



BRASOV

Roadmap



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TOMORROW



Brasov Roadmap

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BRAȘOV — 2022 2030

Discourage the use of personal vehicles by applying traffic restrictions in defined areas and periods * increase the green spaces within the city by at least 50%, from 5.62 sqm/ inhabitant in 2022 to 8.4 sqm/ inhabitant

Continue the process of public lighting system modernization: LED equipment, tele-management

Encourage the use of alternative means of transportation (bicycles, scooters etc.) by enlarging the cycling infrastructure with a minimum of 100 km routes at maximum safety standards

Adapt the urban policies to the assumed objective of reaching climate neutrality

Adopt measures to increase the use of public transport on a regular basis (at least weekly, from Monday to Friday) by at least 60% of the population

Initiate & support information campaigns on Brașov's aim to reach climate neutrality by 2050

Develop campaigns to promote rational and sustainable consumption habits among the citizens

Initiate & support information campaigns on Brașov's aim to reach climate neutrality by 2050

35% CO2 reduction compared to 2008

2022

55% CO2 reduction compared to 2008

2030

75% CO2 reduction compared to 2008

2040

82% CO2 reduction compared to 2008

2050

Roadmap to Climate Neutrality

BRAȘOV — 2040 2050

Ensure a minimum of 50% electricity and heat supply necessary for public buildings from "green" solutions (solar panels, wind power plants, thermal pumps, biogas etc.).

Eliminate the use personal vehicles in the historical centre (excepting residents living in the area).

Extend the centralized heating system to at least 50% of the existing consumers in Brașov and reduce by at least 1/3 the individual power plants.

Increase the use of public transport on a regular basis by at least 75% of the population.

Reach the threshold of 12 sqm green spaces/ inhabitant, equivalent to 50% of the green spaces as regulated by the EU.

Interconnect all neighbourhoods in the city through a minimum of 200 km of cycling routes.

Reach 100% electric local public transportation.

BRAȘOV — 2022 2030 —

—
Descurajarea utilizării autovehiculelor personale prin aplicarea de restricții de circulație în zone și perioade definite

—
Continuarea procesului de modernizare a sistemului de iluminat public: echipamente LED, telegestiune

—
Încurajarea utilizării mijloacelor alternative de transport (biciclete, trotinete etc) prin construirea în municipiu a minim 100 km de trasee de bicicletă la standarde de maximă siguranță

—
Creșterea cu 50% a spațiului verde, de la 5.62 mp/locuitor în 2022 la 8.4 mp/locuitor

—
Adoptarea de măsuri de creștere a utilizării transportului în comun în mod regulat (cel puțin săptămânal, de luni până vineri) de către minim 60% din populația municipiului

—
Campanii de promovare a consumului sustenabil

—
Colectare selectivă a deșeurilor pe întreg teritoriul municipiului

—
Adaptarea politicilor de urbanism la obiectivul asumat privind neutralitatea climatică

—
Inițierea și susținerea unor campanii de informare privind obiectivul orașului Brașov de a atinge neutralitatea climatică până în anul 2050.

Reducerea CO2 cu 35% față de 2008

2022

Reducerea CO2 cu 55% față de 2008

2030

Reducerea CO2 cu 75% față de 2008

2040

Reducerea CO2 cu 82% față de 2008

2050

Foaie de
parcus către
neutralitate
climatică

BRAȘOV — 2040 2050 —

—
Restricționarea totală a autovehiculelor personale (altele decât cele ale riveranilor) în centrul istoric al municipiului

—
Creșterea utilizării transportului în comun în mod regulat de către minim 75% din populația municipiului

—
Minim 50% din energia electrică și termică necesară clădirilor publice, obținută din soluții „verzi” (panouri solare, centrale eoliene, pompe termice, biogaz etc)

—
Atingerea pragului de 12 mp spațiu verde / locuitor, echivalent a 50% din spațiul verde reglementat de UE

—
Extinderea sistemului centralizat de termoficare la cel puțin 50% dintre consumatorii existenți în municipiul Brașov și reducerea cu 1/3 a centralelor individuale

—
Interconectarea tuturor cartierelor din municipiu prin minim 200 km de pistă de bicicletă

—
Transport public local 100% electric

PACED executive summary report

Introduction

Energy Transition Board

Brasov 2030 objectives

The main quantitative objectives to reduce
CO2 emissions to 55% by 2030

Climate change adaptation strategy of the
Municipality of Brasov

Conclusions



Introduction

This document is a summary of all actions, analysis and measures underlying the strategic vision for reaching climate neutrality by 2050 in Braşov. This document was developed in the frame of the **TOMORROW** – www.citiesoftomorrow.eu project through the collaboration and active involvement of citizens and stakeholders.

In order to identify the most appropriate projects at the level of the municipality of Braşov, ABMEE established a Energy Transition Board which covers strategic areas, having representatives from the Braşov City Hall, the local public transport company, the local electricity distribution company, the local natural gas company, the company that manages the local public lighting, the local high-efficiency cogeneration company, the local waste management company, the local environmental protection agency, the regional water supplier, the „Transilvania” University and a local initiative group made up of professionals in architecture, communication, technology, sociology and economics, with the aim of redesigning public services around the needs of citizens, by involving them in the process.



1. Energy Transition Board

The Energy Transition Board worked for 2 years to contribute to the local climate and sustainable energy plan. Innovative processes of citizen involvement in the energy transition and interaction between public authorities and civil society were tested. The result of this collaboration is the present document comprising of the “Roadmap for the energy transition” and the main results expected through the implementation of the Action Plan for Climate and Sustainable Energy, Brasov 2030.

