



CENTRAL EASTERN EUROPEAN
SUSTAINABLE ENERGY NETWORK

Alba Iulia on the path of Carbon Neutrality in the Covenant of Mayors framework

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Alba Iulia on the path of Carbon Neutrality in the CoM framework

- Alba Local Energy Agency (ALEA) is a non-governmental and nonprofit Association founded in 2008 in order to contribute to the sustainable development of Alba county by implementing the energy transition. Main objectives:

- ❖ develop and update sustainable energy policy at Alba County level
- ❖ promote energy efficiency and RES projects
- ❖ support public authorities and local business in sustainable energy issues
- ❖ educate, raise awareness and disseminate of information on efficient energy use and the use of RES among citizens
- ❖ exchange best practices and to transfer skills by participating in European and national networks

ALEA - Official CoM supporter since 2014, provided SECAP technical assistance to more than 25 municipalities



| Signatories | Population | Adhesion | Status | | | | |
|---------------|------------|------------|------------------------|--|--|--|--|
| Botoșani | 113766 | 2015-12-09 | <div><div></div></div> | | | | |
| Ocna Mureș | 13036 | 2016-03-31 | <div><div></div></div> | | | | |
| Baia Mare | 139870 | 2008-12-18 | <div><div></div></div> | | | | |
| Hațeg | 9685 | 2016-04-27 | <div><div></div></div> | | | | |
| Avrig | 14260 | 2009-06-08 | <div><div></div></div> | | | | |
| Sebeș | 27019 | 2016-08-30 | <div><div></div></div> | | | | |
| Alba Iulia | 66369 | 2010-01-26 | <div><div></div></div> | | | | |
| Victoria | 4282 | 2018-02-23 | <div><div></div></div> | | | | |
| Piatra Neamț | 113396 | 2018-02-27 | <div><div></div></div> | | | | |
| Suceava | 116404 | 2018-05-31 | <div><div></div></div> | | | | |
| Siret | 9639 | 2019-02-21 | <div><div></div></div> | | | | |
| Abrud | 5187 | 2021-02-21 | <div><div></div></div> | | | | |
| Baia de Arieș | 3783 | 2021-02-26 | <div><div></div></div> | | | | |
| Câmpeni | 7354 | 2021-04-14 | <div><div></div></div> | | | | |
| Tulcea | 92521 | 2021-08-30 | <div><div></div></div> | | | | |
| Iași | 335585 | 2011-02-25 | <div><div></div></div> | | | | |
| Târgu Mureș | 146550 | 2010-12-16 | <div><div></div></div> | | | | |
| Bacău | 144307 | 2011-09-30 | <div><div></div></div> | | | | |
| Ciugud | 3017 | 2012-05-23 | <div><div></div></div> | | | | |



Alba Iulia on the path of Carbon Neutrality in the CoM framework

- **Alba Iulia** is the seat of Alba County
- Located in “Centru” Development Region
- 74,000 inhabitants (2021) • area: 103 km²
- City profile: touristic and services
- Has the largest citadel in Romania (Vauban type)
- Industry: no heavy industry



❖ Alba Iulia became Covenant of Mayors signatory in 2010 with support from ALEA

Alba Iulia on the path of Carbon Neutrality in the CoM framework

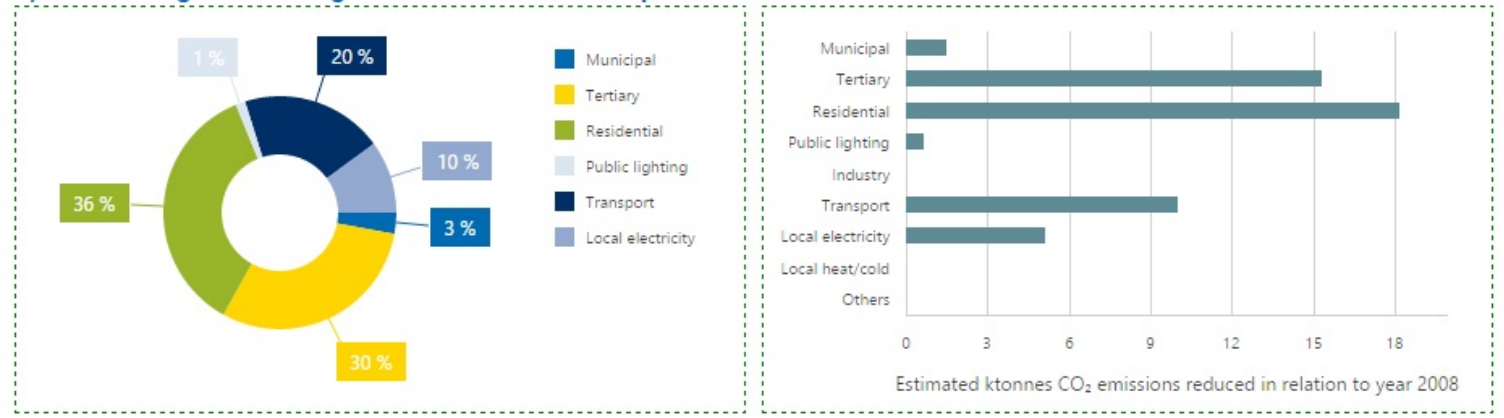
- Alba Iulia Municipality • SEAP with 2020 objectives was submitted in 2011
- 2020 objectives: 24% CO₂ eq. reduction compared to 2008 (baseline year)
- In the framework of SEAP municipality launched new projects in implementation:

