldova; • The national policy to create District energy managers and elaborate local action plans in the field of energy efficiency; • Existence of a legal and regulatory framework that would allow increased use of renewable sources and storage technologies; • Potential for the use of solar energy in Moldova: annual energy flow about 1250 - 1350 KWh / m² / year (especially in Cahul district); • Significant potential to produce pellets and briquettes from agricultural by-products; • Support mechanisms for renewable energy investments; • Guaranteed prices for RES, net metering for photovoltaic electricity; • Obligation of the central electricity supplier to purchase electricity from renewable sources, guaranteed and non- 	<ul style="list-style-type: none"> • Insufficient funds for increasing energy efficiency, e.g. insulation of buildings and to implement RES; • Few RES projects (like wind farms and photovoltaic parks) implemented in Moldova. The result is that storage capacities do not represent yet a stringent necessity; • Few buildings have energy audits and the legislation is not compulsory in this regard; • The population is not sufficiently acknowledged regarding the importance to increase energy efficiency, reduce energy consumption and CSSC related issues; • Shortage of energy service companies (ESCO companies); • Low guaranteed tariffs for the production of electricity from solar and wind energy; • Moldova is considered a country with increased risk for FDI, especially in the current regional context.

<p>discriminatory access to the grid and supply with priority other traditional energy sources;</p> <ul style="list-style-type: none"> • The Atlas of Wind Energy Resources of the Republic of Moldova has been developed. Cahul District being a good place for wind energy. 	
EXTERNAL FACTORS	
Opportunities	Threats
<ul style="list-style-type: none"> • Continuous improvement of national legislation in the field of EE which is gradually harmonized with the EU Directives; • Elaboration of national and regional action plans related to EE and RES that might include also the CSSC topic; • More national funds allocated to implement EE and RES. Also, more external funds available. • RES, EE and CSSC technologies are a significant source of new jobs to be created; • Significant potential of the Cahul region in the field of RES; • New opportunities for training and education, including in CSSC areas; • Creation of a competitive electricity generation market; • Strengthening the capacities of district energy managers; • Pilot projects in sector coupling technologies (such as charging stations) which could accelerate the widespread adoption of these technologies. 	<ul style="list-style-type: none"> • Inability so far to develop attractive instruments for financing energy efficiency measures and investments in RES in the Republic of Moldova; • The growing gap between consumers' ability to pay and the upward trend in energy prices. Significant amounts of the national budget are spent for energy subsidies and not for investments; • Political instability, which often halts international projects in the sector for long periods; • Lack of incentives for SMEs to adopt and use new EE or CSSC technologies; • Economic decline due to the pandemic, the war in Ukraine may stop investment projects in the region.

6.CHAPTER 4: ACTIONS

Action 1	Local action plan to increase energy efficiency at local level in Cahul District
Brief description	<p>The adoption of RES in Moldovan municipalities and the implementation of sector coupling and storage capacities at local and regional level won't have the expected impact without first improving the energy efficiency and thus reduce the energy consumption. Although there were some stand alone initiatives by Cahul and neighbouring municipalities, there is no a unitary approach to improve EE at municipal or regional level. At this moment, there is no legislative obligation to elaborate such plans at local/regional level.</p> <p>That is why, it is necessary to elaborate an action plan for energy efficiency that will provide a useful tool for an integrated approach in the field of energy efficiency. It is necessary that this document has a detailed intervention plan, with a list of interventions, necessary budget and funding sources. Such an initiative started in the framework of the Cahul Municipality activities at the Global Covenant of Mayors for Climate & Energy but it didn't materialized due to lack of funds. Considering the current situation in the region related to energy crisis. The chances to elaborate such a document are much more significant.</p>
Activities/ Implementation steps	<ol style="list-style-type: none"> 1. Assessment of the current situation, legislation, national programmes and activities implemented so far

	<ol style="list-style-type: none"> 2. Elaboration of the objectives, timeframe and concrete measures and expected indicators of the action plan 3. Evaluating the necessary budget and funding sources 4. Implementing the action plan 5. Evaluating the results and impact of the plan.
Timeframe	Since funding sources are scarce, the plan should have a timeframe of at least 5 years to be fully implemented.
Milestones	<ol style="list-style-type: none"> 1. Elaboration of the action plan to increase energy efficiency 2. Elaboration of individual energy audits where necessary 3. Implementation of the measures foreseen in the plan 4. Evaluation of results
Estimated costs	The elaboration of the action plan should cost around 10000 EUR
Financing sources	<ol style="list-style-type: none"> 1. Municipal sources or EU funding
Estimated impact/results	<ol style="list-style-type: none"> 1. Decreased energy consumption in public buildings (heating, cooling, lighting, ventilation) 2. Decreased emissions of CO2
Actors involved	<ol style="list-style-type: none"> 1. Cahul District Council 2. Cahul Municipality

