



ComActivate

Enabling community action for energy sufficiency

ROADMAPS FOR ENERGETIC UPGRADING OF DISTRICTS IN SELECTED NEIGHBOURHOODS

BURGAS

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List of abbreviations

AC	Air conditioning
EU	European Union
HOAs	Homeowners' association
MFABs	Multi-family apartment building
NESR	Neighbourhood Energy Sufficiency Roadmap
NGOs	Non-governmental organisation
PV	Photovoltaic
RC	Resource centre
RES	Renewable energy sources



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1. Introduction

The ComActivate project, funded by the EU LIFE research programme, is a strategic initiative designed to respond to the growing issue of energy poverty across Central and Eastern European countries. The ComActivate project continues the efforts of the ComAct project, implemented between 2020–2024, aiming to improve building energy efficiency in an effort to tackle energy poverty and the effects of climate change.¹ With rising energy prices and widening economic disparities, vulnerable populations are increasingly at risk of becoming unable to afford adequate heating, cooling and electricity.

The project is being implemented in **four selected municipalities across three countries** to pilot innovative and community-based solutions:

- **Bulgaria:** Burgas Municipality
- **Hungary:** Józsefváros Municipality (District 8 of Budapest)
- **Lithuania:** Kaišiadorys Municipality and Elektrėnai Municipality

These municipalities and their pilot areas were selected due to the substantial energy inefficiency of multi-family apartment buildings (MFABs) and the deteriorated condition of many structures, making them priority targets for improvements. Renovation efforts are constrained by a combination of structural, financial, governance and behavioural barriers.

Across Europe, a persistent challenge is the gap between the upfront investment required for building renovation and the financial capacity of individual households. This is particularly difficult in MFABs, where households within the same building may have different² financial circumstances. While some households may be able to finance their share of renovation costs, others may face significant difficulties in covering upfront costs or co-financing requirements. Public funding alone does not always solve this problem, highlighting the need for flexible financing and support mechanisms that can accommodate different financial capacities and enable renovations at building level.

Financial constraints are further reinforced by limited access to information, complex administrative procedures and a fragmented financing landscape. Older people and households with lower income may find it especially difficult to identify suitable renovation measures and funding options. These factors can make the renovation process overwhelming and discourage residents from taking action.

Decades of underinvestment have left much of the housing stock in Bulgaria, Hungary and Lithuania below acceptable energy standards. Nevertheless, building performance does not tell the whole story. Even where energy efficiency improvements have been made in recent years, absolute energy consumption is not going down because of the rebound effect. Household behaviour, must therefore, be considered alongside technical improvements.

1 EU and National Level Policy Analysis and Monitoring, ComActivate, January 2024

2 Baseline Report on the State of the Art of Resource Centres in the Demonstration Sites, ComActivate, April 2024



Another challenge is the legacy of decades of centralised management, which shaped expectations that responsibility for building maintenance and upgrades rests primarily with the state. In many communities, this has contributed to limited initiative at the household level and made collective decision-making more difficult.

For municipalities, addressing these barriers requires more than technical solutions: it requires time, trust, effective communication and local capacity to help residents understand their options, make informed decisions and act together.

Addressing energy poverty therefore requires an integrated approach that combines investment in energy efficiency with accessible financing, straightforward procedures, reliable information and community engagement.

In response to these challenges, ComActivate seeks to empower municipalities through targeted interventions, stakeholder engagement and capacity-building activities. The project supports efforts to reduce energy poverty, improve energy efficiency and energy sufficiency in MFABs, and provides pathways for renovation strategies that integrate renewable energy solutions.

This document, the **Neighbourhood Energy Sufficiency Roadmap** (NESR), is one of the key deliverables of the ComActivate project. It is developed for each participating pilot municipality. The primary focus of this document is MFABs, although NESRs could be applied to a wide range of building types in the future, including public and commercial buildings.



2. Objective of the Roadmap

The NESR provides a practical, locally grounded plan for tackling energy poverty and strengthening resilience in each pilot area. Rather than applying a single template, it is tailored to the socio-economic conditions and the housing stock of each area, so that the guidance is tailored to the specific needs and realities of each of the pilot municipalities.

The primary objective of the NESRs is to define a clear and coherent vision for the **housing stock** in each pilot area, outlining concrete steps, activities and measures to reduce energy demand, improve housing quality and sustainability, and ensure equitable access to adequate housing conditions for residents, particularly vulnerable households. It serves as a strategic tool to facilitate cooperation among key stakeholders through a structured and results-oriented approach. The approach also reflects European Union (EU) requirements, such as those in the Energy Performance of Buildings Directive (EU) 2024/1275, so that each pilot area aligns with the broader strategic goal of achieving a highly efficient and decarbonised building stock. This ensures consistency in implementation and enables measurable progress over time.

2.1 Energy efficiency and energy sufficiency

Energy efficiency and energy sufficiency are the two main pillars of this NESR. They address energy use in different ways:

Energy efficiency. A key component of the EU's strategy to reduce energy consumption, lower costs and achieve climate neutrality by 2050. It involves using less energy to provide the same output or service, thereby minimising energy waste and reducing energy costs and environmental impacts.



Key efficiency measures include:

- Improving a building's foundation and ceiling/roof insulation to enhance thermal performance and reduce heating and cooling demand
- Installing energy-efficient windows, doors and roof hatches to prevent heat loss and air leaks
- Installing solar photovoltaic (PV) systems to generate clean, renewable energy and reduce dependence on the grid
- Implementing smart thermostats to automatically optimise temperature settings
- Upgrading high-consumption products such as heating, ventilation and air conditioning systems and water heaters.

For citizens, energy efficiency interventions offer clear everyday benefits: lower energy bills and warmer and healthier homes. They also reduce dependence on imported energy and exposure to geopolitical tensions and price fluctuations in the energy market. Additionally, energy-efficient buildings are better protected against rising energy costs and are more likely to retain their value.

Energy sufficiency. While energy efficiency reduces energy per unit of service, it does not necessarily reduce overall energy demand. Global energy consumption continues to rise as populations grow, living standards increase and buildings expand. The concept of energy sufficiency focuses on reducing unnecessary energy demand by encouraging people to use only the energy that is genuinely needed while ensuring equitable access, particularly for vulnerable or marginalized populations.



The Intergovernmental Panel on Climate Change defines sufficiency as: *"a set of measures and daily practices that avoid demand for energy, materials, land and water while delivering human well-being for all within planetary boundaries."*

Although energy sufficiency has not been formally adopted as a standalone directive or policy at the EU level (with the exception of France), it appears in many guidance documents, analytical frameworks and academic literature. Across these sources,³ energy sufficiency is generally understood as changing everyday practices of resource use in ways that lower energy consumption without compromising quality of life or creating negative social or environmental impacts.

To better understand and apply the concept, sufficiency measures can be grouped into four categories:⁴

1. **Dimensional sufficiency:** ensuring an energy service matches to its actual purpose (e.g. using a vehicle suited to the travel need rather than one larger or more powerful than necessary, heating only occupied rooms to the temperature required for their specific use, converting an oversized heated basement storage into an unheated bicycle storage area with natural ventilation, eliminating heating demand entirely; using passive cooling strategies, such as external shading and green infrastructure to reduce or eliminate the need for air conditioning (AC), etc)
2. **Cooperative sufficiency:** maximising the shared use of energy services to reduce overall consumption (e.g. car sharing, collective housing arrangements, etc)
3. **Usage sufficiency:** reducing the duration, intensity or frequency of energy-intensive activities and extending equipment lifespan through optimal use (e.g. lowering heating temperatures during unoccupied periods, elevator load management, etc)
4. **Organisational sufficiency:** rationalising the use of space and arranging both physical spaces and human activities to minimise the need for transportation and resources (e.g. designing urban areas to reduce the distances required to access workplaces and essential public services, including the centralised accessible facilities specifically designed to accommodate elderly users and provide various public services within a single location).