- ❖ Energy audits for public buildings
- ❖ Public and private buildings energy efficiency works
- ❖ Use of renewable energy in several buildings
- ❖ Taxes reduction for thermally insulated houses
- ❖ Energy efficient public lightning
- ❖ Local e-government services digitalization
- ❖ Joining Metropolitan Transport Association

5) Greenhouse gas emissions reduction target

| % reduction | tonnes CO ₂ |
|-------------|------------------------|
| 24% | 50445.1 |

6) Estimated greenhouse gas emissions reduction per sector in 2020



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- From 2009 until 2011 **1,714** photovoltaic panels with a cumulative installed power of **257 kW** were mounted on public buildings - headquarters for the following institutions:
 - ❖ The Technical High School “Dorin Pavel” in Alba Iulia – 920 PV panels
PV capacity installed: 138 KWp • Energy production: 150 MWh/yr • CO₂ emissions reduction: 105 t/yr • Amount saved: 18.750 €/yr
 - ❖ The Nursing Home for the elderly – 524 PV panels
PV capacity installed : 80 KWp • Energy production = 86.5 MWh/yr • Additional thermal-solar collectors (for domestic hot water): 44m² • Energy production: 134 MWh/yr • CO₂ emissions reduction: 86.35 t/yr • Amount saved = 14,060 €/yr
 - ❖ The Day Centre for the elderly – 54 PV panels
PV capacity installed: 8 KWp • Energy production: 8.65 MWh/yr • CO₂ emissions reduction: 6.05 t/yr • Amount saved = 1,100 €/yr
 - ❖ The building of Programmes Department of the municipality – 216 PV panels
PV capacity installed: 32 KWp • Energy production: 35 MWh/yr • CO₂ emissions reduction: 24.5 t/yr • Amount saved: 4,375 €/yr



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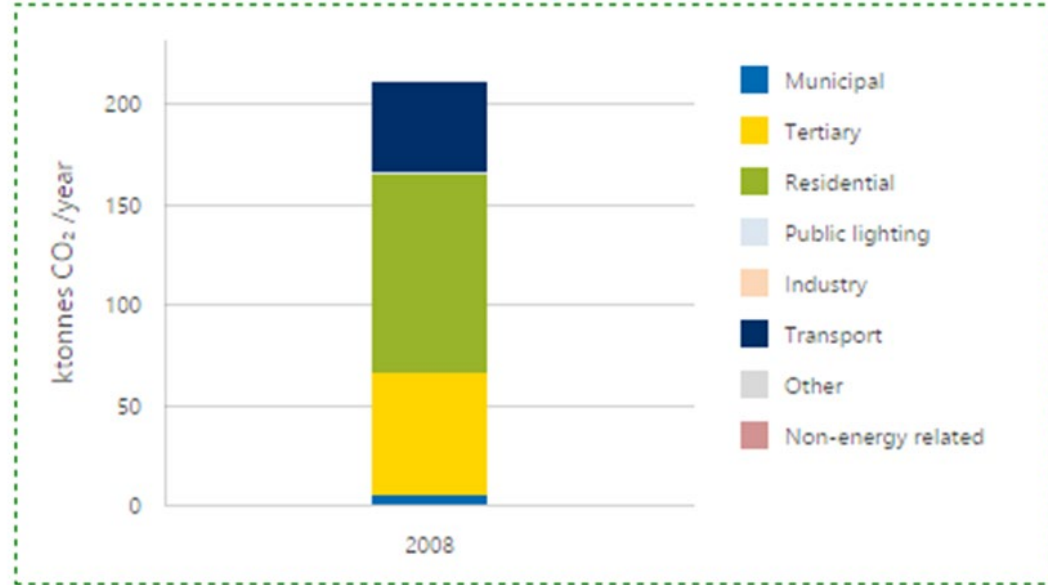
- SECAP baseline emissions inventory year is 2008

There is no district heating system in Alba Iulia

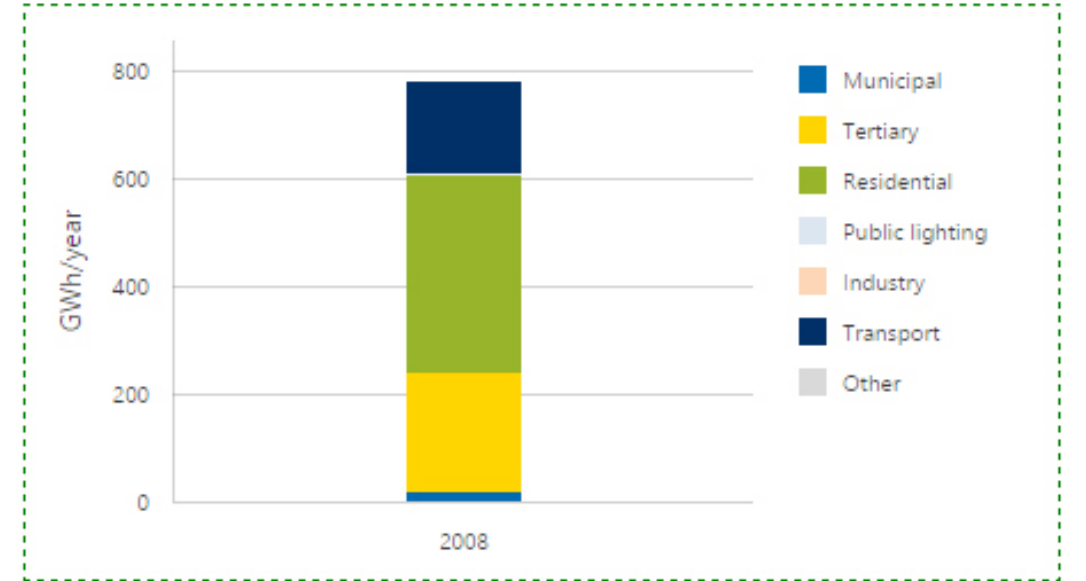
1) Greenhouse gas emissions and final energy consumption per capita

