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EXPRESS

European regions promoting renewable energy self-sufficiency



2nd Thematic Seminar of the EXPRESS project: “EXPRESS Regional Energy Sector Analysis”

Alba Iulia Municipality (RO)

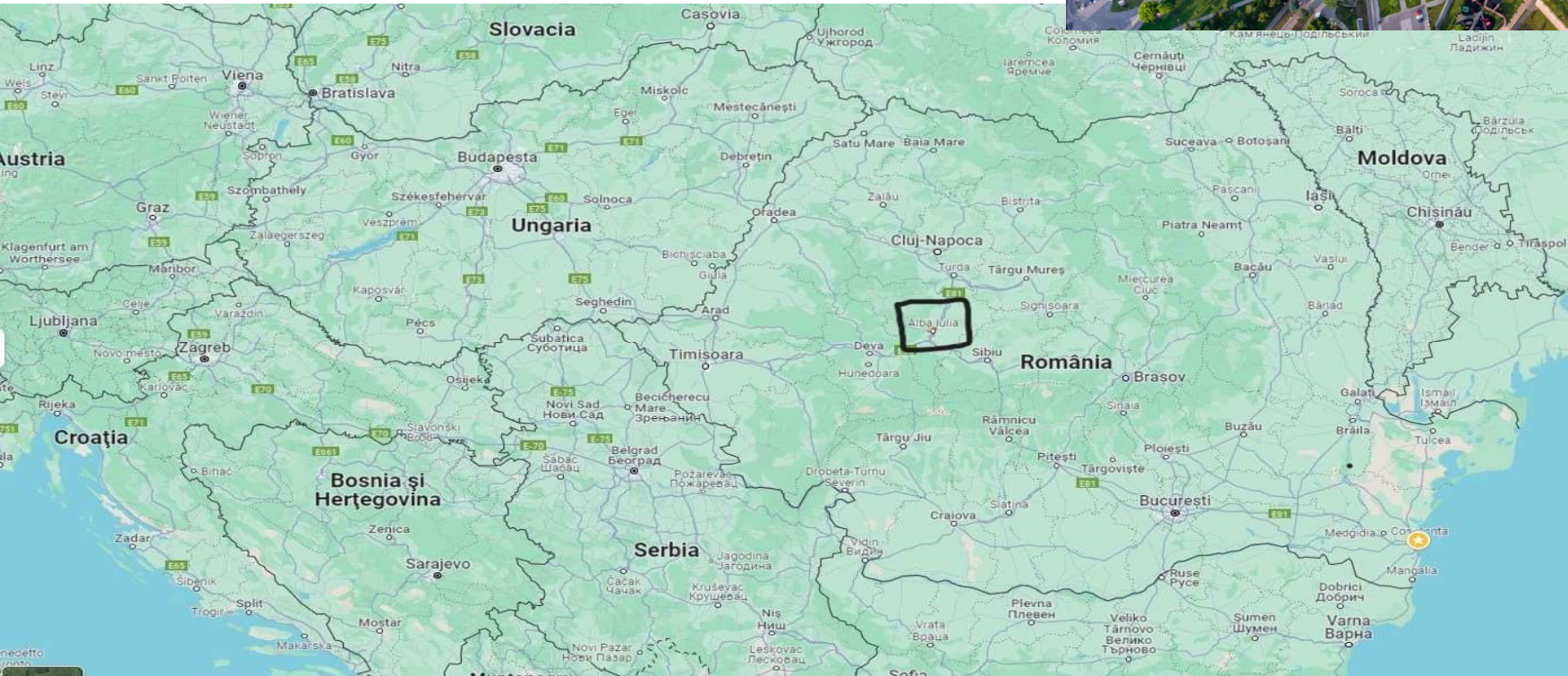
Institute for Research in Circular Economy and Environment “Ernest Lupan Cluj-Napoca

February 26, 2024



Alba Iulia city

- **Located** in west-central part of Romania, in the centre of historical region of Transylvania
- **Population:** 63,536 (as of 2011);
- The **Alba county seat**;
- **Alba county** – a significant concentration of manufacturing companies (transport vehicles; wood processing; food industry, etc.)
- **Region's main natural resources:** precious metals and salt



Presentation structure

- 01. EXPRESS project's objectives**
- 02. Current situation**
- 03. Existing policy measures and initiatives**
- 04. Self-sufficiency and regional energy goals**
- 05. Good practices and remaining challenges**
- 06. SWOT analysis**
- 07. Next initiatives and actions**