Taken together, these four categories reflect a single idea with two boundaries. As a **minimum**, sufficiency guarantees decent living standards for everyone, ensuring that no household falls below the level of energy

3 Source: <https://journal-buildingscities.org/articles/10.5334/bc.458>; https://enr-network.org/wp-content/uploads/Bohnenberger_EnergySufficiency_18.pdf

4 Source: <https://www.enerdata.net/publications/executive-briefing/eu-sufficiency-security-energy.html>

8 Prioritising Existing Buildings for People and Climate, BPIE, 2024

needed for a dignified life. As a **maximum**, it calls for avoiding unnecessary energy and resource use so that consumption stays within planetary boundaries.⁵

When putting sufficiency into practice, a clear hierarchy should guide decision-making.⁶ The first priority is to preserve and make better use of existing buildings, while new construction should be considered only as a last resort and designed according to sufficiency principles. This hierarchy is summarised in Table 1.

Table 1: Hierarchy of sufficiency options: from most to least preferred

Tier	When it applies	Sufficiency solutions	Why it works
Tier 1, most preferred: <i>optimise the existing building</i>	- High heating bills - High summer electric bills for cooling - Vacancies in some flats - Under-occupancy in flats	- Match heated space to actual need - Use passive rather than active heating and cooling solutions - Identify why flats are vacant; bring them back into use - Offer support for flat exchanges (i.e. move into smaller flats)	- Heating only areas of the home actually used - External solar shading rather than/in addition to AC - Enabling and incentivising rightsizing rather than relying solely on efficiency improvements, to reduce the overall energy consumption

⁵ Prioritising Existing Buildings for People and Climate, BPIE, 2024

⁶ Prioritising Existing Buildings for People and Climate, BPIE, 2024

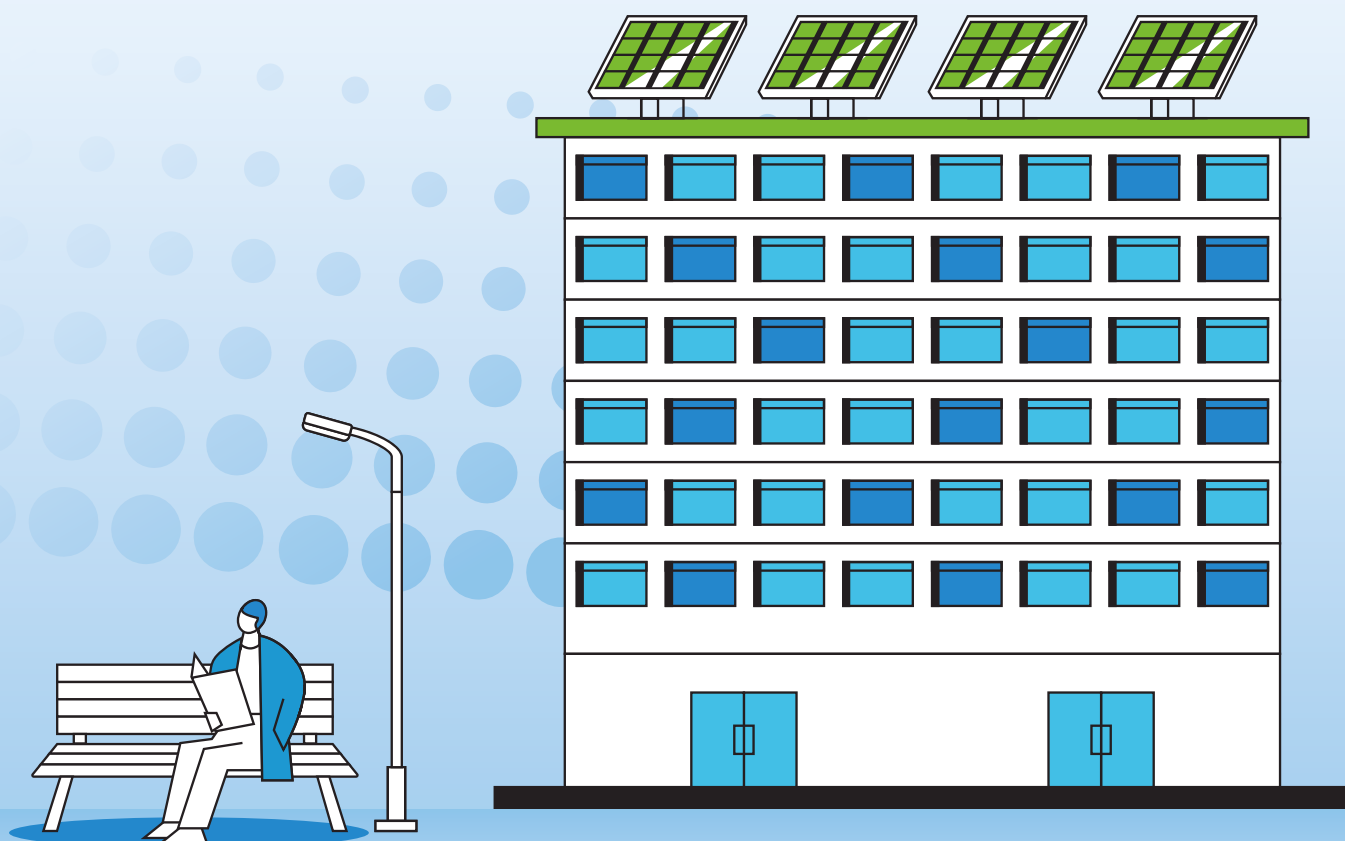
Tier	When it applies	Sufficiency solutions	Why it works
Tier 2: <i>Use existing space and materials before adding anything</i>	● Unused attic space ● Empty commercial spaces on ground floor ● Vacant neighbouring office building ● Nearby building to be demolished	● Convert attic space into additional flats ● Convert unused commercial spaces into flats ● Reuse materials such as bricks, timber, etc	● Reusing existing building structures significantly reduces embodied energy by avoiding the production of new construction materials such as concrete, steel, etc. ● Reusing bricks and timber from demolition avoids energy required to manufacture new materials
Tier 3: <i>Least preferred, but if new construction is necessary, build in the most sufficient way</i>	● Genuine need for new space remains after Tiers 1 and 2 have been fully explored	● Use low-carbon materials (recycled, bio-based insulation, etc) ● Design flexible layouts with movable walls ● Prioritise shared spaces over private ones	● Bio-based insulation such as wood fibre requires far less energy to be produced than conventional foams ● Positioning building to capture sunlight and designing windows to let in right amount of natural light and warmth cuts need for heating and lighting ● Flexible spatial configurations enable a building to be repurposed over time, avoiding large energy cost of rebuilding later

Building on this understanding, the ComActivate project has developed a comprehensive interpretation of energy sufficiency based on the following principles:

- **Equitable distribution:** Reduce energy demand among high consumers while ensuring adequate energy access for vulnerable households (dimensional and cooperative sufficiency at the household level).
- **Behavioural change:** Promote energy-saving habits and discourage unnecessary energy consumption in everyday life (usage sufficiency).

This dual approach recognises that effective energy policy must address both climate goals and human wellbeing.

While each NESR is customised to reflect the unique circumstances of its respective urban area, the methodological approaches proposed in this document are fully transferable to other urban contexts across Europe. As such, they serve as a valuable tool for replication and adaptation in other regions across the EU that face similar energy-related challenges. By sharing best practices and adaptable solutions, the ComActivate project aims to contribute to a fair and inclusive energy transition.



3. Institutional placement of the Roadmap

The Energy Efficiency Directive (EU) 2023/1791 mandates that EU member states must establish a supportive framework for market actors, such as one-stop shops, that would provide residents reliable information, individual technical assistance, and guidance on available financial schemes for energy efficient renovations. Additionally, the Directive on Energy Performance Buildings (EU) 2024/1275 mandates inclusive one-stop shops providing technical assistance to all actors involved in building renovations, including owners, administrative, financial and economic actors, SMEs, etc. By streamlining the renovation process and coordinating both technical and financial support, these one-stop shops, or resource centres (RCs), help to overcome major obstacles, such as a lack of understanding, high upfront costs and complicated administrative procedures.

