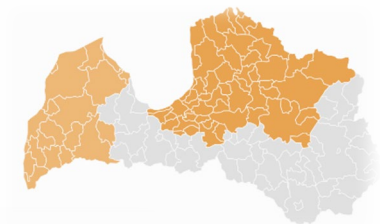




Documentation of Enabled Actions in Target Regions

August 2023



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1 Introduction

1.1 Identification of Actions

Overall, the RoundBaltic Action supports the implementation of sustainable energy investments in general in all the three target countries Poland, Latvia and Denmark. However, specific support is given to enabling actions at the regional level, with the regional roundtables as an anchor point and in interaction with the national roundtables (RT) as to define the national supportive framework.

The actions will follow up on the recommendations from the previous roundtables (under SEI Forums) and relate to the financial pillars: more effective use of public funds, aggregation and project development assistance, and de-risking. Potential actions may be identified prior to the roundtables and will as such be supported by the RTs and their follow-up. Or they may be identified during the roundtables and be further supported by the follow-up activities, including the follow-up roundtables and the Work Package 2 intervention (Supporting Framework).

For each of the 12 regions involved in the RoundBaltic Project several potential actions that could be supported through the roundtables have been identified in the proposal phase and which are to be supplemented during the project.

1.2 Documentation of Actions

Each action will be documented and evaluated by means of a template in terms of description, type of intervention, challenges, stakeholders and their interest and capabilities, organization, needed supportive framework, potential energy savings and investment volume etc. This will regularly feed into the horizontal Work Package 2 task in terms of needed supportive measures (templates, legislation tools etc.) as well as the evaluation tasks in Work Package 5 (Evaluation, Exchange and Learning of Actions).

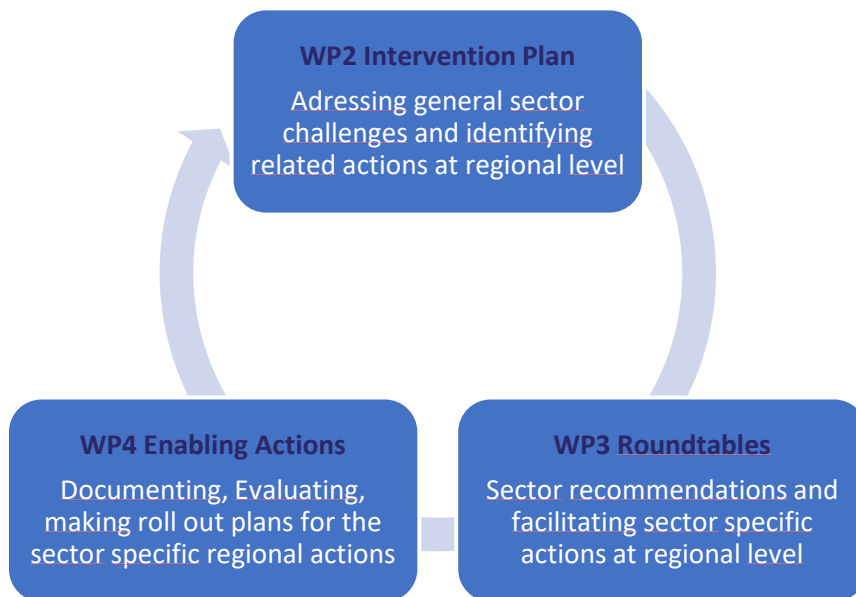
1.3 Roll out Plans for Actions

As to each type of actions launched a roll out plan will be elaborated which will propose improvements in the national policy frameworks, needed measures such as template documents and contracts needed for the functioning of the market and next steps at national as well as regional level. This may also be considered in relation to exchange with best practise at national or European level as appropriate. This will be closely coordinated with the WP2 actions as well as the assessment of impact.

1.4 Integration into the RoundBaltic process

The roll out plans will be closely coordinated with and will feed into the RoundBaltic Intervention Plans (WP2) as well as the assessment of impact. The roll out plans will address both national and regional aspects. In short, the roll out plans will provide general recommendations in relation to the supportive framework addressed in WP2, resulting from the regional interventions, and further address the needed interaction at regional level to roll out the actions versus actions needed at national level. The National Advisory Boards will be an important forum for discussing and implementing the recommendations at national level.

The intention in an organisational project like RoundBaltic is not to support projects in detail (actions) along the whole project cycle but rather to facilitate and support the initiation or further development through gathering stakeholders in a dynamic forum and stimulate their further cooperation within these actions. And with a particular focus to attract/mobilise private capital. The status of each action will be followed up at the regional roundtables as well as during the subsequent national roundtables. The Advisory Board meetings will be used to supervise this process and incorporate views of the represented participants, incl. from the financial sector.



2 Poland - Mazowieckie

The Development Strategy of the Mazowieckie Voivodeship until 2030 was focused on the development of an innovative economy with particular emphasis on the role of SMEs and R&D institutions. In the field of energy, the need for efficiency and energy independence of the region is emphasized. Therefore, it is important to increase the share of energy obtained from renewable energy sources, mainly biomass, wind and solar energy, and geothermal waters. These small generating units, including those operating in the prosumer energy system, should be in the areas of dispersed construction. This is also a signal of the development of the economy towards the development of production, installation and operation of RES.

In order to minimise transmission losses, power transmission and distribution systems for electricity, gas and heat transmission should be modernised. Network concentration in transmission areas should be taken into account. It is also necessary to improve the energy efficiency of the economy, including construction, and reduce the energy consumption of public services, as well as improve the efficiency of transport. It is considered a priority to implement eco-management systems and to disseminate the principles of corporate social responsibility in enterprises. It is assumed that incentives will be introduced to encourage eco-innovations in small and medium-sized enterprises and implementation of good practices in the field of energy efficiency and low-waste production technologies.

Directions of action

An important scope of activities in the direction of energy efficiency in the voivodeship is the potential of residential buildings. There are over 850,000 buildings of various sizes, with approx. 36% of buildings in cities and the rest in rural areas. There were nearly 50,000 large-scale and other-purpose buildings of which in rural areas slightly more than 5,000. About 70% of all buildings (about 500,000) were built by 1988, which indicates a big problem in terms of heat loss. It is estimated that about 20% of the buildings erected before 1985 were modernised in a comprehensive manner with the use of financial support instruments. So, about 400,000 remaining buildings, including approx. 30,000 multi-unit buildings whose owners can obtain financial support for thermo-modernisation taking into account current standards. A more detailed description of the completed investments and renovations characterises the financial instruments used.

On May 24, 2022, authorities of the Mazowieckie Voivodeship regional parliament, by resolution no. 72/22 adopted the Mazowieckie Voivodeship Development Strategy 2030+, in which the issue of improving energy efficiency is linked to the problem described as follows: "so called "low emission" in the household and municipal sector, emission of pollutants from road transport and industry, and still low ecological awareness of the inhabitants of the region. It is necessary to continue the actions taken, including: further implementation of the anti-smog resolution and air protection programs, replacement of conventional raw materials with ecological energy carriers, modernisation and replacement of heating boilers, as well as thermo-modernisation of facilities."

Regional Intervention Plan, main directions

1. Support for investors in the preparation of energy efficiency improvement projects through the implementation of projects supporting local governments in the preparation of investments in public utility buildings co-financed from the EU ELENA program
2. Developing energy efficiency financing from national and European Union funds based on activities in the following areas:

- Energy policy of the voivodeship and the country – in the regional development strategy including the energy efficiency as measure related to reduction of low emission.
- The adopted Long Term Renovation Strategy until 2050 – impact on the central level demonstrated in development by the central Bank Gospodarstwa Krajowego (State Development Bank) of country-wide support schemes for renovation of buildings in form of increased intensity of support.
- EU Funds for Mazovia Region 2021-2027 – taking decision about launching the programs to support energy efficiency investments and RES in amount of 172,3 M€, including 43,2M€ in form of financing instruments provided by intermediary financing institutions.
- A loan with a thermomodernization and renovation bonus of multifamily buildings with the support of ELENA – continuation of interest of several banks in use of ELENA support.
- New forms of support for financing thermo-modernisation of multifamily buildings with use of national funds and EU National Recovery and Resilience Plan – introduced by the central Bank Gospodarstwa Krajowego (State Development Bank).
- “Clean Air” program for single family buildings – continuation of support by the Advisors in co-operation with municipalities.
- ESCO and PPP – promotion of the project implemented in the City of Płock (Masovia Region).
- Active dissemination of financial instruments for owners of private, multi-family, local government buildings and for SMEs – through creation of public energy consultant’s network.
- Support from private energy and financial advisors – activating by the NFOSiGW the Platform of Energy Advisors available in each region, including Masovia.
- Development of a network of public energy consultants - to be implemented by the Masovia Marshall Office in -co-operation with municipalities through implementation of the “Masovia out of SMOG” project financed by EU with 56M€ from the EU Funds for Masovia Region 2021-2027.
- Creation of ONE-STOP-SHOPS
 - Implemented by the Masovian Energy Agency through launching the project Masovia4EEWave, co-financed by EIB ELENA to support municipalities in preparation of the energy efficiency and RES projects in public buildings
 - Implemented by the City of Warsaw with support of STOP SMOG Program of NFOSiGW to renovate buildings of energy poor households
- Round Table continuation – assured through introduction of the financing energy efficiency topic into agenda of the yearly Masovian Clean Air Programm.

2.1 Public buildings

2.1.1 Indicators

Energy efficiency area	Needs and possibilities	Type of initiative	Involved entities	Energy savings in GWh / year	Investment in MEUR
Public buildings	6,900 public buildings in the region - in rural areas 2,600 Project will trigger at least 20 public buildings in rural areas as a subject of thermo-modernisation (Potential: 483 GWh/y)	One-stop-shop	Local authorities, local SME - suppliers of goods and services, banks, energy auditors	10 to 20 buildings x 3,500m ² x 250kWh 9 to 18 GWh/year	8 to 17 MEUR
As of August 2023	Project will trigger investment in deep renovation, RES and energy management in at least 100 public buildings	One-Stop-Shop advisory level co-financed by ELENA	Marshall Office Masovian Energy Agency	42 GWh/y	94 MEUR

2.1.2 Challenges

Many municipalities, having conducted a truly active investment economy in the past, have indebtedness ratios close to the limits resulting from Art. 243 of the Public Finance Act (“they are credited through the roof”). This is one of the reasons, next to the fact that in view of the huge needs resulting from the objectives of environmental policies, as well as due to the fact that the number of programs addressed to people experiencing social exclusion is relatively small, it was emphasized that all sources will be very much needed and one should also think about adding new ones.

2.1.3 Needed supportive framework

The above-mentioned debt situation of municipalities should be taken into account when designing repayable instruments. In view of the existing debt limits, either such instruments will be excluded from the debt ratio calculation algorithm, or they should be replaced with non-repayable instruments.

In addition, equally important are the changes in the regulatory framework of support:

- Introduction of the energy class system
The energy class system will be introduced by Law 2024
- Implementation of a comprehensive beneficiary information and service system → One-Stop-Shop
It has been implemented April 2023 by the project Masovia4EEWave, co-financed by EIB ELENA to support municipalities in preparation of the energy efficiency projects in public buildings
- The need to introduce uniform, ambitious guidelines regarding the modernisation standard of public buildings

This question will be partly solved by the central Bank Gospodarstwa Krajowego (State Development Bank) through preparation of Guides for Investors in different energy efficiency and RES areas for use of Regional Financing Instruments of Energy Efficiency and RES supported by EU Programms for Regions

- Introduction of increased support for the modernisation of public buildings reaching the zero-emission standard in support programs financed from EU funds, KPO (National Reconstruction Plan) and the Modernization Fund

This support has been introduced April 2023 to public multifamily buildings in form of grants up to 90% of total renovation cost

- Launch of a new nationwide instrument to finance deep and comprehensive refurbishment of public buildings in the mid-2020s

This instrument called EPC+, developed by the NFOSiGW with budget of 25M€ from EU Modernisation Fund, finished June 2023 the pilot phase with concluding the EPC contract for selected 2 municipal buildings

- Creation of a national database on the energy efficiency of public buildings by extending the CEEB

The combining of existing data bases is subject of consideration by the Government

- The need to introduce a data management system to identify needs related to the modernization of public buildings

This need is subject of consideration by the consortium led by FEWE with participation of NAPE, SAPE, Association Fala Renowacji and Warsaw School of Economics and supported by NFOSiGW – in form of project proposal to be submitted to the call of Life Programm-2023-CET November 2023

- Creation of a dedicated portal containing good practices in the modernization of monuments, linked to the expanded CEEB database (Central Register of Emissions of Buildings).

No progress on the central level

- The need for greater support for the specific challenge of modernising historic buildings, which are most often buildings with the lowest energy standard.

This question is partly solved by setting-up minimum criteria for selection of renovation projects to be financed by the domestic and EU funds on the national level, e.g. for historic multifamily buildings the grants from the EU Recovery and Resilience Plan are higher by 10 p.p. than for non-historic buildings, the 30% primary energy savings are not required

2.1.4 Needed instruments and tools

The needs focus on support related to the preparation of projects for implementation. Thinking of the planned creation of a regional advisory system, active participation in all of the following activities was indicated as the proposed support scheme:

- physically reaching the final beneficiaries,
- informing (including during meetings with many participants),
- persuading
- clarification of doubts - individual conversations,
- design assistance,
- assistance in planning and obtaining financing,

- assistance in the selection of contractors - there were many voices that certification of contractors would be useful,
- support in the organisation and implementation of supervision over works,
- assistance in carrying out acceptances,
- assistance in conducting settlements with financing parties.

This form of assistance has been implemented in Masovia by the Masovian Energy Agency April 2023 by the project Masovia4EEWave, co-financed by EIB ELENA to support municipalities in preparation of the energy efficiency projects in public buildings. The Agency provides services partly paid by the ELENA grant in the following scope:

- elaboration of energy audits
- preparation of feasible studies and technical assessments
- technical designing of measures
- cost estimating
- applications for funding of investment cost
- preparation of public procurement for implementation of projects

The project will trigger the investment in energy efficiency and RES in at least 100 public buildings in amount of 94M€ (80M€ in deep renovation, 11M€ in RES, 3M€ in introduction of energy management systems).

2.1.5 RoundBaltic intervention support

Presenting to the members of the Regional Advisory Committee proposals from representatives of local governments, including:

- one initiative in the region will not solve all problems, but it will help to initiate or continue processes in municipalities,
- development of Regional Financing Instruments for energy efficiency and RES as supplementary to the country-wide support schemes developed by the central authorities with use of domestic and EU funds will help municipalities in overcoming the budget shortages,
- use of Energy Performance Contracts, which obligations are not included in public debt need to be promoted, based on regional and national experience.

2.1.6 Road map - how to achieve goals and overcome challenges

Presentation of regional recommendations for improving the framework at the national level at the forum of non-governmental organisations led by the Stowarzyszenie Fala Renowacji (Renovation Wave Association), which deals with the development of expert opinions justifying appropriate changes in national programs and programs co-financed by the European Union. The works of the interdisciplinary expert group started March 2023 and are planned to be finished and presented to central public administration Autumn 2023.

Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by an update of the regional diagnosis in communication with the Advisory Committee:

1. The regional diagnosis with participation of the Marshal Office has been updated 8 March 2023 and presented during the 2nd Round Table 22 March 2023

2. The agenda of the 2nd Round Table covered the following required and relevant topics to renovation of public buildings:
 - a. project Masovia4EEWave
 - b. EPC+ project
 - c. Regional Financing Instruments
 - d. PPP project of Płock Municipality

August 2023 invitation of Masovia Marshall Office by the consortium preparing the project to be submitted to the call of Life Programm-2023-CET November 2023 to be a project beneficiary for testing the model of one-stop-shop for region-wide energy consulting scheme targeted to trigger further investments in energy efficiency and RES in public buildings.

2.1.7 Stakeholders

At the regional level:

- Marshall Office,
- RoundBaltic project's Advisory Committee,
- Mazowiecka Agencja Energetyczna (Mazovian Energy Agency).

At the national level:

- Ministry of Climate,
- Ministry of Development and Technology,
- Ministry of Development Funds and Regional Policy,
- Renovation Wave Association,
- National Fund for Environmental Protection and Water Management, Modernisation of residential buildings

2.2 Home renovations

2.2.1 Indicators

Energy efficiency area	Needs and possibilities	Type of initiative	Involved entities	Energy savings in GWh / year	Investment in MEUR
Home renovations	Total number of MFHs: 44,914 - in rural areas 5,311 SFH total number: 708,442 - in rural areas 458,603 Project will trigger at least 10 SFH and 20 MFH in rural areas as a subject of thermomodernisation (Pot. 47,961 GWh/y)	Development of local energy advisory networks on the intermediary administration level (county)	Banks, local authorities, energy auditors, ESCOs	10 to 20 MFH x 2,500m ² x 200 kWh + 5 to 10 SFH x 150m ² x 240 kWh 5 to 10.36 GWh/year	6 to 12.13
As of August 2023	Financing of renovation of multifamily buildings in Masovia Region, approximately	Regional Financing Instrument co-financed by EU Funds for Masovia	Marshall Office Bank Gospodarstwa Krajowego (State Development Bank) Intermediary Financing Institutions	7,9	171,5

2.2.2 Challenges

None of the largest support programs have been assigned requirements ensuring comprehensive and deep energy modernisation of buildings that would be consistent with the EU climate and energy goals for 2030 and 2050.

- In programs where minimum requirements for improving energy efficiency are applied, they are set at the level of 25-30% of final energy, without providing additional incentives for deeper or more comprehensive modernisation of buildings.

The required minimum energy savings in EU co-financed projects of multifamily renovation buildings on country and regional levels has been set at the level of 30% of primary energy savings. Intensity of support can be designed in relation with the level of planned savings. The specific incentives are under development during preparation of the Regional Financing Instruments, which will be launched 2023/2024 in each region separately.

- Some programs do not specify the criteria for minimum energy savings at all or postpone decisions in this regard for the future.

The “Clean Air” program for renovation of single-family houses starting from January 2023 set the minimum requirement for complex renovation at 80kWh/m²/y or 40% savings of usable energy

2.2.3 Needed supportive framework

- Adjusting the rules of the "Clean Air" program so that it supports deep and comprehensive modernisation - increasing the levels and intensity of support.

Intensity of support has been differentiated in three levels depending on the household's income

- Linking the support under the thermo-modernisation relief with the energy effects of the investment.

The support is related to the pre-defined scope of measures, the most complex and covering RES and heat recovery, the support is higher in percent and nominal value terms.

- Integration of STOP SMOG with "Clean Air" while redefining the role of local governments and including energy saving companies in the program.

The STOP SMOG and “Clean Air” programs are integrated centrally in one priority program of NFOSiGW. The energy saving companies may take part in the program as they became to be eligible to receive the grants on their bank accounts based on the grant contract signed with beneficiaries of the “Clean Air” program

- Ensuring large-scale, effective support for the least affluent owners of single-family buildings.

Based on the STOP-SMOG program the municipalities are able to develop the one-stop-shop projects on the implementation level for vulnerable households with lowest income.

2.2.4 Needed instruments and tools

Adjustment of the "Clean Air" program to the needs of final beneficiaries and taking into account the demands of local governments due to:

- Complicated application and considerable bureaucracy,
This has not been changed, however wider participation of municipalities and entering banks in the system provides opportunity to reduce the effort of beneficiary to apply for grant and supporting loan
- Long waiting time for funds and lack of pre-financing for all applicants
The waiting time has been reduced, the pre-financing option of 50% of grant has been introduced 2023
- Digitization of the application submission system excluding digitally restricted persons,
The submission the applications in paper form is possible 2023 via municipalities or regional funds for environment protection
- Difficult contact with the representative (too few energy advisors)
This bottleneck is to overcome through development of public energy advisors' networks
- Delegating responsibilities to municipalities

The municipalities are using opportunity to conclude the contract with NFOSiGW, which provides financing for permanent information point managed by the municipality, which role is to help in preparation of grant application and passing it to the grant operator.

Continuation of support for owners of multi-family buildings in the preparation of thermo-modernisation investments related to the use of preferential repayable financing.

This issue is to be tackled by non-public consultant experienced in preparation of energy audits required by banks financing thermo-modernisation of multifamily buildings with the state support.

2.2.5 RoundBaltic intervention support

Bringing the problems of the "Clean Air" program to the agenda of the second national round table. Consultation with the Government Plenipotentiary for Energy Efficiency on the improvement of investor care, paying attention to the European experience in the field of Integrated Home Renovation Services.

- While in the case of individual owners/users of residential premises, a significant part of the work must be devoted to building environmental awareness and motivation to conduct thermo-modernisation processes, at the level of municipalities both factors are already developed, and problems begin to pile up at the stage of seeking contractors
- A systemic solution could be the introduction of an "umbrella" one-stop-shop at the regional level, which would enable support in the creation of urban structures of this kind

Consultations with banks to use EU ELENA funds in addition to the offer of financing for thermo-modernisation of multi-family buildings.