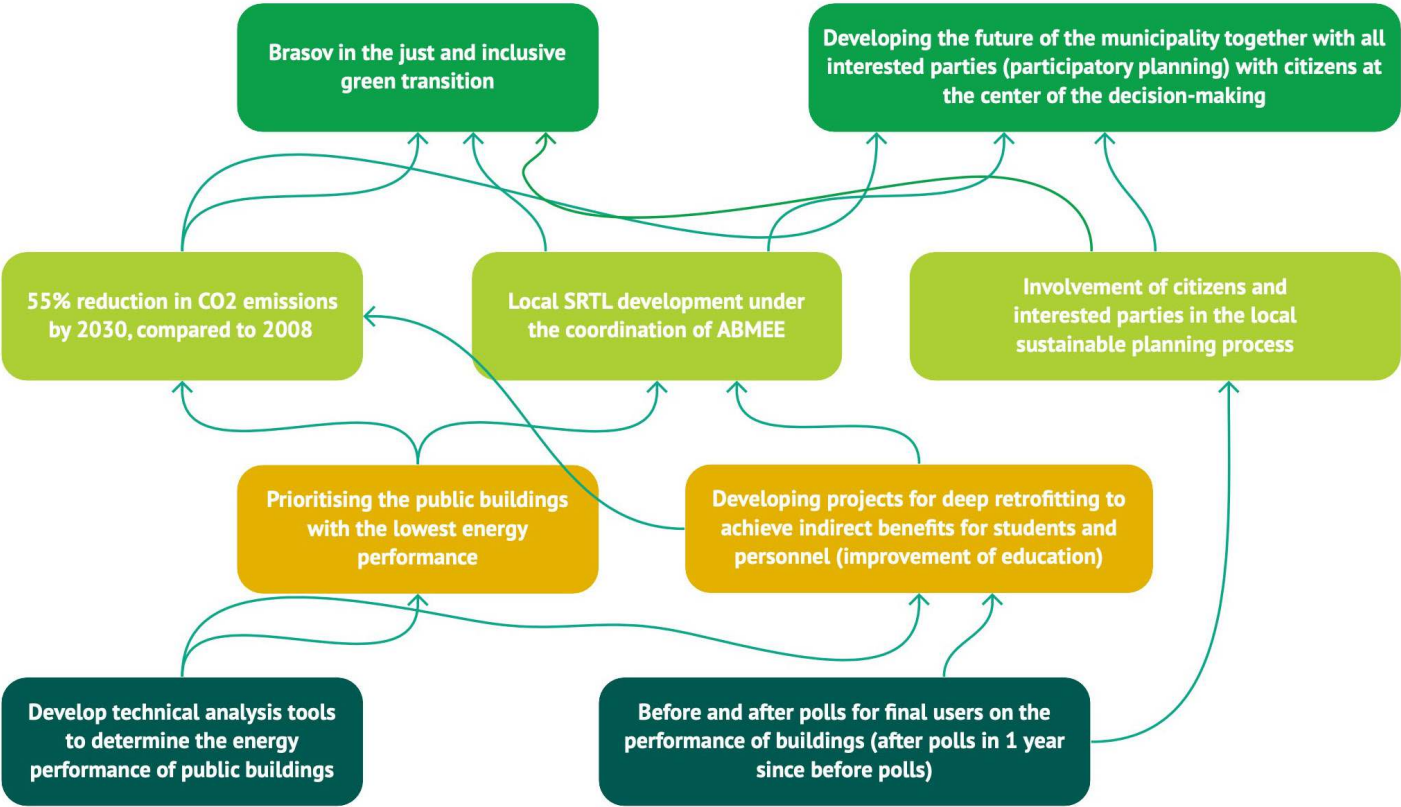


During team meetings, we have explored what are some sustainable projects that could address some of the following themes:

- Increased Quality of Life
- How to become a sustainable community
- How to protect nature & clean air
- The benefit of active & sustainable mobility
- How to engage citizens in the transition process
- How to reach neutrality and transform our community in a green one!



Reflexive thinking for the 2030 SECAP



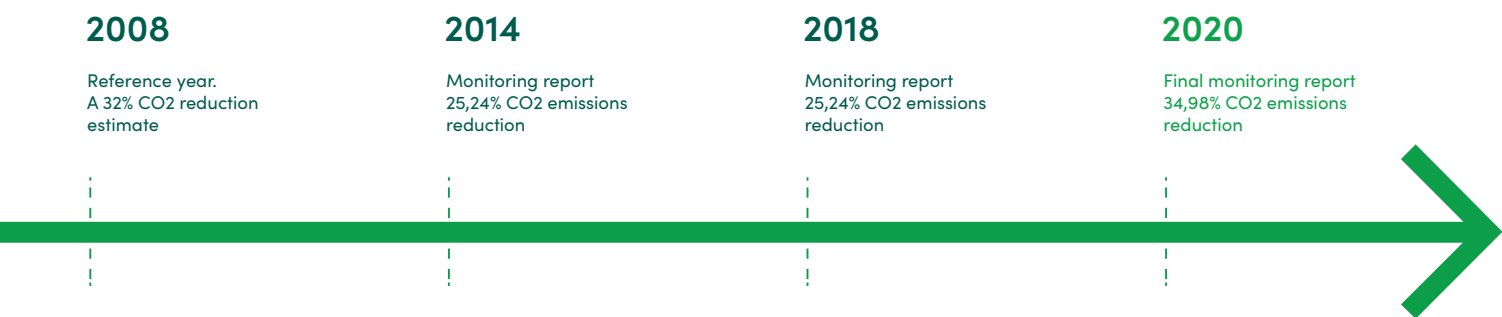
● Goal ● Objective ● Policy ● Measure/Action

2.Brasov 2030 objectives

The local strategy was based on the experience and results of the 10 years of implementation of the projects included in the Sustainable Energy Action Plan 2010–2020. The results obtained exceeded the assumed commitments and demonstrated the usefulness of the existence of a realistic, monitored and permanently adjusted strategy to meet the CO2 emission reduction targets.

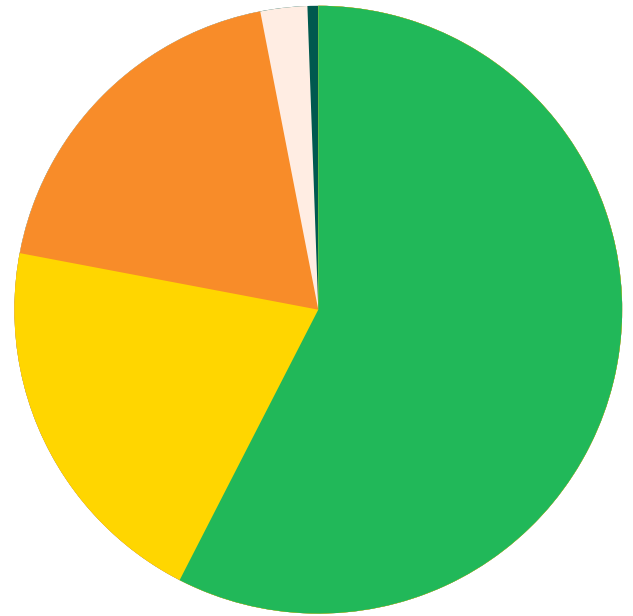
2.1. Energy diagnosis and inventory of emissions in the local community 2010–2020

The municipality of Brasov signed the Covenant of Mayors in 2008, this being the starting point for a new approach to energy by the local public administration, through: planning, implementation, monitoring and reporting for the evaluation and permanent adjustment of the results.