Their core role is to assist households throughout the renovation journey by offering accessible and tailored services that make energy-saving improvements easier to implement.

The key benefits of establishing a RC for community members (residents), including vulnerable people, and property managers are presented in Table 2. While the benefits for community members also apply for vulnerable people, they require additional attention and tailored support, as highlighted in the table.

Table 2: Key benefits of RC for community members (residents)

BENEFITS FOR ALL COMMUNITY MEMBERS	ADDITIONAL BENEFITS FOR VULNERABLE PEOPLE
● Main point of contact ● Based on clear and reliable renovation advice, residents can make informed decisions ● Professional guidance improves the quality of renovations ● Informed access to funding options ● Guidance on energy-saving measures that improve comfort and living conditions ● Better understanding of energy-saving measures and available support ● Better coordination of neighbourhood renovation projects and stronger resident engagement	● Reduced mental load ● Overcoming information barriers (using understandable language at appropriate literacy levels) ● Resource centre is perceived as a trusted intermediary ● Prevention of exploitation (protection from high-interest loans or unnecessary work) ● Home visits available when needed ● Ensure renovations meet accessibility needs ● Identification of households that need wider support (connection to other social services)

Beyond individual support, RCs also help implement NESRs by engaging residents, providing guidance and translating neighbourhood-level energy strategies into practical actions for all households, including residents with vulnerabilities. Although there are many benefits of energy renovation, there are barriers⁷ that prevent people from engaging in such renovation, such as:

- Lack of understanding of the benefits of measures
- Fear of higher energy costs and getting into more debt
- Stigma associated with receiving free help and subsidies
- Structural barriers related to tenancy type or eligibility for interventions

While NESR provide the strategic vision for neighbourhood transformation, the Resource Centre offer the infrastructure required to realize the vision through trusted relationships, tailored support and community organizing.

Resource centre, Burgas

The Burgas Municipality established its Energy Office, or resource centre (RC), at the beginning of 2023 as an integral component of its administrative framework. The premises are located at the heart of the city in a building owned and managed by the Burgas Municipality. The RC is readily accessible via public transport, pedestrian routes and bicycle paths.

The primary beneficiaries of the RC include citizens, households facing energy poverty, and homeowners' associations (HOAs) in Burgas.

The core services provided by the RC are:

- Details regarding financing support schemes for energy efficiency and photovoltaic (PV) system installations
- Assistance with the compilation of documents required for financing applications
- Organising training sessions and informational days on energy efficiency, energy saving and enhancing the quality of living in MFABs.

The RC operates from Monday to Friday, between 08:30 and 17:15. Services are delivered in person, by phone and e-mail. The RC is currently staffed by one full-time employee. As of April 2024, a showroom for insulation materials and windows has been established at the RC.

Since its establishment, the RC was visited by more than 5,000 people. A significant majority (70%) indicated a preference for building renovation, while 20% were interested in replacing old wood stoves with air conditioners and 10% in PV system installations.

⁷ Assert, D.2.1 Report on the state of the art on energy poverty and disability and relevant indicators

The operation of the RC is directly linked to the Burgas Strategy for Sustainable Energy and Climate 2021–2030 (SECAP) and contributes to the implementation of the following priorities and measures:

- **Priority 1:** Decarbonisation of municipal building infrastructure and municipal facilities
 - Measure 1.1: Conducting campaigns to change the behaviour of citizens with a focus on energy-efficient heating / cooling with energy efficient heating appliances and use of Renewable Energy Sources (RES)
 - Measure 1.2: Develop municipal mechanisms to support energy-poor households
- **Priority 4:** Support for changing energy behaviour
 - Measure 4.1: Organise and implement info campaigns

When financial resources are available for measures like energy efficiency improvements and PV systems installation, the RC proves itself to be extremely valuable. It is common for individuals and HOAs to struggle with interpreting guidelines and assembling required materials, including application forms and budgets, and this is where the RC plays a crucial supportive role. The RC Burgas is recognised nationally and has been chosen by various ministries to host informational events for energy efficiency programs.

One of the main challenges this RC has faced is recruiting suitable qualified staff,⁸ despite offering salaries slightly above the average. The role requires proactive, initiative-driven individuals who actively engage citizens, identify their needs and propose relevant trainings and other events tailored to address those needs.

Homeowners' associations

The Condominium Property Management Law⁹ regulates the establishment and operation of HOAs in Bulgaria. Under the law, a HOA is established automatically once a building is completed and contains at least three separate units (such as apartments or offices) owned by more than one person. In such cases, the property is legally considered to be under condominium ownership. No explicit consent from the owners is required, as the status is defined by the law. Regardless of the chosen management structure, registration of the HOA in the local municipality is mandatory.

Forms of management

Owners can choose between two types of structures:

1. **General Assembly:** This is a standard form where owners make decisions and delegate the execution of those decisions to a Building Manager or a Managing Board.
2. **Association of Owners:** A legal entity created primarily for applying for European projects or energy efficiency renovations.

⁸ The RC faced challenges in engaging a suitable employee, as the candidates, despite their strong qualifications, did not fully meet the RC's established performance expectations.

⁹ Source: <https://lex.bg/laws/ldoc/2135614516>



Cooperation between HOAs and the RC

HOAs are the main beneficiaries of the services provided by the RC. National and EU programmes are available to HOAs for the purpose of renovating MFABs and installing renewable energy systems. The RC's main responsibility involves providing information and administrative assistance for the preparation of applications to EE programmes. Since businesses¹⁰ generally have greater financial and administrative capacity, they usually approach the RC only to obtain information about the open calls. After that, they independently prepare the required project documentation, often by hiring external consultants. Unlike private companies, residents living in condominiums typically do not have financial resources to hire a consulting company to prepare project proposal and documentation. Given that, they rely on the services of the RC for this support.



10 HOAs refer not only to homeowners but also to the owners of commercial or business premises, as some buildings may include such spaces alongside residential units.

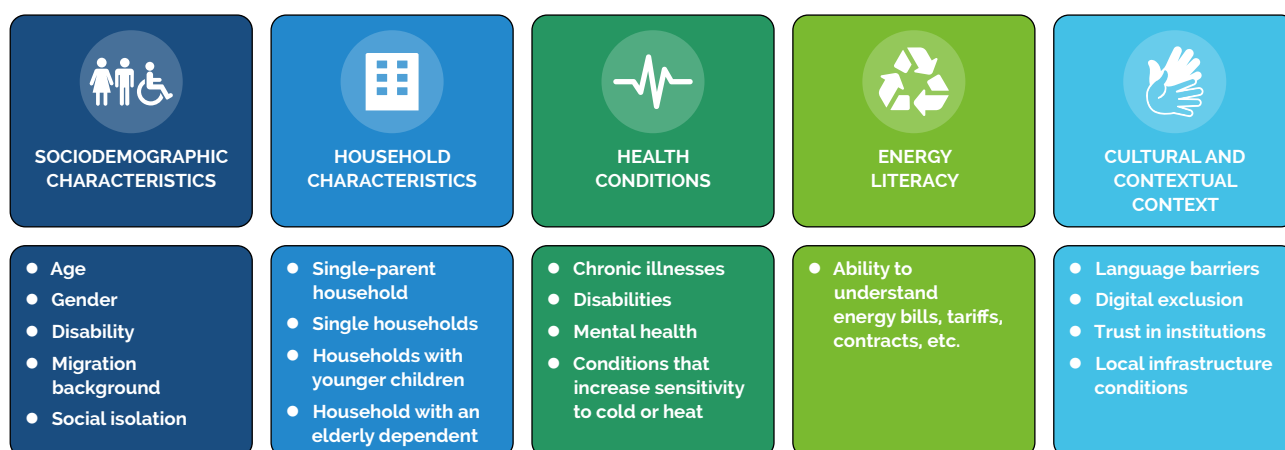
4. Energy vulnerability

While the assessment of building performance and the design of renovation measures rely primarily on technical expertise, addressing energy vulnerability demands a human-centred approach. In the context of energy poverty, vulnerability encompasses the social, economic, demographic and housing-related factors that increase the risk of households facing insufficient access to affordable and adequate energy services.¹¹

Energy vulnerability should not be understood as an inherent characteristic of individuals or groups, but rather as the results of the contextual conditions that shape households' capacity to secure essential energy services, cope with energy-related challenges, and adapt to changing circumstances. These conditions are multiple and frequently intersecting, including factors related to income, age, health, housing tenure, building characteristics and other context-specific factors. While low income is the most commonly cited factor, it is rarely the only one. Vulnerability typically emerges where several of these factors overlap and reinforce one another. Understanding vulnerability in all its dimensions is therefore a precondition for targeting support accurately, so that measures reach the households where disadvantage compounds rather than those who are simply easiest to identify.