2.2.6 Road map - how to achieve goals and overcome challenges

Action plan to help implement recommendations from the Round Tables, tools needed to improve policy in the region, other actions taken by the Partner in the project

Presentation of regional recommendations for improving the framework at the national level at the forum of non-governmental organisations led by the Stowarzyszenie Fala Renowacji (Renovation Wave Association), which deals with the development of expert opinions justifying appropriate changes in national programs and programs co-financed by the European Union. The works of the interdisciplinary expert group started March 2023 and are planned to be finished and presented to central public administration Autumn 2023.

Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by an update of the regional diagnosis in communication with the Advisory Committee:

1. The regional diagnosis with participation of the Marshal Office has been updated 8 March 2023 and presented during the 2nd Round Table 22 March 2023
2. The agenda of the 2nd Round Table covered the following required and relevant topics to renovation of residential buildings:
 - a) The Thermo Fund of Bank Gospodarstwa Krajowego (State Development Bank) for multifamily buildings in new shape
 - b) The "Clean Air" program in the region - achievements, bottlenecks, perspectives

- c) The one-stop-shop service for vulnerable households with use of the STOP SMOG program in the City of Warsaw
- d) The Marshall Office project “Masovia without SMOG” to create the regional network of eco-consultants, supporting development of energy efficiency projects on territory of the Masovia region
- e) The country-wide offer of ELENA assistance provided by the Bank of Environment Protection for the owners of multifamily buildings, municipal infrastructure and SMEs

Preparation of the Marshall Office the project “Masovia without SMOG” to be financed by the EU Funds for Masovia in amount of 56M€, which will assure:

1. Providing analysis of renovation needs of residential buildings in the Masovia region
2. Covering minimum 50% of cost of specialist called eco-advisor over 5 years in each municipality, including:
 - a. Salary
 - b. Training in energy efficiency, air protection, psychology of needs, project management
 - c. Equipment of the working place
 - d. Equipment of the air quality control
 - e. Equipment for further education and awareness raising activity

The role of eco-advisors will be in developing the energy efficiency and RES projects in municipalities, including identification of energy poor households and help them in reduction of energy cost through investment measures – all with use of available financing sources from national and regional domestic and EU co-financed programmes. The project should start early 2024

Bringing into force by the Marshall Office the decision on creation of Regional Financing Instrument for renovation of multifamily buildings within allocation of maximum 24,1M€ co-financed by EU Fund for Masovia for the task related to renovation of multifamily buildings, triggering investments in amount of 171 M€. The Instrument is envisaged as the loan provided by the intermediary financing institution (public or private), softened by the appropriate credit redemption. Implementation is expected early 2024 after selection of intermediary financing institutions.

2.2.7 Stakeholders

At the regional level:

- Marshall’s Office,
- RoundBaltic project’s Advisory Committee,
- Mazowiecka Agencja Energetyczna (Mazovian Energy Agency),
- Velo Bank (former Get-In Noble Bank),
- Bank Ochrony Środowiska (BOŚ - Environmental Protection Bank),
- Local governments of the region.

At the national level:

- Ministry of Climate,
- Ministry of Development and Technology,
- Ministry of Development Funds and Regional Policy,

- Renovation Wave Association,
- National Fund for Environmental Protection and Water Management,
- State Development Bank.

2.3 SMEs and industry

2.3.1 Indicators

Energy efficiency area	Needs and possibilities	Type of initiative	Involved entities	Energy savings in GWh / year	Investment in MEUR
SME and industry sector	Total number of SMEs in the region: 304,015 Project will trigger at least 20 as a subject of thermo-modernisation (Potential: 13,681 GWh/y)	Continuation of energy audits and special FI for SMEs	Branch-oriented and local chambers of trade and services, local authorities	10 to 20 SMEs x 300m ² x 150 kWh 0,5 to 1 GWh/year	0,5 to 1 MEUR
As of August 2023	Financing of extension and construction of RES, including in SMEs and by SMEs	Regional Financing Instrument co-financed by EU Funds for Masovia	Marshall Office Bank Gospodarstwa Krajowego (State Development Bank) Intermediary Financing Institutions	4,0	12,8

2.3.2 Challenges

Conclusions after the first Round Table, changes in the legal environment, regional conditions.

The energy efficiency of the economy should be improved, including through the development of energy-saving construction and the reduction of energy consumption in the provision of public services, as well as improving the efficiency of transport. Implementation of eco-management systems and dissemination of the principles of corporate social responsibility in enterprises should also prove helpful. Incentives should be introduced to support eco-innovation in small and medium-sized enterprises and the implementation of good practices in the field of energy efficiency and low-waste production technologies

2.3.3 Needed supportive framework

Support for improving energy efficiency should be accompanied by support significantly limiting the impact of the energy crisis on the activities of enterprises.

Reduction of the impact of the energy crises on enterprises has been arranged by the central government in form of so called “Anti-crisis Shields” in form of freezing of electricity prices on the level of 174€/MWh.

2.3.4 Needed instruments and tools

Loans for thermo-modernisation and RES, which have not been used by entrepreneurs in the region so far, should be continued in a more accessible form. Approved is allocation from regional EU Funds, which will trigger investments in this field in amount of 12,8 M€.

2.3.5 RoundBaltic intervention support

Providing the Advisory Committee with recommendations and a description of good practices in this regard from the Podlaskie region presented at the First Round Table.

2.3.6 Road map - how to achieve goals and overcome challenges

Organization of the 2nd Regional Round Table to determine the progress of implementing the recommendations made during the first meeting, preceded by an update of the regional diagnosis in communication with the Advisory Committee.

The regional diagnosis with participation of the Marshal Office has been updated 8 March 2023 and presented during the 2nd Round Table 22 March 2023

2. The agenda of the 2nd Round Table covered the following required and relevant topics to energy efficiency and RES in SMEs:

- a) The Regional Energy Loan – available but not used by SMEs
- b) The country-wide offer of ELENA assistance provided by the Bank of Environment Protection for the owners of multifamily buildings, municipal infrastructure and SMEs

Bringing into force by the Marshall Office the decision on creation of Regional Financing Instrument for RES, including in SMEs and by SMEs, within allocation of maximum 19,1M€ co-financed by EU Fund for Masovia for the task related to extension and new capacities. The Instrument is envisaged as the loan provided by the intermediary financing institution (public or private), softened by the appropriate credit redemption. Implementation is expected early 2024 after selection of intermediary financing institutions.

2.3.7 Stakeholders

- Marshall's Office,
- State Development Bank,
- BOŚ (Environmental Protection Bank),
- Financing intermediary institutions.

2.4 Results summary

Output	Outcome
1.1 Establishment of regional round tables focused on financing energy efficiency	
<p>2 regional round tables implemented</p> <p>220 participants representing 65 key stakeholders involved at the regional level, 10% from the financial sector + 40% from municipalities</p> <ul style="list-style-type: none"> ◦ Strong advice for: <ul style="list-style-type: none"> ◦ - creating one-stop-shops for owners of residential buildings ◦ - development of municipal energy consulting facilities ◦ - creating attractive financial instruments for SMEs 	<p>Increased network and interaction with banks on a regional and national level</p> <p>Increased network and interaction with other stakeholders</p>
1.2 Establishment of permanent structures involving all relevant stakeholders, including important financial actors	
Advisory Board, which includes the NAPE team	<ul style="list-style-type: none"> ● Passing recommendations from the region to the national level ● Direct consultation with the public and private finance sector
2. Benefits of roundtables to increase the database of best practices, developed strategies, roadmaps and action plans	
<p>Proceedings reflecting the state of progress and activities and a road map indicating actions at national and regional levels (coordinated with other regions)</p>	<ul style="list-style-type: none"> ● Development of local energy consultancy in the region ● Preparation of a one-stop shop for municipal buildings ● Decision to create regional financing instruments for the multi-family housing sector, municipalities and SMEs
3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market	

Preparation of an update of the Regional Diagnosis with the active participation of members of the Advisory Board	<ul style="list-style-type: none"> ● Improvement of communication between public regional institutions ● Implementation of measures discussed in the Advisory Board meeting and in bilateral consultations with national key stakeholders ● Potential participation of the Marshall Office in preparation, testing and implementation of the model one-stop-shop for renovation of public buildings to be subject of Life project
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3 Poland - Podlaskie

The Podlaskie Voivodeship Development Strategy until 2020 includes seven most important challenges, which will probably continue to be important strategic directions.

- The basis for the competitive advantage of the Podlaskie Voivodeship will be green industries, including dynamic sectors of industrial production and market services.
- The external border of the European Union creates opportunities for the development of the region.
- In the coming years, the region will have a relatively large number of young people well prepared to compete on the markets.
- There are opportunities to use EU policy to drive a technological revolution in energy
- The idea of "e-podlaskie" is being implemented, which will facilitate administrative procedures.
- The diversity of the region can be an asset.
- Accessibility of the voivodeship in terms of communication is necessary.

Energy security will be a problem for the region, as outdated high- and medium-voltage networks may not meet the demand for electricity. Consideration should be given to meeting demand from local energy production capacity. The economy is dominated by agriculture and agri-food processing, and with dispersed needs, it is worth taking this into account.

Directions of action

Since the voivodeship is considered unattractive in terms of location for SME investments, incentive programs should be created, and the focus should be pointed out to the industries which will not degrade the environment. This is an asset and worth investing in as the region is potentially interesting for the development of tourist services. With the dispersion of construction and the poor condition of power grids, investing in RES is an interesting opportunity for economic development. Based on breeding and agriculture, investments in biogas plants are certainly a good direction for energy security and a certain independence. It is estimated that there are approx. 120,000 buildings in the region that can be retrofitted. This gives an opportunity for the development of local business in the production of materials and services. This also indicates the need to train specialists and promote renewable energy sources as a local specialty in the field of small energy. Investments can be prepared based on the ELENA program.

Regional Intervention Plan, main directions

Summarising the offers, activities and entities in the field of energy efficiency collectively, it can be presented in the following framework:

- Preparation of a proposal for a simple documentation template and evaluation of this activity
The regional financing intermediary institutions, which started providing loans for energy efficiency and RES in SMEs have received advisory in form of templates of energy audit and assessment procedures of projects to be financed.
- Relying on the Podlaskie Voivodeship Development Strategy until 2020
The Regional Development Strategy was updated until 2030, where the main point related to the project is supporting the development of renewable energy sources (RES) and diversified Energy.
- EU Funds for Podlaskie 2021-2027/financing instruments
The Marshall Office decided to launch the Regional Financing Instruments co-financed by EU Fund for Podlaskie for deep renovation of multifamily buildings and for energy efficiency and RES in SMEs.
- A loan with a thermomodernization bonus of Bank Gospodarstwa Krajowego (State Development Bank) with the support of ELENA
Bringing to the public the country-wide offer of ELENA project of the Bank of Environment Protection for owners of buildings, municipal infrastructure and SMEs.
- Clean Air program – continuation based on the network of public energy consultants.
- ESCO – raised interest of private Eastern Fund to implement projects based on the Energy Performance Contract.
- Project packaging (ELENA) – initiative of private Eastern Fund to create ELENA assistance for owners of multifamily buildings and SMEs in development of energy efficiency and RES projects to be financed by domestic and EU funds.
- Drawing up and applying the recommendations of the conclusions of the Round Table, promotional and educational activities – discussed by the regional Advisory Board and continuously planned and implemented.
- Round Table continuation through including the topic on permanent way into the agenda of the cyclic meetings of the Association of rural municipalities, with support of Marshall Office EU Information Point.

3.1 Public buildings

3.1.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
Public buildings	At least 10-20 public buildings will undergo thermo-modernisation	Local energy advisory networks One stop shop	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	10 to 20 buildings x 3,500m ² x 250 kWh savings 9 to 18 GWh/yr	8 to 17 MEUR
As of October 2022	Preparation of renovation of public buildings	Direct advisory by NAPE team to the municipal owners of buildings	Association of rural municipalities NAPE	29 GWh/y	25 MEUR
As of August 2023	RES in 36 public buildings of the City of Białystok developed by the Energy Management Office in the City of Białystok – launched 1 st November 2022 Further planning of renovation of public buildings in development	One-stop shop for managers of municipal buildings and infrastructure	City of Białystok	2 GWh/y	2,4 MEUR

3.1.2 Challenges

1. Financing thermomodernization investments

Currently, entities carrying out thermo-modernization investments can benefit from non-repayable support (e.g. subsidies) or repayable support (e.g. loans). It is reasonable to pursue such a policy by the Managing Authorities that, when deciding on the policy of allocating funds, it takes into account the economic effects of the financed energy projects. In many cases, investments have a small economic effect, resulting in a long payback period. In such cases, support in the form of non-repayable instruments is justified.

2. Database of good practices

The concept of thermo-modernization has been increasingly popular in business practice for several years. Therefore, it is advisable to prepare "good practice database" describing the investments carried out, costs and benefits resulting from them. There is a good chance that it will be an excellent inspiration for making the right decisions in the field of thermomodernization investments by units of the local government sector

3. One-stop-shop initiative

An interesting initiative that may be a solution to some problems is the creation of one place where it will be possible to obtain assistance in various aspects related to thermal modernization (e.g. selection of optimal solutions, technical and financial advice, recommendations of contractors).

3.1.3 Needed supportive framework

After the first regional round table, the regional information point independent of the contractors and suppliers of goods and services was launched on voluntary base in terms of ecology and economy in connection with thermomodernisation. The "Eko -ekspert" advisory company provides information mainly on ecological aspects, while Eastern Fund informs on financing energy efficiency and RES projects. NAPE SA Branch in Białystok advice is concerning technical and ecological issues of comprehensive thermal modernization of buildings.

To some extent, after the 1st Regional Round Table, the partial one-stop-shop form is implemented by the Białystok Branch of NAPE. At the seat of the Branch, free advice is provided on the technical aspects of thermomodernization of buildings, possible effects (based on an interview on the subject of thermomodernization). If necessary, it is possible to carry out an initial audit as part of the ex-ante audit cost, as well as to agree on the required technical documentation depending on the scope of thermal modernization and to indicate contractors proven in the field of thermal modernization investments.

3.1.4 Needed instruments and tools

Strengthening information about good practice and financing opportunities of public buildings through the Information Point of EU Funds located in the Marshall Office.

3.1.5 RoundBaltic intervention support

Presenting to the members of the Regional Advisory Committee proposals from representatives of local governments, including:

- Employment in each municipality of a specialist in energy efficiency and RES to help the municipality in development of projects in public buildings.
- Continuation of cooperation of independent advisors with the Association of Rural Communes in the field of dissemination of good practices for thermal modernization of public buildings and information on sources of financing is being considered.

3.1.6 Road map - how to achieve goals and overcome challenges

Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting.

The agenda of the 2nd Round Table covered the following required and relevant topics to renovation of public buildings:

- a) Support from the Ministry of Funds and Regional Policy to develop energy efficiency projects in public buildings with use of Energy Performance Contracts or PPP
- b) EU Fund for Podlaskie – new financing options
- c) Good practice in energy management of municipal infrastructure – City of Białystok
- d) ELENA support for municipalities provided by the Bank of Environment Protection

Strengthening the information flow to municipalities about the domestic and EU financing through cyclic meetings of the independent advisors and Marshall Office EU Information Point employees with the members of Association of rural municipalities.

Sharing experience of municipalities in the region through the established of voluntary advisory service.

Raising interest of independent advisors in development of Energy Performance Contracting for renovation of public buildings in the region.

3.1.7 Stakeholders

- Ministry of Funds and Regional Policy,
- Marshall Office of Podlaskie Region,
- NAPE – independent energy consultancy (buildings, enterprises),
- Eko-ekspert – independent energy consultant (RES),
- Eastern Fund – private financing institution (energy efficiency and RES in SMEs),
- City of Białystok,
- Association of rural municipalities of Podlasie.

3.2 Buildings modernisation

3.2.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
Buildings modernisation	At least 10-20 multi-family buildings in rural municipalities will undergo thermo-modernisation	Development of local energy advisory networks at the level of intermediary administration (powiat) Providing access to information about financial support	Banks, local authorities, energy auditors, ESCOs	10 to 20 buildings x 2,500m ² x 200 kWh = 5 to 10 GWh/year	6 to 12 MEUR
As of October 2022	Preparation of 36 multifamily buildings for thermos-modernisation financed by the Regional Financing Instrument operated by the Alior Bank	Liaison to potential beneficiaries provided by NAPE Branch in Białystok as independent consultant	Alior Bank Building Managers	36 buildings 4 GWh/year	8 MEUR
As of August 2023	Financing of energy efficiency and RES in Home Owner's Associations	Regional Financing Instrument 2021-2027	Marshall Office Intermediary Financing Institutions	13	26,8 MEUR

3.2.2 Challenges

Renovation of multifamily buildings has long experience thanks country-wide scheme to support thermomodernisation measures and the owners of such buildings are well managed by professional buildings managers. Thanks engagement of independent energy auditors and banks providing the state support since 1999 approximately 2000 multifamily buildings, mostly managed by housing co-operatives, undergone thermomodernisation, which brought over 33% of energy savings in average. Nevertheless, the Marshall Office decided to launch the pilot activity in form of Regional Financing Instrument to support thermomodernisation of multifamily buildings owned by home owners associations being in weaker financial condition than the housing co-operatives, needing more assistance in development of thermomodernisation projects.

3.2.3 Needed supportive framework

The Regional Financing Instrument has been introduced by the Alior Bank in form of loan with subsidized interest to 0% (constant over loan period up to 15 years) and equipped with the grant from EU ELENA to cover up to 90% of project preparation cost.

3.2.4 Needed instruments and tools

The new support scheme needs promotion and explanation for potential beneficiaries.

3.2.5 RoundBaltic intervention support

The NAPE Branch in Białystok launched series of meetings with managers of buildings with participation of Alior Bank officers in order to explain how to apply for the support of the ELENA program and which conditions are necessary to get the loan subsidized by the Regional EU Fund.

3.2.6 Road map - how to achieve goals and overcome challenges

Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting.

The agenda of the 2nd Round Table covered the following required and relevant topics to renovation of residential multifamily buildings:

- a) The Thermo Program of the State Bank of Economy in new shape
- b) The Alior Bank experience with financing thermomodernisation of multifamily buildings in the region
- c) Country-wide ELENA support for owners of buildings provided by the Bank of Environment Protection

As the pilot project finished with success, bringing in force decision to launch the continuation of the new support scheme by creation of the next Regional Financing Instrument for thermomodernisation of Homeowner's Association buildings with budget of 26,8MEURO co-financed by EU Fund for Podlasie. The Instrument is envisaged as the loan provided by the intermediary financing institution (public or private), softened by the appropriate credit redemption. Implementation is expected early 2024 after selection of intermediary financing institutions

3.2.7 Stakeholders

- Marshall Office,
- Alior Bank,
- Building Managers,
- NAPE as independent advisor,
- Independent consultants – energy auditors acting in the region.

3.3 SMEs and industry

3.3.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
SMEs and industry	At least 15- 30 SMEs will undergo thermo-modernisation	Support for energy audits in SMEs and financial support schemes	Industry and regional chambers of commerce and services, local authorities	10 to 20 SMEs x 300m ² x 150 kWh 0.5 to 1 GWh/y	0.5 to 1 MEUR
As of August 2023	Financing of thermomodernisation and RES implementation of SMEs by pilot Regional Financing Instrument finished	Financing energy efficiency and RES in SMEs with EU support	Marshall Office Foundation of Regional Development Eastern Fund	140 SMEs 8GWh/year	achieved 12MEUR
As of August 2023	Financing of thermomodernisation and RES implementation of SMEs by new Regional Financing Instrument	Financing energy efficiency and RES in SMEs with EU support 2021-2027	Marshall Office Financial Intermediaries to be selected	14	22MEUR

3.3.2 Challenges

1. Financing thermomodernization investments

In the case of thermomodernization investments with a quick return on capital (several years), which takes place largely in the SME sector, there is a high motivation of entrepreneurs to carry out the investment. In such cases, support in the form of repayable instruments is justified.

2. Access to financing as a barrier to the growth rate of thermomodernization investments among SMEs

Representatives of two financial institutions dealing with financing thermomodernization investments among SMEs indicated the lack of knowledge of entrepreneurs from smaller towns about the possibility of using attractive sources of financing as one of the serious limitations of thermomodernization investments. As a consequence, financial institutions see "white spots" in the province. Podlaskie, where entrepreneurs did not benefit from preferential financing. Therefore, they do not look for solutions because they are not aware that they exist. There is a need to establish cooperation between local governments (especially smaller ones) and Institutions providing support in the field of information on available funds for thermomodernisation.