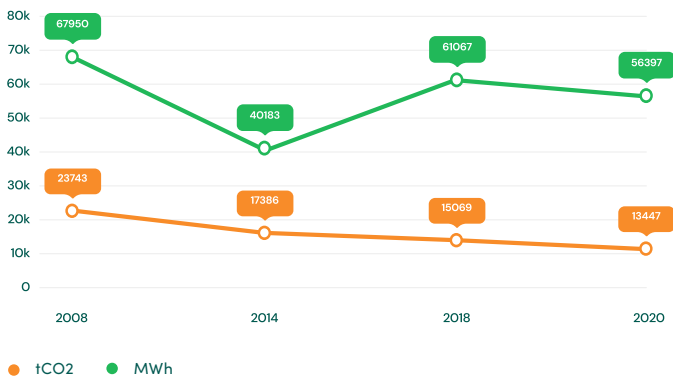
Energy split in Brasov in 2020.
Population, Transport, Tertiary,
Public buildings, Public lighting

- Population 57,54%
- Transport 20,44%
- Tertiary 18,96%
- Public Buildings 2,4%
- Public Lighting 0,57%

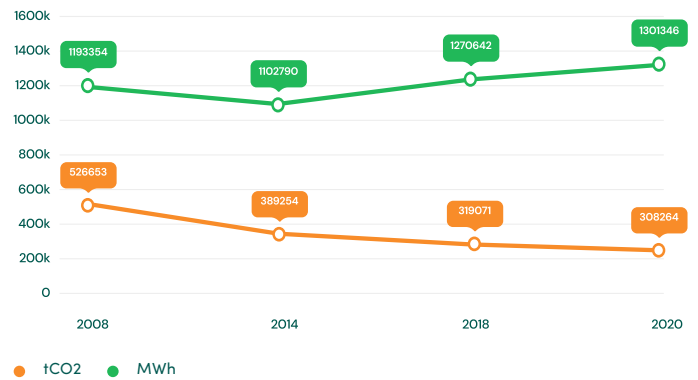


Results – 2008-2020 evolution by sectors

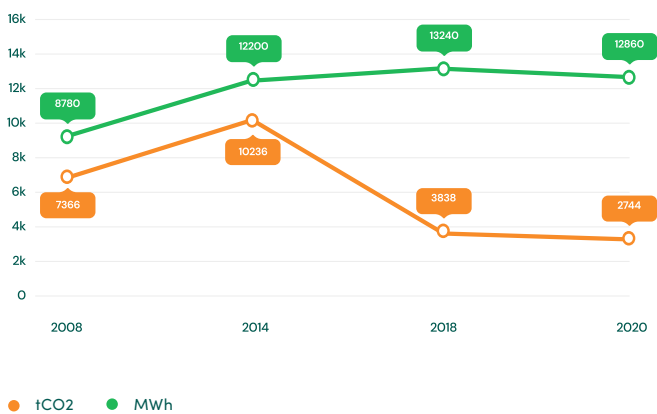
Public Buildings Sector



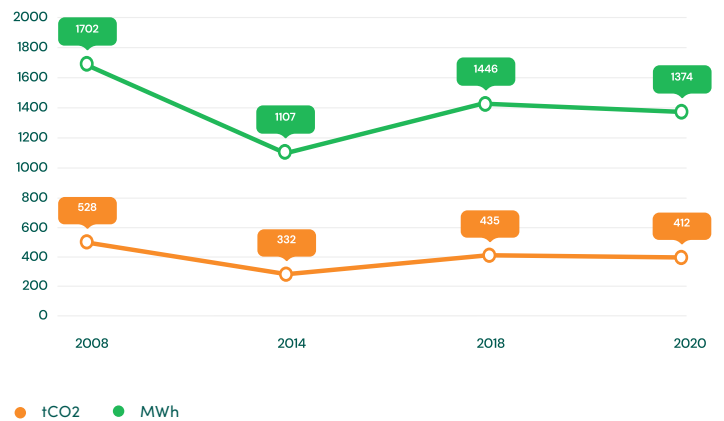
Residential Buildings Sector



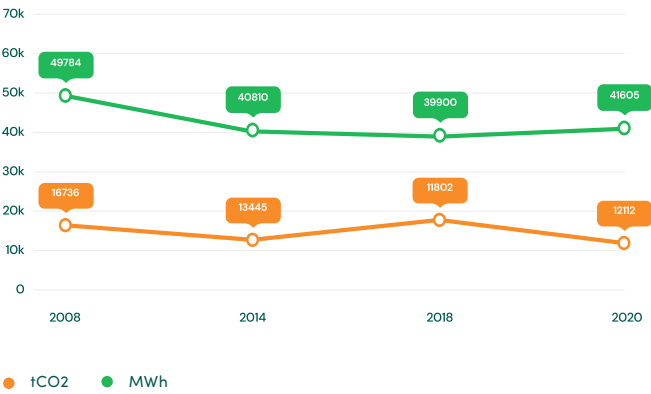
Public Lighting Sector



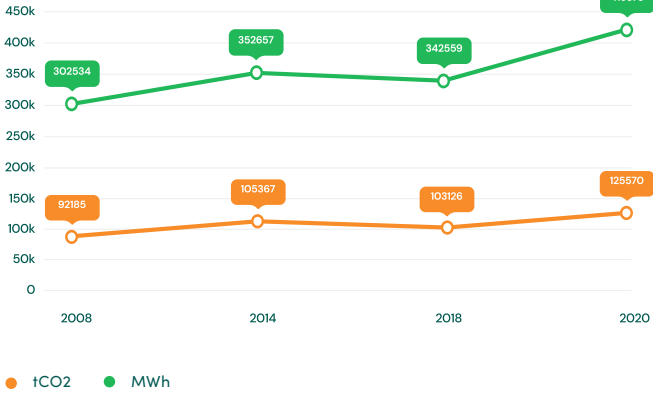
Municipal Fleet



Public Transport Sector



Private and commercial transport sector



Evolution of the private and commercial transport fleet



The final SEAP 2010–2020 monitoring report was publicly presented during the Green Cities Forum – Braşov 2021

The analysis of the structure of energy consumption by each type of consumer and the inventory of emissions associated with consumption helped define the priority objectives for SECAP 2030 and the development of the „Roadmap towards climate neutrality Braşov 2050”. As per the evolution graphs of energy consumption and CO2 emissions the main share is represented by the residential sector, in the case of buildings and by the private and commercial sector in the field of transport – mobility.