03 - Existing policy initiatives and programmes

| | |
|---|--|
| Strategies and programmes: | <ul style="list-style-type: none">• Action Plan for Sustainable Energy and Climate (PAEDC 2030) – 2011; updated in 2019 (PAEDC); new update ongoing (PAECD 2050) |
| <ul style="list-style-type: none">• Alba Iulia Municipality – member of Covenant of Mayors since 201• Long-term objective: reducing CO2 emissions by 40% in 2030 (reference year 2008)• Still to set their targets and goals for energy efficiency | <ul style="list-style-type: none">• Integrated Urban Development Strategy of the Municipality of Alba Iulia 2021-2030• Smart City Strategy 2021-2030• Climate Change Mitigation and Adaptation Plan 2022-2030• Sustainable Urban Mobility Plan of Alba Iulia Municipality (PMUD) (updated in January 2022)• Programme for Improving Energy Efficiency in Alba Iulia City 2015 (updated in November 2023) |

01 -EXPRESS project's objectives



EXPRESS project aims to contribute to:

- increasing Alba Iulia city's energy self-sufficiency degree
- reaching higher share of renewable energy in the city's energy supply
- updating and better targeting local strategies for more energy-efficient supply and consumption in all energy sectors (buildings, transport, public services, etc.)

02: Current situation – local energy profile

Energy resources:

- **natural gas** (e.g., perimeter Cetatea de Balta -Tăun)
- **renewable energy sources:**
 - **hydropower** (Sebeş river valley: 4 large and 2 small hydroelectric power plants)
 - **geothermal** (moderate potential)
 - **solar** (significant potential - estimated capacity of 1,150 kWh/year*)
 - **wind** (especially in the county's mountain areas; low intensity; economically unexploitable potential)
 - **biomass:** agricultural residues; large potential of processed wood residues;
 - **biogas** from animal farming

For details:

* Alba Iulia Municipality's Programme for Improving Energy Efficiency – PIIE (latest version, November 2023)

** IRCEM (2023), «Thematic study for assessing the regional context of Alba Iulia city's energy sector» (within the framework of EXPRESS project)

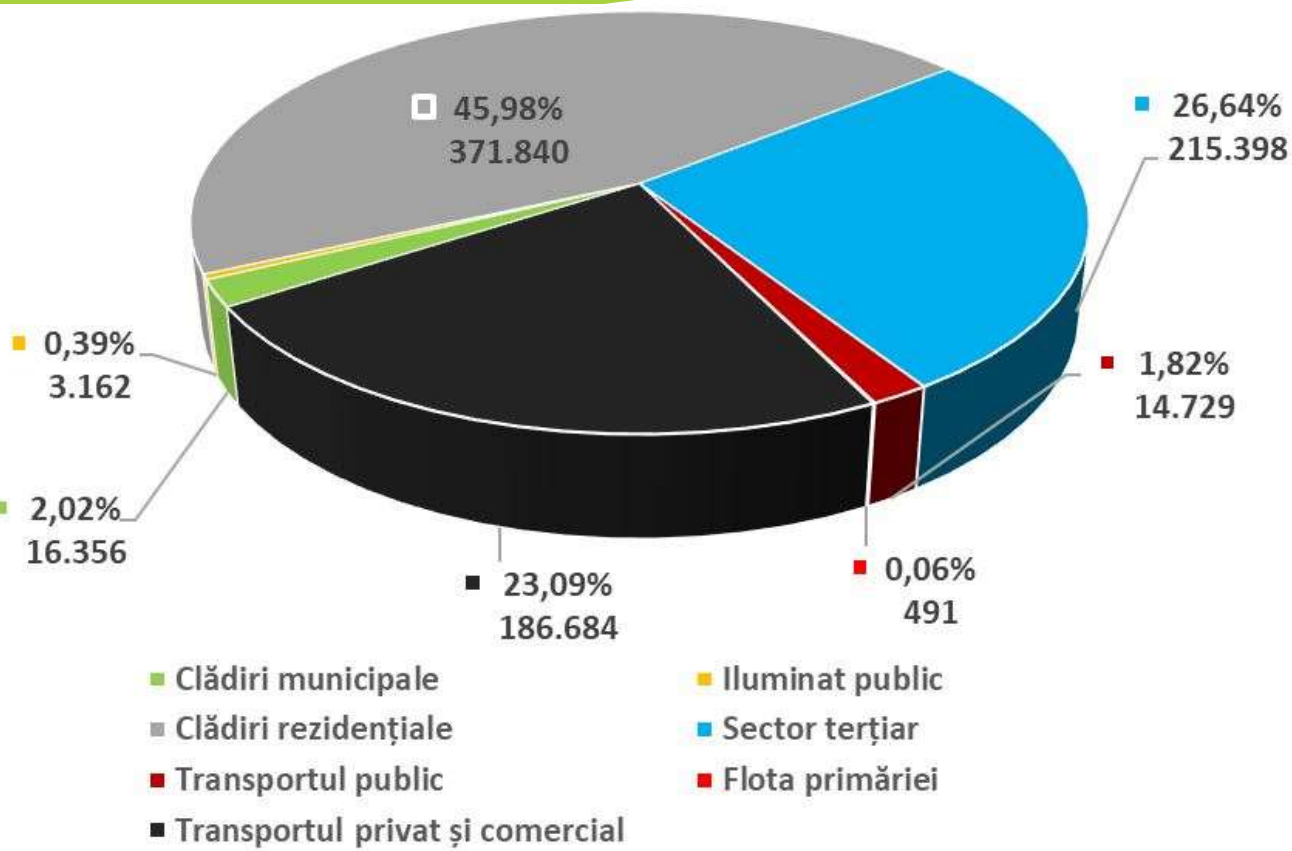
Energy supply:

- **electricity** (national network; local distribution company)
- **natural gas** (national network; local distribution company)
- **thermal energy** (no central heating network; individual heating systems mostly based on gas and wood)
- **renewable energy**
 - **hydro** (SH Sebeş – production of 399 GWh in 2022)
 - **solar** (< 0.1 % of city's total annual energy consumption)

Energy consumption, by sector:

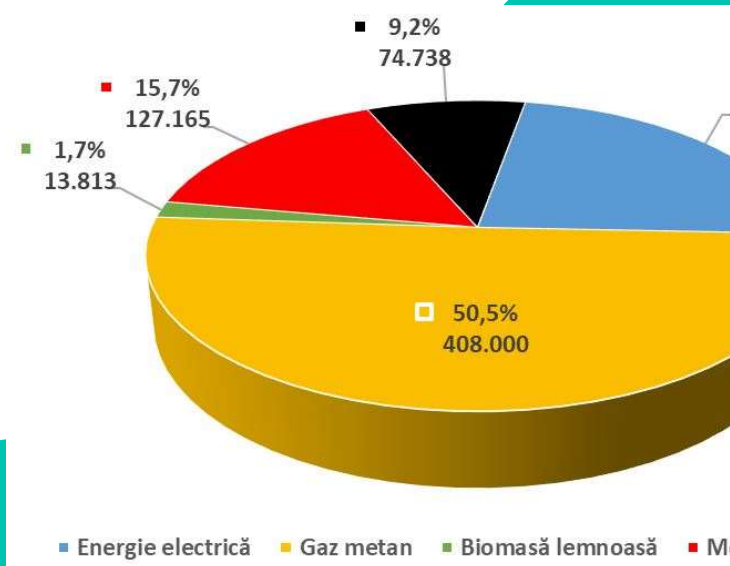
- **buildings** (public, private and tertiary sector)
 - share = around 75 percent
- **transport** (public, private and commercial)
 - share = 23 percent
- **public lighting**
- **water supply and treatment**
- **waste collection and processing**
- **Consumption by source:** natural gas (50%); electricity (23%)

Structure of energy consumption in Alba Iulia by sector (MWh/year; 2021)