| Emission factor | tonnes CO ₂ /capita | MWh/capita |
|-----------------|--------------------------------|------------|
| IPCC | 3.1 | 11.6 |

2) Greenhouse gas emissions per sector



3) Final energy consumption per sector



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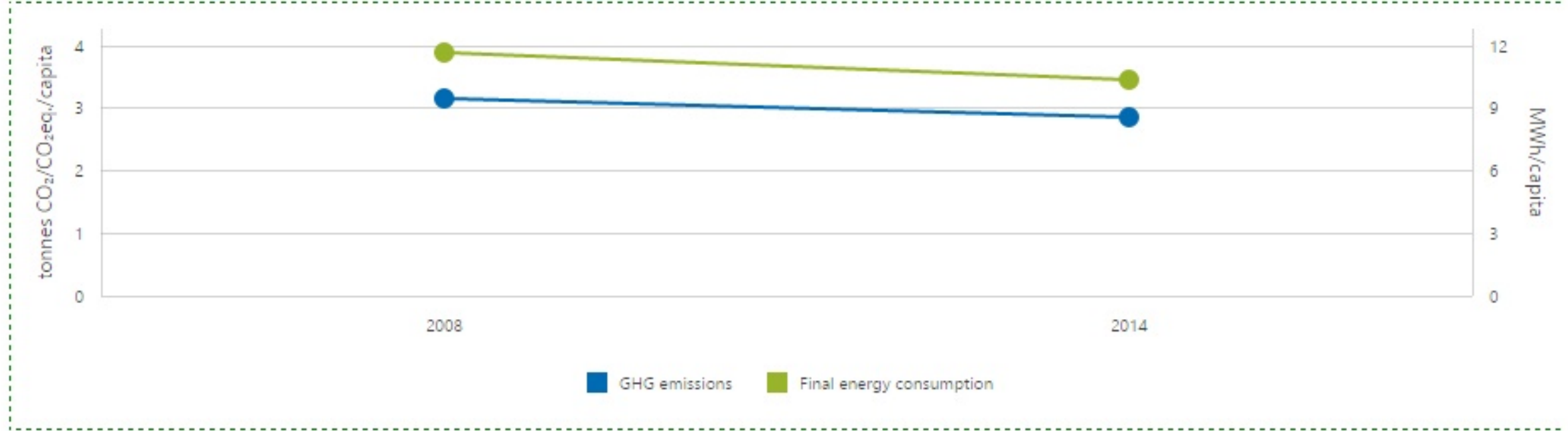
- **ALEA, the technical supporter of the municipality for SEAP was monitoring sectorial energy data yearly:**
 - ❖ First CoM emission inventory (MEI) was elaborated in 2015 (full reporting)
 - ❖ Municipality reached 14% CO₂ reduction in 2018 compared to 2008
 - ❖ As the city was expanding total energy consumption went up in some sectors. Only specific energy consumption was relevant in understanding the evolution of energy efficiency
 - ❖ There are challenges in data collection especially for transport and tertiary buildings/facilities sector



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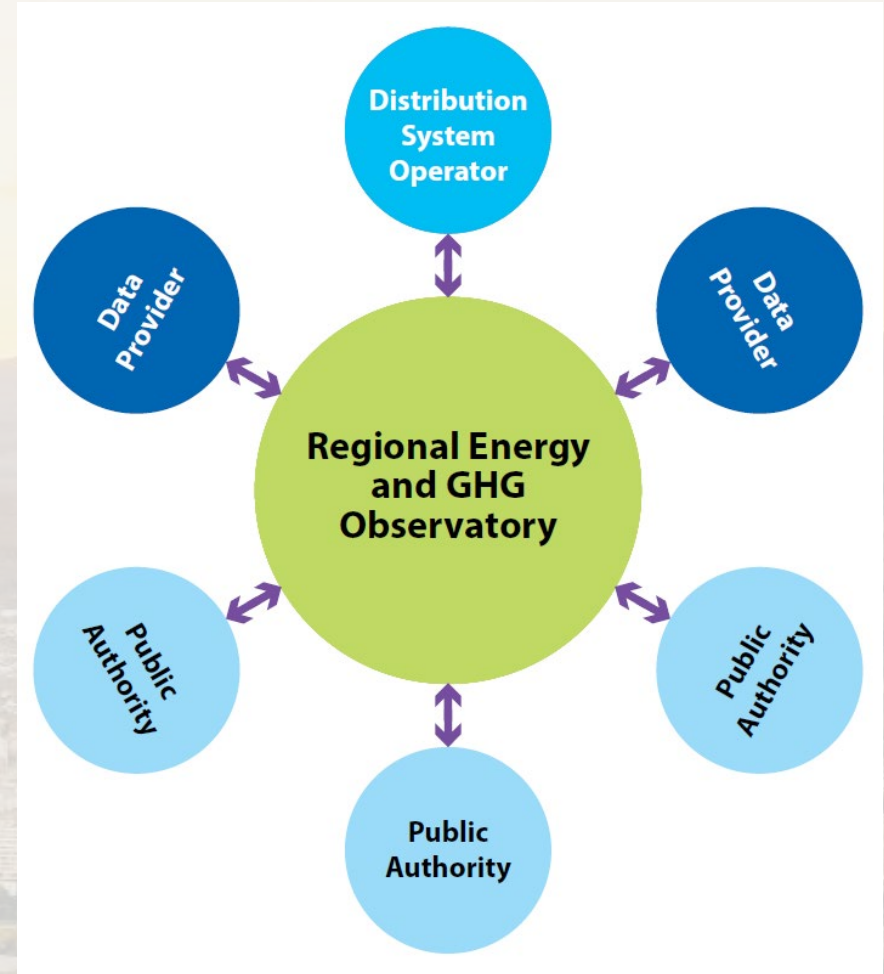
Your performance towards energy sustainability