2.2.

Future Vision and objectives in 2030

2.2.1. Strategic objectives

1. To build local energy production capacities from renewable sources and to use the energy produced to ensure a high degree of energy independence and help decarbonize the energy supply in our community.
2. To maximize the benefits of energy efficiency for the built stock and for future construction by applying the requirements for near-zero energy buildings.
3. To continue the implementation of the 2021–2030 local plan for public buildings retrofitting based on the principles of maximizing energy benefits.
4. To expand the centralized heating/cooling by producing energy through high-efficiency cogeneration.
5. To implement projects that foster the adoption of clean, safe, and connected mobility.
6. To develop the climate change adaptation strategy, through correlation with the Air Quality Plan, the Disaster Adaptation Plan, and other complementary strategies.
7. To continue the involvement of the TOMORROW Energy Transition Board in the analysis, monitoring and update process of the SECAP 2030.
8. To complete an update the „Roadmap towards climate neutrality 2050” through systematic consultation with representatives of the civil society, the business environment, and relevant stakeholders on various projects of general interest.
9. To make the „Voice of Citizens” heard through awareness raising, information and participation campaigns.

2.2.2. 2030 CO₂ emission reduction target for Braşov

In 2021, during the Green Cities Forum (September 6–12), the Municipality of Braşov renewed its commitment to the Covenant of Mayors by increasing its commitment to reduce CO₂ emissions to 55% the by 2030 (477,422 tCO₂) and by adding the energy poverty component and committing to climate neutrality by 2050.

In 2020, an emissions reduction of 34.98% was reached compared to the reference year 2008 (303,601 tCO₂), and the municipality will reduce at least 173,821t CO₂ by 2030.

SECAP 2030 reference year and time horizon

The reference year 2008 was kept for the analysis of energy consumption of the municipality of Braşov. Thus, all analyses regarding the reduction of CO₂ emissions, the evaluation of the results after the implementation of the projects and measures of SECAP, will use this reference year.

2.2.3. The 2030 Sustainable Energy and Climate Action Plan of Braşov includes the following sectors:

- Buildings and related installations (municipal buildings, tertiary sector buildings, residential buildings, public lighting)
- Transport (municipal fleet, public transport, private and commercial transport)
- Heating / cooling (SACET¹, high efficiency cogeneration, residential heating)
- Local energy production
- Urban planning (strategic urban planning, development of local regulations for sustainable constructions)
- Public procurement of products and services (green public procurement, energy efficiency criteria, green energy contracting)
- Involvement of citizens and stakeholders (information and awareness campaigns, consultation sessions)
- Waste management (selective waste collection, recycling)
- Energy poverty
- Risks and vulnerabilities due to of adaptation to climate change

1. SACET – Centralised Heating Supply Service

2.2.4. Evaluation methodology

For a more complete assessment of all factors influencing CO₂ emissions, and as a reference for SECAP 2030, the LCA emission factors were used in the SEAP 2020 Final Report.

Product life cycle assessment (LCA) was developed as a method to determine the energy consumption and environmental pressures associated with specific production systems. Life cycle assessment has an important role in climate change mitigation, being used to quantify GHG emissions associated with mitigation technologies, for example wind power, heat recovery ventilation systems or carbon capture and storage. This method of quantifying emissions is used to compare different ways of providing the same functional unit, such as a kWh of electricity.

Life cycle assessment has also been used to quantify the co-benefits and harmful side effects of mitigation technologies and measures, including other environmental issues and resource use, but also including geophysical effects such as albedo changes or indirect² climate effects.

Initially, for the years 2008 and 2014³, the IPCC⁴ -type emission factors were used, therefore, in the SEAP 2020 report, the emission calculations were redone with LCA factors for the first 2 data sets (years 2008 and 2014).

3. The main quantitative objectives to reduce CO₂ emissions to 55% by 2030

3.1. Local energy production from renewable sources

By 2024 90% of the Braşov municipality electricity consumption to be locally produced from renewable energy sources through a project in the financing phase to build a photovoltaic park to produce and provide electricity for public utility services.

50% of the municipal buildings with photovoltaic panels for own consumption. In 2022, 30 of the total 180 public buildings have finalized projects.

At least 30% of private buildings will produce electricity and become prosumers. This process has been accelerated in the last year by the continuous increase in energy prices.

2. AR5 Climate Change 2014: Mitigation of Climate Change Annex II: Metrics & Methodology, Volker Krey, Omar Masera https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-ii.pdf

3. For this span the data was evaluated and reported at the level of final energy consumption.

4. IPCC (Intergovernmental Panel on Climate Change) - emission factors for burning fuels based on the carbon content of each fuel.

3.2. Buildings and urban planning.

This sector, both public and private, has the largest share in the energy balance of the Brasov community. Brasov is a mountain city, and the average annual heating period is 6 months.

40% of private buildings will be thermally renovated through public or private financing instruments. The energy crisis of the last year boosted the field of renovations with impact on reducing energy poverty. Government programs are launched in partnership with the local public administration dedicated to private multi-storey buildings, where the lack of energy performance affects many citizens with low incomes.

For newly built buildings after 2020, there is the obligation through the construction certificates for developing almost zero energy buildings and the technical documentation is verified by the Chief Architect service of the local administration.

50% of the municipal buildings will be renovated using high energy performance solutions. The process is ongoing, a multi-year program has been drawn up, will be implemented in stages, starting with the lowest energy performance buildings.

The technical requirements for the energy modernization of public buildings are strictly verified by the investment service of Brasov City Hall.

The government buildings in our community are also rehabilitated annually through the national energy modernization fund within the limit of 3% of the usable area: hospitals, administrative and cultural buildings.