Action 2	Promoting sector coupling and energy storage among regional stakeholders in Moldova
Brief description	Since the concept of sector coupling in Moldova is quite new and there are few applications implemented, it is necessary to acknowledge the main actors regarding this issue and its importance towards reaching energy independence and reduction in CO2 emissions. The same situation is in the field of energy

	<p>storage. As there are few RES projects implemented in Moldova, energy storage was not yet perceived as a strong necessity, but as the share of wind and solar energy will increase, the storage component will become more and more important. But the first step towards this direction is to acknowledge the potential stakeholders, train them and present them the best practices from EU member states in this domain.</p>
Activities/ Implementation steps	<ol style="list-style-type: none"> 1. Acknowledgement campaign on various issues related to CSSC with presenting best practices from EU member states. including from CSSC Lab project 2. Training stakeholders, especially local authorities on implementing actions related to CSSC, RES and EE and accessing necessary funding for them.
Timeframe	6 months
Milestones	<ol style="list-style-type: none"> 1. Organising an acknowledgement campaign 2. Organising trainings 3. Organising site visits to learn about good practices (if possible)
Estimated impact/results	<p>At least 20 representatives from municipalities and other relevant institutions trained in the CSSC related issues. Number of investments proposals derived from these meetings. - at least 3.</p>
Actors involved	<ol style="list-style-type: none"> 1. ACTIE 2. External experts

Action 3	Photovoltaic Park at the Cahul water pumping station
Brief description	<p>Water pumping equipment (and water treatment and transportation) consumes significant amounts of electricity. One of the water pumping stations that provides tap water for Cahul municipality (and neighbouring villages) has significant land space nearby to install a photovoltaic park. The energy generated</p>

	<p>could be used to pump water and provide electricity to other equipment of the pumping station. In order to keep prices low, no electric storage capacities are needed. In fact, the storage could be achieved by increasing the water tanks capacities so that most of the water used at night (which is significantly less than during the day anyway) could be pumped during the day. Also, the energy generation during summer is higher when water consumption is also higher. Such a proposal existed for some time at the Apa-Canal Cahul SA (local water and sewage company) but this project was not yet materialized. It is necessary to elaborate a feasibility study that could show if such an investment is technically and financially feasible. If the answer is positive, it is necessary to elaborate a technical project and find financing sources.</p>
Activities/ Implementation steps	<ol style="list-style-type: none"> 1. Elaboration of the feasibility study 2. Elaboration of the technical documentation 3. Implementing the project
Timeframe	18 months
Milestones	<ol style="list-style-type: none"> 1. Elaboration of the feasibility study 2. (if feasible) investment phase
Financing sources	Agency for Energy Efficiency
Estimated impact/results	<ol style="list-style-type: none"> 1. Reduction of electricity consumption 2. Greater independence of water supply
Actors involved	<ol style="list-style-type: none"> 1. Apa Canal Cahul SA 2. Cahul Municipality

Action 4	Creating energy storage capacities (batteries) at the district hospital in Cahul
Brief description	<p>The district hospital has already applied for installing photovoltaic panels of up to 200 kW capacity so cover partially its energy needs. But there is room for both increasing this capacity and also include Li-ion batteries (or other type). This will have a double effect: the hospital will</p>

	have an improved back-up system which is mandatory for any hospital but also will allow to store the energy produced by photovoltaics and increase the usage of solar energy during at night as well.
Activities/ Implementation steps	<ol style="list-style-type: none"> 1. Elaboration of the necessary technical documentation 2. Extending the PV system and installing batteries 3. Testing various scenarios to optimise both the fiability of energy supply and increase the PV energy usage in situ, without relying exclusively on the grid.
Timeframe	2024-2025
Milestones	<ol style="list-style-type: none"> 1. Allocate/ the necessary funding source 2. Elaborating the technical documentation 3. Realising the investment
Estimated costs	TBD
Financing sources	Own sources, EU funds, National funds
Estimated impact/results	Increased fiability of energy supply Improved capacity of PV system to generate most of the energy for the needs of the Hospital and reduce the reliance on the grid.
Actors involved	Cahul District Hospital