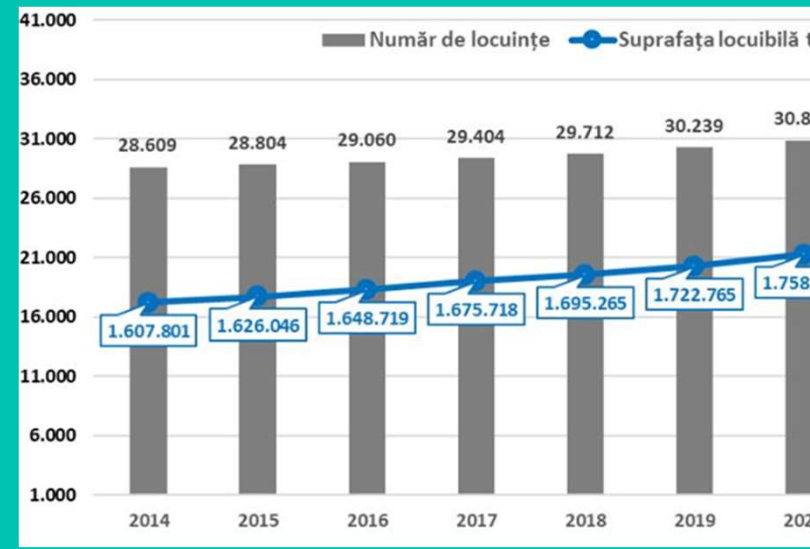


Source of data: Energy Observatory ANERGO, in PIEE 2023

Energy consumption in Alba Iulia by primary source (MWh/year)



Number of houses and total habitable area in Alba Iulia city; period 2014-2020



04. Self-sufficiency and regional energy goals (1)

Alba Iulia Municipality has made sustained efforts to increase energy efficiency, to reduce city's energy consumption and to promote local production of renewable energy over the last years

- **Actions already taken:**

- implementation of projects for **installation of photovoltaic systems in public buildings**
- implementation of dedicated projects for extending **public lighting system**, and making it more efficient (e.g., by using new LED technologies)
- support for projects for using **solar systems** for generating heating and hot water
- support for **rehabilitation** of heating installations and for **thermal insulation** of private homes, using both national financing schemes and EU funds
- measures were taken for **improving energy efficiency of buildings** (including public ones) - due to its high share in total energy consumption, and thus of high energy saving potential
- partial electrification of **public transport buses**
- Implementation of several **energy management systems in the Municipality's** own buildings

04. Self-sufficiency and regional energy goals (2)

- **Actions already taken (continued)**

- **Dialogue: two stakeholder workshops** co-organized by Alba Iulia Municipality and IRCEM within the framework of EXPRESS project – on the 10th of January and 07 of February 2024:

- i) how to implement the **EXPRESS project's three broad objectives**;

- ii) **what has been done** so far - projects/programmes/actions already/being implemented

- iii) how to complete a comprehensive **local energy profile** (energy resources, supply and distribution and consumption structure), with inputs from participants;

- iv) discussion on the **SWOT analysis** done by IRCEM;

- v) discussion on IRCEM's proposal on the structure and content of the **next city's Plan of Integrated Energy Efficiency**

- **Actions envisaged:**

- **supply of more energy-efficient heat and electricity** to the public buildings (such as hospitals, school buildings, social houses), based on renewables sources, including local wooden biomass

- design of well-targeted **measures for supporting households in reducing the energy consumption** (as private buildings accounts for around 20 percent of total energy consumption)

- support for producing high-efficiency energy through **adoption of performant technologies**

- how to promote increasing **production of hydroelectricity** - as hydropower is the most important renewable energy source in the county and in Romania

- implementation of an integrated smart telemanagement system for monitoring and optimizing the **public lighting**

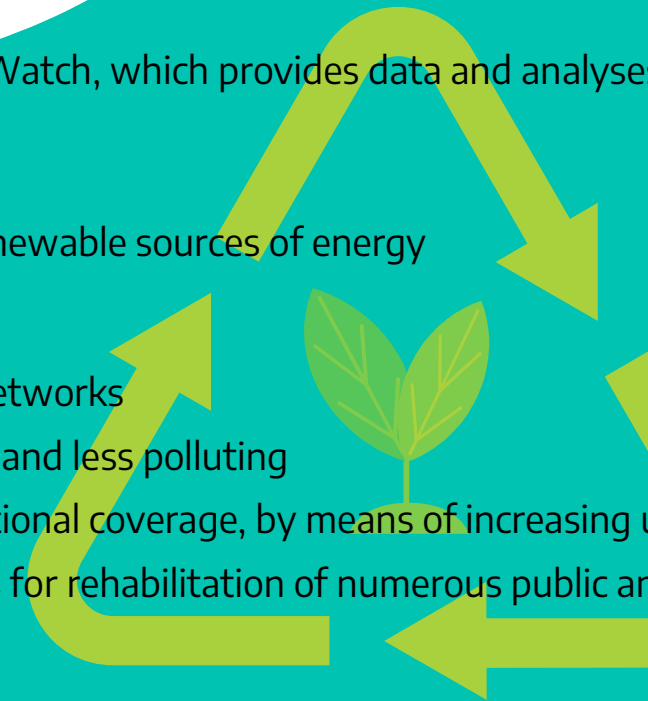
05. Good practices and remaining challenges