5) Greenhouse gas emissions and final energy consumption per capita



Alba Iulia on the path of Carbon Neutrality in the CoM framework

- In 2015 Alba Iulia signed Cooperation agreement with **ANERGO Energy Observatory**:
 - ❖ ANERGO is a structure inside ALEA dedicated to energy data collection, processing, CoM BEI/MEI elaboration, weather data analysis/RVA
 - ❖ Established in 2015 with technical support from DATA4ACTION IEE project and Energy Watch Network
 - ❖ **ANERGO** has cooperation agreements with other municipalities and energy data providers in the region (15 municipalities, 5 energy data providers)
 - ❖ Energy data collection/aggregation and storage are provided for free for municipalities in Alba County
 - ❖ For more details: alea.ro/anergo



| Mici consumatori | | | | | | | | | |
|---|-----------------|----------------------|---------------|---------------|----------------------|-----------|-----------|-----------|-----------|
| neeligibili | LEI neeligibili | % consum neeligibili | kWh eligibili | LEI eligibili | kWh total mici cons. | LEI total | kWh rural | LEI rural | kWh total |
| 33117 | 122608 | 7,06 | 3069848 | 1462182 | 3302965 | 1584790 | 419986 | 2882979 | 12583 |
| 19928 | 115.935 | 7,63 | 2663051 | 1.256.217 | 2882979 | 1372152 | 0,5063 | 0,4759 | 828 |
| 6703 | 2.970 | 4,82 | 132483 | 69.029 | 139186 | 71999 | | | 328 |
| 1335 | 766 | 4,77 | 26647 | 14.343 | 27982 | 15109 | | | 158 |
| 2972 | 1.713 | 4,80 | 59001 | 29.144 | 61973 | 30857 | | | 64 |
| 35 | 20 | 0,11 | 31000 | 14.722 | 31035 | 14742 | | | 336 |
| 13 | 13 | 0,16 | 13180 | 6.267 | 13201 | 6280 | | | 93 |
| | | | 62988 | 31.727 | 64244 | 32417 | | | 394 |
| | | | | 5.833 | 12088 | 5890 | | | 154 |
| | | | | | 35344 | | | | |
| ANERGO OBSERVATORUL ENERGETIC ALBA | | | | | | | | | |
| Tot. casnici + mici cons. LEI (fara TVA) | | | | | | | | | |
| % din casnici + mici cons. % consum casnici % consum mici cons. 74 3,76 | | | | | | | | | |
| Pragul de 10 kWh neeligibili LEI kWh neeligibili LEI 121138 121138 | | | | | | | | | |