3.3. Heating and cooling solution through high-efficiency cogeneration energy production⁵

In the EU, district heating and cooling systems are currently considered the most efficient and least polluting solution for heating and cooling, at least for high-density urban areas. The development of modern centralized heating/cooling systems, with prices at a bearable level for consumers and using fossil fuels (natural gas) as the source of ensuring continuity and security with input of renewable energy, represents one of the cheapest and most efficient solutions to reduce emissions and primary energy demand.

Combined with energy efficiency measures in buildings, centralized systems can contribute to reducing emissions in the energy system. In fact, the European Parliament requested the strengthening of the EU strategy with clear proposals regarding the obligation of the member states to develop national strategies for heating and cooling, with support for high-efficiency cogeneration and for centralized system solutions that integrate renewable energy and the replacement of old heating systems or unsustainable individual solutions with efficient centralized heating/cooling systems.

6. Extract from the 2021–2030 Action Plan towards climate neutrality 2050 of the Local Public Heating Service, in partnership with the high-efficiency cogeneration thermal energy producer.

Based on the 2020 monitoring data, at the municipal level, the heating solution is either individual heating per apartment/building or SACET⁷, both of which having natural gas as the only fuel. The other types of systems used for heating for which data could not be collected and which use fuels other than natural gas (pellets, firewood, etc.) were not included in the analysis.

The supply of heat and domestic hot water in a centralized system is done by two producers: BEPCO SRL the main producer of heat in high-efficiency cogeneration and the Braşov Local Public Heating Service through 6 district plants that delivered thermal energy in 2021.



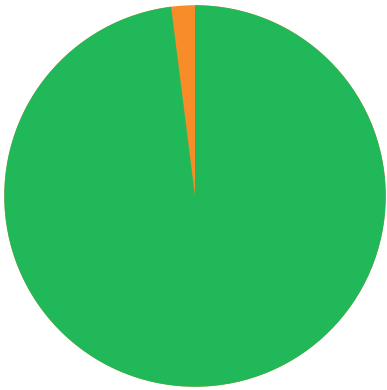
● BEPCO ● SPLT

The high-efficiency cogeneration production capacities of BEPCO ensured over 90% of the heating production in SACET, making SACET Braşov an “efficient heating system”, in accordance with EU Directive 2012/27.

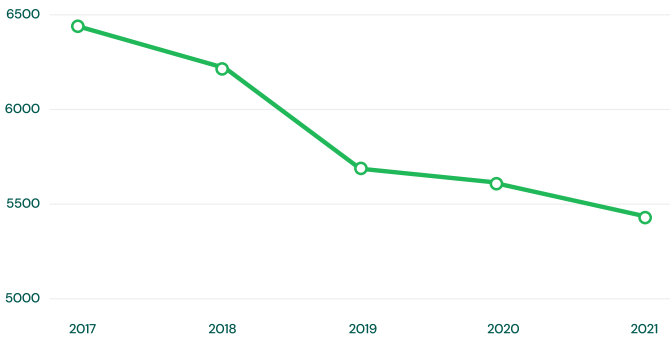
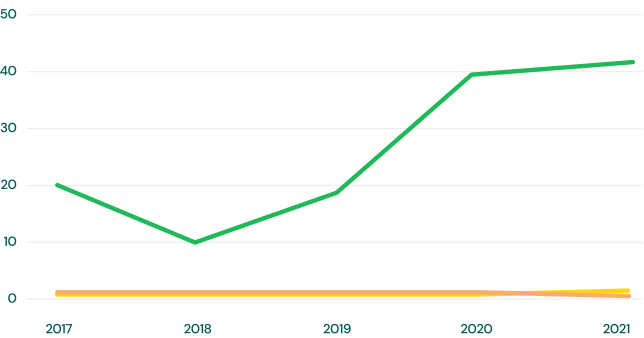
7. SACET – Centralised Heating Supply Service

Heating data 2020

- Individual heating per apartament/building
98%
- SACET
2%

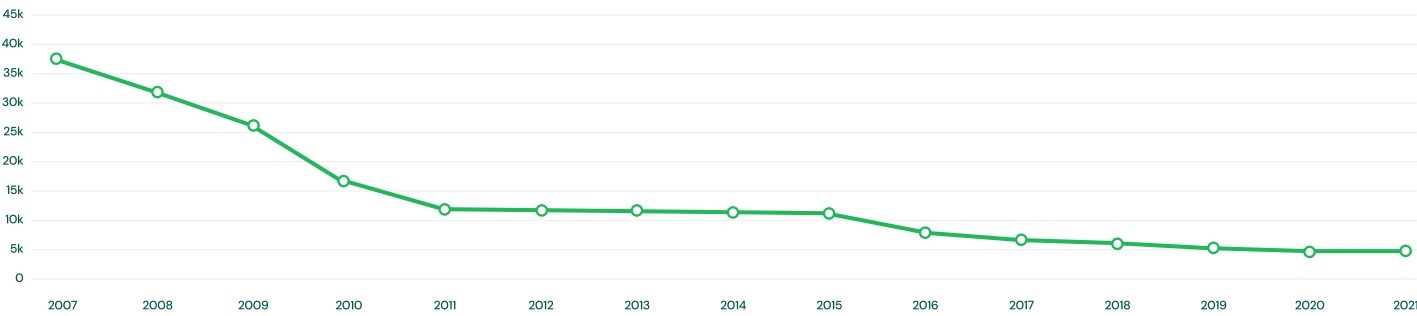


SACET share in the heating split of Braşov in 2020 – residential sector evolution



SACET share in the heating split of Braşov in 2020 – residential sector evolution

2017-2020 residential sector evolution (nr. of apartments)



SACET share in the heating split of Braşov in 2020 – residential sector evolution

The existence of a Public Heating Service/SPLT and a private heat energy producer through high-efficiency cogeneration BEPCO represents one of the most important sources of decarbonization for the local heating system.

Until 2030, the main actions that could bring important benefits in the carbon balance of the municipality of Brasov are directly related to the increase in the number of consumers.

Consumers' trust in the centralized heating system, due to the constraints of the years of communism, represented a constant barrier in connecting/reconnecting to the current thermal energy supply system.