• Good practices:

1. Existence of the **Alba Iulia municipality's energy team**, responsible for
 - i) monitoring the energy consumption by sector, with support from the local data provider (ANERGO)
 - ii) mapping the local potential for renewable energy sources
 - iii) coordination and periodical upgrading of municipality's energy efficiency strategies, programmes and action plans, according to challenges.
2. Existence of **Alba Regional Energy Observatory (ANERGO)**, member of ENERGeE Watch, which provides data and analyses on consumption and associated CO2 emissions to the Municipality
3. Successful implementation of several projects **making public lighting** more efficient
- 4.. Actions taken for making **public building** exemplary in energy efficiency and use of renewable sources of energy

• Challenges still to tackle:

- **Energy supply and distribution:** high internal consumption of electricity distribution networks
- The actual need for central systems for heating private houses - arguably more efficient and less polluting
- Reducing the dependence on energy provided via central distribution networks, with national coverage, by means of increasing use of renewable energy sources
- Identifying new (public and private) financing sources – due to need of substantial funds for rehabilitation of numerous public and private buildings

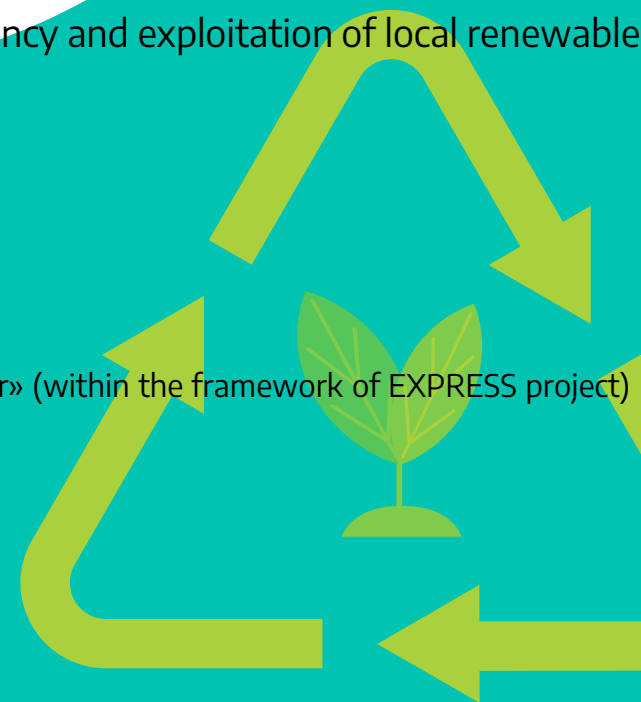


06. SWOT analysis for Alba Iulia Municipality (1)

Strenghts

- Significant energy-saving potential in residential buildings and public sectors – lighting; public transport; water supply and tr management)
- Local renewable energy sources – hydropower, biomass (especially wood), and solar power
- Existence of several EU funds and programmes dedicated to increasing energy efficiency and exploitation of local renewable
- Support from ALEA – the local energy-related data and analysis provider

* Source: IRCEM (2023), «Thematic study for assessing the regional context of Alba Iulia city's energy sector» (within the framework of EXPRESS project)



06. SWOT analysis for Alba Iulia Municipality (2)

Weaknesses

- **Electricity distribution network** - outdated and with limited coverage
- **Water supply system** – need of technological upgrade
- insufficient own funds for **co-financing capital-intensive energy efficiency works**
- Limited capacity of **existing national programmes** supporting public projects for energy efficiency and increasing use of renewable energy sources
- Legal barriers in **accessing private financing** by public bodies;
- Difficult access of public authorities to detailed data related own energy consumption (from suppliers, distributors, etc.)
- Unclear legal status of some land areas to be used in big projects for exploitation of renewable energy sources
- High capital needed for initiating big renewable energy projects
- Incomplete data on **vulnerable energy consumers** impede the design of coherent measures for tackling **energy poverty**
- **Few available supply-side measures** to address high-consumption private sectors (residential buildings; private transport)