3. Database of good practices

The concept of thermo-modernization has been appearing more and more frequently in the vocabulary of SMEs for several years. With the increase in prices of energy carriers, interest is also growing. Nevertheless, small and medium-sized companies lack knowledge in the field of possible investments and economic benefits resulting from them. The vast majority of this type do not even know where to look for support/advice. Therefore, it is advisable to prepare "good practice database" describing the investments carried out, costs and benefits resulting from them. There is a good chance that it will be a great inspiration to make the right decisions in the field of thermomodernization investments.

4. Ecological and economic education

While local government units and the sector of large companies have a relatively high environmental awareness and take the above criteria into account when making investment decisions, consumers and small and medium-sized enterprises mainly take into account financial/economic elements. However, due to the lack of competence, they rely on the knowledge and "advice" of solution vendors (RES, thermal modernization). Since the goal of solution vendors is to maximize profits, in many cases this leads consumers/SMEs to wrong investment decisions (e.g. oversized photovoltaic installations). It is therefore advisable to develop an effective advisory model where people planning an investment can benefit from the knowledge of experts.

5. One-stop-shop initiative

An interesting initiative that may be a solution to some problems is the creation of one place where it will be possible to obtain assistance in various aspects related to thermal modernization (e.g. selection of optimal solutions, technical and financial advice, recommendations of contractors).

3.3.3 Needed supportive framework

The Regional Financing Instrument has been created in the form of loan with subsidized interest by the EU Regional Funds to 0%. The pilot product has been offered by 2 financial intermediaries, the public Foundation of Regional Development and private Eastern Fund. Thanks this instrument investments in amount of 12 M€ have been triggered and with the new instrument planned to implement 2024 the amount will be almost doubled – up to 22M€.

It is necessary to convince the SMEs with the procedure of confirmation the eligibility of the projects for financing through mandatory elaboration of energy audits.

3.3.4 Needed instruments and tools

The SMEs being interested in reduction of operational cost through implementation of energy efficiency measures and RES need independent assistance for choice of technologies and confirmation of energy and cost savings as well as attractive financing scheme.

3.3.5 RoundBaltic intervention support

NAPE branch in Białystok established assistance centre for both Financial Intermediaries and their clients to help them in preparation of projects feasible in technical and economic terms and eligible for financing by the Regional Financing Instrument

3.3.6 Road map - how to achieve goals and overcome challenges

Action plan to help implement recommendations from the Round Tables, tools needed to improve policy in the region, other actions taken by the Partner in the project.

Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting.

The agenda of the 2nd Round Table covered the following required and relevant topics to renovation of SMEs:

- a) Summarizing the experience of pilot Regional Financing Instrument of energy efficiency and RES in SMEs
- b) EU Fund for Podlaskie – new financing options
- c) ELENA support for SMEs provided by the Bank of Environment Protection

Bringing into force by the Marshall Office the decision on creation of Regional Financing Instrument for energy efficiency and with budget of 22MEURO co-financed by EU Fund for Podlasie. The Instrument is envisaged as the loan provided by the intermediary financing institution (public or private), softened by the appropriate credit redemption. Implementation is expected early 2024 after selection of intermediary financing institutions.

Creation of the ELENA support for SMEs for proper development of energy efficiency and RES projects. Pre-application to EIB submitted by the Eastern Fund and positively evaluated. Full application under preparation.

3.3.7 Stakeholders

- Marshall Office,
- Foundation for Regional Development,
- Eastern Fund,
- NAPE Branch in Białystok,
- State Development Bank (Bank Gospodarstwa Krajowego).

3.4 Results summary

Output	Outcome
1.1 Establishment of regional round tables focused on financing energy efficiency	
<p>Two regional round table implemented</p> <p>94 participants representing 31 key stakeholders involved at the regional level, 10% from the financial sector + 40% from municipalities</p> <p>◦ Strong advice for:</p> <ul style="list-style-type: none"> ◦ awareness raising among potential beneficiaries of financing sources ◦ providing independent advisory on development of projects 	<p>Increased networking and interaction with banks and intermediary financing institutions on a regional and national level</p> <p>Increased networking and interaction with other stakeholders like independent energy consultants</p> <p>Increasing interest of Marshall Office in promoting energy efficiency and RES projects in different economy sector</p>

<ul style="list-style-type: none"> ◦ continuation of attractive financial instruments for SMEs and Home Owner's Associations 	
1.2 Establishment of permanent structures involving all relevant stakeholders, including important financial actors	
Advisory Board including NAPE team	<ul style="list-style-type: none"> ● Passing recommendations from the region to the national level ● Direct consultation with the public and private finance sector in region
2. Benefits of roundtables to increase the database of best practices, developed strategies, roadmaps and action plans	
Proceedings reflecting the state of progress and activities and a road map indicating actions at national and regional levels (coordinated with other regions)	<ul style="list-style-type: none"> ● Creation of voluntary independent advisory centres for investors interested in energy efficiency and RES projects ● Strengthening activity of the Marshall Office EU Information Point towards undertaking of energy efficiency and RES projects to be supported by the EU Fund for Podlasie ● Launching the municipal one-stop shop for energy efficiency and RES projects in municipal buildings and infrastructure ● Decision to create Regional Financing Instruments for the multi-family housing sector and SMEs
3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market	
Preparation of standardised procedures for development of energy efficiency and RES projects in multifamily buildings and in SMEs.	<ul style="list-style-type: none"> ● Increased interest in use of Regional Financing Instruments by beneficiaries

4 Poland - Pomorskie

All municipalities have assumptions for heat and energy supply plans (PZC), necessary requirements for updating plans when applying for funds from the ROP. The activity of local government units is the basis for reducing energy consumption, increasing the share of RES and lowering emissions.

The main lines of action should include:

- Activities of local government units to increase public awareness in the field of energy conservation and the development of prosumer energy: both in the short and long term.
- Thermo-modernisation of local government buildings and RES installations in the prosumer mode, creation of a database of local government buildings and monitoring of energy consumption.
- Promoting Integrated Energy Systems (IES) based on renewable energy sources in all construction sectors, i.e. housing construction, public buildings and service and industrial buildings.
- Support for the creation of energy communities, construction of energy cooperatives, clusters, energy islands.
- Support by local government units for all sectors (housing, services, SMEs) - energy consulting in their area. Creation of one-stop-shops. This process can be started by increasing the number of advisers in the region. Currently, the number of advisers includes eight people at the WFOŚiGW cooperating in the Pomeranian Voivodeship with a population of 2.2 million.
- Support for the integration of individual recipients into groups applying for aid funds and organisation of financing. Organising and supporting the construction of energy islands in the form of energy clusters and energy cooperatives.
- Within the energy islands, preference should be given to comprehensive projects in energy efficiency and RES. Reducing the consumption of coal as a fuel for end users, increasing the use of energy and RES, supporting cogeneration, including in heating systems. Support for the modernization of heating systems to achieve the standard of an energy-efficient system.

Regional intervention plan, main directions:

1. The Regional Plan - "Effective Pomerania" - is being implemented, BAPE is taking part in consultations
2. EFP - financing instruments, ongoing cooperation with the Marshal's Office, especially in the field of projects for the development of energy islands and energy communities
3. National programs - activities are monitored on an ongoing basis and promotion of launched national programs such as "My Electricity", "Warm House", etc
4. Joint programs and cooperation of stakeholders - activities are carried out, for example, in energy islands (analysis of the possibility of creating islands, fighting poverty in the Pomeranian Region)
5. Supporting banks and cooperation with the environment - cooperation with a financial institution - Pomeranian Loan Fund - activity continued in 2023
6. Educational and promotional campaigns, project consultations - is carried out through the participation of BAPE in seminars and meetings of stakeholders

7. Organisation of Regional Round Tables in the field of supporting and financing EE and RES investments

4.1 Public buildings

4.1.1 Indicators

Energy efficiency area	Needs and possibilities	Type of initiative	Involved entities	Energy savings in GWh / year	Investment in MEUR
Pomeranian voivodeship					
Public buildings	At least 10 - 20 public buildings will undergo thermo-modernisation	Local energy advisory networks One-stop-shop	Local authorities and SMEs - suppliers of goods and services, banks, energy auditors	10 - 20 buildings x 3,000m ² x 250 kWh 7 - 15 GWh/year	7 - 14 MEUR
As of October 2022	Cost-effectiveness analysis for improving energy efficiency and the possibility of using RES were carried out in 13 hospital complexes, which in total cover over 70 buildings. The amount of outlays and savings for projects in EE and RES was calculated.	Development of local energy advisory networks on the intermediary administration level (county) Enabling access to information about financial support	Banks, regional authorities, energy auditors, ESCOs	In total over 70 buildings, savings of 10,9 GWh/year	Total investment of 9,9 MEUR
As of April 30, 2023	Ecological effect of thermorenovation of Regional Hospital in Kościerzyna – thermorenovation of buildings and installation PV 40 kW Preliminary data from other 7 hospitals after thermorenovation	Verification of planned results of thermorenovation of hospital buildings Collecting preliminary data from other hospitals	Hospitals' administrations, Investment Office of the Pomerania Administration	Koscierzyna 0.88 GWh/a Other hospitals 14 GWh	Koscierzyna 0.9 MEUR Other hospitals 8,4 MEUR

4.1.2 Challenges

1. Deep thermo-modernisation of residential buildings, especially multi-family buildings, should receive support. Previously developed support mechanism from the Thermomodernization and Renovation Fund should be appropriately modified and should receive support for deep thermo-modernisation and abandonment of fossil fuels – modifications were made to the Thermo Act; it is possible to get support for RES, without the need to perform an energy audit. BAPE calls for energy efficiency measures to be taken before installing RES.

2. Support systems prepared centrally (the current Clean Air and the expected Warm Apartment for multi-family buildings) are hedged with detailed subsidy limits, not related to the situation on the construction and energy markets. It is not known how these records were created and their effectiveness is not confirmed by objective analysis. There are unrealistic ideas, such as support for thermo-modernisation of an apartment in a multi-family building under the Warm Apartment program – the programs have been started – while the Warm Apartment program serves only for the replacement of heat sources.
3. The experience in supporting RES investments with loans is positive, especially in the prosumer system. The first known effects of the changes in the prosumer system and the transition from net-metering to net-billing are negative. Changes in electricity prices and tariffs in 2022 do not allow for the presentation of specific effects of using the net-billing system for the prosumer, however, the planned changes in the energy billing system on an hourly basis and the increasing problems with the collection of energy generated by prosumers by distribution networks may constitute a barrier to new micro-installation projects.
4. The central database on emissivity does not meet expectations, because the only information that is obtained is the type of fuel used for heating and hot water. There is no information about the age of the boilers, the size of the heated area and the amount of energy carriers used.
5. Support instruments at the regional and national/EU level propose separate support for financing EE and RES, while the installation of RES should not take place in isolation from improving energy efficiency.

4.1.3 Needed supportive framework

Ad.1

SAPE support is needed for changes towards deep thermo-modernisation in combination with RES.

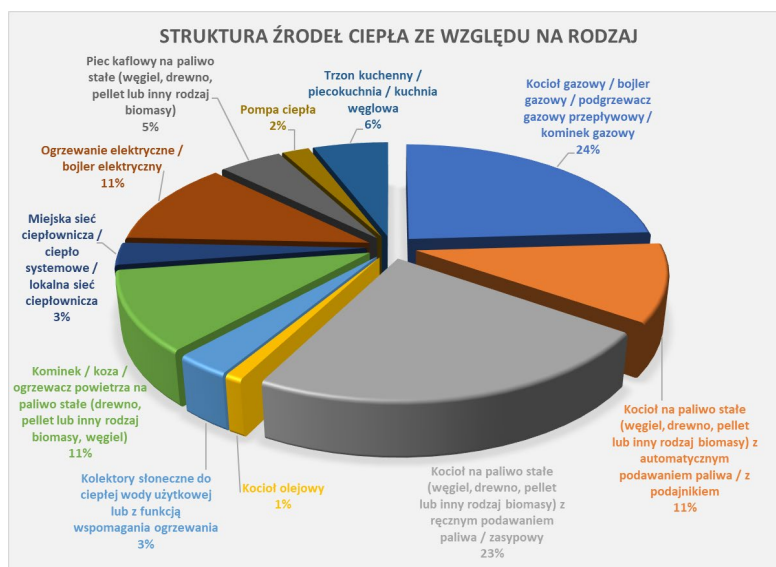
In February 2022, the provisions on the Central Register of Building Emissions were introduced to the Thermomodernisation Act. In the light of these provisions, the data and information collected in the records are made available to entities specified by law, including provincial assemblies and provincial environmental protection funds. However, implementing regulations are currently lacking and practically more detailed data are not available.

Aggregated data is available, as in the chart below.

[Chart title: Structure of heat sources by type.]

Listed types:

- 24% - gas boiler / instantaneous gas heater / gas fireplace
- 11% - solid fuel boiler (coal, wood, pellet or other type of biomass) with an automatic fuel feeder
- 23% - solid fuel boiler (coal, wood, pellet or other type of biomass) with manual fuel feeding
- 1% - oil boiler
- 3% - solar collectors for domestic hot water or with heating support function
- 11% - fireplace, air heater for solid fuels (coal, wood, pellet or other type of biomass)
- 3% - district or local heat network / system heat
- 11% - electric heating / electric boiler
- 5% - solid fuel tiled stove (coal, wood, pellet or other type of biomass)
- 2% - heat pump
- 6% - kitchen core / stove-kitchen / coal kitchen]



Source: <https://www.gunb.gov.pl/strona/statystyki> (As for April 26, 2023)

In perspective - the collected data is also to contain information on social assistance benefits or other forms of financial support from public funds in the field of:

- housing allowance,
- energy supplement,
- special-purpose allowance for heating.

Access to this data would make it possible to determine the scale of energy poverty.

Access to the Central Base of Building Emissions on a national, regional and municipal scale is needed.

The page on emissivity of buildings can be found on the website of the General Office of Building Control.

www.gunb.gov.pl/strona/statystyki

The data published therein shows that the share of coal and carbon-based fuels still account for 55.6% in the structure of fuel consumption (as for April 2023).

Ad.2

a. Warm Apartment program was launched in July 2022. However it is full of flaws:

- does not apply to housing communities
- in practice, it only allows to replace the heat source or replace the windows (on condition that the heat source is replaced); moreover, the replacement of a heat source, e.g. a tiled stove, with heat pumps is not possible if there are technical and economic conditions for connection to the heating network; the program cannot be used by persons renting an apartment; the owner may apply for co-financing for the premises in which he lives, while projects in rented premises are not subject to co-financing.

b. Clean Air program – launched in July 2022 – the program is addressed only to owners of single-family buildings; the scope of support covered thermo-modernisation and replacement of heat sources, including the construction of PV installations. In January 2023, a new edition of the Clean Air

program was launched. An important change is the introduction of the rule that a bank loan with a subsidy for partial repayment of the liability can be obtained for investments starting up to 6 months before submitting the application to the bank.

c. My Electricity 4.0 program – The program covers projects consisting in the purchase and installation of photovoltaic micro-installations with an installed electric power of 2 kW to 10 kW, serving the needs of existing residential buildings, as well as projects consisting in the purchase and installation of electricity storage facilities with a capacity of at least 2 kWh. **The program does not provide for pre-financing, but only reimbursement of costs incurred up to 50% (for energy storage up to PLN 7,500).**

Funds for the program have been exhausted and the program closed on March 17, 2023. Until April 5, 2023, 412,500 PV installation projects were co-financed, worth PLN 1.7 billion.

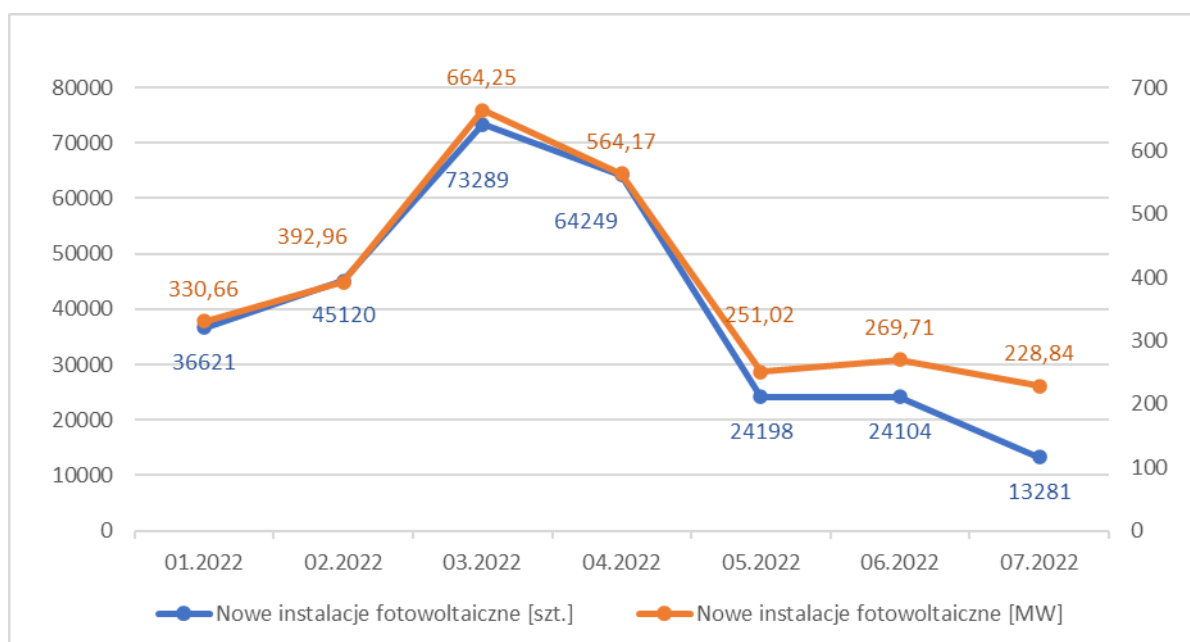
New edition of the program - My Electricity 5.0. Co-financing in the My Electricity 5.0 program covers not only photovoltaics or energy storage, but also air and ground heat pumps or solar collectors.

Conclusion: there is a great demand for financial instruments supporting investments in improving energy efficiency and RES; further modification of the programs is needed by changing the rules of providing support towards a better adjustment to the needs and facilitating the acquisition of funds

Information on available funds is dispersed. There should be a single platform covering the available programs - e.g. at the regional level.

Ad.3

- experiences with low-interest loans with fixed interest rates (repayable funds under the ROP, support from EIB funds), for investments in renewable energy sources from the Pomeranian Loan Fund (PFP) for legal entities are positive; in September 2022, the funds were practically exhausted; it was proposed to continue this type of support.
- Due to the great interest in the loan, PFP was provided with additional funds. The implementation period of the projects has been extended until the end of 2023.
- after a few months of prosumer activity under the changed rules, the interest in this type of installations decreased significantly:



[blue line - new PV installations (quantity)

orange line - new PV installations (MW)]

Source: BAPE own study

It is necessary to increase the activity of energy companies in the modernisation of distribution networks and substations of various power ranges in order to prevent the shutdown of prosumer installations and enable the collection of energy generated in distributed energy.

A new category of prosumer appears on the market - tenant prosumer - for multi-family buildings and there is a lot of interest in cooperatives and housing communities in this instrument. However, currently (July 2023), there are no regulations.

Ad. 5

A broad campaign is needed to raise awareness of the need to check/improve energy efficiency before implementing investments in RES.

4.1.4 Needed instruments and tools

The needs focus on support related to the preparation of projects for implementation in the 2021-2027 financial perspective.

- Solutions that are effective not only in terms of energy, but also economically should be promoted. In the current period of supporting investments in the years 2021-2027, the majority of programs will be based on loans, not subsidies, as so far.
- The implementation of IES should be promoted as a comprehensive solution for improving energy efficiency and increasing investments in RES and moving away from fossil fuels.
- The implementation of EE should be promoted together with or before the implementation of RES.
- Promote and support (e.g. legal and technical advice) the creation of various forms of energy communities, including energy cooperatives and energy clusters.

4.1.5 RoundBaltic intervention support

- Presenting to the representatives of the regional government the approach to the implementation of IES and combining investments in EE and RES during meetings and regional tables, disseminating the presentation on the BAPE website and making it available directly to interested parties.
- The impact through the members of the Regional Advisory Committee on stakeholder groups, depending on the organisation represented by a given person: support in applying for funding in the new formula through repayable instruments, including environmental aspects in the allocation of support, dissemination of the topics of integrated investments in energy efficiency and RES among executive entities offering delivery and assembly of devices and installations.