Dimensions of energy vulnerability. Energy vulnerability is defined by a range of interconnected dimensions that shape households' capacity to secure essential energy services and to access available support. These dimensions include economic, demographic, health-related, social and housing-related factors.

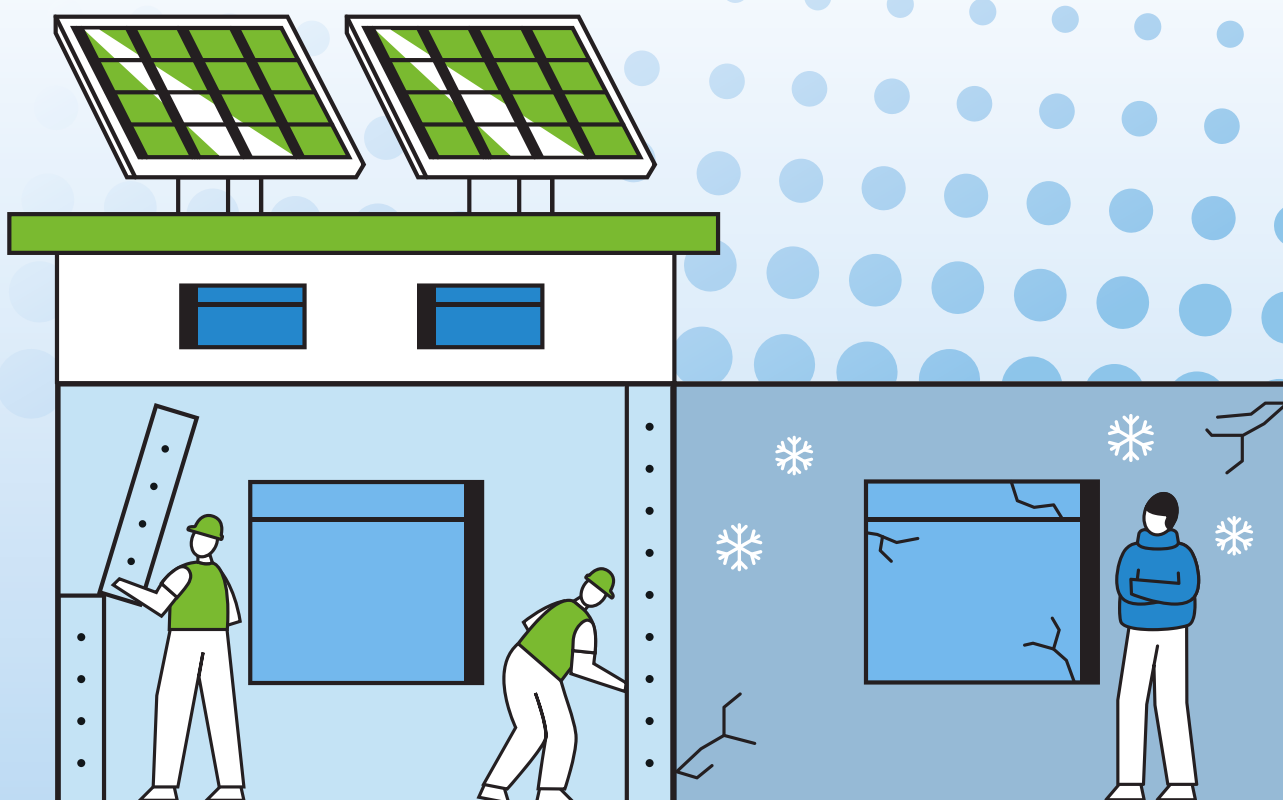
Figure 1: Key dimensions of vulnerability that shape access to essential energy services and available support¹²



11 EPAH Guidelines, Addressing Vulnerability & Equity in Energy Poverty Action, 2026

12 EPAH guidelines, Addressing vulnerability & equity in energy poverty action, 2026

Energy poverty. When vulnerability factors, such as economic, infrastructural and contextual dimensions accumulate and exceed a household's adaptive capacity to overcome energy-related barriers, the household may experience energy poverty. Energy poverty¹³ is defined as a condition experienced by households unable to secure sufficient energy services, encompassing thermal comfort, illumination and appliance operation, required for maintaining physical health, wellbeing and social participation. The impact of energy poverty may also extend to other household members (e.g. caregivers of people with disabilities), who may face stress and fatigue when providing support in poorly resourced households.¹⁴



¹³ https://www.researchgate.net/publication/259543840_Energy_poverty_in_the_European_Union_Landscapes_of_vulnerability

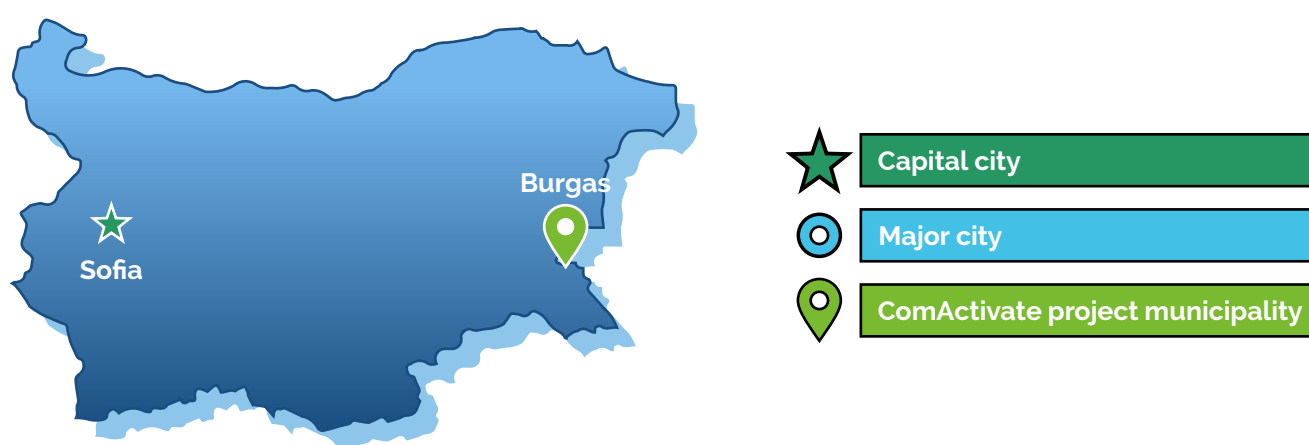
¹⁴ ASSERT, D2.1 Report on the state of the art on energy poverty and disability and relevant indicators, 2025

5. Local context

Burgas is the second-largest city on the Bulgarian Black Sea Coast and the fourth-largest city in Bulgaria after Sofia, Plovdiv, and Varna. The city is the capital of Burgas Province and an important industrial, transport, cultural and tourist centre.