* Source: IRCEM (2023), «Thematic study for assessing the regional context of Alba Iulia city's energy sector» (within the framework of EXPRESS project)

06. SWOT analysis for Alba Iulia Municipality (3)

Opportunities

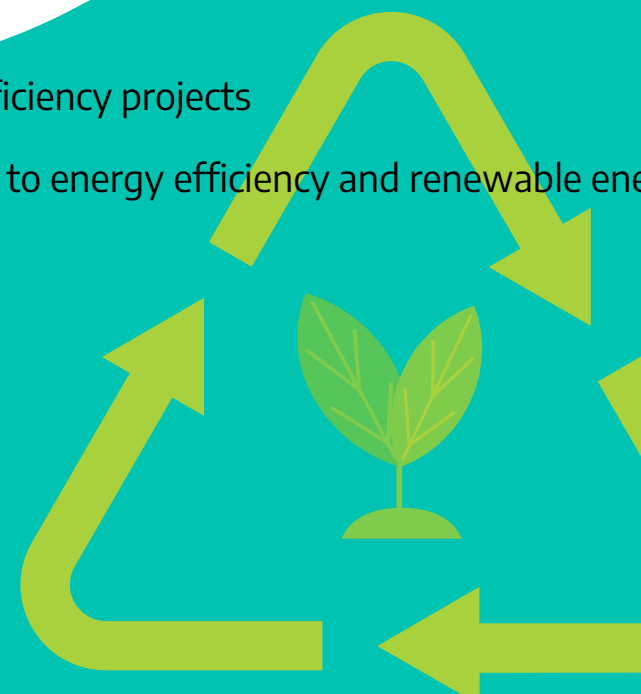
- Significant still **unused biomass resources** in the Alba county (mostly wooden biomass from wood processing industry)
- High **energy saving potential** in building sector, public transport and public lighting
- Existence of the **energy-efficiency legal framework** – Regulation 121/2014 (RO) and the new EU Directive on energy efficiency (2023/1791)
- Progress made by Alba Iulia Municipality on **integrated planning in local development strategies**- ex., harmonization between energy and sustainable mobility programme
- Existence of EU funds for financing pan-European projects related to energy efficiency – such as European Energy Efficiency Fund
- Opportunities for modernising the national electricity distribution networks through the existing EU programmes – e.g., Modernisation of Energy Infrastructure
- Legislative changes for facilitating injection of the energy produced by prosumers into distribution networks;
- Technical adjustments to the existing energy network infrastructure for improving the prosumer integration into the network and the transfer of energy between prosumers and other consumers;
- More coordinated dialogue among all local stakeholders for identifying solutions to the city's emerging challenges.

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06. SWOT analysis for Alba Iulia Municipality (4)

Threats

- Repeated modifications and lack of continuity in the **national energy-related strategies and policies**; also their incompleteness
- Excessive **centralisation of administrative decisions** in the field of energy
- Prioritization of **investments** in energy infrastructure, to the detriment of energy efficiency projects
- **Low co-financing capacity of public bodies** when applying for EU funds allocated to energy efficiency and renewable energy



* Source: IRCEM (2023), «Thematic study for assessing the regional context of Alba Iulia city's energy sector» (within the framework of EXPRESS project)

07: Next priorities, initiatives and actions of Alba Iulia Municipality (1)

- **Directions:**

- reducing city's overall energy consumption (due to their high share in total energy consumption, a strong emphasis is placed on b transport sector)

- increasing energy efficiency

- **maximal use of measures at hand:** streamlining urban mobility and public services (such as public lighting and water supply)

- **Types of measures:**

- regulation

- indirect measures (financing schemes, tax/fee exemption, other incentives)

- targeted measures for awareness raising (especially directed to private consumers)

- energy audits (ex., of city's water supply system)

- new data collection (ex., detailed geographic distribution of energy/heat distribution and consumption via a GIS-based mapping s