4.1.6 Road map - how to achieve goals and overcome challenges

Action plan to help implement recommendations from the Round Tables, tools needed to improve policy in the region, other actions taken by the Partner in the project

1. Cooperation with SAPE in terms of a stronger impact on decision-makers regarding the shape of financial support for investments and legal facilitations for RES - including amendments to

the Wind Farm Act

2. Cooperation with the Department of Economic Development of the Marshal's Office of the Pomeranian Voivodeship on European Funds for Pomerania
3. Cooperation with the Department of Economic Development of the Marshal's Office of the Pomeranian Voivodeship on energy poverty
4. Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by an update of the regional diagnosis in communication with the Advisory Committee
5. Promotion and implementation of conclusions from both regional roundtables
6. Continuation of the idea in the following years, after the end of the project

4.1.7 Stakeholders

- Banks, Pomeranian Loan Fund, WFOS, regional authorities, energy auditors,
- All municipalities have assumptions for heat and energy supply plans (PZC), necessary requirements for updating plans when applying for ROP funds. The activity of the municipalities is the basis for achieving a reduction in energy consumption, increasing the share of RES and lowering emissions.
- Main courses of action should include:
- Actions by territorial self-government units to raise public awareness of energy conservation and prosumer energy development: both short- and long-term.
- Thermo-modernisation of territorial self-government buildings and installation of RES in prosumer mode, creation of a database for territorial self-government buildings and monitoring of energy consumption.
- Promotion of Integrated Energy Systems (IEE) based on renewable energy sources in all building sectors, i.e. housing, public buildings and tertiary and industrial buildings.
- Support by JTS for all sectors (residential, services, SMEs)- energy advice in their area. Creation of one-stop-shops.
- Supporting the integration of individual consumers into groups applying for subsidies and organising financing. Organising and supporting the construction of energy islands in the form of energy clusters and energy cooperatives.
- Reducing the consumption of coal as end-use fuel, increasing the use of energy and RES, support for cogeneration, including in district heating systems. Support for modernisation of district heating systems to achieve an energy-efficient system standard.

Regional Intervention Plan, main orientations:

1. Regional Plan - "Efficient Pomerania" - is being implemented, BAPE is involved in consultations,
2. ROPs and national programmes - funding instruments - there is ongoing monitoring of activities and the proportion of national programmes launched such as. My Electricity, Warm Home etc.

3. Joint programmes and stakeholder cooperation - is implemented e.g. with energy islands (feasibility studies for the creation of islands, fight against poverty in the Pomeranian Region,
4. Support of banks and cooperation with the community - cooperation with a financial institution - Pomeranian Loan Fund,
5. Educational and promotional campaigns, project consultations - is implemented through BAPE's participation in seminars, stakeholder meetings.

4.2 Buildings modernisation

4.2.1 Indicators

Energy efficiency area	Needs and possibilities	Type of initiative	Involved entities	Energy savings in GWh / year	Investment in MEUR
Pomeranian voivodeship					
Residential buildings	At least 10 - 20 multi-family buildings in rural municipalities will undergo thermo-modernisation	Development of local energy advisory networks at the level of intermediary administrations (poviats) Providing access to information about financial support	Banks, local authorities, energy auditors, ESCO	10 - 20 buildings x 2,500m ² x 200 kWh 5 - 10 GWh/year	6 - 12 MEUR
As for October 2022	An analysis of the potential of buildings for the implementation of IES along with thermal modernization as part of the pilot energy islands was carried out The energy effect for 20 buildings in 4 municipalities of Pomeranian Voivodeship was estimated	Development of local advisory networks at the level of commune (regional authority, energy end users, home owners, associations, energy auditors) Creation of energy islands (cooperatives), including; thermo-modernisation of multi-family buildings and heat supply from heat pumps as part of the energy island	regional authorities, local authorities, energy auditors (BAPE) Municipalities involved in the pilot; selected in a competition in the expected funding from EFP; the provincial government will provide technical assistance	20 buildings x 800m ² Change from coal fueled heating to RES, savings of non-renewable primary energy 2,4 GWh/year	Thermo-modernisation; PV and heat pumps installations - 5,0 MEUR

As for April 30, 2023	A profitability analysis of the project was carried out, the selection of equipment was verified, and the ecological effect was calculated	Liquidation of the coal boiler room for heating, preparation of hot water and its replacement with ground source heat pumps	Housing community, contractor, PFP, BAPE	14 buildings x 816 m2 The power of newly installed devices: 476 kW CO2 emission reduction: 0,329 thousand of tonnes/ye ar	0,8 MEUR
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4.2.2 Challenges

Conclusions after the Roundtable in Pomorskie Voivodeship, changes in the legal environment, regional conditions

1. Expanding the energy advisory system at the municipalities level.
2. Information and education activities addressed to the group of existing and potential energy advisors, including the consolidation of information on various sources of obtaining support for investments in energy efficiency.
3. Creating Investors' Comprehensive Service Points (KOIs).
4. Lack of information on technical progress - mainly in renewable energy technologies and energy management systems in buildings.
5. Application of the Gdańsk Gdynia Sopot Metropolitan Area to the EIB under the ELENA program to finance support for 25 provincial governments in energy efficiency and RES activities.
6. Friendly conditions for the operation of ESCO type of companies should be created.
7. Combining support for EE and RES financing.
8. Analysis of energy poverty at the regional level.
9. Including multi-family buildings in the created energy communities and building energy cooperatives.

4.2.3 Needed supportive framework

1. There is a need to extend the energy advisory system at the municipalities level to support the following activities:
 - a. of deep thermo-modernisation,
 - b. towards doubling the number of buildings being subject to thermo-modernization by 2030,
 - c. for moving out of energy poverty.

2. It is necessary to organise further information and education training addressed to the group of existing and potential energy advisors.
3. There is a great need to further develop the system of energy advisors, including the creation of the Investors' Comprehensive Service Points (KOIs).
4. There is still an open question: which of the KOIs models operating in Western Europe are most adequate to the situation in Poland at the national, regional, poviats/municipal levels?
5. There is a need to consolidate information on various sources of support for investments in energy efficiency.
6. There is a shortage of information on technical progress - mainly in renewable energy technologies and energy management systems in buildings.
7. Broader promotion and removal of barriers for ESCOs in order to ensure large-scale, effective support for the least affluent owners of single-family buildings - this need is addressed at the national level, as it requires incurring campaign costs and changes to the law at the national level.

4.2.4 Needed instruments and tools

1. An important role for the wide implementation of IES may be played by the wide promotion of such solutions, creation of IES offers by contractors (moving away from forcing single technologies in favour of integrated solutions) for residential buildings (but not only). Therefore, the following actions are indicated as the postulated support scheme:
 - disseminating information about the benefits of implementing IES,
 - creating financial support systems as preferred for IES solutions,
 - clarification of doubts - individual conversations with interested parties,
 - assistance in the preparation of applications,
 - assistance in planning and obtaining financing,
2. Creating conditions for the creation of energy cooperatives with the participation of multi-family housing
3. Combating energy poverty

4.2.5 RoundBaltic intervention support

1. Consultations with the Marshal's Office on the creation of energy islands and local energy communities.
2. BAPE was invited to participate in the Energy Poverty Team at the Marshal's Office - an analysis of the state of energy poverty in the Pomeranian Voivodeship was made. Unfortunately, the available data refer to 2020, i.e. before the crisis and the outbreak of war in Ukraine. Therefore, the scale of the phenomenon should be further monitored, and the data and conclusions updated.
3. Dissemination of the concept of integrated modernization of buildings and renewable energy sources among the sector of suppliers and installers of equipment and systems.

4.2.6 Road map - how to achieve goals and overcome challenges

1. According to the provisions of the EFP (European Funds for Pomerania) - In the area of development of renewable energy sources, support will be given to the construction and

expansion of renewable energy sources in the field of electricity and/or heat generation, including energy storage facilities operating for the needs of a given RES source, with particular emphasis on dispersed prosumer energy along with the connection of RES sources to power or heating networks.

2. Support will be given to undertakings consisting in the organisation and construction of energy islands (connected systems of heat (cold), electricity and/or gaseous fuels) based on local, renewable energy resources, also with the reconstruction of existing heating plants supplying local groups of recipients.
3. Projects consisting in organising and building energy clusters, energy cooperatives and energy communities operating in the field of renewable energy will also be co-financed. As part of comprehensive projects, it will also be possible to build, expand or reconstruct networks within energy clusters, energy cooperatives and energy communities operating in the field of renewable energy.
4. Cooperation with SAPE in the field of ESCO promotion.
5. Cooperation with WFOS in supporting the system of energy advisors.
6. The Gdańsk Gdynia Sopot Metropolitan Area pre-application to ELENA has been accepted by the EIB. The next step will be to sign agreements with the municipalities' authorities. Presidents, mayors and commune heads will ultimately decide which investments will qualify for the program. Of course, this involves the need to obtain funds for their implementation in the future. Above all, however, thanks to ELENA, municipalities will be able to finance the preparation of documentation¹.
7. Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by updating the regional diagnosis in communication with the Advisory Committee.
8. Promotion of good practices obtained in regional governments.

4.2.7 Stakeholders

Regional authorities, local authorities, energy auditors, banks, other financing institutions

4.3 Results summary

Output	Outcome
1.1 Establishment of regional round tables focused on financing energy efficiency	
Two regional round tables were implemented, with total of 189 participants, including: 1st round table: 93 participants, including: Finance sector 27	Increased network and interaction with financial institutions at the regional level Increased network and interaction with stakeholders (investors, advisors, suppliers, financial institutions)

¹ <https://www.metropoliagdansk.pl/metropolitalne-wiadomosci/elena-pomoze-metropolitalnym-gminom-i-ich-mieszkancom-oszczedzac-energie/>

Local government sector 40 Experts 11 Entrepreneurs 8 Others 7 2nd round table: 96 participants, including: Finance sector 15 Local government sector 57 Experts 13 Entrepreneurs 11 Advisory: <ul style="list-style-type: none"> ● Support for creating local energy communities 	
1.2 Establishment of permanent structures involving all relevant stakeholders, including important financial actors	
<ul style="list-style-type: none"> ● Advisory Board including BAPE team 	<ul style="list-style-type: none"> ● Transferring recommendations to the regional level ● Direct consultations with financial institutions and regional government units
2. Benefits of roundtables to increase the database of best practices, developed strategies, roadmaps and action plans	
<ul style="list-style-type: none"> ● Public discussion on problems in financing investments in EE and RES 	<ul style="list-style-type: none"> ● Improvement of communication between public regional institutions ● Improvement of communication between stakeholders ● Increased awareness among public sector stakeholders about the need for integrated measures in the field of energy efficiency and RES
3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market	
<ul style="list-style-type: none"> ● Developing, together with members of the Advisory Board, conclusions from the round tables 	<ul style="list-style-type: none"> ● Implementation of the conclusions discussed at the meetings of the Advisory Board ● Ad hoc consultations with the provincial government on supporting investments in EE and RES in the Pomeranian Voivodeship

5 Poland- Kujawsko – Pomorskie

Kujawsko-Pomorskie voivodeship is located in the course of the main elements of the national transmission system (electricity and gas). This favourable condition will enable the development of distribution networks and energy supply. Thanks to the development of RES and new large modern energy generation investments, the region's energy production covers approximately 80% of its own needs. The voivodeship already stands out from the country with approximately 12% of its energy generation potential from RES. Wind energy dominates, providing more than 59% of the province's RES energy production. 21% is provided by hydroelectricity, 17.4% by biogas plants and about 1.5% by photovoltaics. The capacity of biomass installations is approximately 177 MW, which is 13% of the capacity of all installations of this type in the country. A significant investment in the region is the construction of a hydrogen hub with the potential to produce 'green hydrogen'.

There are 5 energy clusters in the province. Due to the small fluctuations in energy consumption, there are opportunities to generate energy savings.

Action lines:

Energy efficiency projects in the Kujawsko-Pomorskie voivodeship primarily concern the following sectors:

- Housing;

"The housing stock of the Kujawsko-Pomorskie Voivodeship in 2017 consisted of over 745.8 thousand dwellings, representing almost 5.2% of the national stock. Between 2008 and 2017, the number of dwellings in the voivodeship increased by 59.7 thousand, which means an increase in housing stock by 8.7% and ranks the region 8th in the country. The vast majority of dwellings (67.2%) were located in cities (of which 71.0% in the region's five largest cities), with the remaining 32.8% located in rural areas."

In small towns and rural areas, information and promotion activities are needed, following which thermo-modernisation measures will be carried out.

- Public utilities;

There are 52 towns and 3419 inhabited rural settlements in the province. This means the operation of several thousand buildings of a public utility nature. In 2017, almost 196,000 business entities were registered in Kujawsko-Pomorskie Voivodeship. Most of them are micro and small enterprises. Their energy demand is generally slightly higher than that observed in residential construction. Medium-sized and large businesses are by far the largest energy consumers, where the potential for energy savings should be seen first and foremost.

For public buildings managed by government institutions, the following funding opportunities for energy efficiency measures have been identified:

- The Infrastructure and Environment Operational Programme, under which the investment priority 'Supporting energy efficiency and the use of renewable energy sources in the public and housing sector' was created,
- Programmes implemented by the National Fund for Environmental Protection and Water Management in the field of energy savings for buildings belonging to the public finance sector (e.g. SOWA - Energy efficient street lighting, PUSZCZYK and Green Public Transport),
- Regional Operational Programme, the area of intervention of which includes activities related to the comprehensive energy modernisation of public buildings and residential buildings,

including the implementation of energy audits,

- Ekoklimat 2020 programme, implemented by the Provincial Fund for Environmental Protection and Water Management in Toruń in the field of improving the energy efficiency of buildings and the construction of RES installations and energy storage facilities, aimed at legal persons, among others.

Investment and funding opportunities are needed in:

- The industry and SME sector, funding opportunities for energy efficiency measures included:
 - Regional Operational Programme enabling financial support for measures enabling small, medium and large enterprises to increase energy efficiency and the use of RES;
 - Operational Programme Infrastructure and Environment enabling support for enterprises.
- The residential sector:
 - Support system resulting from the Act on supporting thermomodernization and renovation (thermomodernization bonuses),
 - Funds administered by the Regional Environmental Protection and Water Management Fund in Toruń (preferential loans),
 - Preferential loans granted by certain banks (e.g. Bank Ochrony Środowiska).
 - The Ekoklimat 2020 programme implemented by the Provincial Fund for Environmental Protection and Water Management in Toruń in the field of improving the energy efficiency of buildings and the construction of RES installations and energy storage facilities, aimed at, among others, housing cooperatives and communities.
- The agricultural sector:
 - NFOŚiGW's priority programme, AgroEnergy, which aims to support investments in, inter alia, renewable energy sources that will reduce the negative impact of agricultural activity on the environment (improving air quality, improving the energy efficiency of farms and increasing their energy self-sufficiency).

It is important to note the operation of the following financial programmes / initiatives to support energy efficiency improvements:

- *EKO - CLIMATE 2020 Programme*
The aim of the EKO - KLIMAT 2020 water, air, land programme is to support water, air and land surface protection projects.
- *Energy Plus Programme*
The programme aims to reduce the negative impact of businesses on the environment, including improving air quality, by supporting investment projects.
- *Energy Plus Programme*
The programme aims to reduce the negative impact of businesses on the environment, including improving air quality, by supporting investment projects.

- *Clean Air Programme*
The programme aims to improve air quality and reduce greenhouse gas emissions by replacing heat sources and improving the energy efficiency of single-family residential buildings.
- *My Electricity Programme*
The programme aims to increase the production of electricity from micro photovoltaic installations.
- Thermomodernisation allowance
- Thermomodernisation bonus
A form of state aid for investors implementing a thermomodernisation project. Repays a part of the loan taken by the investor.
- Kujawsko-Pomorski Loan Fund
A loan earmarked for the construction or modernisation of installations for the production, processing and storage of electricity from RES, together with the connection of the source to the distribution/transmission network.
- Bank Pekao SA
Preferential financing for micro, small and medium-sized enterprises in the Kujawsko-Pomorskie Voivodeship planning investments reducing the costs of energy consumed by at least 25%.

Of great importance are the initiatives undertaken by the WFOŚiGW and NFOŚiGW in the Kujawsko-Pomorskie Voivodeship. The environmental effects achieved as a result of the implementation of air protection projects with support from these institutions are presented in the table below.

There is high development potential in financing energy efficiency projects in the ESCO formula. It is applied on a very small scale. There is a lack of financial institutions to commit to its implementation, and there is insufficient promotion of this type of financing or awareness-raising activities.

The financial sector (banking) does not show the commitment to energy efficiency improvements to the extent that could be expected. Too few financial institutions provide low-interest loans for such projects. Banks that show interest in financing energy efficiency improvements include:

- Bank Ochrony Środowiska,
- Pekao SA,
- PKO BP SA.

In the Kujawsko-Pomorskie Voivodeship, there are ample opportunities to build energy investment potential:

- support for the development of low-carbon energy transport and industry,
- modernisation of individual and collective heating systems,
- support for energy using renewable energy sources (including large-scale development of prosumer installations),
- development and support of technologies and social behaviour leading to lower energy consumption,

- promotion of passive, low-energy buildings and thermo-modernisation of buildings.

In addition, the following can contribute to this capacity building:

- promoting less common forms of financing, such as ESCOs,
- disseminating knowledge about projects which are examples of good practice,
- raising public awareness of the need to save energy and respect the environment, starting with educational activities in schools.

Regional Intervention Plan, main directions

Collectively, the offers, activities and actors in the energy efficiency sphere can be summarised as follows:

- Inclusion of energy efficiency issues in more financial programmes operating in the voivodeship,
- POIŚ, RPO, NFOŚiGW (SOWA, PUSZCZYK, Green Public Transport),
- Thermomodernisation bonus,
- Ecoclimat2020 programme,
- Energy Plus programme,
- Clean Air Programme,
- My Current Programme,
- Thermal modernisation allowance,
- Thermomodernisation bonus,
- Kujawsko-Pomorski Loan Fund,
- Bank Pekao SA,
- ESCO,
- Necessary support for commercial banks,
- Support of JST,
- Support of low-carbon transport, energy industry,
- Modernisation of individual and district heating systems,
- Support of renewable energy sources, including the development of prosumer installations,
- Development and support of technologies, social behaviour leading to lower energy consumption,
- Promotion of passive, low-energy buildings and thermo-modernisation,
- Consultations with banks in order to use EU ELENA funds in addition to the offer of financing for thermal modernization of multi-family buildings,
- Creation of a One Stop Shop in the region,
- Transfer of information between project participants.

5.1 Public buildings

5.1.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
Public buildings	At least 10 to 20 public buildings will undergo thermal upgrading	Local energy advice networks One-stop-shop	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	10 - 20 buildings x 3,000m ² x 250 kWh 7 - 15 GWh/year	7 - 14 MEUR
Situation as of October 2022	Thermo-modernisation of the buildings of 9 schools, 3 boarding schools, 6 other public buildings was carried out.	Activities according to the programme of thermo-modernisation of facilities of the Municipality of Toruń.	Local authorities, local MŚP - suppliers of goods and services, banks, energy auditors	8,80 GWh/year	7,6 MEUR
Situation as of April 2023	Thermo-modernisation of 9 schools, 3 dormitories and 8 other public utility buildings was carried out.	Actions according to the program of thermo-modernisation of the facilities of the Municipality of Toruń City.	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	9,00 GWh/year	7,9 MEUR

5.1.2 Challenges

- Increasing energy efficiency in public buildings, such as schools, is feasible. This process could be carried out by the building's maintenance services by reducing electricity consumption (controlled switching off of light sources and reduction of heating temperatures). The benefits of reduced electricity and heating bills should be shared between the local authority and the local authority (school), but this is made difficult by the legal framework. The most effective form of reducing electricity and heat bills is through specialised control and monitoring systems.
- A good example of increasing energy efficiency are the solutions adopted in the Małopolskie Voivodeship, where a programme of subsidies for the replacement of furnaces, boilers and tiled cookers has been consistently implemented, as well as a local total ban on burning coal and wood. A large part of the money for replacing heating boilers comes from the city budget. It is necessary to act restrictively and raise as much money as possible for energy efficiency improvements. Provincial anti-smog resolutions must not be liberal.
- A good solution is to connect municipal buildings to the district heating network.
- A form of ESCO-type investment financing is an interesting proposal for entrepreneurs and local governments. However, this type of investment is not very popular in Poland. The reason for this may be the difficulty in settling the investment budget and the complicated form of

the contract, which results in prolonged negotiations. Therefore, the entity providing co-financing should take into account the extended time of investment implementation.

- In practice, the thermo-modernisation of historic buildings is technically significantly different from the thermo-modernisation of non-historic buildings. Referring to the experience of energy auditors, it can be clearly stated that many aspects depend on the type of building and on the direct opinion of the conservation officer. In view of this, attention should be paid to the financial aspect of carrying out the thermo-modernisation itself. Funds granted for the thermo-modernisation of historic buildings should be allocated adequately to the type of building which will be subject to thermo-modernisation.
- ELENA project
 - The project is intended for financial support for undertakings in the public, enterprise and housing sectors. Supports, among others, modernization of buildings with the use of renewable energy sources.
- The credit product "EKO-loan for local governments" is intended for local governments that benefit from co-financing 90% of the costs of preparing technical documentation using funds from the ELENA grant.
- "Loan with a SDB premium" dedicated to housing cooperatives, housing communities, local government units and municipal companies for thermomodernization and renovation projects of the housing stock.