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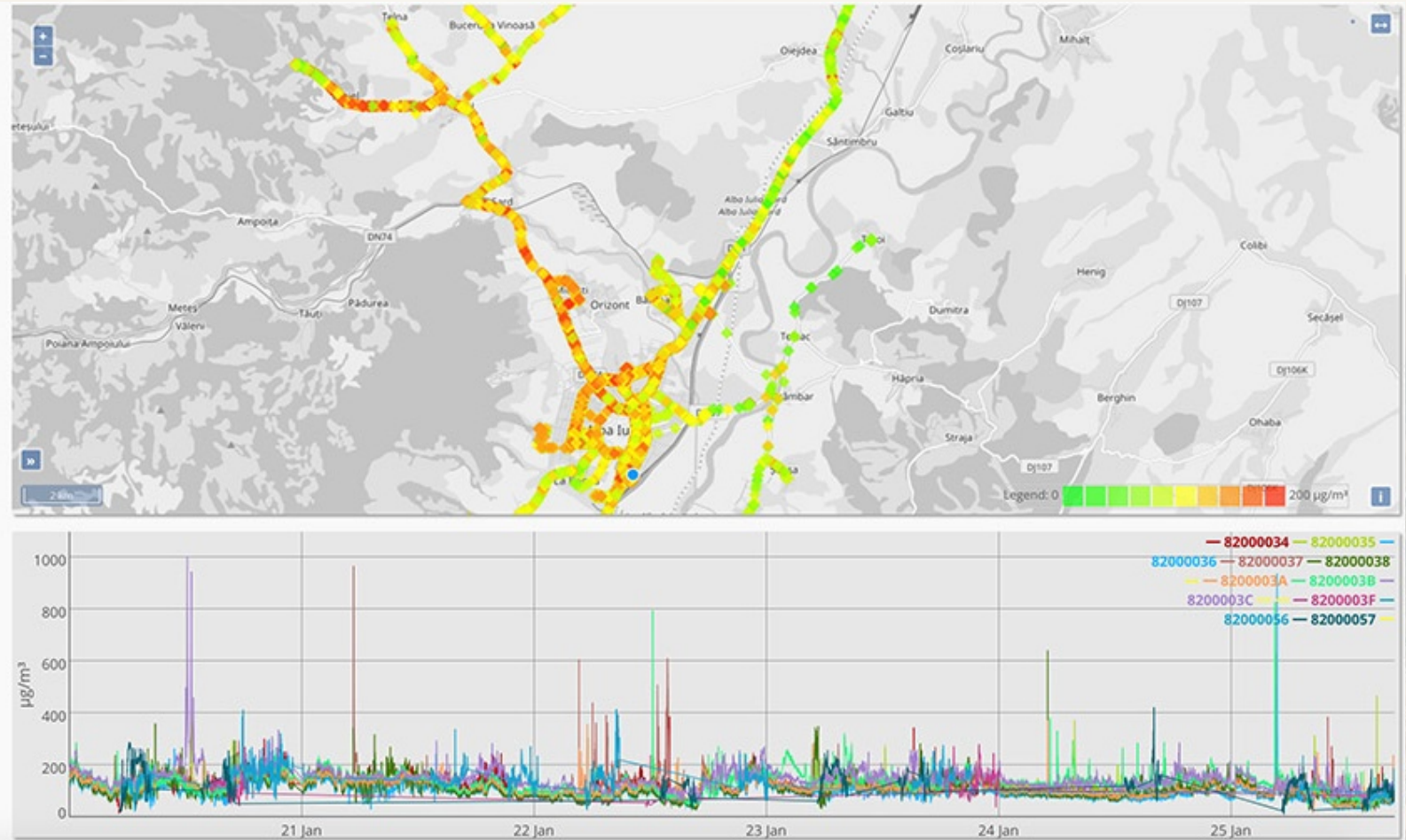
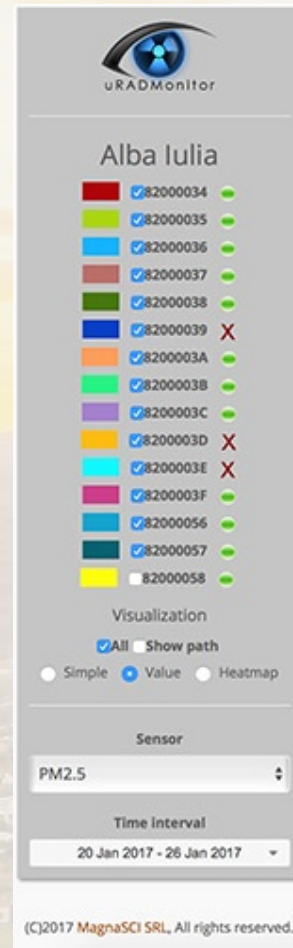
- **In 2018 the municipality starts Smart City pilot project:**
 - ❖ Establishing partnerships with multiple IT and telecom companies, smart equipment providers
 - ❖ Testing various smart city solutions from multiple providers in multiple areas of interest at local level like real-time air pollution monitoring, integrated alert system for citizens and administration, virtual beacons for tourists and other like:
 - ❖ Smart, sustainable energy and environment; smart lighting
 - ❖ Smart sustainable houses; smart water & waste management
 - ❖ Smart public surveillance & safety; intelligent health services
 - ❖ Smart schools, smart education
 - ❖ E-administration; smart billing/local taxes
 - ❖ Smart tourism; smart mobility



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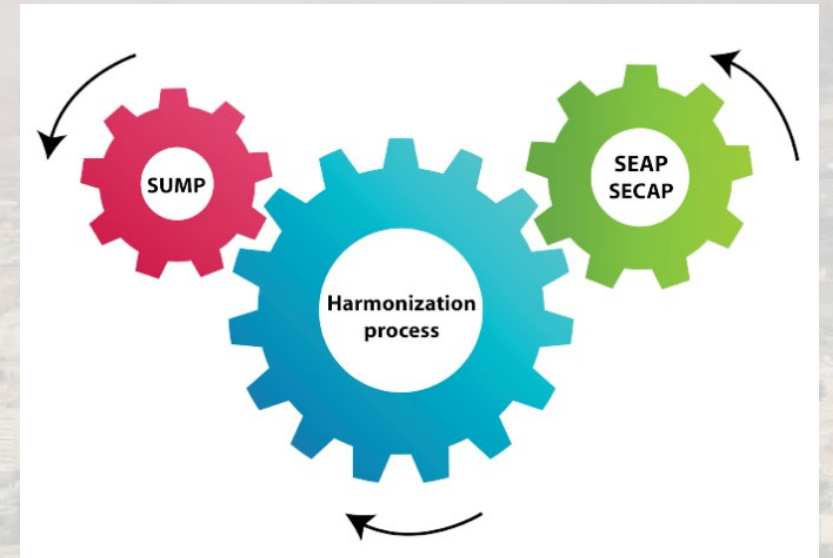
- **uRADMonitor mobile stations:**