The Municipality of Burgas covers 14 towns and villages, with Burgas city its administrative centre of the municipality is Burgas city.¹⁵

Figure 2: Overview of Bulgaria and ComActivate project municipality



Population. The overall Burgas population stands at 198,593 residents, consisting of 93,792 (47.2%) men and 104,801 women (52.8%), indicating a slightly larger female population. The 25–54 age group makes up the largest share of the age structure at 43.4%, which represents the working-age population. Among older residents, 12.7% are aged 55–64 years, 11.7% are 65–74 years, and 7.3% are 75 years and above.

The economically active population totals 87,689, with men accounting for 51.9% and women 48.1%. Unemployment is relatively low. The total number of unemployed is 2,082 with 1,129 men and 953 women.

Education. In Burgas, there are five universities with a total of 6,088 students, of whom 2,352 are men and 3,736 women. As one of the few Bulgarian municipalities that have implemented steady educational programme development policy, Burgas has been recognised nationally for several consecutive years for being one of the leading municipalities in the field of knowledge.¹⁶

Business landscape. In Bulgaria, Burgas stands out economically due to its key role as an industrial and logistics hub, boasting the country's largest port and a thriving tourism sector.

¹⁵ Source: https://papers.iafor.org/wp-content/uploads/papers/iice2022/IICE2022_62027.pdf

¹⁶ https://papers.iafor.org/wp-content/uploads/papers/iice2022/IICE2022_62027.pdf

Key economic sectors are:

- Logistics and transport: The Port of Burgas serves as a key centre for international trade. Burgas Airport serves the southeastern region of Bulgaria, facilitating tourism and trade.
- Industry and manufacturing: The region hosts heavy industry, most notably LUKOIL Neftohim Burgas, which stands as the largest oil refinery on the Balkan Peninsula. Other significant sectors include chemical fibre production, mechanical engineering, and fish processing.
- IT and innovation: While still developing, the tech sector is growing through initiatives like the ICT Cluster Burgas. The city is also investing in a new scientific campus with guidance from the European Investment Bank.
- Tourism and Services: Burgas leads the country in tourism revenue, though the sector remains highly seasonal.
- Industrial zones: The city offers modernised sites such as the Industrial and Logistic Park Burgas, providing ready-to-go solutions for small and medium-sized enterprises.
- Financial stability: The municipality maintains high financial independence, and investment activity per capita remains well above the national average.
- Tax system: Businesses benefit from Bulgaria's favourable 10% flat corporate tax rate, although local taxes in Burgas are slightly higher compared to other regions.

Housing stock. The building stock in Burgas consists of about 1,500 buildings, with 91,258 apartments. A substantial majority (80%) were built before 1990. These buildings have poor energy performance (energy classes E, F and G) and face multiple challenges, including:

- Physical deterioration of certain building elements (such as connections at balcony railings, roof panels, etc.) due to the lack of systematic technical maintenance over the years
- Poor condition of buildings' elements, including roofs, damaged waterproofing and drainage system, deteriorated façades, old window frames and glazing, etc.

There is a direct correlation between general poverty and energy poverty. The country has high levels of inequality, poverty and limited budgetary opportunities. On average, Bulgarian households spend more than 75% of their income on food and energy, compared to an EU average of 45%. This predetermines the lack of investments for professional maintenance of the building, implementation of integrated and complete energy efficiency measures on the building, and the replacement of heating and cooling systems in the home.

Another reason for low energy efficiency is the lack of awareness on energy consumption, combined with insufficient financial resources to carry out the necessary repairs or invest in efficient heating appliances. Additionally, there is often reluctance to take action, as a persistent perception remains that the state should bear primary responsibility for such improvements. Furthermore, consumers are generally unable to monitor their energy consumption in real time, receiving information only at the end of the month when the utility bill is issued.

6. Housing

Construction periods of MFABs. Around 80% of the building stock in the district was built pre-1990.

Energy efficiency status. The buildings fall within energy classes E, F and G, indicating low energy efficiency, higher operational costs, and greater environmental impacts.

Recent renovations on energy efficiency. Between 2018 and 2022, 88 households in eight MFABs on different streets¹⁷ underwent full refurbishment, including façade and roof insulation, replacement of windows and doors, installation of energy-efficient internal lighting and insulation of basement ceilings. Energy performance improved in all buildings, with most upgraded from E to B class, while others improved from E to C and from D to C, reflecting a significant enhancement in overall energy efficiency. Nevertheless, many people implement energy efficiency measures in their apartments, such as wall insulation, windows replacement; however, these activities are not reported and registered.

Between 2024 and 2026 another 30 MFABs (about 1800 families) have been completely renovated and reached energy class A. In August 2026, 39 more MFABs were approved for renovation.

Subsidies for renovations. Currently, the following programs for financing EE measures and PV installation are available to MFABs and households:

- **Renovation of MFABs**

Since 2016, the government in cooperation with the municipalities and HOAs invested about 5 billion leva (approx. EUR 2.56 billion) for renovation of MFABs. Grants are 100% and cover the implementation of energy efficiency measures for the whole building, including facade insulation, windows replacement, roof repair and insulations, and replacement of lightning in shared areas. The implementation of these measures results in MFABs achieving energy classes B and A. With more than 300 completely renovated private MFABs, Burgas holds the top position in the country.

- **Replacement of coal/wood heating stoves with energy-efficient heat pumps / pellet stoves**

Since 2022, Burgas Municipality has undertaken initiatives, funded by several EU projects, to substitute outdated heating devices with new energy-efficient air conditioners or pellet stoves. To date, approx. 2,800 outdated heating devices have been replaced and another 4,250 households will have their devices replaced by the end of 2028.



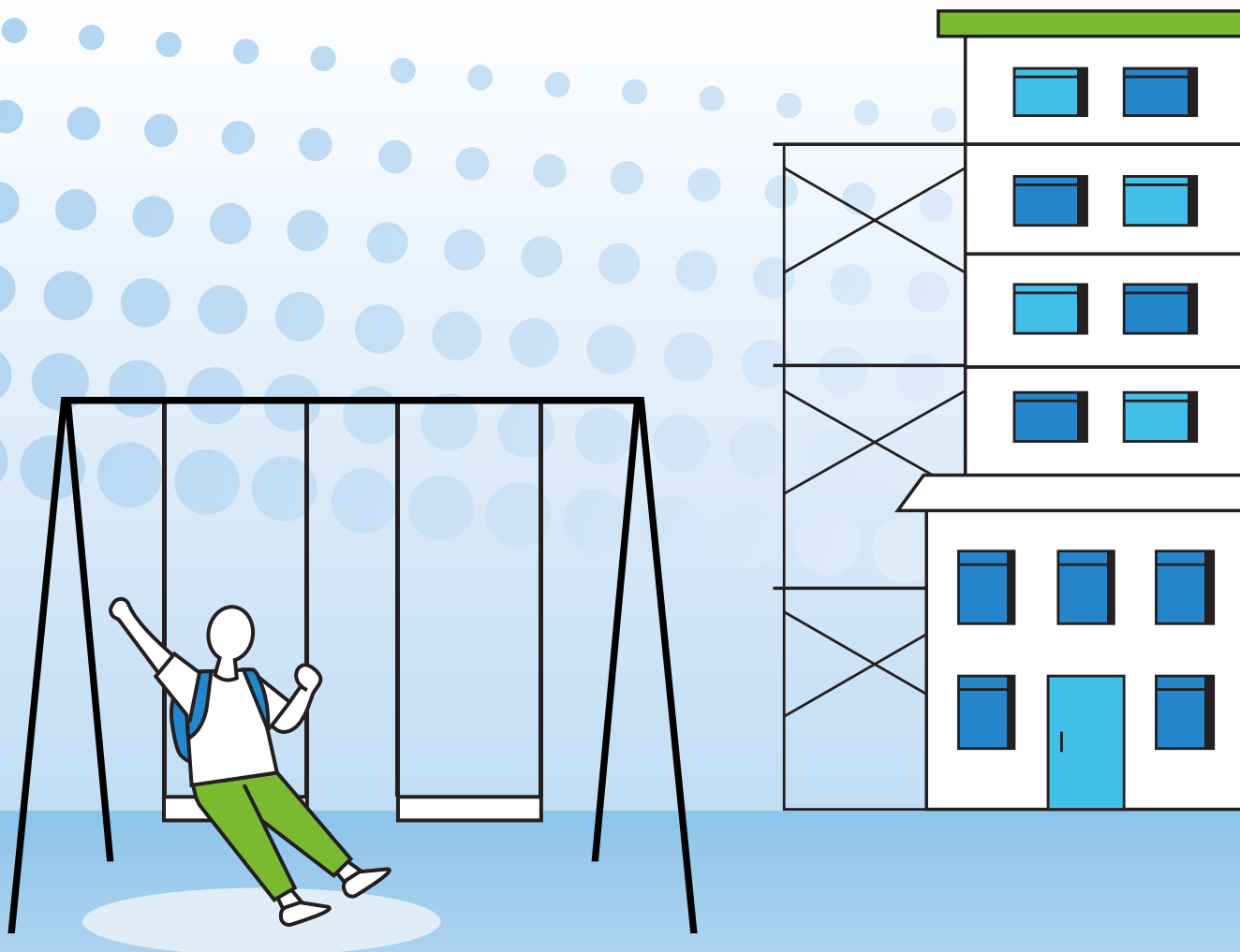
17 The renovations were carried out at the following streets: Han Krum No.11 and No. 13; Slivnitsa No. 20; Sheynovo No.12 and 29; Sveti Kliment Ohridski No. 25; Gladston No. 52; and Sveti Patriarh Evtimii No. 76.