The Centralized Supply System with Thermal Energy/SACET formed by the public operator SPLT and the private producer BEPCO, have developed a valuable action plan to contribute to the target of 55% reduction in carbon emissions by 2030:

Projects / Project proposals / Sustainable development vision 2021 - 2030	Estimated implementation schedule	CO2 Reduction [t/year]	CO2 Reduction [t/year] 2030
Connection of public institutions (County Hospital, Astra Hospital, Tractorul Hospital, Kindergartens, Schools, High Schools, Olympic Pool and Skating Rink) to SACET	2022	86,99	695,94
Connection of public institutions (County Hospital, Astra Hospital, Tractorul Hospital, Kindergartens, Schools, High Schools, Olympic Pool and Skating Rink) to SACET	2023	130,49	913,42
Connection of public institutions (County Hospital, Astra Hospital, Tractorul Hospital, Kindergartens, Schools, High Schools, Olympic Pool and Skating Rink) to SACET	2024	173,98	1.043,91
Connection of CEC Braşov to SACET	2022	15,66	125,27
Circulation pumps with converter for the north transport network	2022-2023	679,53	4.756,69
Connection of industrial consumers (Energ SA) to SACET	2022	76,93	615,45
Connection of residential consumers (ExFactor Grup) to SACET	2022-2024	93,95	563,71
Rehabilitation of transport and distribution networks - Florilor	2024	988,64	5.931,86
Rehabilitation of transport and distribution networks - Centru Civic	2024	645,67	3.873,99
Rehabilitation of transport and distribution networks - Astra	2024	219,70	1.318,23
Rehabilitation of transport and distribution networks - Carfil	2024	129,98	779,88
Rehabilitation of transport and distribution networks - Noua	2024	48,08	288,50
Connection of Elderly Home to SACET	2023	52,37	366,59
Connection of School no.9 and Brasov ZOO to SACET	2024	23,92	143,54
Water degassing system for the North transport network	2024	278,37	1.670,24
Implement solar panel projects on power plants	2022-2024	296,59	1.779,54
Decrease of transport and distribution losses	2025	1.412,35	7.061,74
Increase in domestic and non-domestic clients	2025	935,17	4.675,84
Decrease of transport and distribution losses	2026	1.412,35	5.649,39
Increase in domestic and non-domestic clients	2026	935,17	3.740,67
Increase in domestic and non-domestic clients and investments in network rehabilitation	2027	2.242,61	6.727,84

Projects / Project proposals / Sustainable development vision 2021 – 2030	Estimated implementation schedule	CO2 Reduction [t/year]	CO2 Reduction [t/year] 2030
Increase in domestic and non-domestic clients and investments in network rehabilitation	2028	2.242,61	4.485,23
Increase in domestic and non-domestic clients and investments in network rehabilitation	2029	1.176,96	1.176,96
			58.384,41
CO2 capture, Bepco NORD	2024–2027	3.875,00	11.625,00
Thermal energy storage	2023–2026	3.915,00	15.660,00
			27.285,00

BEPCO⁸, high efficiency cogeneration heating producer

The thermal energy producer BEPCO is actively involved in the efforts to reach the targets assumed by Romania and by Braşov in terms of reducing GHG and achieving climate neutrality. Consistent with its vision of an efficient SACET, BEPCO will focus its efforts to carry out the following measures to achieve significant reductions in GHG emissions:

- Thermal energy storage in the North area;
- Energy Hub Braşov
- CO2 capture in production locations.
- Thermal energy production pilot project from H2 Cetăţii/Metrom/ Noua area;
- Expansion of the pilot project for thermal energy production from H2 in the North area.
- Municipal waste treatment/drying facilities
- High-efficiency biogas cogeneration plant

3.4. Transport and mobility⁹.

The evaluations were carried out through a specialized study on the “Impact of urban mobility measures on the reduction of CO2 emissions”

Until the end of the 2020s, the organization of arterials, intersections, parking policies and public transport services have favoured the personal vehicle. The perceived advantages of the personal vehicle (comfort, accessibility, safety) coupled with the growth of the motor vehicle fleet, quite accelerated in the last decade, have led to its popularity at the expense of public transport, the use of bicycles or walking for distances short. Thus, over time, most of the intersections regulated by priorities or traffic lights were transformed into roundabouts, which provided a better flow of road traffic on the main arteries.

8. BEPCO – local producer of heat and electricity in high-efficiency cogeneration

9. This section is a summary of the evaluation performed by Conf. dr. ing. Stelian ȚĂRULESCU, „Transilvania” University, Faculty of Mechanical Engineering, Department of Motor Vehicles and Transport

Gradually, public transport was modernized, today 50% of the fleet of the public transport company/RATBV is electric, with the prospect of becoming 100% electric or hydrogen powered by 2030. This change led to a constant increase of passengers.

The most effective measures from the perspective of reducing energy consumption, respectively the level of CO₂, can be found in public transport as a system and service.

The investment plans of RATBV SA

- Purchase of 30 electric or hydrogen buses, through PNRR¹⁰
- Acquisition of 30–40 electric or hydrogen buses, through POR¹² 2021–2027
- Creation of Park & Ride spaces and purchase of charging stations, through POR 2021–2027
- The development of the public rail transport system, through POR 2021–2027 and POR 2028–2035
- Development of Bike Sharing, Bike Parking and cycle infrastructure systems (25–35 km), through the „Calea Verde” project
- Development of bicycle routes, through the AFM and PNRR programs.

Mobility measures are more difficult to transpose in CO₂ emissions reduction terms, that's why we turned to specialists who, based on European practices, identified two types of measures for PACED 2030: incentive and coercion.

Providing incentives to the community:

- Ensuring access to reliable public transport for all categories of users, including vulnerable groups;
- Promoting sustainable mobility, building pedestrian and cycle paths.
- Providing integrated mobility solutions by creating spaces where pedestrian and cycle paths merge with public transport and bicycle garages.
- Encouraging the storage of bicycles on board public transport.
- Elimination of taxes for green vehicles.
- Reduced parking fees for green vehicles.

10. PNRR – NATIONAL RECOVERY AND RESILIENCE PLAN

11. POR – Regional Operational Program (ROP)

12. AFM – ENVIRONMENTAL FUND ADMINISTRATION

Use of coercion
methods:

- Introduction of taxes for some urban roads or in certain areas.
- No access for motor vehicles for some urban roads or in certain areas.
- Additional charging for vehicles equipped with engines below the Euro 5 standard.
- Reducing the number of parking spaces and increasing parking price in the city centre.