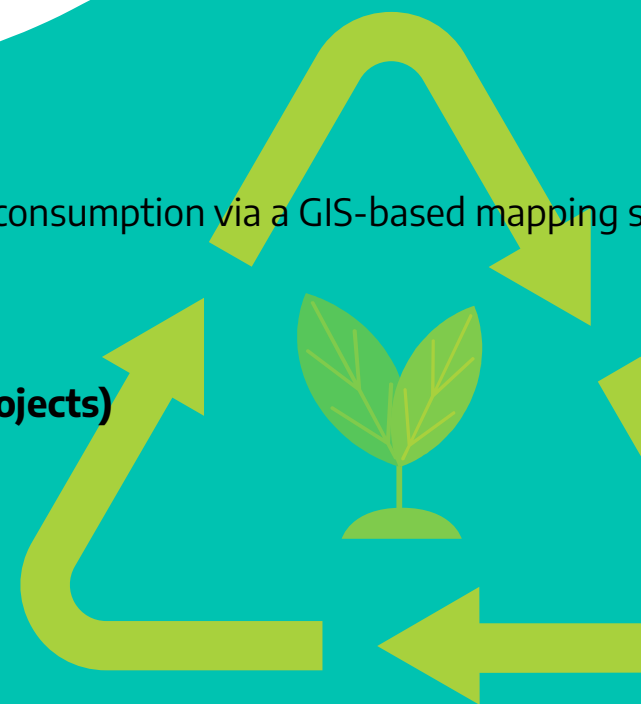
- **Four policy action areas** put forward by IRCEM:

Policy Area 1: Policy Content & Directions

Policy Area 2: Financing Schemes and Incentives (grants, subsidies, demonstration projects)

Policy area 3: Integration of Utilities and Public Procurement

Policy area 4: Awareness Raising



07: Next priorities, initiatives and actions of Alba Iulia Municipality (2)

Action to be taken (proposed by IRCEM)

Policy Area 1: Policy Content & Directions

- Conduct a study of the legal, physical (resources), social and economical barriers hindering local energy generation, and provide corrections (subsidies, regulation, campaigns);
- Identify the high energy consuming buildings/facilities and design a high replication strategy to replace old heating plants by cogeneration and renewable energy installations (or a combined installation);
- Introduce renewable energy installations' requirements (such as space for biomass supply and storage facilities) in the design of new buildings;
- Integrate the utilities companies in the new projects of distributed energy generation
- Energy saving by addressing both generation and distribution, as well as energy consumption stage

Policy Area 2: Financing Schemes and Incentives

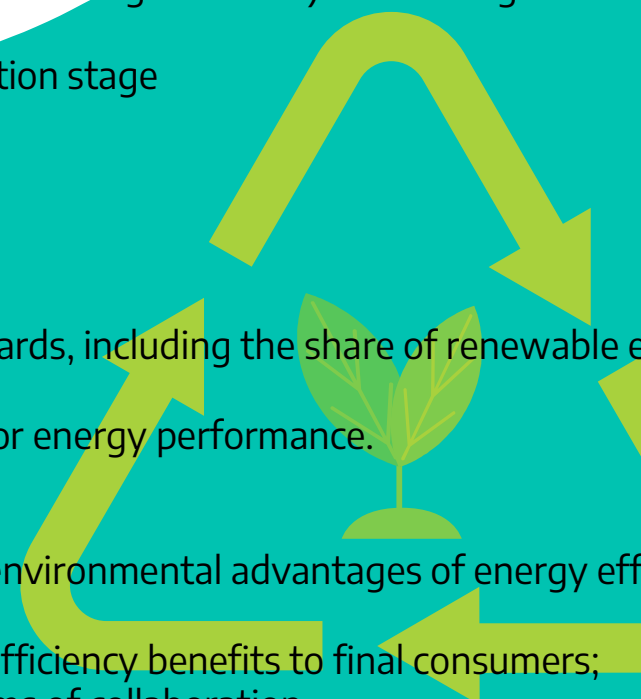
- Design of proper instruments - grants, subsidies, funding demonstration projects, etc.

Policy area 3: Integration of Utilities and Public procurement.

- Promotion of green public procurement by means of more stringent energy efficiency standards, including the share of renewable energy sources;
- Impose high efficiency standards that reduce the building's overall energy consumption;
- Purchase of environmentally friendly IT goods that meet the highest EU energy standards for energy performance.

Policy area 4: Awareness Raising and Stakeholder Engagement.

- Organise informative meetings with stakeholders to demonstrate the economic, social and environmental advantages of energy efficiency and renewable energy sources;
- Provide financial resources to consumer associations and NGOs to disseminate the energy-efficiency benefits to final consumers;
- Bring together stakeholders in the ICT and energy domains to create synergies and new forms of collaboration.



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Thank you!

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