- ❖ The stations are attached to public transport buses
- ❖ Monitoring air pollution (PM, CO₂ and more) across the main boulevards in the city
- ❖ This solution is part of smart city pilot project
- ❖ In the image on the right, we see PM2.5 values (date: 26 Jan 2017)



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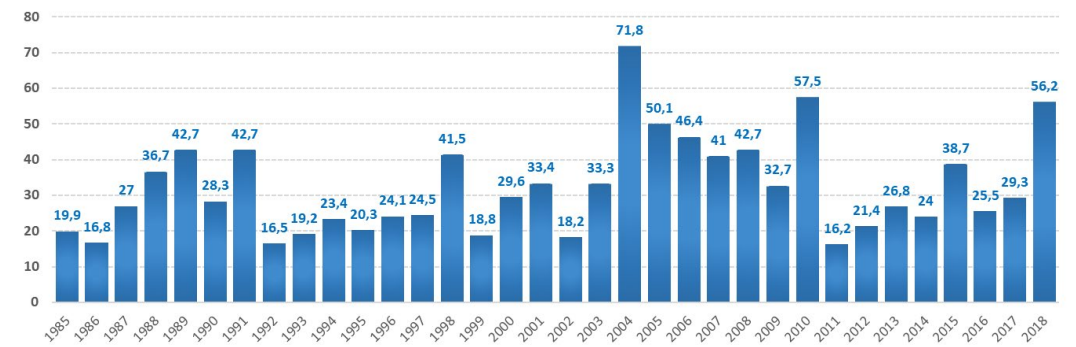
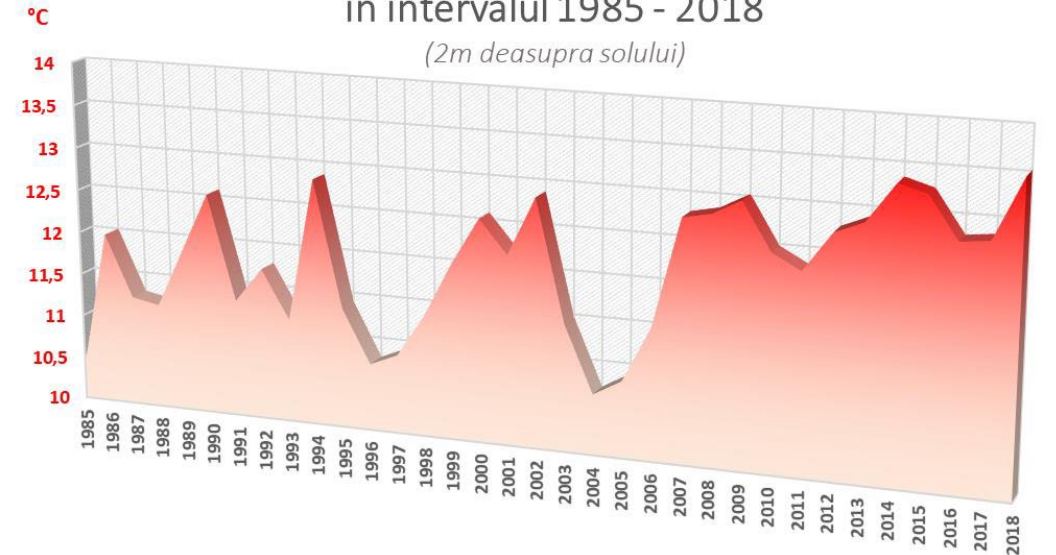
- **Development of e-mobility Action plan in the framework of H2020 eMobility Works project**
 - ❖ In 2016 Municipality elaborated an electro-mobility action plan to consolidate the efforts for decarbonization of public and private transport sector. ALEA was national partner in eMobility Works project.
- **Harmonization of SEAP with SUMP in the framework of H2020 SIMPLA project**
 - ❖ In 2018 municipality updated its SEAP in the process of harmonization with the Sustainable Urban Mobility Plan (SUMP) with support from SIMPLA H2020 project that included the development of SECAP/SUMP harmonization methodology. ALEA was national partner in SIMPLA project.