The following diagram shows the principles by which traditional road transport planning should be replaced by accessibility and integrated mobility planning:

Integrated mobility strategies
principles

Integrated mobility has the role of finding the compromise between the mobility needs of citizens and the quality of life, respectively the environment in urban space



Starting from the examples of measures adopted in different cities in the European Union, as well as from the measures adopted in metropolitan areas in Romania, several actions can be considered:

- Mobility management measures.
- Measures to renew the vehicle fleet – municipal, private, public transport.
- Measures to improve urban road transport infrastructure, dedicated to public and green transport.
- Coercive measures to reduce private car use in certain sensitive areas.
- Public information and awareness measures on sustainable transport modes.

Each of these measures can have a considerable impact on reducing pollution and greenhouse gas levels, as well as energy consumption.

The measures evaluated in the table below have 2022 as the year of implementation for the calculation of emissions with carryover until 2030 and as a modelling tool an allocated number of reference vehicles.

Measure	SEAP 2020 CO ₂ t emissions	SECAP 2030 CO ₂ emissions	Reduction in %
1 – Implementing pedestrian zones	138.091	133.603	3,25
2– Transport for companies and schools	138.095	117.142	15,17
3 – Sharing systems	138.095	125.380	9,21
4 – Decrease of parking places	138.095	131.949	4,45
5 – Bicycle infrastructure	138.095	126.998	8,04
6 – Green public transport	12.112	10.711	11,57
7 – Park & Ride	138.095	120.406	12,81
8 – Prioritizing public transport and cycling	138.145	122.145	11,58
9 – Renewal of municipal car fleet (including TAXI fleet)	138.095	134.413	2,67
10 – Sustainable mobility at university level	138.095	135.896	1,59
	1.255.013	1.158.643	
Estimated economy 96,370 tons of CO ₂			

4.Climate change adaptation strategy of the Municipality of Brasov¹³

Within the Action Plan for Climate and Sustainable Energy, the assessment on adaptation to climate change has identified several vulnerable sectoral objectives, namely:

- Infrastructure and urban planning
- Transport
- Tourism and leisure
- Biodiversity
- Education, information, and awareness.

To mitigate climate change, it is necessary to promote appropriate local policies, legislative measures applied at the project level, which will contribute to the reduction of GHG emissions.

The sectors addressed and the projects included in the Action Plan for Sustainable Energy 2021-2030 come in support of climate change mitigation:

→ The high energy performance renovation of public and private buildings will contribute to reducing dependence on fossil fuels and reducing vulnerability to the negative effects of climate change.

→ The adoption of clean, safe, and connected mobility as an alternative to the personal car will reduce GHG emissions and increase society's ability to adapt to the expected effects of climate change.

→ The local production of energy from renewable sources will support the promotion of a less polluting transport in the territory, by providing a part of the electricity requirement.

→ Continuous education, information, and awareness campaigns to change individual and collective behaviour, fostering responsibly and proactive involvement in community life.

→ The promotion of prosumer photovoltaic systems for the production of electricity in public buildings as well as in the residential sector will increase the ability to adapt to possible extreme events, ensuring part of the energy needed for cooling systems, necessary due to the constant increase in temperatures in the last decade.

13. Reference project «Green Path to Sustainable Development», www.caleaverde.ro

In the process of adapting to climate change, our community aims at a constant increase in the level of quality of life, aligned with European standards. We aim to grow an environmentally friendly society, that is connected to the rich nature around it, to become one of the most attractive cities for living and in the main destination for natural tourism in Romania.

At the municipal level, five vulnerable sectors were defined, for which objectives and measures were defined¹⁴:

General sectorial objective	Specific objective	Measures
INFRASTRUCTURE AND URBANISM		
1. Reducing the surface area of urban heat islands Brasov by at least 10% until 2020 and at least 50% until 2050	1.1 Stopping the expansion of urban heat islands during periods of drought	1.1.1 Increasing green surfaces 1.1.2 Reduction of industrially polluted areas 1.1.3 Elaboration of restrictive regulations regarding buildings and green surfaces 1.1.4 Reducing the number of paved parking lots 1.1.5 Completing and revising the legislation at the national level in the field of urban planning
	1.2 Reducing the number of landslides and deposits of alluvium in periods of heavy rainfall	1.2.1 Stabilization of unstable slopes, with high activation risk 1.2.2 Development of the rainwater drainage systems
	1.3 Reducing the degree of damage to the facades, structural elements, and buildings as a result of the storms	1.3.1 Increasing financial allocations and the number of people employed in the field of urban planning 1.3.2 Revising the legislation in the field of historical monuments and clarifying the legal regime of buildings
PUBLIC HEALTH		
2. Reducing the number of illnesses and deaths related to climate change by at least 10% by 2020 and by 30% by 2050	2.1 reducing the level of exacerbation of chronic diseases in periods of extreme temperatures, especially among vulnerable people	2.1.1 Expansion of the car park and improvement of ISU Emergency Situations Inspectorate) and County Ambulance Services equipment 2.1.2 Increasing the number of spaces for temporary accommodation of homeless people
	2.2 Reducing the frequency of temporary flooding of streets and basements during periods of extreme rainfall	2.2.1 Ensuring the proper sizing and maintenance of the sewer network
	2.3 Preventing the emergence of infectious disease vectors during periods of extreme precipitation	2.3.1 The introduction of buried sealed bins for waste
	2.4 reducing the level of with suspended dust pollution in periods of wind, storms, and drought	2.4.1 Increasing the area of exclusive pedestrian, increasing the public transport routes, and increasing the number of kilometres of cycle paths (alternative transport solutions)

14. The strategy regarding adaptation to climate change in the Municipality of Brasov, author Marius Cristea, project manager, Stefan Varvari, Expert in development and strategic planning, S.C. Avenza Consulting S.R.L.