- **Installation of photovoltaic systems**

In 2024, a programme¹⁸ for installation of PV systems for households was opened, financed by Bulgaria's National Recovery and Resilience Plan.¹⁹

- **Bulgaria's Social Climate Fund**

Bulgaria's Social Climate Fund is anticipated to launch in the second half of 2026. The budget allocated for this is EUR 2.28 billion, of which EUR 1 billion will be available for the implementation of energy efficiency measures, with an emphasis on energy-poor households.²⁰



18 Since citizens applied directly to the respective institution, the total number of households covered by the programme is unknown.

19 <https://build-up.ec.europa.eu/en/news-and-events/news/eur-123-million-make-bulgarian-homes-more-energy-efficient/>

20 <https://bankwatch.org/blog/bulgaria-s-opportunity-to-address-energy-and-transport-poverty-the-social-climate-fund-challenge>

7. Pilot area

The pilot area, Vazrazhdane, is a neighbourhood in Burgas, located fairly close to the city centre. The district is bordered by major roads and is near transport hubs (e.g. bus lines, railway), making it very well connected. The city overall has a humid subtropical climate with maritime influence plus some continental traits. Summers are long (mid-May to late September) and warm to hot; the region experiences mild winters and snow is rare and doesn't last.

The central part of the city and the Vazrazhdane residential district are characterised by predominantly low- and medium-rise buildings. There are many old buildings dating back to the city's founding, most of which are cultural monuments. However, in addition to the historic part of the centre, the area has many apartment buildings (5–6 storeys) from the last 20 years, which has significantly densified the urban structure and resulted in a high population density.

In terms of the built environment, the area consists of older panel and brick buildings as well as newer residential complexes. This area is well-equipped with schools, kindergartens, shops, restaurants and cultural institutions (opera, theatre, youth centre, etc.) However, it is heavily urbanised and lacks parking spaces and green areas.

Compared to peripheral areas, this area has relatively high property prices, especially for newer/renovated housing. The neighbourhood is desirable for people who want to be near central Burgas but still in a quieter, residential environment.

Figure 3: Delineation of the pilot area



Figure 4: Overview of the pilot area and its surroundings, with selected buildings highlighted in beige, orange and red



8. Findings from the technical survey of the pilot area

The target neighbourhood in Bulgaria, part of the district, is part of Burgas, measuring approximately 1.00 by 0.5 km and covering an area of approximately 0.6 km². It includes 738 residential buildings, most of which are smaller MFABs, closely packed side-by-side and sharing outer walls, with small inner yards or gardens and narrow streets between them. Beside such buildings, there are a few dozen large residential buildings (residential blocks) with several entrances each, separated from other buildings by parks, sport terrains and parking spaces.

Table 3: Overview of Burgas building stock, current state

Buildings	-	738
Heated area, total	m ²	718,049
Heated area, average per building	m ²	973
Heat required for heating, total	kWh/a	58,251,437
Heat required for heating, average per m²	kWh/m ² a	81.12
Small buildings (≤500 m²)	-	162 (22%)
	m ²	61,104 (9%)
	kWh/a	6,404,173
	kWh/m ² a	104.81
	tCO ₂ /a	861.78
	tCO ₂ /m ² a	0.014
Mid-sized buildings (501–1,999 m²)	-	531 (72%)
	m ²	498,625 (69%)
	kWh/a	42,612,058
	kWh/m ² a	85.46
	tCO ₂ /a	5,934.76
	tCO ₂ /m ² a	0.012
Large buildings (≥2,000 m²)	-	45 (6%)
	m ²	158,320 (22%)
	kWh/a	9,235,206
	kWh/m ² a	58.33
	tCO ₂ /a	2,546.89
	tCO ₂ /m ² a	0.016

Owing to the area's mild climate and hot summers, apartments (in some cases, entire buildings) are heated and cooled by using split and multi-split air conditioners. They are used to heat or cool individual rooms and spaces inside apartments, while common spaces within buildings remain without air conditioning. For small buildings, outside units are located in inner yards, on terraces and balconies, or on roofs. Several brand-new buildings are heated/cooled by using heat pumps. Electricity provides the energy source for all of these, and almost all air conditioners are inverters. According to information collected during site visits, district heating is available but not extensively used. The system is old, partially refurbished, and residents pay for the energy spent, but at a building level, rather than for their own apartment's energy consumption. Electricity is used for the lighting of residential and common spaces in buildings, as well as for the preparation of domestic hot water and all appliances.

Implementation of any RES measures makes sense only if buildings are fully insulated, i.e. with wall, ceiling/roof and floor/basement insulation, as well as with new windows and doors.

Table 4: Overview of Burgas building stock after implementation of energy efficiency measures

Heat required for heating, total	kWh/a	29,286,018
Heat required for heating, average	kWh/m ² a	40.78
Small buildings (≤500 m²)	kWh/a	3,106,504
	kWh/m ² a	50.84
	reduction %	51.50
	tCO ₂ /a	419.84
	tCO ₂ /m ² a	0.007
Mid-sized buildings (501–1,999 m²)	kWh/a	20,754,665
	kWh/m ² a	41.62
	reduction %	51.30
	tCO ₂ /a	2,893.84
	tCO ₂ /m ² a	0.006
Large buildings (≥2,000 m²)	kWh/a	4,424,850
	kWh/m ² a	34.27
	reduction %	41.26
	tCO ₂ /a	1,491.65
	tCO ₂ /m ² a	0.009

In the reports on possibilities for energy production from renewable sources needed for energy autonomy or independence of target districts, various renewable sources have been analysed and considered to achieve sustainable and independent energy supply after implementation of energy efficiency measures, instead of the natural gas and fossil-fuel based electricity systems currently used. It has been suggested to keep current ways of heating by inverter split-system air conditioners and heat pumps. Through installation of PV

panels on rooftops and inverters within the buildings, with the average utilisation of a relatively modest 25% of the roof area, it would be possible to achieve energy sustainability for the entire target neighbourhood.

Considering that baseline assessment and proposed energy efficiency measures are already covered and included in building stock (with all details), the next step would be prioritisation and selection criteria. Based on numbers presented in Table 3 and Table 4, it would be reasonable to start implementation for mid-sized buildings. Largest by number and heated area, and accommodating most residents, they would provide an effective start. In addition, many of these buildings are built in rows along the streets, therefore effectively reducing investment. Smaller buildings would require smaller investment, but the expected impact would be smaller too, involving fewer residents. Conversely, due to possible legal reasons in conjunction with large numbers of residents, implementation for large buildings could be somewhat problematic. Therefore, the latter two could be included in later stages of renovation.