5.1.3 Needed supportive framework

- The need to include large enterprises and municipal companies in aid programmes - so far, funds have been directed to individuals, small and medium-sized enterprises and public entities.
- The need to carry out continuous educational activities in all target groups - decision-makers in individual municipalities, managers and employees of municipal organisational units, young people and children.
- Implementation of appropriate programmes to improve energy efficiency by local municipalities.
- Financial support for connecting public buildings to the district heating network.
- Popularise and create a clear legal framework for alternative financing solutions, such as ESCO.
- Dissemination of information - popularisation of aid programs.
- Design support.
- Assistance in planning and obtaining financing.
- Assistance in carrying out acceptances.
- Assistance in settlements with financing parties.
- Expansion and development of the energy advisory system, exchange of information on various sources of obtaining support for investments in energy efficiency.
- Intensification of training and other information and education campaigns on the implementation of energy efficiency measures and the possibility of their financing.

An important initiative resulting from the Regional Round Tables is the establishment of a permanent regional energy support system and active participation in:

- information activities, especially aimed at final beneficiaries,
- educational campaigns and raising awareness of the need to care for energy efficiency and the possibilities of its financing,
- support in designing, assistance in planning and obtaining financing,
- certification of contractors,
- support in the organization and implementation of supervision over works, in conducting acceptance and settlements with financing parties.

5.1.4 Needed instruments and tools

- Support in the preparation of projects for implementation (education, information on sources of support, assistance in submitting applications for financial support, support during the implementation and acceptance of investments).
- Development of the energy advisory system.
- Conducting an information campaign and training in the field of EE and its funding sources.

5.1.5 RoundBaltic intervention support

- Maintaining constant contact with stakeholders of the RoundBaltic project (information exchange platform)
- Creating a "bank of good practices" for the implementation of investments in the field of EE and their financing.

5.1.6 Road map - how to achieve goals and overcome challenges

Action plan to help implement recommendations from the Round Tables, tools needed to improve policy in the region, other actions taken by the Partner in the project.

- Cooperation with local authorities to develop programmes for energy efficiency improvements by local authorities,
- Cooperation with local municipalities and the district heating provider for connecting public buildings to the district heating network,
- Financial programmes to support the thermo-modernisation of historic buildings.

5.1.7 Stakeholders

- Local authorities,
- Banks,
- Regional Environmental Protection and Water Management Fund in Toruń,
- Kujawsko-Pomorski Loan Fund,
- Energy auditors.

5.2 Buildings modernisation

5.2.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
Public buildings	At least 5-10 multi-family buildings owned by cooperatives/communities in rural municipalities will undergo thermo-modernisation	Development of local energy advice networks at intermediate administration level (district) Enabling access to information on financial support	Banks, local authorities, energy auditors, ESCOs	5 - 10 buildings x 2,500m ² x 200 kWh 2.5 - 5 GWh/year	3 - 6 MEUR
Situation as of October 2022	Example action: thermo-modernisation of 25 multi-family buildings belonging to the Youth Housing Cooperative.	Implementation of thermal modernisation programmes for multi-family residential buildings of individual property owners/managers.	Banks, local authorities, energy auditors, ESCOs.	5 GWh/year	4 MEUR
Situation as of April 2023	Receipt of 3000 applications for funding under the Clean Air Programme.	Clean Air Programme	WFOŚiGW	1,86 GWh/year	2 MEUR

5.2.2 Challenges

- In order to effectively start reducing carbon dioxide emissions into the atmosphere in Poland, special attention should be paid to communal/social housing. Ultimately, they constitute a significant group of dwellings requiring immediate modernisation of the heating system.
- Only a comprehensive approach to carrying out thermo-modernisation will make it possible to achieve satisfactory results in reducing carbon dioxide emissions into the atmosphere. In the process of thermo-modernisation, the investor should not focus solely on replacing the heating boiler. Rely on the expertise of energy auditors. The report drawn up by the auditor contains all the indications to enable the investor to carry out a comprehensive thermo-modernisation accordingly.
- Combating 'energy poverty'. The energy-poor is the household owner who spends most of the household budget on heating fuel.

5.2.3 Needed supportive framework

- Subsidising thermo-modernisation projects for property owners is a priority.
- Creating mechanisms that offer assistance to the poorest struggling with the high cost of heating after a boiler replacement.
- Expand teams of energy advisors.
- Expansion and development of the energy advisory system, exchange of information on various sources of obtaining support for investments in energy efficiency.
- Intensification of training and other information and education campaigns on the implementation of energy efficiency measures and the possibility of their financing.
- Creation of additional programs facilitating the financing of projects increasing energy efficiency.
- Educational activities in the field of energy efficiency - making the public aware of energy, ecological, financial and health aspects.
- Simplification of formalities related to the use of the "Clean Air" program.

5.2.4 Needed instruments and tools

- Conducting continuous educational and informational activities in the field of EE and its funding sources.
- Development of the energy advisory system.
- Facilitations in applying for funds from the Clean Air program and other programs co-financing projects related to EE.
- Establishing a platform for exchanging information with project stakeholders regarding EE funding sources.

5.2.5 RoundBaltic intervention support

- Maintaining constant contact with stakeholders of the RoundBaltic project (information exchange platform)
- Creating a "bank of good practices" for the implementation of investments in the field of EE and their financing.

5.2.6 Road map - how to achieve goals and overcome challenges

- Establishment of additional programmes to facilitate financing of energy efficiency projects.
- Educational activities on energy efficiency - making the public aware of energy, environmental, financial and health aspects.
- Continuation of cooperation with project stakeholders in the field of EE.

5.2.7 Stakeholders

- Local government units, their unions and associations, and local government organisational units.
- Housing cooperatives, housing associations and social housing associations.
- Banks.
- Voivodeship Fund for Environmental Protection and Water Management in Toruń.

- Kuyavian-Pomeranian Loan Fund.

5.2.8 Financing the renovation of residential buildings, public buildings and local government units - conclusions of the Second Regional Round Table in Toruń

- Experience of housing cooperatives in the implementation of renovation activities and obtaining external funds for them:
 - the biggest barrier – the breakthrough moment is the complicated legal regulations – the regulations are complicated and difficult to interpret.
 - there are also difficulties in obtaining answers and appropriate support from offices and institutions implementing various forms of co-financing.
- Installation of photovoltaics in residential buildings as a tool to support energy efficiency:
 - most of it is a cooperative initiative. The residents still need to be educated on the benefits of the presence of photovoltaic devices - residents ask about the profits for the tenants - an aspect that is difficult to explain due to the fact that the profits are only for the common parts of the building,
 - the difficulty in understanding the sense of investing in photovoltaics in multi-family buildings is the lack of benefits for residents in low-rise buildings, i.e. with a small area of common areas and without elevators,
 - it is planned that the regulations should take into account that the benefits of photovoltaics should be felt not only for the common parts of the building, but also directly for the residents - this should encourage both residents and building managers to use modern photovoltaic technologies. The current regulations prevent the creation of effective "energy cooperatives" and local energy balancing areas, which could encourage tenants to incur capital expenditures on photovoltaics,
 - attention should be paid to the barrier to efforts to obtain co-financing for projects - great difficulties with their settlement, the organisation and lengthy process of co-financing settlement should be improved. This discourages mainly small building managers with a small number of employees.
- Voivodeship Fund for Environmental Protection and Water Management in Toruń – advisory activities:
 - there is a large number of sources of financing, it is difficult for an average person to orientate in this area, because the same project can count on various forms of co-financing. The role of the energy advisor should be to find the best solution, not only from WFOŚiGW programs,
 - energy advisors from WFOŚiGW also provide information on other sources of financing known to them.
- Support from the Marshal's Office of the Kuyavian-Pomeranian Voivodeship for local governments and residents in choosing the best solutions:
 - WFOŚiGW is implementing a training project for "Energy Advisors" (municipal), which can be a very good solution. The problem, however, is the lack of financial resources in communes to employ communal power engineers. The solution would be support from external funds, i.e. employment of municipal power engineers by the Marshal's Office from subsidy programs,
 - there are also no people and resources to encourage residents to implement the provisions of the anti-smog act,

- as a country, we overlooked the possibility of obtaining EU funds to subsidise the employment of municipal power engineers; only some municipalities managed to take advantage of such employment subsidies. Currently, it is necessary to convince local government heads, mayors and presidents of cities about the benefits and positive effects of employing a municipal power engineer,
- an initiative of the Marshal's Office could be to develop a program (e.g. 5 years) for the employment of municipal power engineers, including defining the purpose and scope of their work, individual tasks and remuneration,
- in order for the employment of a municipal power engineer to be effective, high competences and experience should be required from candidates, which is associated with an increase in the level of remuneration - the current scale of remuneration was definitely too low.
- Employment of a municipal power engineer (municipal advisor) covering several municipalities at the same time. In that case the problem would be not only the difficulty in performing a large number of tasks, but also with the remuneration - each municipality has its own separate budget.
- Rational solutions and actions should be sought so as not to prolong the energy transformation. There are indications that the EU will organise "proxy investors" in the future, whose task would be to help local governments in modernising infrastructure and energy transformation. This is a solution instead of municipal advisors, a substitute investor who prepares applications and conducts the entire process of obtaining funds for investments. The idea of a "substitute investor" is a good one - but it requires good development in the context of regulations and regulations enabling the functioning of this position.
- White Certificates (WC) for actions to improve energy efficiency in housing cooperatives and local governments. Local governments do not try to obtain White Certificates, mainly due to the fact that the revenue per toe (WC) does not cover the costs of the company obtaining energy efficiency certificates. The costs of audits are too high in relation to the benefits of WC, and there is also legislative chaos.
- Other ideas for solutions to improve energy efficiency in buildings:
 - in Western countries, there are subsidies for photovoltaic installations mounted on balconies in multi-family buildings (25% of investment costs) - we must bear in mind that such technical solutions may wait for us in the future and gain popularity. Awareness of energy efficiency of residents is constantly growing and will be associated with the desire to install photovoltaics on balconies,
 - balcony photovoltaic installations - these are currently huge problems for building managers. Despite the increasing number of inquiries from residents, it can be concluded that at the moment there are no technical conditions in Poland for self-assembly of installations by tenants. This is an activity that requires the development of formal and technical solutions.
- Integrated Areas of Local Energy Balancing - the future of RES and energy markets
 - objectives and scope of the Gaspostrateg EueRegion project, concerning energy transformation plans, including integrated areas of local energy balancing (ZOLBE),
 - The current power system is planned and built based on the assumption that energy is transmitted in one direction - from large power plants through the transmission and distribution network to the end user. Due to the development of distributed energy and the need to improve the efficiency of energy use, this is a defective system.

- ZOLBE's role is to provide the flexibility necessary to ensure the economically optimal development of the RES-based energy system by increasing the local use of locally produced energy, increasing local flexibility and system integration of distributed sources, and the possibility of using distributed energy resources to reduce justified costs.
- The role of ZOLBE in the energy transformation - legal, organisational and technical conditions for the operation of the most well-known forms of energy communities in the country, i.e. energy clusters and energy cooperatives, and less known - collective prosumer of renewable energy and virtual prosumer of renewable energy.
- European Funds for Kuyavia and Pomerania for 2021-2027.

The local government of the Kuyavian-Pomeranian Voivodeship has adopted the rules governing the European Funds for Kuyavia and Pomerania program for 2021-2027. The issues of energy efficiency were given the most attention in *Priority 2. Clean energy for the region, and in particular in Specific Objective 2(i). Supporting energy efficiency and reducing greenhouse gas emissions*. Under the specific objective, measures consisting in comprehensive energy modernisation (the so-called deep modernisation in connection with the energy monitoring and management system) of public utility buildings and multi-family residential buildings, including elements of the heating installation and heat sources, will be supported. Support for undertakings consisting in carrying out an energy audit, comprehensive energy modernisation of buildings, including the use of RES installations and replacement of heat sources will lead to a reduction in the consumption of heat and electricity, which will also reduce air pollution. Projects in the field of energy modernization of buildings must ensure an increase in energy efficiency by a minimum of 30% (subject to exceptions for monuments) in relation to final energy. The replacement and modernization of inefficient heat sources in multi-family buildings and public utility buildings will have a significant impact on reducing pollution and improving the condition of the air, as well as reducing the consumption of heat and electricity. The change of the current heating source will consist in replacing the heating source with a new low- or zero-emission one, or in connecting it to the district heating network. With regard to heat sources, the introduction of coal-fired furnaces will not be co-financed. Priority will be given to heat sources using renewable energy sources. Investments in heat sources must contribute to reducing CO2 emissions and other air pollutants. The projects should also counteract energy poverty. The improvement of air quality is also to be supported by activities related to the development of system heating, focusing on the construction and modernization of heating networks and the reconstruction and modernization of local heating plants. The supported heating networks will be dedicated to connecting buildings in order to change the existing inefficient and air-polluting heating source. On the other hand, investments in local heating plants will consist in the reconstruction and modernization of installations that are a source of air pollution, in particular those fired with coal, into effective heating systems. Investments in heating plants, where the current heating source will be replaced with RES, will be preferred. In addition, it is possible to provide support in the field of energy/climate consultancy. Investments in the area will contribute to reducing energy consumption in the public and residential sectors, as well as improving air quality in the region, which is related to the implementation of the "anti-smog resolution" in the voivodeship.

5.3 Results summary

Output	Outcome
1.1 Establishment of regional round tables focused on financing energy efficiency	
<p>Two regional round tables were organised. About 130 stakeholders from the Kuyavian-Pomeranian region participated, including about 30% from the housing cooperative, 28% from the local government sector and 27% from the financial sector.</p> <p>Main recommendations resulting from regional roundtables:</p> <ul style="list-style-type: none"> ● The need for continuous, professional educational activities related to EE dedicated to individual stakeholder groups, ● Extensive information and promotion activities in the field of EE, ● Development of energy consultancy, ● Comprehensive approach to modernization investments, ● Improved access to EE financing instruments. 	<ul style="list-style-type: none"> ● Exchange of experiences between project stakeholders ● Dissemination of information on new sources and conditions of EE financing ● Increasing the activity of the regional financial sector
1.2 Establishment of permanent structures involving all relevant stakeholders, including important financial actors	
Establishment of Regional Advisory Board	Exchange of experiences and good practices between project stakeholders
2. Benefits of roundtables to increase the database of best practices, developed strategies, roadmaps and action plans	
Road map for EE activities at regional level	<ul style="list-style-type: none"> ● Participation in the creation of records regarding the EE of the FEdPK 2021-2027 project ● A platform for exchanging experiences with project stakeholders ● Cooperation with WFOŚiGW in Toruń ● Development of energy consultancy
3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market	
Preparation of the Regional Diagnosis and its updating during the project	Implementing and monitoring the conclusions of the two regional round tables.

6 Poland - Śląskie

The energy and economic characteristics of the voivodeship clearly indicate which directions of investment and modernisation activities are and should be prioritised. Reduction and liquidation of heavy industry, which is the most energy-intensive and has a destructive impact on the environment and air quality, deep modernisation of conventional sources of energy and heat production in the case of cogeneration sources, and the necessary fight against low emissions, particularly significant in the case of old buildings concentrated in coal-fired city centres, are the main directions of action. A centuries-long tradition of access to coal as part of workplaces, particularly in mines, has made coal heating in multi-family and single-family homes the primary cause of the region's dire air conditions. The struggle for energy efficiency is particularly evident in the commercial sector, mainly for economic reasons, while a difficult issue is the implementation of rational energy management in the case of dispersed housing. While large projects are being undertaken in city centres to promote and implement district heating, in the case of scattered housing, it is important to modernise electricity transmission networks, especially medium-voltage and low-voltage, and to implement renewable energy sources as an increasingly common course of action. Hence, the clustering of stakeholders for the implementation of energy efficiency and pro-climate tasks is evident, making it easier to apply for external funding and to achieve the intended project goals more efficiently, e.g. in the form of clusters.

These activities are particularly evident when analysing strategic documents related to the economic, energy and environmental aspects of the transformation of the province.

Regional Intervention Plan, key directions:

The main lines of action are defined by the financial framework and available financial instruments at regional and local level:

- Development strategies,
- Air Protection Programmes,
- Low emission management plans,
- ROPS,
- White certificates,
- Loans with thermomodernisation bonus,
- Preferential loans,
- Credit lines with WFOŚiGW subsidy,
- Clean Air Programme,
- Tax relief,
- Loan guarantees,
- Low emission reduction programmes and municipal revolving funds.

An important element and condition for success is the participation of the financial sector and stakeholders in the implementation of energy efficiency processes:

- Banks,
- WFOŚiGW,
- Silesian Development Fund,
- Upper Silesian Fund,

- Leasing companies and local development agencies,
- Marshal's Office and municipalities,
- Energy advisors,
- Social organisations.

In addition, activities within the framework of broad cooperation, education and promotion are important: the development of cooperatives, the implementation of one-stop-shop investments, the development of advisory services, the local adoption of European climate goals and energy and climate plans.

6.1 Public buildings

6.1.1 Indicators

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh/year	Investment MEUR
Public buildings	Local climate-energy planning is an opportunity to develop plans for the thermo-renovation of public buildings, as a result of the development of two SECAP plans (enacted and adopted for implementation), deep modernization of 85 public buildings was identified and prepared for implementation (Cities: Zabrze and Katowice, realisation years 2021-2027).	Comprehensive technical assistance from a technical advisor individual counselling.	Cities, consultants, advisors, environmental funds.	17,5 GWh/year	93,4 MEUR

6.1.2 Challenges

During the Roundtable, the possibility for partners to use audits carried out by local governments for the purpose of thermal modernisation to determine the terms of the PPP agreement aroused the greatest emotions, especially if such studies are the basis for applying for financing from various sources. Private partners drew attention to the discrepancies resulting from the assumptions made, tools used, and sometimes from the quality of studies. Participants wondered how to solve this problem.

The PPP in its classic form as well as in its hybrid variant can become a model solution for the implementation of EU-funded projects in the area of energy efficiency for both buildings and street lighting. The use of the ESCO model (as given by the amended Energy Efficiency Act referring to the simplified PPP model) is now easier. A problem that requires the development of appropriate solutions, however, is the proper definition and settlement of the energy effect generated by an investment. Both the quality of pre- and post-investment energy audits, as well as reporting on this type of undertakings, not only to institutions managing subsidies, but also to parties to the PPP agreement, require improvement.

In the discussion summing up the speeches on PPP in the context of subsidies and preferential loans, it was pointed out that it is appropriate to use refundable instruments, which will allow financing

(bankability) of this type of enterprises, settled already based on an agreement on PPP while enforcing the guarantees of energy consumption declared in it.

- Limited level of ambition corresponding to minimum technical requirements (“**WT2021**”),
- Lack of confirmation of effects by energy performance,
- Municipalities prefer subsidies to financial instruments and /or energy services ,
- New support mechanisms meet the expectations of municipalities - still do not require use of financial instruments and combining support with savings and commercial financing (PPP, ESCO),
- Energy audit, which in its customary form does not meet the needs of ppp/esco contracts,
- Limited interest in RES due to the terms of competitions rather than a real fit with needs,
- Decarbonisation is not a criterion for choosing a retrofit option.

6.1.3 Needed supportive framework

- There is a need for an intensive education and information campaign for public investors on the importance of quality measures for improving the energy efficiency of buildings.
- It is advisable to create institutional support (OSS) for public investors in the process of preparation and implementation of undertakings in the field of energy efficiency improvement, taking into account proven mechanisms of the public procurement law (e.g. competitive dialogue, limited tender) and providing them with co-financing of technical support, e.g. costs of preparing energy audits together with cost-technical documentation.
- It is important to link the results obtained from the implemented energy saving projects with their financing model.
- Support mechanisms for energy-saving investments do not so much have to be "intensive" 50%+ but should be sustainable and predictable, possible calls using financial instruments should be carried out continuously.

6.1.4 Needed instruments and tools

Given that the local market for energy modernization of public buildings will be decisively influenced by the **FESL'2027** the new regional operational programme, which is currently oriented towards intensive subsidies - it is necessary to convince Stakeholders to introduce new provisions by 2025 that are much more promoting/scoring solutions that are not only energy efficient but also economically efficient. New solutions should already be tested now, as in the next EU perspective 2028-2034 the programmes will be based on loans and not on grants as before, henceforth:

- PPP/EPC solutions should be promoted in the **FESL'2027** program and a rating and verification system based on the energy performance of buildings and energy management systems should be included as part of a comprehensive solution for improving energy efficiency and increasing the cost-effectiveness of investments.
- The association of municipalities or the Marshal's Office should establish at least two-three permanent One Stop Shops in the Silesia and Zagłębie region - providing a Comprehensive Service for their investments.
- A significant problem is the financing of thermo modernization of historic buildings under conservation protection, for which dedicated support mechanisms should be created.