General sectorial objective	Specific objective	Measures
BIODIVERSITY		
3. Reducing the area of ecosystems affected by climate change by at least 10% by 2020 and by 30% by 2050	3.1 Prevention of damage to the life cycle of plants and animals during periods of extreme weather phenomena	3.1.1 Strengthening the institutional capacity of the cystoses of protected areas 3.1.2 Studies regarding the evaluation of the vulnerability of different ecosystems and species to the effects of climate change 3.1.3 Forest management adapted to the area and to climate changes
	3.2 preventing the appearance of some invasive species in periods of excess precipitation or heatwaves	3.2.1 Removal of invasive species
TOURISM AND LEISURE		
4. Reducing seasonality in the local tourism sector by at least 20% until 2020 and by 50% until 2050	4.1 Preventing the agglomeration of tourists in the optimal period	4.1.1 Supplementing public transport/special tourist transport in the optimal period
	4.2 Increase the tourist season	4.2.1 Diverse distribution of events in other areas of interest (Multipolar development)/Adaptation of tourist offers 4.2.2 Strengthening the institutional capacity of the Association for the Promotion and Development of Tourism in Brasov County
EDUCATION, INFORMATION, AND AWARENESS.		
5. Increasing the number of residents of the municipality informed and aware of the issues related to the adaptation to climate change by at least 15% until 2020, respectively by 50% until 2050	5.1 increasing institutional and autonomous adaptation capacity to climate change and ensuring appropriate behaviour in the event of a disaster	5.1.1 increasing the level of information and awareness, including through formal and non-formal education regarding adaptation to climate change 5.1.2 Encouraging applied research and the transfer of good practices and know-how in the field of adaptation to climate change.

5. Conclusions

We managed to engage all the types of stakeholders targeted, namely:

- The main Energy & Climate related local stakeholders
- Civil society and Academia
- Experts and Researchers
- Citizens.

The most difficult was to reach the citizens, to engage them and keep them involved.

We managed to go beyond the target set and reaching this high number of participants was possible through the organization of multiple engagement sessions, workshops, consultations, ideation and co-design sessions, as well as public events.

Objectives of the engagement

The aim of the engagement activities we organized refer to:

- Defining the local Sustainable Energy and Climate Action Plan (SECAP) for 2030
- Testing tools and put in practice innovative methods to involve the civil society at all stages
- Developing the roadmap to Climate Neutrality in 2050
- Maintaining the energy sufficiency and climate neutrality on the local agenda
- Empowering circular economy, local production of energy, renewable sources, recycling and reuse of materials
- Raising awareness about the City's Energy Transition
- Generating a change of mindset over the way Energy is produced and consumed locally, of behavior related to sustainability, circular economy, mobility, and clean energy
- Lowering the impact of CO₂ on the environment and on the quality of

The engagement process was supported using several methodologies:

- Stakeholders mapping
- X-Curve
- Reflexive thinking and monitoring
- Participatory co-design
- Empathy maps, role playing
- Ideation, co-creation, prototyping.

5.1. Results of the engagement process

Being a first wave signatory of the European initiative “the Covenant of Mayors” since 2008, the Municipality of Brasov committed to a CO₂ reduction of at least 40% by 2030 and pledged to become climate neutral by 2050.

With the support of the TOMORROW project and through the citizens engagement process, Brasov Municipality increased its CO₂ reduction commitment to 55% by 2030. In this context, the engagement process helped to identify and determine the collective actions of the civil society and the Energy Transition Board members, which can be integrated in the long-term development strategy of Brasov.

5.2. Evaluation methodology

Throughout the project, we have faced many challenges, from the Covid 19 pandemic which affected our way of work and the communication between the members of the Energy Transition Board, to the unforeseen geopolitical developments in Ukraine, one of Romania’s neighboring countries. This impacted the last year of the project, the year of completion of SECAP and of the roadmap to climate neutrality 2050.

The events in Ukraine have had a major impact in the field of energy, with many restrictions but also major financing opportunities for the local public administration. This context determined us to have a more hands-on approach and consider measures that can be implemented in the short term (during 2023 through the NRRP), in the medium term (through Structural Funds remaining to be spent for the period 2014–2020, and planned to be finalized during 2023), and long term (with the launch of the new 2021–2027 Structural Funds).

We have a first project submitted by the local administration in November 2022, due to start in 2023, to produce electricity in a prosumer regime. This project covers 27 education institutions, and it was initially meant to be launched after 2025.

The current situation spurred the local decision-makers to make the reduction of the final energy consumption in all sectors of activity a top priority on their agenda, both from a technical point of view, by identifying the best solutions and from a financial point of view, to reduce the pressure on the local budget caused by the accelerated increase in energy costs. All the above led to the intent, already discussed with the management team of the municipality, to finalize during November the roadmap towards climate neutrality as an Annex to the Action Plan for Climate and Sustainable Energy. This means aligning to the latest legislation in the field of efficient energy use and the production of energy from renewable sources and implementing a calendar of discussions during December and January, that will finalize with the validation by the City Council of the Action Plan, in the first months of 2023. This would represent a strong political commitment that validates the projects identified in SECAP:

- Regarding energy efficiency, a special focus on the building sector, towards implementing buildings with almost zero energy consumption.
- Maximizing the implementation of renewable energies in the prosumer regime and the use of electricity for the decarbonization electricity supply for final consumers. In addition to the project already submitted for prosumers, work is being done to set-up a photovoltaic park, to produce electricity for the municipal services of Brasov City Hall.
- The adoption of a clean, safe, and connected mobility.

BRAȘOV

Planul de Acțiune
pentru Climă și
Energie Durabilă

2030

Adapt the urban policies to the assumed objective of reaching climate neutrality

Secțiuni analizate în PACED



Sector Clădiri și Instalații

Capitolul 1 – 5

Sector Încălzire Centralizată

Capitolul 2 – 5

Producție de energie din SRE

Capitolul 3 – 5

Sector Transport

Capitolul 4 – 5

Brașov 2022 – 2050

Adapt the urban policies to the assumed objective of reaching climate neutrality

Măsuri propuse de populație

Vezi tot

Foaie de parcurs către Neutralitatea Climatică a municipiului Brașov

Află mai mult

Adapt the urban policies to the assumed objective of reaching climate neutrality

Initiate & support information campaigns on Brasov's aim to reach climate neutrality by 2050

Encourage the use of alternative means of transportation (bicycles, scooters etc.) by enlarging the cycling infrastructure with a minimum of 100 km routes at maximum safety standards

Noutăți

Vezi tot



November 9, 2022

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November 9, 2022

Vestibulum ac porttitor magna. Sed vehicula tortor enim, et convallis



November 9, 2022

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November 9, 2022

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November 9, 2022

Vestibulum ac porttitor magna. Sed vehicula tortor enim, et convallis

Brașov’s Transition Team

The Roadmap paving these actions towards climate neutrality was not developed by ABMEE and the municipality behind closed doors. As an essential part of the TOMORROW project, this vision for 2050 was co-created together with citizens and key stakeholders.

Call to action