Providing an implementation timeline is difficult, as it includes many mutually connected and intertwined steps. Preparation could take 6–12 months, and includes coordination with HOAs and verification of legal documentation and ownership. Residents should acknowledge that implementation of the RES measures makes sense only if all the EE measures are implemented. Technical documentation and procurement procedures could be made in stages. Implementation of measures, i.e. actual works on buildings, could take up to five years to complete, when considering the number of buildings and available resources, weather, and other influencing factors.

There are many key actors to be involved in this process, some of them being HOAs, the Municipality of Burgas (technical assistance, social programmes and co-funding support), construction companies, and electricity distributors/operators (for PV grid connection). With their joint work and assistance to residents, a financing plan and analysis can be made, including municipal and EU-funded subsidies, alongside "green" and other loans or other co-financing programmes.

After implementation of measures, monitoring and verification should last at least 10 years.



9. Vision for the pilot area

Burgas Municipality signed the Covenant of Mayors initiative in 2009, then joined the Global Covenant of Mayors for Climate and Energy in 2020. This initiative brings together local authorities in the EU in a voluntary commitment to implement measures and projects promoting sustainable energy development and combating climate change. Its objectives include improving energy efficiency, increasing the share of renewable energy, and reducing greenhouse gas emissions by 2050, as defined by the Paris Agreement.

The main objectives of the initiative are:

- Reducing greenhouse gas emissions
- Increasing resilience and adapting to and mitigating the adverse impacts of climate change
- Combating energy poverty as a key action to ensure a just transition

In order to achieve the commitments made by Burgas Municipality, the local administration has identified energy efficiency and the implementation of renewable energy sources as key priorities. To a large extent, these priorities have been achieved regarding public buildings. On the other hand, the administration, well aware of the needs of its citizens, is trying to provide full institutional support to the citizens of Burgas who are willing and eager to improve the energy efficiency of the buildings in which they live.

Taking into account the pace of renovation of MFABs over the years, as well as the political commitments of the Bulgarian state, Burgas Municipality has set the following goals for the Vazrazhdane neighbourhood to meet by 2050:

- 50% of buildings are expected to achieve energy class A, reflecting a significant improvement in overall energy performance and building efficiency standards.
- In parallel, 70% of electricity consumption is projected to be supplied from RES, supporting the transition toward a low-carbon and more sustainable system.

9.1 Goals for the pilot area

The following goals were identified:

- **Promote awareness and knowledge of lower consumption habits through engagement activities**
- **Energy efficiency in buildings**
 - Complete renovation of 20 MFABs to achieve energy class A by year 2030
 - Complete renovation of 200 MFABs to achieve energy class A by year 2040
 - Complete renovation of 500 MFABs to achieve energy class A by year 2050
- **Photovoltaic installations**
 - 500 MW photovoltaic installations built by 2030
 - 1.5 GW photovoltaic installations built by 2040
 - 3 GW photovoltaic installations built by 2050

A detailed overview of defined activities has been presented in Table 5.



Table 5: Overview of defined activities and responsibilities

Objective	Activities	Lead actors	Supporting actors	Target group	Timeline
Energy efficiency in buildings					
Financing and incentives	Gather and prepare comprehensive information regarding funding opportunities and subsidy schemes available to residents	RC HOAs	Burgas Municipality	Residents	1 year
	Secure funding through EU and other program	RC	Burgas Municipality	Residents	1 year
	Organise informational days regarding funding opportunities, energy efficiency and energy saving	RC	HOAs Burgas Municipality	Residents	Continuously
Energy audit and assessment	Conduct energy audits of MFABs to identify the most effective renovation measures	External experts	RC Burgas Municipality	-	1 year
	Identify shared areas (storage rooms, basements) to reduce	External experts	RC	Residents	1 year
	heated volume or repurpose for community use	RC	Burgas Municipality		

Objective	Activities	Lead actors	Supporting actors	Target group	Timeline
Dissemination of information²¹	Inform residents about the audit's findings	RC	HOAs External experts	Residents	1 year
Renovation plans	Develop building-specific renovation plans	External experts	RC Burgas Municipality	Residents	2 years
	Require contractors to demonstrate how proposed designs apply energy sufficiency principles by minimising energy demand ²²	External experts	RC Burgas Municipality	Residents	2 years
Communicate renovation proposals	Presentation of renovation proposals including plans, budgets and timelines	RC	External experts Burgas Municipality	Residents	2 years
Increase residents' awareness and knowledge on energy-efficient and energy sufficient practices	Conduct workshops for residents on energy saving and provide guidance on energy-efficient and energy sufficiency lifestyles	RC HOAs	Burgas Municipality	Residents	Continuously
Evaluate renovation proposals	Review renovation proposals (planned measures), gather residents' feedback, and address concerns	HOAs	RC	Residents	2 years

²¹ To ensure accessibility for vulnerable groups, particularly those with chronic illnesses or mobility impairments, information should be provided through multiple communication channels.

²² For example: relocate light switches to zones with window access



Objective	Activities	Lead actors	Supporting actors	Target group	Timeline
Outline the project scope	Specify technical requirements and standards; set timeline and budget expectations	HOAs	RC	-	2 years
Identify potential contractors	Review portfolios, past projects and experience	HOAs	RC	-	2 years
Evaluate proposals	Review contractors' proposals, check licences and certifications, assess methodology and work plan	HOAs	RC	-	2 years
Negotiate and finalise contract	Agree on scope, price, timeline; define payment terms and penalties	HOAs	RC Burgas Municipality	-	2 years
Implementation of renovations	Carry out planned renovations (façade, roof and basement insulation)	Contractor(s)	Construction supervisor (RC)	-	3 years
	Install energy-efficient lighting and smart meters	Contractor(s)	Construction supervisor (RC)	-	3 years
Monitoring	Monitor energy performance post-renovation	External experts	RC	-	4 years
Certification	Certify buildings as energy class A	External experts	RC	-	4 years
Photovoltaic installations					
Site assessment and feasibility studies	Identify suitable MFABs (rooftops)	External experts	HOAs RC	-	1 year



Objective	Activities	Lead actors	Supporting actors	Target group	Timeline
Access to financial support opportunities	Gather and prepare comprehensive information regarding funding opportunities and subsidy schemes available to residents	RC HOAs	Burgas Municipality	-	1 year
	Organise informational days regarding funding opportunities	RC HOAs	Burgas Municipality	-	Continuously
Financial support	Apply for government or EU funding	HOAs	RC Burgas Municipality	Residents	1 year
Dissemination of information	Inform residents about the studies results	External experts RC	HOAs	Residents	1 year
Outline the project scope	Specify technical requirements and standards; set timeline and budget expectations	HOAs	RC Burgas Municipality	-	2 years
Identify potential contractors/suppliers	Review portfolios, past projects and experience	HOAs	RC Burgas Municipality	-	2 years
Evaluate proposals	Review proposals, gather residents' feedback, and address concerns	HOAs	RC	-	2 years

Objective	Activities	Lead actors	Supporting actors	Target group	Timeline
Negotiate and finalise contract	Agree on scope, price, timeline; define payment terms and penalties; technical specifications, warranties; installation and safety standards	HOAs	RC Burgas Municipality	-	2 years
Planning and permitting	Obtain necessary permits and approvals	Contractor	RC	-	3 years
Installation	Install rooftop PV systems; integrate battery storage where feasible	Contractor	HOAs RC	-	3 years
Grid integration and smart management	Connect PV systems to the local grid	Contractor	HOAs RC	-	3 years
	Install smart inverters and energy management systems to optimise systems	Contractor	HOAs RC	-	3 years
Monitoring and maintenance	Monitor system performance and ensure reliability	Contractor	HOAs RC	-	3 years

9.2 Tailored outreach and communication

Effective communication is not an additional aspect of the NESR, but rather its cornerstone. Regardless of funding or technical quality, no renovation initiative will succeed if the target population neither understands it nor feels sincerely considered.