6.1.5 RoundBaltic intervention support

The RoundBaltic team promoted the ELENA mechanism run by the EIB in the Silesian Voivodeship, e.g. among municipalities associated in the Association of Municipalities and Districts of Western Sub-region of Silesian Voivodeship based in Rybnik.

Through the Regional Advisory Board, the team influenced the work of the Regional Energy Council and shaped the concept of implementing the ELENA GZM measure.

The team ensured the transfer of applications for nationwide solutions and concepts to the regional level - e.g. through comments to those working on **FESL'2027** as well as the transfer of applications regarding solutions, experiences and concepts of entities based in the region to the National Round Tables.

The project proposals involving PPP/ESCO mechanism submitted to the FESL'2027 program will receive additional points in the calls.

Based on the created network of partners and experience accumulated in this project, the project team prepared an application to the LIFE instrument (call LIFE-2022-CET-FINROUND) for a program that would allow the smooth continuation of cooperation (also at the regional level) and the provision of expertise - EnergoDialogue - Roundtables for sustainable energy investments in Poland, the project was not chosen but is planned to be resubmitted in the next calls.

A separate application to the LIFE instrument for a project supporting the development of OSS for public buildings based on examples from the region is also being prepared.

6.1.6 Road map - how to achieve goals and overcome challenges

Action plan to help implement recommendations from the Round Tables, tools needed to improve policy in the region, other actions taken by the Partner in the project

The idea of the RoundBaltic project was introduced to the Silesian Regional Energy Council, which is to consider setting up a permanent group tackling energy efficiency and acceptable under public procurement models of financing energy efficiency improvements.

Intensive promotion of the ELENA mechanism as a tool to practically develop the One Stop Shop (OSS) concept in the area of support for thermal modernisation of public buildings was carried out.

Continuation of cooperation with RRE, ŚZGiP (Silesian Association of Communes and Districts) and GIG (Central Mining Institute) in the field of creating a centre of competence and consulting in the implementation of energy efficiency investments.

Promotion of provisions favourable to the **PPP/ESCO** mechanism in the **FESL'2027** program.

Obtaining support from the Managing Authority of **FESL'2027** program (Marshal's Office, JTF department) for the application for the Regional ELENA for local government buildings.

Promotion and implementation of recommendations from both regional roundtables regarding the organisation of Financial Instruments.

6.1.7 Stakeholders

- WFOŚiGW in Katowice,
- Marshal's Office of the Silesian Voivodeship,
- BGK- The National Economy Bank,
- BOŚ The Environmental Protection Bank (BOŚ Bank S.A),
- European Investment Bank
- Institute for Public-Private Partnership,
- GIG Research Institute,
- C&AE Association,
- The Silesian Union of Municipalities and Districts,
- Regional Energy Council,
- Association of Municipalities and Districts of Western Sub-region of Silesian Voivodeship based in Rybnik,
- City of Katowice.

6.2 Buildings modernisation

6.2.1 Indicators

EE area	Needs and opportunities	Type of initiative	Involved actors	Energy savings GWh/year	Investment MEUR
Residential Buildings single-family	More than 100 single-family buildings have been thermal upgraded as the results of advice on the scope covered by the Clean Air Programme for single-family buildings	Enabling access to information on financial support, energy audits and applications for funds have been delivered.	System of Environmental FUNDS, local authorities, energy auditors,	3.95 GWh/year	1.4 MEUR
Residential Buildings of housing association	347 housing association buildings (347 energy audits, 334 applications for financing, as well as 311 construction projects) has been addressed in technical assistant co-financed by the ELEna Mechanism	Comprehensive technical advisory service as part of the ELENA programme for multi-family buildings of Housing Associations	Banks, energy consultants, auditors, property managers, housing associations, ESCOs	46.50 GWh/year	23.3 MEUR

6.2.2 Challenges

During the Round Table, the problem of the lack of support mechanisms for private multi-family buildings such as townhouses or private rental buildings was most strongly articulated. Also pointed out was the problem of making investments at the minimum level of obtaining a bonus, which results in blocking the potential for thermo-modernisation. At the same time, while drawing attention to the need to counteract the widespread bad practice of realising the scope of thermo-modernisation according to the wishes of the investor, the need was signalled for intensive educational and information activities for residents in the field of energy efficiency, who would in effect perform a

watchdog and monitoring function for property managers. The discussion pointed to the need for the organisation of competent advisory centres that could support investors throughout the investment process. The role of the energy performance of buildings was also discussed, and it was pointed out that it could potentially be an important source of information for both the investor and financing institutions.

6.2.3 Needed supportive framework

- An intensive education and information campaign is needed for inhabitants/investors in the field of measures to improve the energy efficiency of buildings.
- Support for investors in the process of preparation and implementation of projects for energy efficiency improvement and conversion to clean energy sources is necessary to improve the quality/depth of the work carried out. This support should be implemented, as is currently the case in projects supported by the ELENA mechanism, in the form of co-financing (at a high level of more than 80%) of the costs of preparing energy audits with cost-technical documentation combined with advisory services (e.g. in the OSS formula).
- Mechanisms for supporting energy-efficient investments should be sustainable and predictable, calls for proposals should be continuous, the required documents should be useful to the investor (discussion of the role that energy performance certificates for buildings, drawn up in accordance with the methodology of energy performance certificates for buildings, can play), instruments should allow for the combination of funding from different sources (use of regional funds in a manner complementary to the available national and international funds, so as to maximise the number and scope of supported investments, and not just the take-up rates at regional level).
- New mechanisms are needed to support thermo-modernisation measures which will make the level of support (subsidies) dependent on the size of the effect achieved, opening up the field to commercial financing and financial instruments based on European funds.
- The issue of monitoring the achieved effects resulting from completed thermo-modernisation projects is important. Algorithms should be developed and implemented to control the correct operation of new energy systems, proper operation, etc.

6.2.4 Needed instruments and tools

We estimate that the local market of energy modernisation of residential buildings will be decisively influenced by the program based on the "State Development Bank mechanism" bonus paid together with the investment settlement based on the provisions of the "Thermo Act", unless WFOSiGW returns to previous, proven solutions based on the promotion of subsequent "pro-ecological" activities or simple subsidies for one-building housing associations, or simplify the system of accepted collateral for its loans.

A valuable instrument would be additional bonuses for energy management systems in buildings as an element of a comprehensive solution for improving energy efficiency and increasing the profitability of investments.

WFOSiGW should reconsider the co-creation of the market for affordable investment support services based on the ELENA mechanism based on the abandoned project, which has already received the Commission's approval.

Expanding and developing the system of energy advisory and information exchange on various sources of obtaining support for investments in energy efficiency may include:

- Assistance in the selection of contractors - there were many voices that certification of contractors would be useful,
- Support in the organisation and implementation of supervision over works,
- Assistance in carrying out acceptances,
- Assistance in settlements with financing parties.

6.2.5 RoundBaltic intervention support

During the implementation of the program, support was organised for the BNP Bank - in the "promotion of the SDB mechanism" under the Thermo Act implemented throughout Poland using the ELENA mechanism. The team supported the advisory for property managers in the field of planning and financing energy efficiency projects. Through the Regional Advisory Board, the need to verify the current WFOSiGW offer was indicated. The concept of the local (**Zagłębie**) initiative ELENA for multi-family housing was supported by the gained experience. This **MZB -TBS Sosnowiec** project has been submitted to the EIB, received approval from the European Commission and is entering the implementation phase.

There was a transfer of applications for nationwide solutions and concepts to the regional level, and a transfer of applications for solutions, experiences and concepts from the region to the National Round Tables.

It has been pointed out to the WFOSiGW representative that the current overly restrictive security system limits renovation processes in residential buildings managed by small/single-building housing communities. In this segment, it is important for micro-investors to return to the earlier model, i.e. to a **subsidy offer which is** settled shortly after the completion of the investment instead of settled after the five-year sustainability period.

6.2.6 Road map - how to achieve goals and overcome challenges

An intensive promotional campaign was carried out for the ELENA mechanism as a tool for developing One Stop Shop (OSS) concepts, particularly in the area of support for thermal modernisation of residential buildings. Comprehensive advisory services for housing associations were tested in practice on the basis of the ELENA project operated by BNP Paribas Bank, while preparations are also under way to launch a new project developed by the GZM Metropolis and aimed at residential buildings owned by municipalities belonging to the GZM.

At the same time, discussions have started on adapting the offer of WFOSiGW support mechanisms to the current needs of cooperatives and communities.

Support for the organisation of the implementation of the Zagłębie ELENA initiative for multi-family housing developed by **MZB -TBS Sosnowiec** may contribute to the creation of OSS consolidation and development of the market using lists of reliable local service providers and proven technologies in the field of improving energy efficiency.

Currently, as part of the RenoWave program funded by INERREG Baltic Sea Region (<https://interreg-baltic.eu/project/renowave-interreg-baltic-sea-region/>) the model OSS solutions for residential buildings are being implemented in the region - cooperation is being organized between owners, construction companies, energy agencies, financial institutions and public authorities.

6.2.7 Stakeholders

- Marshal's Office of the Silesian Voivodeship,
- BGK National Economy Bank,
- BNP Paribas Bank Polska S.A.,
- BOŚ Environmental Protection Bank S.A,
- ING Bank Bank Śląski S.A.,
- WFOŚiGW in Katowice,
- GZM Metropolis,
- GIG Research Institute,
- Institute of Real Estate Management (IGN),
- Śląsko-Dąbrowska Spółka Mieszkaniowa sp. z o.o.,
- Karpacka Spółdzielnia Mieszkaniowa,
- Stowarzyszenie Certyfikatorów i Audytorów Energetycznych (C&AE Association).

6.3 Results summary

Output	Outcome
1.1 Establishment of regional roundtables focused on financing energy efficiency	
<p>Two regional round tables and one expert meeting were implemented. About 80 local stakeholders were involved, including 8 key ones at the regional level.</p> <p>20.% of the financial sector and 15 % of local government units.</p> <p>Two reports containing over 20 recommendations were prepared, of which the key ones are related to the need:</p> <ul style="list-style-type: none"> - of access to affordable energy consultancy - use of the ELENA mechanism, - of an extended uniform template for the energy efficiency audit card, - of a new simple mechanisms to support thermo-modernisation activities, - of linking the level of support (subsidy) to the achieved effect, to open the field for commercial financing, 	<p>Invitation two participants of the Silesian Round Table to the Monitoring Committee of FESL'2027 program.</p> <p>Taking into account energy labels/classes of public buildings in FESL'2027 calls.</p> <p>Development of the ELENA-GZM mechanism and two subsequent application procedures.</p> <p>Exchange of experience of the involved banks at the regional and national level (SDB, BOŚ, BNP Paribas) and obtaining market information by Financial Institutions on the assessment of the products they propose and expected model solutions.</p> <p>Initiating the preparation of a program of MZBM - TBS Sosnowiec for support of technical consulting for modernization of buildings with co-financing from the ELENA mechanism.</p>

<ul style="list-style-type: none"> - of creating a platform for stakeholder dialogue to improve energy efficiency in the Silesian region, - of creation of lists of recommended products and reliable service providers, - of implementation by local institutions of regional energy efficiency co-financing models, e.g. micro-projects based on leasing 	
1.2 Establish permanent structures involving all relevant stakeholders, including important financial actors	
Formalising the dispersed activities of energy efficiency stakeholders in the format of the Regional Advisory Board with the participation of FEWE and GIG	<ul style="list-style-type: none"> • Invitation to create the concept of the energy efficiency section at the Regional Energy Council, • possibility to discuss recommendations and ideas with key regional institutions. • the EnergoDialog application to the LIFE instrument (call LIFE-2022-CET-FINROUND)
The first concept of the ELENA - Zagłębie project addressed, among others, to cooperative multi-family buildings	MZB -TBS Sosnowiec (ELENA) project has been submitted to the EIB, received approval from the European Commission and is entering the implementation phase
2. Benefit from roundtables to increase the base of best practices, develop strategies, roadmaps and action plans	
Recommendations and changes to the provisions regarding energy efficiency in the European Funds for Silesia 2021-2027 program	<ul style="list-style-type: none"> • promotion of the market of energy services and EPC / PPP in Silesia • promotion of simple solutions
3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market	
Initiating the process of new regional solutions taking into account energy classes/labels of public buildings, <ul style="list-style-type: none"> • Recommendations for the newly created template for the energy audit of Silesian buildings. 	<ul style="list-style-type: none"> • Creating a forum for the exchange of information among CROEF stakeholders (CROEF the Central Record of Final Energy Savings), • Creating a space for cooperation of local stakeholders regularly planned meetings.

7 Poland – Łódzkie

The basic document at the regional level setting out development directions is the voivodeship development strategy. In the **Development Strategy of the Łódź Voivodeship 2030**, in which the area of mining and energy transformation was indicated as the Area of Strategic Intervention - Area of New Energy. The objectives of the Strategy include:

- modern and competitive economy,
- civil society of equal opportunities,
- attractive and accessible space,

and a horizontal objective was indicated: Effectively and responsibly managed voivodeship.

The planned directions of intervention resulting from the provisions of the **Territorial Plan for Just Transition of the Łódź Voivodeship**, which was adopted on 14 April 2023 by the Board of the Łódź Voivodeship by Resolution No. 317/23, will contribute to the achievement of the above-mentioned objectives.

The planned transformation is to create a new model of economic development, taking into account activities related to e.g. the development of entrepreneurship and diversification of the economy, the implementation of the concept of a low-carbon circular economy, retraining staff, creating alternative jobs, preventing social inequalities and exclusion, proceedings aimed at regenerating and renaturalizing post-mining areas, increasing the use of RES and energy efficiency.

The document describes the expected transformation process towards achieving the Union's 2030 energy and climate goals and towards a climate-neutral Union economy by 2050. The process will be implemented in line with the objectives of the integrated national energy and climate plans and other existing transformation plans, containing a schedule for the cessation or limitation of activities such as coal and lignite mining or electricity production in coal-fired installations. The Plan identifies the territories that are expected to be most affected by the negative effects of the transition and justifies this choice with appropriate estimates of the impact on the economy and employment. The document also includes a diagnosis of transformation challenges for each of the identified territories, as well as management mechanisms and output or result indicators.

The milestones of the transformation of the Łódź Voivodeship are:

- by 2026 obtaining building permits for part of the RES project (approx. 130 MW); commencement of the implementation of part of the RES project
- by 2028, extraction in the Bełchatów Field will be completed, and one of the units of the Bełchatów Power Plant with a capacity of 380 MW will be submitted for shutdown by 2030.
- by 2030 completion of the implementation by the PGE Capital Group (Polish Energy Group) of RES projects in the post-mining areas of the lignite coal mine (min. 130 MW)

The mining and energy plant in Bełchatów will suffer in the long term due to the gradual withdrawal from lignite mining and burning. The power plant in Bełchatów is of key importance for the production of electricity in Poland, and the decommissioning of the power plant poses a significant challenge to the security of supply.

The transformation of the economy towards climate neutrality will change the economic profile of the area and make it more diversified. The transformation will cause significant changes in the energy sector, currently based on lignite, with a relatively low share of energy production from RES and

prosumers. As a result of the transition to a climate-neutral economy, it will be necessary to accelerate the implementation of RES installations, including prosumer ones, create energy clusters and energy cooperatives and energy storage facilities to strengthen the stability of the system, which will force the modernization and reconstruction of the power system in terms of intelligent solutions and adaptation to the connection of new capacities from RES. As a result of the transformation, it will be necessary to adapt the distribution and transmission networks to the changed energy flows in the network, related to the shutdown of coal-fired units at the Bełchatów Power Plant.

In summary, the Just Transition Mechanism will prepare the Łódź region for the transition from a lignite-based monoculture to a more diverse local economy by reskilling the local workforce, creating new green jobs and businesses, and contributing to the decarbonisation of electricity production.

According to the diagnosis made at the beginning of the project, the main objective of the project will be to increase the availability of energy efficiency financing through:

- strengthening the energy advisory network at the level of municipalities or poviats
- organisation of comprehensive service points (one-stop-shop)
- involvement of regional public and private entities
- mobilisation of the financial sector
- creating an opportunity to exchange experiences and compare the carried-out activities

Regional Intervention Plan, main directions

The Łódź Intervention Plan is based on the guidelines resulting from the provisions of documents at the national level, such as Poland's Energy Policy until 2040 and the Renovation Strategy until 2050. Among the voivodeship documents, the provisions of the Development Strategy for the Łódź Voivodeship 2030 and the Territorial Plan for Just Transition of the Łódź Voivodeship, as well as the guidelines resulting from the Regional Operational Program European Funds for Łódź 2021-2027, should be pointed out.

Sources of financing the planned activities should also be sought both at the national and regional level. These can be funds from State Development Bank, the "Clean Air" or "My Electricity" programs, funds from the National Fund for Environmental Protection and Water Management in Łódź, commercial banks, as well as the implementation of investments in the ESCO or PPP formula.

The main direction is to disseminate knowledge on available financial instruments and to provide support for energy and financial advisors. Access to the exchange of experience, expert knowledge and sources of financing will be facilitated by the development of a network of energy and financial consultations, the creation of Comprehensive Investor Service points and round table meetings.

The RoundBaltic project can contribute to the establishment of new and changes to the current frameworks for supporting energy efficiency financing through discussions held within the framework of the Round Tables and the cooperation of the Regional Advisory Board. It can also support the implementation of the tasks indicated in the Air Protection Program for the Łódź zone, designated in order to increase the effectiveness of reducing emissions from the municipal and household sector in the Łódź Voivodeship by:

- concentration of support for thermo-modernisation and boiler replacement in buildings inhabited by the poor, the elderly, people who are helpless and uneducated (single-family and

- multi-family houses, including municipal, TBS (Social housing associations) and special-purpose houses),
- planning support instruments aimed at mitigating the economic effects of replacing boilers (e.g. increasing the cost of better-quality fuel),
 - introduction of an advisory support system at the level of communes in the voivodeship,
 - increasing the effectiveness of the adopted information and communication channels,
 - running projects such as PONE (Low Emission Reduction Program) in municipalities, which increase the possibility of financial support for residents of small municipalities and villages, and thus the number of activities carried out,
 - undertaking initiatives in the field of projects addressed to residents, consisting in co-financing by local governments of investments in the field of renewable energy sources (installation of heat pumps, solar collectors, photovoltaic cells), as well as subsidies for the replacement of heating sources,
 - information and advisory support for owners of single-family houses based on the “Clean Air” and “My Electricity” programs.