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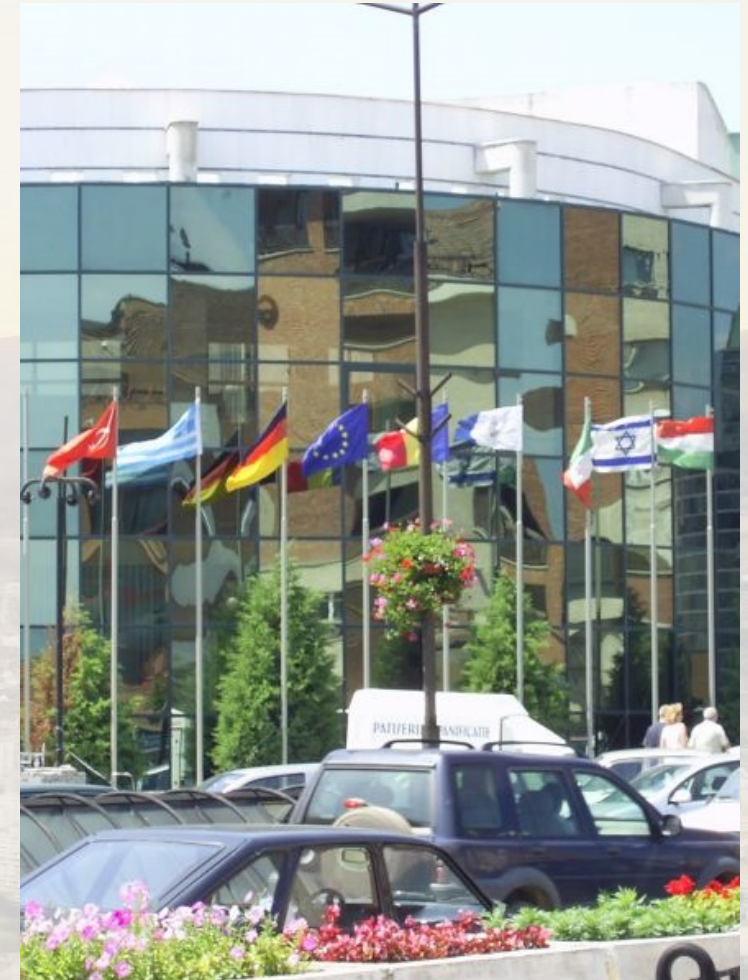
- **Covenant of Mayors for Climate and Energy** adhesion was signed by the municipality in 2016:
- ❖ Municipality strengthen its vision on mitigation for 2030 and a SECAP workgroup was created locally
- ❖ New vision and strategy for adaptation to climate change and energy poverty were developed at local level by the workgroup
- ❖ The local decarbonization goals were enhanced with a new CO₂ reduction target of 40% until 2030
- ❖ **Climate Risks and Vulnerability Assessment for Alba Iulia's SECAP** was developed using ANERGO Energy Observatory
- ❖ A historical weather dataset was used, as well as a questionnaire for the SECAP workgroup to validate the most feared climate hazards at the local level
- ❖ The SECAP was officially approved in 2019 by local council, containing an updated SEAP for 2030, RVA and measures in all three CoM pillars: mitigation, energy poverty and adaptation.

Evoluția temperaturii medii anuale în Alba Iulia
în intervalul 1985 - 2018
(2m deasupra solului)



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- The Sustainable Energy and Climate Action Plan (SECAP) of Alba Iulia Municipality represents the commitment document focused on reducing CO₂ equivalent emissions throughout the local community, in line with the targets assumed by the European initiative of the Convention of Mayors for Energy and Climate and was elaborated with the technical support of ALEA
- The SECAP is a key document in terms of sustainable energy policy in Alba Iulia, which will contribute to the:
 - ❖ Increase the economic efficiency of all activities carried out at the municipality level by improving the competitiveness of products and services through efficient and responsible energy consumption
 - ❖ Sustainable development of the municipality through better exploitation of local renewable energy resources
 - ❖ Reduction of environmental impact caused by the use of energy and fuels from fossil sources at the municipal level
 - ❖ Climate change adaptation action; protecting the vulnerable urban areas
 - ❖ Tackling energy poverty and providing solutions for vulnerable consumers



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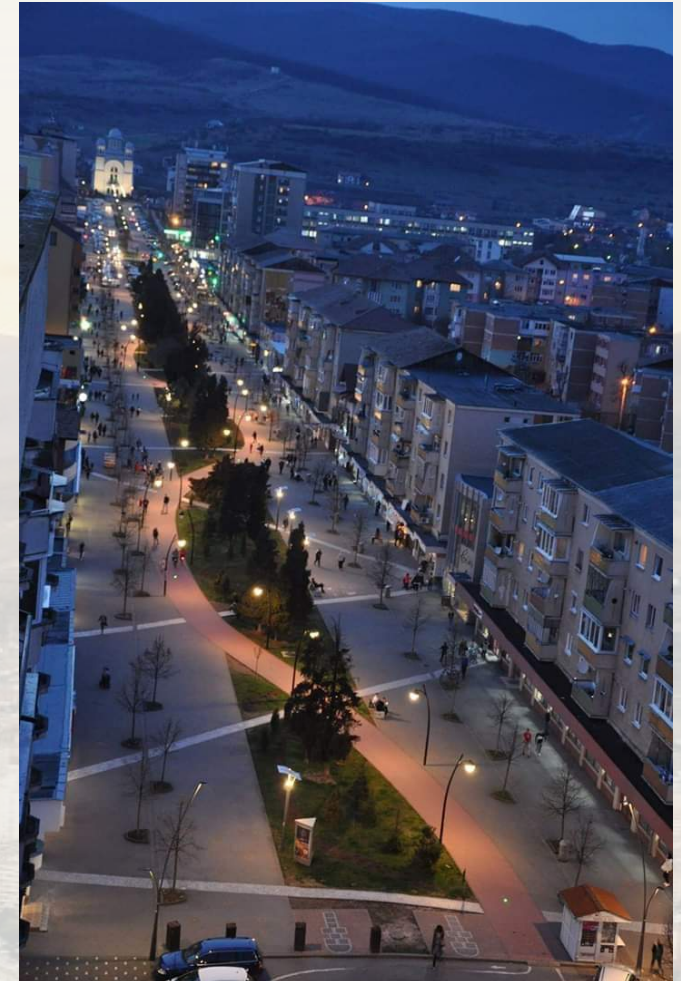
• Selection of SECAP measures for decarbonization:

- ❖ Energy audit for all public buildings
- ❖ Public school buildings retrofit and thermal insulation, energy efficiency works
- ❖ Thermal rehabilitation of housing blocks
- ❖ Public lighting system expansion and modernization for increasing energy efficiency
- ❖ PV solar panels on 6 public buildings across the city
- ❖ Partial electrification of public transport fleet and expansion of charging infrastructure for electric buses (13 electric buses and 17 charging stations in implementation)
- ❖ Developing the urban cycling infrastructure
- ❖ Road traffic optimization



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- **Selection of SECAP measures with impact on decarbonization and energy poverty:**
 - ❖ Thermal insulation projects for housing blocks
 - ❖ Increasing energy efficiency of social housing units
 - ❖ Smart energy metering in residential sector
 - ❖ Organize of sustainable energy week, mobility week
 - ❖ National funds for RES equipment in residential sector (Romanian Environmental Fund)
 - ❖ Energy labeling for residential buildings
 - ❖ Electricity/methane subsidies are granted every year for vulnerable consumers/social cases



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- **Selection of SECAP measures for adaptation to climate change:**
 - ❖ Building municipal air quality monitoring system
 - ❖ Increasing rainwater discharge capacity/sewage in multiple urban areas affected by flash floods
 - ❖ Increasing green urban area and perimetral re-forestation works
 - ❖ Interconnection of local weather hazard alert systems for citizens with regional/national system
 - ❖ Expansion of social services for elderly persons exposed to climate hazards



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- **Awards and other local EU commitments:**

- ❖ Municipality is also reporting for Global Covenant of Mayors for Climate and Energy (CDP)
- ❖ In 2021 Alba Iulia received Sustainable Community status - European Energy Award
- ❖ Joining EU's Green City Accord in 2021
- ❖ Municipality Has applied on EU's "100 cities mission"
- ❖ Has 4 projects on EEA grants in implementation



GLOBAL COVENANT
of MAYORS for
CLIMATE & ENERGY



Local Governments
for Sustainability



DISCLOSURE INSIGHT ACTION



EUROPEAN
ENERGY
AWARD



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- **Projects on EEA grants** (in implementation):

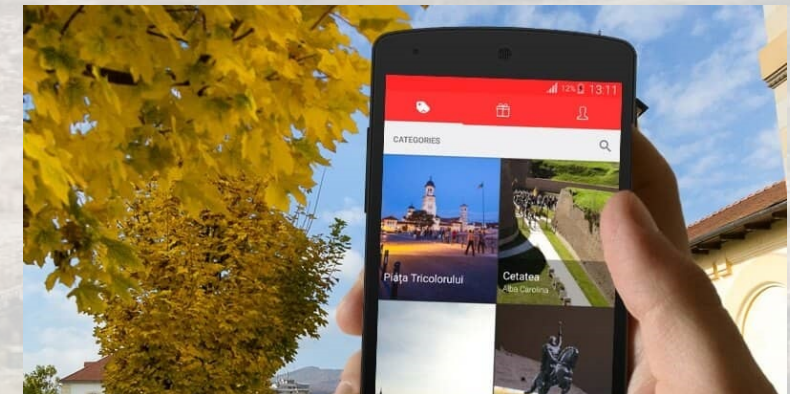
- ❖ **Project for implementing renewable energy solutions the largest public building (social) nursing home for elderly** – solution is based on geothermal heating and cooling, and it includes soil to water heat pumps and equipment for heat distribution across the building and for using current thermal-solar energy production already working on site. CO₂: -162 t/yr • Savings: 1,2 GWh/yr • 1,395,492 €
- ❖ **Project for implementing energy efficiency systems on largest public energy consumer Olympic swimming pool** – integrated solution that includes thermodynamic solar panels, air to water heat pumps and the equipment required for integrating and using current thermal-solar energy production already working on site. CO₂: -336 t/yr • Savings: 1,6 GWh/yr • 603,875 €
- ❖ **Project for development of Action plan for adaptation to climate change at city level and study on urban rainwater management and discharge** – this will build on the data provided by SECAP's RVA and will focus SECAP adaptation measures on critical infrastructure affected by climate hazards like flash floods
- ❖ **Project for solar photovoltaic panels on 6 public buildings (mostly schools)** – this will inject excess electricity produced on site to the grid when not used on site. Electricity distributor will compensate the injected electricity with on site consumption on a yearly basis



Alba Iulia on the path of Carbon Neutrality in the CoM framework

- **Some perspectives for the future of sustainable energy, adaptation to climate change and energy poverty in Alba Iulia:**

- ❖ Increase the citizens involvement in the SECAP process
- ❖ Joining relevant initiatives in CoM/SECAP context, at national and EU level
- ❖ Mapping energy poverty at local level, providing solutions
- ❖ Continuation of increase the annual municipal investment budget share for decarbonization/energy efficiency/renewables measures:
2007-2013: 9% • 2014-2020: 28% • 2021-2027: 49%
- ❖ Signing the CoM adhesion for 2050 (carbon neutrality)
- ❖ Development of SECAP vision and strategy for 2050
- ❖ Reaching the objective of carbon-neutral smart city in the next 30 years



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Thank you for your attention!

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apulum.ro
visitalbaiulia.city