This chapter outlines a NESR approach to outreach and stakeholder/citizen engagement that is organized around five interrelated pillars:

- Language-accessible information
- Communication through culturally and locally appropriate channels
- Trust-building activities
- Continuous two-way dialogue
- Ongoing monitoring and adaptation

These five pillars form a communication framework designed to reach all residents of the neighbourhood, regardless of their language, age, digital access or prior experience with public programmes. At the same time, the framework is built to adapt continuously to changing needs and circumstances, ensuring that residents are engaged as active partners rather than passive recipients.

Language-accessible information. The starting point for any communication strategy is an assessment of the audience's capacity to understand and engage with the message. Where neighbourhoods have a diverse linguistic composition, the answer cannot be taken for granted.



All communication materials (leaflets, frequently asked questions, application forms, workshop handouts) need to be produced in Bulgarian as the primary language. Where there is a significant presence of other language groups, equivalent versions should also be made available in those languages.

To ensure accessibility, all materials need to be written in plain language, using clear, concise and easy-to-understand wording while avoiding complex sentence structures, technical jargon and ambiguous terms. Once the content has been simplified and finalised, it can then be translated into other languages.

NOTE

Messages should be tested rather than assumed to resonate

- Where technical and legal terms must appear, they should be followed by a plain language explanation in parentheses.
- Before anything is finalised or shared, materials must be reviewed by community individuals (volunteers) from each language group.
- Every key message (energy savings, eligibility for subsidies, application deadlines and contact details) should be supported with simple visual icons, so the information is accessible for those with lower literacy levels.

Communication through culturally and locally appropriate channels. A communication strategy that relies solely on one channel will consistently fail to reach the populations that need it most. The NESR combines traditional and digital communication channels, aiming for both broad outreach and meaningful engagement.



- **Community meetings:** Meetings are scheduled at times that accommodate working adults, elderly residents and parents with school-age children. These meetings are held both at the RC and within community spaces across the neighbourhood, if convenient for the residents and the specific circumstances.
- **Focus groups:** Focus groups are a structured form of small-group discussion used to gather insights, opinions and perceptions from people who may share similar experiences or challenges such as tenants, youth, elderly residents, etc. By bringing together participants with similar backgrounds, this approach encourages more open discussion and allows a safe environment where all participants feel comfortable contributing.
- **Door-to-door visits:** This approach is used when targeting vulnerable groups as it enables direct, personal and trust-based interaction with people who are often difficult to reach through conventional communication channels. Many vulnerable groups (e.g. elderly people, low-income households, socially isolated individuals, people with limited digital access, etc.) may not participate in public meetings or actively seek information about services and support mechanisms.
- **Printed materials:** Materials need to be distributed and made available for residents to pick up at the RC and frequently visited locations within the neighbourhood. This may include community centres, public utility company premises, local shops, residential building entrances, etc. Placement of materials take into account the daily movement and habits of residents to maximise visibility and accessibility.
- **Digital outreach channel:** Channels such as SMS or mobile applications (e.g. WhatsApp) are an effective and low-cost communication channel for wider outreach at neighbourhood level. Since mobile applications are already widely used in many communities, they provide a familiar and accessible platform for communication. However, when using such applications an administrator respects privacy and data protection principles such as obtaining participant consent, limiting the sharing of personal information, and clearly communicating the purpose and rules of the group.

Trust-building activities. Important preconditions for effective communication such as language accessibility and the use of appropriate communication channels are not sufficient to establish trust. In communities that have experienced failed promises or administrative complexity, trust must be built through consistent, transparent and open dialogue.



The NESR trust infrastructure is based on three elements:

1. A credible intermediary institution
2. Community knowledge sharing
3. Meaningful participation

Credible intermediary institution: the RC as a trusted intermediary. Its role is not only to distribute information but to accompany residents through the renovation process from first enquiry to project completion. Specific functions include:

- **Home visits:** Representatives of the RC visit households at their request, assessing the building's situation, explaining eligible measures, and walking residents through the application process.
- **Personalised technical advice:** Each household receives advice tailored to their specific building type, tenure situation and financial circumstance.
- **Follow-up:** The RC proactively follows up with households that expressed interest but have not yet progressed, identifying and addressing barriers rather than waiting for residents to re-engage.

Continuous two-way dialogue. This pillar represents the most transformative change to traditional public communication approaches. Traditional communication method is predominantly one-way and passive, focusing on sharing, preparing and distributing materials to a public. The NESR takes a different approach by engaging residents as active participants in shaping their neighbourhoods.



Before any outreach activities begin, a stakeholder mapping exercise should be carried out to identify the full range of stakeholders who may either support or hinder renovation efforts. This extends beyond apartment owners and tenants and includes:

- Vulnerable groups: older residents living alone, energy-poor people, people with disabilities, etc.
- Community intermediaries: trusted individuals with informal influence within the community, such as religious leaders, respected local figures, social workers, school directors, etc.

Open dialogue sessions should be held regularly with the primary goal of hearing from residents rather than presenting information to them. These sessions should begin with a brief project update, leaving most of the time for residents to share their views, concerns and suggestions. Facilitation needs to be conducted by trained professionals who can create an environment that prioritises listening, encourages participation and ensures that all voices are heard. During these sessions, concerns raised need to be documented exactly as expressed, ensuring that their specificity are not diluted through paraphrasing. Residents who raised specific concerns need to receive individual follow-up from the RC.

NOTE

Fostering ongoing conversation

Research on public participation²³ shows that residents who feel genuinely heard are more likely to trust decision-making processes and maintain engagement even during challenging periods

Monitoring and evaluation. A communication strategy without systematic evaluation is only a plan that hopes to succeed. The NESR integrates monitoring and evaluation into the communication framework from the beginning, treating communication effectiveness as a performance indicator with the same relevance applied to other metrics (technical or financial).



²³ OECD Survey on Drivers of Trust in Public Institutions. 2024

Communication effectiveness need to be assessed through a combination of quantitative and qualitative indicators:

- **Participation rate:** How many people are showing up to community meetings and open dialogue sessions? Additionally, the number of households that respond to door-to-door visits should be tracked and broken down by age and gender.
- **Repeated contact rate:** Measuring the number of households that contact the RC more than once is worthwhile since it could either mean they did not get a clear answer the first time or that they trust the channel enough to return.
- **Satisfaction survey:** Using short surveys after community events to assess the quality, accessibility and usefulness of information provided
- **Grievance mechanism:** Tracking communication-related grievances, response times and information accuracy, with results reviewed on a monthly basis

The above-mentioned indicators need to be read differently for energy-poor people because low turnout does not necessarily mean low interest. It often reflects real barriers. Energy-poor households are more likely to skip meetings because they are less comfortable with digital or written materials if literacy or internet access is limited. The following indicators should be considered on energy-poor households:

- Track participation of energy-poor households separately, not just by age and gender, to determine whether they are being reached at all.
- Watch for a low repeat-contact rate as a potential warning sign. It may mean the first contact left people confused or discouraged rather than satisfied.
- Conduct satisfaction surveys verbally or in-person where possible, since this group may be less likely to fill out written forms.
- Flag grievances from energy-poor households separately, since they may be more hesitant to complain in the first place.

However, the purpose of measurement is not simply to evaluate performance, but to generate insights that lead to meaningful action and lasting impact. The NESR therefore proposes monitoring data to guide continuous improvements through:

- Monthly communication review meetings attended by RC staff, municipal staff and one community representative to identify trends and agree on adjustments.
- Transparent communication of changes through all active channels, explaining what was changed and why, reinforcing trust between the project and residents.

NOTE

Communication framework that learns

Success is not measured by how many materials are produced, how many meetings are held or messages sent. It is measured by how many eligible residents understand the programme or project well enough to make informed decisions, trust it enough to engage with it and feel heard enough to recommend it to their neighbours.





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