7.1 Residential buildings

7.1.1 Indicators

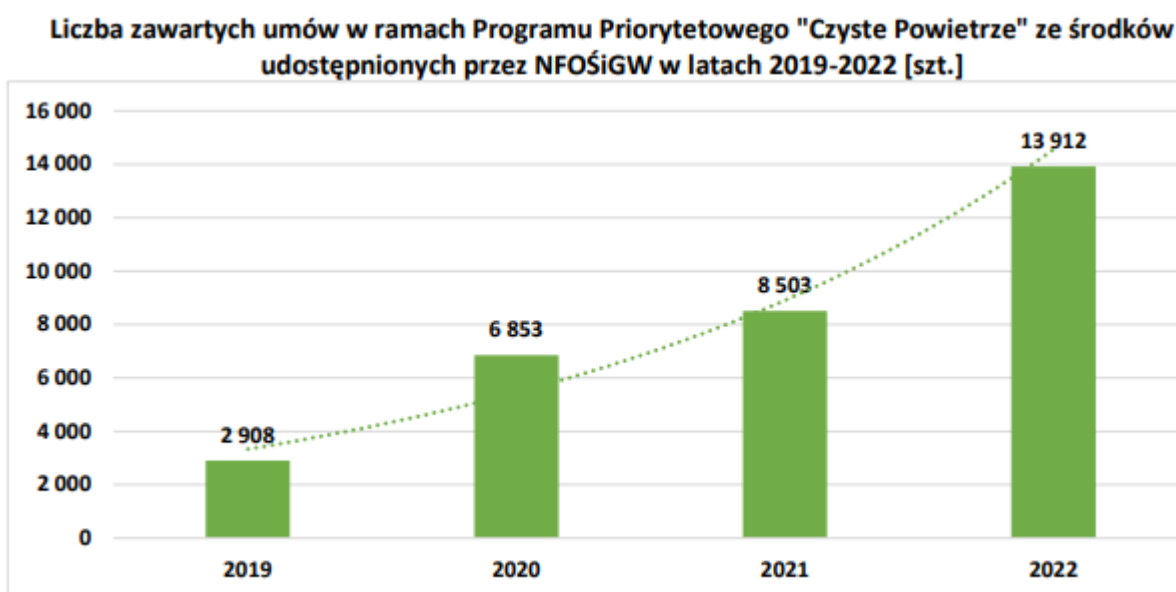
EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh / year	Investment MEUR
Łódzkie voivodeship					
Residential buildings	26 149 multi-family houses and 346 308 single-family houses Rural area: MFH 2459, SFH 226 613 The project will launch at least 10 MFHs and 10 SFHs in rural areas as a thermomod entity. (Potential: 25 500 GWh /year)	Development of local energy advisory networks at the level of indirect (powiat) administration. Enabling access to information on financial support	Banks, local authorities, energy auditors, ESCO	5 do 10 MFH x 2.500m ² x 200kWh 3 equals 5,36 GWh / year	3 to 6,13 MEUR
Status and progress as of December 31, 2021	1. Multi-family house 63-300 Taczanów Drugi 2A	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.21164	0.08547
	2. Multi-family house 63-300 Taczanów Drugi 3A	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.21164	0.08547
	3. Multi-family house 63-300 Taczanów Drugi 4A	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.32232	0.08547

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh / year	Investment MEUR
	4. Multi-family house 63-300 Taczanów Drugi 5	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.32232	0.08547
	5. Multi-family house 63-300 Taczanów Drugi 5A	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.22756	0.08547
	6. Multi-family house 63-300 Taczanów Drugi 6A	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.32232	0.08547
	7. Single-family house 92-701 Grabina, ul. Kasztanowa 25	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0.004	0.005
stan na 07.10.2022	8. Multi-family house Housing Association Żeromskiego 17 in Łódź	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0,5	0,5
	9. 8 multi-family houses Housing Association Radogoszcz - Zachód in Łódź	Providing access to information on financial support and energy advice	WFOŚiGW, local authorities, energy auditors	0,509	0,405
	10. Multi-family house Housing Association Krośniewicka 50 in Kutno	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0,12	0,075
	11. 3 multi-family houses Housing Association Nakielnica	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0,375	0,190
	12. Multi-family house Housing Association Kilińskiego 48 in Łódź	Providing access to information on financial support and energy advice	Banks, local authorities, energy auditors	0,407	0,724
	13. Replacement of inefficient heat sources in 247 residential buildings in Zgierz	Providing access to information on financial support and energy advice	WFOŚiGW, Banks, local authorities, energy auditors	3,308	0,677
	14. Replacement of inefficient heat sources in 444 residential buildings in Aleksandrów Łódzki	Providing access to information on	WFOŚiGW, Banks, local authorities, energy auditors	5,946	1,892

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh / year	Investment MEUR
		financial support and energy advice			
As of May 18, 2022	Thermo-modernisation of 22,415 buildings, financed by "Clean Air" program in 2021-2022	Providing access to information on financial support and energy advice	WFOŚiGW, energy auditors	141,494	82,708

The graphic below shows the increase in interest in co-financing from the "Clean Air" program in the Łódź Voivodeship as a result of the promotion and information campaigns.

[The tile says: Number of contracts concluded under the Priority Program "Clean Air" from the funds made available by the National Fund for Environmental Protection and Water Management in 2019-2022 [pcs.]



Source: REPORT ON THE ACTIVITIES OF THE WFOŚiGW IN ŁÓDŹ FOR 2022

7.1.2 Challenges

The main problem in the Łódź Province is access to attractive sources of financing for energy efficiency measures. For public buildings, the existing forms of financing thermo-modernisation are insufficient to cover the needs in the municipalities of the Łódź Province outside the large cities. In order to increase the modernisation of residential buildings, it is required to reach urban-rural centres in the Łódź Province with financial instruments, where the level of thermo-modernisation of buildings is very low. Model contracts, exchanges of best practice and guidelines, particularly relating to energy performance contracts, can also help to develop this type of project.

Not all municipalities in the Łódź Province have up-to-date municipal energy policy documents, including the Guidelines for Heat, Electricity and Gas Fuel Supply Plans and the Low Emission Economy

Plans. Many investors are seeking financial support for the development of the technical documentation necessary for the preparation of energy efficiency investments.

Residents are looking for sources of information about the possibility of subsidising the thermal modernisation of single-family houses. Such services are provided by the Provincial Environmental Protection and Water Management Fund in Łódź, as well as in many local government units, which makes it easier for people in rural areas to get in touch.

During the First Round Table in the Łódź Province, it was discussed which activities related to energy efficiency could be supported from regional sources, i.e. the Regional Operational Programme and the WFOŚiGW in Łódź. Several examples of good practices were presented, i.e. model investments implemented and settled in the Łódź Province. The biggest problems in obtaining co-financing were also pointed out, such as:

1. Long process for municipalities to develop the low-carbon plans needed to receive support,
2. Difficulties in implementing projects due to the selection of contractors in tendering procedures (no bids or too high a price),
3. Changes in national law that affected the decisions of potential beneficiaries regarding planned investments, in particular regarding renewable energy sources,
4. The complex and time-consuming process of preparing a loan application, due to the need to carry out an ex-ante audit, perform a number of expert studies, obtain numerous certificates, opinions and decisions issued by external bodies,
5. Time-consuming process of verifying application documents,
6. Difficult to meet the 25% energy efficiency threshold eligible for support,
7. Difficulties in gathering decision-makers, which translates not only into problems in taking the necessary decisions or preparing the required documents, but also in being able to present the offer,
8. Begin the implementation of the Projects in a period when the potential Final Recipients had already planned their budgets for the year,
9. Problems caused by the SARS-Cov-2 coronavirus outbreak.

The above issues are the biggest challenges to be solved when agreeing further forms of support for energy efficiency tasks. In addition, due to the current socio-economic situation, further challenges are brought in separately for residential and public buildings:

Challenges for residential buildings:

- adjustment of the amount of aid due to the increasing costs of carrying out the work,
- the amount of collateral required for the provision of funding is an increasing constraint on the ability to provide support,
- insufficient funding for the elimination of cooker heating,
- technical limitations on the location of the new heat source - heat substation, boiler room when providing premises that would meet the requirements of the WT,
- the need to educate the public about reducing energy consumption - raising environmental awareness,
- the introduction of incentive elements, e.g. tax exemptions in connection with the thermal modernisation work carried out,

- the requirement to cooperate with the auditor at every stage of the project and the reliability of the energy audits,
- exhaustion of available funding and bottlenecks in the evaluation of submitted proposals,
- development of cooperation in terms of financing with the BGK (Thermomodernisation Act),
- developing energy audits on the basis of actual measurements, which would guarantee the energy and economic effects to be achieved,
- to install solar thermal collectors to support the preparation of hot water as part of thermo-modernisation work, as a project that brings considerable savings in the purchase of heat energy,
- installation of PV system with heat pump.

At the end of 2021, materials from the first Regional Round Table were made available to stakeholders of the RoundBaltic project. Recommendations and conclusions generated by the participants of the meeting were also sent.

In 2022, thanks to the project's activities, as well as with the participation of members of the Regional Advisory Board, it was observed how the previously identified activities were implemented. It was a year of recovery after the difficulties related to the SarsCov 2 epidemic, and also a very difficult one due to the energy crisis caused by Russian military aggression in Ukraine. A year in which funds were sought to save energy, produce energy from renewable sources, and diversify supplies, mainly to become independent of Russian fossil fuels. In view of the galloping prices of fuels, heat and electricity, all kinds of subsidies for energy efficiency measures and information on the status of their implementation were sought.

Starting from 2022, the regulations will enable co-financing by obligated entities, such as: energy companies, projects involving connection to the heating network or replacement of heat sources at end users, and then including the obtained savings towards the performance of the efficiency obligation. In 2022, a program of non-refundable subsidies for the replacement of central heating devices or and hot water installations was launched to those with a higher energy efficiency class. The program also covered connections to the heating network. The co-financing program was implemented by VEOLIA ENERGIA ŁÓDŹ S.A. The implementation of this subsidy affects the postulated increase in subsidies for the liquidation of furnace heating.

In 2022, the "Clean Air" program was implemented. From January 1, 2022, it was no longer possible to obtain a subsidy for the purchase of a coal boiler under this program. There was also an increase in income thresholds in the second part of the program (increased level of co-financing). The change was aimed at unifying the income thresholds of the "Clean Air" and "Stop Smog" programs, thanks to which more people could benefit from the increased level of funding in "Clean Air".

In 2022, it was still possible to obtain funding from the Stop Smog Programme, the aim of which is to eliminate or replace heat sources with low-emission ones and to thermo-modernise single-family residential buildings of people with low energy levels.

During the deliberations of the first Regional Round Table, the issue of valorization of the amount of aid provided by WFOŚiGW in connection with the growing costs of works was raised, which is or may be a problem in the implementation of projects increasing energy efficiency in the near future. The Voivodeship Fund for Environmental Protection and Water Management in Łódź decided to update the indicators for 2023. In response to other demands, WFOŚiGW in Łódź reminded that the

Fund's resources are public funds, and care for their correct spending is one of the priorities, hence the issue of securing the return of funding in the event of their incorrect use / failure to repay the loan is particularly important. In response to the conclusion regarding technical limitations in the elimination of heating or the location of a new heat source in the building in 2022, changes were made to the catalogue of eligible costs applicable at WFOŚiGW in Łódź. Within the scope of tasks carried out in the area of air protection, modernisation of the boiler room was included as an eligible cost, and if necessary, construction of a new boiler room building - without taking into account finishing works.

At the end of 2022, the Management Board of the Łódź Voivodeship adopted the regional program European Funds for Łódź 2021-2027 and the Environmental Impact Assessment for the regional program European Funds for Łódź 2021-2027.

Very little involvement of the banking sector in financing energy efficiency measures is still observed, in particular the development of audits, projects, etc. At the end of 2022, only BOŚ Bank offered co-financing of technical documentation from the ELENA program in the Łódź Voivodeship.

Some of the actions identified by the participants of the first ROS have been implemented, but many of them are still valid. The adjustment of the previously indicated challenges to the current needs took place during the session of the second Regional Round Table.

During the second Regional Round Table debates, changes in the subsidies that could be obtained were discussed, including:

- thermomodernization bonus, thermomodernization grant, RES grant, renovation bonus, compensation bonus, MZG bonus with the possibility of increasing the MZG bonus with a MZG grant from State Development Bank (MZG grant - grant to improve the technical condition of the municipality's housing stock-
- regional technical support programs for public and private investors in the light of the BOŚ Bank offer
- changes in the financial offer of WFOŚiGW in Łódź
- financing energy efficiency in the light of European Funds for the Green of Łódź

Particular attention was paid to determining which funds will be administered centrally and which will be administered regionally, broken down by the scope of intervention and the group of beneficiaries. It was also indicated whether the funds would be repayable and which would be subsidies.

The financial assembly of projects based on various means was presented. As part of the discussion, participants shared their experiences from already completed investments. It was discussed whether it would be possible to account for energy savings cumulatively as a prerequisite for obtaining co-financing for previously thermo-modernised buildings. The discussion, based on the presented good practices, made it possible to formulate conclusions that should be used when modifying the existing and creating new programs and policies supporting energy efficiency in residential buildings.

During the talks and discussions at the event, the main challenges, and therefore recommendations were proposed for implementation, including:

- Accelerating the implementation of programs and the availability of funds under FENiKS (European Funds for Infrastructure, Climate and Environment) and regional EU programmes,

- Introduction of non-refundable support mechanisms for improving the energy efficiency of buildings,
- The problems of buildings under conservator's protection were indicated, and the related limitations in the scope of the possibility of carrying out thermo-modernisation. It was suggested that these buildings should be included in special programs enabling financing of costly solutions for this type of buildings, whose payback period is often very long,
- Attention was drawn to the inability to achieve the required minimum values of savings by buildings built in the 1990s or subjected to thermo-modernisation in those years and at the beginning of the 20th century. It was suggested to introduce cumulative savings when evaluating further work on improving the energy efficiency of buildings, i.e. examining individual stages of modernisation from the time the building was erected and demonstrating energy savings from the original state.
- A lot of attention was paid to the need for energy education of the inhabitants, aimed at the skilful use of thermal energy by end users.

7.1.3 Needed supportive framework

Properly conducted energy planning in municipalities provides support for the implementation and financing of investments that increase energy efficiency. Inclusion of the investment in the Low-Emission Economy Plan and/or in the Assumptions to the heat, electricity and gaseous fuel supply plan is mandatory to apply for co-financing.

Continuation of support for the preparation of design documentation for investments increasing energy efficiency from the ELENA (EIB) program - currently offered by BOŚ.

There is a very high interest of investors and insufficient funds of co-financing units (WFOŚiGW, commercial banks, ŁARR, etc.) allocated to co-financing thermo-modernisation and implementation of RES - it is necessary to increase the allocation of funds for these purposes.

It is necessary to launch calls under the European Funds for Łódź 2027 regional programme.

Implementation of central programs Clean Air, My Electricity, thermomodernization bonus implemented by State Development Bank - necessary modifications of the support provided, extension of the list of potential beneficiaries, maximum simplification of application procedures.

The necessary support framework identified at the beginning of the project is still valid.

7.1.4 Needed instruments and tools

- Expansion and development of the energy advisory system, exchange of information on various sources of obtaining support for investments in energy efficiency.
- Intensification of training and other information and education campaigns on the implementation of energy efficiency measures and the possibility of their financing.
- Establishment of a permanent One Stop Shop point in the Łódź region.

7.1.5 RoundBaltic intervention support

The implementation of the RoundBaltic project in the field of intervention is of the greatest importance related to the transfer of information between project stakeholders. The organisation of regional round tables should be treated as creating a platform for exchanging information and enabling discussion. In the implementation of the identified activities so far, it has also been an

impulse for changes expected by the environment in the current subsidies and a contribution to the preparation of assumptions for new competitions.

Submission of conclusions regarding national programs from the regional round table sessions to the National Round Table sessions.

7.1.6 Road map - how to achieve goals and overcome challenges

Cooperation with the communes of the Łódź Voivodeship continues in the field of consultancy in the implementation of energy efficiency investments and energy planning.

Advising property managers on planning and financing energy efficiency projects is maintained.

Organization of meetings within the Regional Advisory Board discussing the current conditions and possibilities of financing investments in the region.

Examples of best practices for the implementation of energy efficiency investments and their sources of financing are sought for dissemination among other stakeholders.

It is proposed to continue involvement under SAPE to improve the form of financial support for activities improving energy efficiency.

7.1.7 Stakeholders

- Marshal Office,
- WFOŚiGW advisory team,
- BOŚ - Environmental Protection Bank,
- State Development Bank,
- local government units in Łódź,
- energy and financial auditors.

7.2 Public buildings

Currently, the largest share in the financing of activities comes from the own funds of local government investors, who are responsible for implementing the Community requirements. For public utility buildings, the existing forms of co-financing for thermo-modernisation are insufficient to cover the needs in the municipalities of the Łódź Voivodeship, apart from large cities. Support from the state budget is relatively small and does not exceed a few percent. A significant part of public investments carried out in the Łódź region is co-financed by EU funds. The implementation of tasks in the field of energy efficiency in utility buildings can be supported by:

- reaching urban-rural centres with financial instrument
- strengthening cooperation and partnership of local governments, e.g. by promoting and raising awareness of the benefits of cooperation in the implementation of strategies and projects, including the creation of platforms for the exchange of knowledge, experience and good practices, introducing mechanisms encouraging local governments to jointly undertake energy efficiency projects, integrating the sources of financing of local government units and other entities;

- development of the advisory system in the field of energy efficiency and RES, including increasing the number of Municipal Energy Engineers and training at least one Municipal Energy Engineer in each municipality;
- reduction of barriers in order to mobilise private sector funds for the implementation of energy efficiency tasks in the form of e.g. ESCO, PPP - exchange of experience, contract templates, etc.

To sum up, the key element supporting the achievement of the objectives related to energy efficiency investments assumed in the Łódź region is not only the creation of appropriate financial instruments for their implementation, but also the information and educational offer that brings them closer to potential investors.

7.2.1 Indicators

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh/year	Investment MEUR
Łódź voivodeship					
Public buildings	1,554 public buildings in rural areas As part of the project, at least 20 public buildings will be thermo-modernised (Total potential: 1166 GWh / year)	local energy advisory networks, one-stop shops	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	7 do 15 budynków x 3,000m ² x 250kWh 7 do 15 GWh / rok	7 do 14 MEUR
Status and progress as of December 31, 2021	1. Thermo-modernisation of public utility buildings in municipality Witonia - Water treatment plant in Witonia	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.00556	0.018
	2. Thermo-modernisation of public utility buildings in municipality Witonia - Water treatment plant in Gajewo	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.00556	0.018
	3. Thermo-modernisation of public utility buildings in municipality Witonia - Watchtower, Kuchary Volunteer Fire Department	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.02778	0.012

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh/year	Investment MEUR
	4. Thermo-modernisation of public utility buildings in municipality Witonia - Watchtower, Gledzianówek Volunteer Fire Department	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.00014	0.012
	5. Thermo-modernisation of public utility buildings in municipality Witonia - Watchtower, Romartów Volunteer Fire Department	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.00011	0.012
	6. Construction of photovoltaic micro-installations on municipal buildings located in the Witonia municipality	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.10265	0.095
	7. Construction of new municipal buildings in energy-saving technology	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.13418	1.25
	8. Construction of a full-size sports hall in the passive system at Primary School No. 1 in Konstancin Łódzki	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.04985	2.045
	9. Optimization of the use of thermal energy in public buildings of the Pabianice Poviast - Nursing Home in Konstancin Łódzki	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.301	0.335
	10. Thermo-modernisation of the public utility building of the Special School Complex No. 4 in Konstancin Łódzki, ul. Zgierska 10	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.02564	0.273

EE area	Needs and opportunities	Type of initiative	Entities involved	Energy savings GWh/year	Investment MEUR
	11. Thermo-modernisation of the administration building (roof replacement and insulation, wall insulation, floor insulation on the ground), replacement of central heating and hot water installations and heat sources in the Sports and Recreation Center at ul. Plac Wolności 60	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.00368	0.164
	12. Construction of the Poviats Sports Hall at the School Complex No. 1 in Pabianice, ul. Piotr Skargi 21	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0.118277	1.818
	13. Modernisation of 11 municipal buildings in Zgierz	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	12	12.727
	14. Thermo-modernisation of 24 public buildings in Zgierz with PPP formula	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	2.5	2.613
As of October 7, 2022	15. Thermo-modernisation of the building of the School Complex No. 3 in Pabianice	Energy advisory	Local authorities, local SMEs - suppliers of goods and services, banks, energy auditors	0,18	0,37
As of June 20, 2023	16. Energy efficiency projects in the field of public buildings implemented under sub-measures IV.2.1 and IV.2.2 of ROP LV 2014-2020 - 11 projects	Energy advisory	Marshal's Office of the Łódź Voivodeship Department of Regional Policy Department of the Network of European Funds Information Points; energy auditors	32,50	82,20
Sum				48,25	103,96

7.2.2 Challenges

Most of the challenges cited in the area of EE financing for residential buildings are also valid for public buildings.

During the First Round Table in the Łódź Voivodeship, it was discussed which activities related to energy efficiency could receive support from regional sources, i.e. the Regional Operational Program and WFOŚiGW in Łódź. Several examples of good practice were presented, i.e. perfectly implemented and settled investments in the Łódź Voivodeship. The biggest problems with obtaining subsidies were also indicated, such as:

- investing under the Public-Private Partnership
- development of ESCO financing
- the need to share experiences from investments in energy efficiency and ways of financing them
- implementation of energy consumption monitoring in order to quickly catch any anomalies and quickly diagnose their causes in order to maximise the effects of the thermo-modernisation works carried out
- contact with the conservator of monuments during thermo-modernisation of historic buildings at the stage of preparing for the investment
- introduction of the function of the Municipal Power Engineer
- return to training for municipal power engineers (start of on-line training)

Some of the challenges for residential buildings also apply to public buildings. These are challenges related to, for example, applying for funds, settling investments or a common problem with finding investment contractors, the related increase in the cost of construction services, which is conducive to postponing investment decisions.

At the end of 2021, materials from the first Regional Round Table were made available to stakeholders of the RoundBaltic project. Recommendations and conclusions generated by the participants of the meeting were also sent.

In 2022, thanks to the project's activities, as well as with the participation of members of the Regional Advisory Board, it was observed how the previously identified activities were implemented. It was a year of recovery after the difficulties related to the SarsCov 2 epidemic, and a very difficult one due to the energy crisis caused by Russian military aggression in Ukraine. A year in which funds were sought to save energy, produce energy from renewable sources, and diversify supplies, mainly to become independent of Russian fossil fuels. In view of the galloping prices of fuels, heat and electricity, all kinds of subsidies for energy efficiency measures and information on the status of their implementation were sought.

During the deliberations of the first Regional Round Table, the issue of valorization of the amount of aid provided by WFOŚiGW in connection with the growing costs of works was raised, which is or may be a problem in the implementation of projects increasing energy efficiency in the near future. The Voivodeship Fund for Environmental Protection and Water Management in Łódź decided to update the indicators for 2023. In response to other demands, WFOŚiGW in Łódź reminded that the Fund's resources are public funds, and care for their correct spending is one of the priorities, hence the issue of securing the return of funding in the event of their incorrect use / failure to repay the loan is particularly important. In response to the conclusion regarding technical limitations in the elimination of heating or the location of a new heat source in the building in 2022, changes were made to the catalogue of eligible costs applicable at WFOŚiGW in Łódź. Within the scope of tasks carried out in the

area of air protection, modernization of the boiler room was included as an eligible cost, and if necessary, construction of a new boiler room building - without taking into account finishing works.

As part of the Energy Consultancy Project, training for municipal power engineers was carried out (five groups so far) and supplementary training. Further training for municipal power engineers is planned due to the reported needs (basic and supplementary training). Since the beginning of its activity, WFOŚiGW has been granting subsidies for ecological education from its own funds.

In 2022, WFOŚiGW, as part of priority programs for local government units, implemented the program WARM FLAT, ECO-LIGHTHOUSE, EKO-FIRE STATION, Rationalization of energy consumption in public buildings and municipal resources in order to reduce emissions of pollutants into the atmosphere - 5th edition. There were no priority programs for individuals in the field of energy efficiency.

At the beginning of 2022, the Marshal's Office of the Łódź Voivodeship plans to extend the offer of the Main Information Point of European Funds in Łódź with a new service regarding Public-Private Partnership (PPP). Local governments and other public entities interested in using the PPP formula can obtain information and support in the implementation of such projects. This is a response to the recommendation regarding public information on the advantages of investing under Public-Private Partnerships. Hybrid projects implemented in the PPP formula for thermo-modernization of buildings have already been financed under the ROP Łódź Voivodeship 2014-2020 programme. Good practices in the implementation of this type of projects are presented on the website www.ppp.gov.pl.

The regional programme, i.e. European Funds for Łódź 2021-2027, indicates that it will be possible to use the ESCO financing model or other models using private capital, including the PPP formula. In turn, the provisions of the Program Contract for the Łódź Voivodeship concluded between the government and the voivodeship self-government in 2022 indicate that hybrid projects will be rewarded.

It was also indicated that there is now a website available since 2007 presenting projects implemented throughout Poland www.mapadotacji.gov.pl.

In 2022, public consultations were held on the draft European Funds for Łódź 2027 regional program along with the environmental impact forecast. The City of Łódź Office, Department of The City Strategy, which is a member of the RRD, submitted comments regarding Priority 2 Green Łódzkie. The comments were taken into account in the consultation report.

At the end of 2022, the Management Board of the Łódź Voivodeship adopted the regional program European Funds for Łódź 2021-2027 and the Environmental Impact Assessment for the regional program European Funds for Łódź 2021-2027.

Very little involvement of the banking sector in financing energy efficiency measures is still observed, in particular the development of audits, projects, etc. At the end of 2022, only BOŚ Bank offered co-financing of technical documentation from the ELENA program in the Łódź Voivodeship.

Some of the actions identified by the participants of the first Regional Round Table have been implemented, but many of them are still valid. The posed challenges were brought into line with the current needs during the second Regional Round Table meeting.

During the second Regional Round Table, good practices were presented, and experiences were exchanged in the field of energy efficiency investments in public buildings. The basis for the discussion was the presentation of the sources of investment financing. The complexity of energy efficiency improvement projects at each stage was also noticed: preparation, implementation, as-built activities. On this basis, models of investor support were discussed. Participants of the conference shared their experiences from already completed investments. The discussion and the presented examples of good

investment financing practices brought conclusions that can be used in the implementation of subsequent investments at each of its stages.

It was discussed how to effectively minimise problems, barriers and limitations in the implementation of projects aimed at increasing energy efficiency in public infrastructure. The growing needs of municipalities in responding to the drastic increase in energy prices by preparing and implementing EE measures in municipal infrastructure were discussed.

Sources of financing for thermo-modernization of public utility buildings and changes in financing WFOŚiGW in Łódź were presented.

During the talks and discussions during the event, the main challenges, and therefore recommendations for implementation, include:

- Due to the large interest of investors in projects increasing energy efficiency, the funds available to, for example, the Voivodeship Fund for Environmental Protection of Water Management in Łódź are quickly depleted. As a result, beneficiaries have a problem with preparing the appropriate documentation and submitting the application on time (before the closure of the call for proposals).
- Difficult access to co-financing for investments in which some thermo-modernisation works had previously been carried out.
- The prolonged time of processing applications for co-financing makes it difficult to plan financial investments.
- The lack of constant supervision by an energy auditor during the implementation of the investment often causes problems with achieving the assumed indicators of the project. It is postulated to introduce, following the example of author's supervision over project documentation, "audit supervision".
- The market of construction goods and services, which has recently been difficult to predict, makes financial planning of energy-saving investments difficult.
- No substantive verification of the assumed project indicators at the stage of appraisal of co-financing applications.
- Attention was drawn to the insufficient role of the energy auditor in the entire investment process.
- Attention was also drawn to the discrepancies appearing in various regulations that hinder the work of the auditor.
- The need to increase cooperation between the auditor and the documentation preparation designer was pointed out.
- Rising prices of energy carriers result in greater interest of investors in implementing projects that increase energy efficiency or reduce energy purchase costs, and increase interest in RES. Rising prices increase the economic efficiency of projects.
- It also presents the reactions of financing institutions to the changing conditions of project implementation, including the freezing of interest on loans to public entities and changes in their redemption. Simplification of procedures for obtaining funds for investments related to the implementation of photovoltaic installations.
- It was pointed out that the auditor should not only be the author of the energy audit, but also advise the investor and designer at all stages of the investment process. Therefore, it is

advisable to organise training courses for auditors in the field of new technologies, available financial resources or the implementation of projects in historic buildings.

7.2.3 Needed supportive framework

Properly conducted energy planning in municipalities provides support for the implementation and financing of investments that increase energy efficiency. Inclusion of the investment in the Low-Emission Economy Plan and/or in the Assumptions to the heat, electricity and gaseous fuel supply plan is mandatory to apply for co-financing.

Continuation of support for the preparation of design documentation for investments increasing energy efficiency from the ELENA (EIB) program - currently offered by BOŚ Bank.

There is a very high interest of investors and insufficient funds of co-financing units (WFOŚiGW, commercial banks, Łódź Regional Development Agency, etc.) allocated to co-financing thermo-modernisation and implementation of RES - it is necessary to increase the allocation of funds for these purposes.

It is necessary to launch calls under the European Funds for Łódź 2027 regional programme.

Implementation of central programs Clean Air, My Electricity, thermomodernization bonus implemented by State Development Bank - necessary modifications of the support provided, extension of the list of potential beneficiaries, maximum simplification of application procedures.

The necessary support framework identified at the beginning of the project is still valid.

7.2.4 Needed instruments and tools

- Expansion and development of the energy advisory system, exchange of information on various sources of obtaining support for investments in energy efficiency.
- Intensification of training and other information and education campaigns on the implementation of energy efficiency measures and the possibility of their financing.
- ESCO and PPP promotion.
- Establishment of a permanent One Stop Shop point in the Łódź region.

7.2.5 RoundBaltic intervention support

The implementation of the RoundBaltic project in the field of intervention is of the greatest importance related to the transfer of information between project stakeholders. The organisation of regional round tables should be treated as creating a platform for exchanging information and enabling discussion. In the implementation of the identified activities so far, it has also been an impulse for changes expected by the environment in the current subsidies and a contribution to the preparation of assumptions for new calls.

7.2.6 Road map - how to achieve goals and overcome challenges

Cooperation with the municipalities of the Łódź Voivodeship continues in the field of consultancy in the implementation of energy efficiency investments and energy planning.

Advising property managers on planning and financing energy efficiency projects is maintained.

Organisation of meetings within the Regional Advisory Board discussing the current conditions and possibilities of financing investments in the region.

Examples of best practices for the implementation of energy efficiency investments and their sources of financing are sought for dissemination among other stakeholders.

It is proposed to continue involvement under SAPE to improve the form of financial support for activities improving energy efficiency.

7.2.7 Stakeholders

- Marshal Office,
- WFOŚiGW advisory team,
- BOŚ - Environmental Protection Bank,
- State Development Bank,
- Local government units in Łódź,
- Energy and financial auditors.

7.3 Results summary

Output	Outcome
1.1 Establishment of regional round tables focused on financing energy efficiency	
<p>Two regional round tables were implemented.</p> <p>About 100 local key stakeholders were involved at the regional level, 15% from the finance sector and 25% from the local government units.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> – increasing access to attractive ee financing instruments – development of the energy consulting network – creating one-stop-shops – dissemination of information and exchange of experience 	<p>Dissemination of information on possible sources of financing</p> <p>Involvement of banks at the regional and national level (State Development Bank, BOŚ)</p> <p>Exchange of experiences and discussion</p>
1.2 Establishment of permanent structures involving all relevant stakeholders, including important financial actors	
Establishment of Regional Advisory Board	<ul style="list-style-type: none"> • Passing recommendations from local to national level • Exchange of experiences and good practices
2. Benefits of roundtables to increase the database of best practices, developed strategies, roadmaps and action plans	

<p>Proceedings reflecting the state of progress and activities, and a road map indicating actions at the regional level</p>	<ul style="list-style-type: none"> ● development of energy consultancy ● influence on shaping the provisions of regional subsidies (e.g. cooperation with WFOŚiGW in Łódź and ROP Main Information Point, submitting conclusions and motions from Regional Round Tables meetings)
<p>3. Jointly developed templates of documents, contracts and tools leading to better functioning of the market</p>	
<p>Preparation of an update of the Regional Diagnosis with the active participation of members of the Advisory Board</p>	<ul style="list-style-type: none"> ● Implementation of measures discussed in the Advisory Board meeting and in bilateral consultations with regional key stakeholders

8 Poland – Dolnośląskie

The most important document defining the directions of development is the Development Strategy of the Lower Silesian Voivodeship. Its derivative is the Energy Strategy of Lower Silesia.

The basis for achieving climate neutrality by 2050 and carrying out the energy transformation is raising the level of social awareness and stakeholder involvement. Active inclusion in the development processes of all social groups is beneficial for finding sustainable and acceptable solutions that guarantee socio-economic development. Increasing knowledge about the climate and the environment requires the support of society and stakeholders, as well as the promotion of knowledge about sustainable development and new models of sustainable consumption. Full knowledge and awareness of the problems arising from the energy transformation (e.g. a periodic increase in energy prices) will allow for social acceptance, which is a necessary element of achieving climate neutrality by 2050. It is therefore necessary to launch support for the development of skills and education in the energy sector, including in particular those related to the use of technologies that increase energy efficiency. One of the goals set under the European Green Deal is to help EU countries fight energy poverty. The National Plan for Energy and Climate for 2021-2030 provides for dedicated instruments and measures to improve energy efficiency, taking into account measures addressed to households affected by energy poverty. The available data indicate that the energy poverty rate in households living in single-family houses in the Dolnośląskie Voivodeship in 2016 was 12.4% (approx. 35,113 households). An important scope of actions towards energy efficiency is the potential of residential buildings. In order to minimize energy losses, all elements of the power industry should be modernized in terms of energy. It is considered a priority to implement management systems and to disseminate the principles of corporate social responsibility in enterprises.

Directions of action:

The most important documents defining the development policy of Lower Silesia are:

- Renovation Strategy 2050
- Development Strategy for the Lower Silesian Voivodeship 2030,
- Spatial Development Plan for the Lower Silesian Voivodeship
- Energy Strategy of Lower Silesia

An important scope of actions towards energy efficiency is the potential of residential buildings. There are over 1.1 million buildings in the area. The estimated number of buildings to be thermomodernised, ie built by 2010, is presented in the table below.

Category	In Poland	in Lower Silesia	
	number of buildings	estimated number of buildings	Estimated number for deep thermomodernization
multi-family residential buildings	553,000	44 547	28 956
single-family residential buildings	5,604,000	451 433	316 003
collective residence buildings	3 900	614	220
public buildings	420,000	33 833	23 683
production, economic and warehouse buildings	5,116,000	412 122	288 485
non-residential buildings	2,491,000	200 664	140 465
TOGETHER	14 187 900	1 143 213	797 812

In the Strategy for the Development of Lower Silesia, "low emission" in the household and municipal sector, the emission of pollutants, the source of which is road transport and industry, is a key topic. It is necessary to continue the actions taken, including: further implementation of the anti-smog resolution and air protection programs, replacement of conventional raw materials with ecological energy carriers, modernization and replacement of heating boilers, as well as thermal modernization of facilities and promotion of a low-carbon economy.

In all documents, ecology, RES, climate neutrality, energy efficiency and clean air are the "axis" of further development

The working group established at DAEP as part of the RB actively participated in the work of the team established at MWD, sharing experiences in the field of improving energy efficiency and energy poverty.

The goal of the Energy Strategy of Lower Silesia (SEDS) is to make the region climate-neutral by 2050.

Finally, it was agreed that the main objectives include responsible use of resources and protection of the natural environment and cultural heritage, as well as supporting the production of energy from renewable sources and supporting energy security. Strategic SEDS projects are part of the theme of the RoundBaltic project and include:

1. using the potential of conventional energy, supporting grid energy, distributed cogeneration and energy clusters
2. stimulating research and implementation works related to the production of energy from renewable sources
- 3. actions in the field of combating low emission, especially in health resorts**
4. taking action to save energy and improve the efficiency of its use
5. "Reducing Low Emissions" - replacement and liquidation of old-type local sources powered by solid fuels or biomass, and their place is introduced:
 - connecting buildings to the local district heating network
 - purchase and installation of a modern heat source
 - renewable energy sources
6. Activities related to the so-called anti-smog resolution, but its effects have not yet been estimated

IMPROVING AIR QUALITY

- promoting the use of non-emission energy carriers/sources, in particular renewable energy sources in energy generation processes,
- support for the replacement of fossil fuels used in district heating with non-emission sources
- support for reducing emissions of pollutants into the air from individual heating - replacement of low-emission sources in facilities using solid fuel boilers
- preventing and reducing emissions of pollutants into the air from heating devices in public utility buildings

INCREASING THE USE OF RENEWABLE ENERGY SOURCES AND ITS STORAGE TECHNOLOGIES

- support for replacing heat sources using hydrocarbons with renewable energy sources

- connections to collective power supply systems supplied from non-emission sources;

INFORMATION AND EDUCATION

- introduction of information and education activities related to energy, in particular promoting RES;
- development of a network of advisory points, training for advisors (as part of an educational campaign conducted by the voivodeship self-government)
- strengthening awareness in the field of energy efficiency and the use / use of energy sources based on RES
- informing residents about the possibility of obtaining subsidies and using financial programs mitigating the impact of energy transformation

The European Funds for Lower Silesia 2021-2027 (FEDS 2021-2027) are involved in the implementation of the energy strategy. In the EU perspective for 2021-2027, EU funds, together with national funds, will support innovation, entrepreneurship, digitization, infrastructure, environmental protection, energy, education and social issues.

Financial mechanisms

- European Funds for Lower Silesia 2021-2027 (*FEDS* 2021-2027),
- A loan with a thermomodernization and renovation bonus of BGK with the support of ELENA,
- New forms of support for financing thermal modernization of buildings by BGK using national funds and KPOiWO,
- Clean Air program,
- Low-interest loans for thermal modernization for SMEs, WM and SM,
- ESCO,
- PPP,
- Active dissemination of financial instruments for owners of private, multi-family, local government buildings and for SMEs.

Energy consulting

- Creation of Comprehensive Investor Service entities. Adapting the one-stop-shop idea to Polish legal conditions, creating a franchise-based model,
- Launching one-stop-shop centers in poviats or in the territory of the commune association,
- Support from private energy and financial advisors,
- Round Table Talks.

The voivodeship adopted an ambitious goal for Lower Silesia, assuming the achievement of climate neutrality by 2050. As part of the work of the advisory board, the potential for energy savings was estimated at 134.1 TWh (reducing energy consumption by 72% by 2050):

Potential for reducing energy consumption in Lower Silesia according to the Renovation Strategy

Category	in Lower Silesia		Final energy savings [GWh /year]	Energy savings in [%]
	estimated number of buildings	Estimated number for deep thermomodernization		
multi-family residential buildings	44 547	28 956	4991.5	63.8%
single-family residential buildings	451 433	316 003	6754.6	67.0%
collective residence buildings	614	220	113.2	53.7%
public buildings	33 833	23 683	3310.6	52.8%
production, economic and warehouse buildings	412 122	288 485	105668.1	76.3%
non-residential buildings	200 664	140 465	13243.8	56.4%
TOGETHER	1 143 213	797 812	134081.8	72.0%

As part of FEDS, the UMWD considered energy efficiency activities with the use of RES as a priority. The detailed description of the priorities of the European Funds for Lower Silesia 2021-2027 program lists the priorities in the field of energy efficiency and energy renovation of building resources:

- Action FEDS.02.01 Efficiency energetic In buildings public,
- Action FEDS.02.02 Efficiency energetic In buildings residential,
- Action FEDS.02.03 Instruments financial on efficiency energy,
- Action FEDS.02.04 Innovations In RES,
- Action FEDS.02.05 Instruments financial on RES,
- Action FEDS.02.07 Security nature and climate,
- Priority FEDS.03 Funds European on thing mobility urban Lower Silesia,
- Action FEDS.03.01 Eco-transport city and suburban,
- Priority FEDS.04 Funds European on thing mobility Lower Silesia.

Scope of intervention under FEDS

Construction of new energy efficient buildings, Energy efficiency renovation or energy efficiency measures for public infrastructure, Demonstration projects and support activities in line with energy efficiency criteria, 044 - Energy efficiency renovation or energy efficiency measures for public infrastructure, demonstration projects and support activities

A description of the action

Types of projects: **Energy efficiency in buildings and** comprehensive energy modernization:

- Public buildings (i.e. buildings of local government units, organizational units of local government units and NGOs, if they pursue public purposes, collective housing buildings that meet these conditions are also treated as public),
- Residential buildings, demonstration projects and support activities,
- energy efficiency renovation of existing residential buildings, demonstration projects and support activities in line with energy efficiency criteria.

- Energy efficiency renovation or energy efficiency measures for public infrastructure, demonstration projects and support activities,
- Renovation of existing residential buildings in terms of energy efficiency, demonstration projects and support activities in line with energy efficiency criteria,
- Energy efficiency projects and demonstration projects in SMEs or large enterprises and support activities in line with energy efficiency criteria,
- Construction and extension of installations generating electricity and/or heat from renewable energy sources: solar radiation, geothermal energy, aerothermal energy /environmental energy, biomass and biogas,
- construction of energy storage facilities for the needs of a given RES source,
- construction of charging stations for electric vehicles using energy from a given energy source/storage),
- construction, expansion or reconstruction of networks within energy clusters, energy cooperatives, housing communities and energy communities operating in the field of renewable energy.

A minimum threshold for primary energy savings should be adopted, not lower than 30%.

8.1 Public utility buildings

8.1.1 Indicators

Energy saving potential for public buildings

Category	in Lower Silesia		Final energy savings [GWh /year]	Energy savings in [%]
	estimated number of buildings	Estimated number for deep thermomodernization		
Utility buildings , schools, dormitories, kindergartens, offices, sports facilities,	33 833	23 683	3310.6	52.8%

8.1.2 Challenges

Local government entities:

- Local government buildings are also municipal construction and public utility buildings, they are often historic, energy-intensive buildings, due to the Monument Protection Law, they are treated in a way that limits the possibility of improving efficiency,
- Deep thermal modernization of public facilities has a huge educational and pilot dimension,
- Encouraging and including (commune associations) to apply for funds for thermal modernization - launching the ELENA financial mechanism
- Educating and helping in obtaining funds from programs by creating One-Stop-Shop points (everything in one place), i.e. comprehensive service of thermomodernization investments

- Municipalities are indebted at the limit resulting from the applicable law, the challenge is to improve energy efficiency, which can be done based on the ESCO or PPP system

8.1.3 Framework needed support

In the case of communes with excessive debt, such a situation will make it impossible to improve energy efficiency. Therefore, a support framework is needed for:

- It is necessary to prepare materials explaining the implementation of investments in the ESCO or PPP system, legal assistance and energy consulting. It is expected that information and legal and technical training will be launched.
- Communes use buildings subject to conservation protection, therefore it is necessary to educate conservators of monuments in the field of thermal modernization and to develop models of cooperation, technologies acceptable to the KZ and to create a favorable climate of cooperation.
- Introduction of a system of energy classes for buildings so that they are easier to assess and compare.
- It is necessary to launch a comprehensive information and service system for beneficiaries who will be able to obtain information on complex legal, technical and financial issues regarding the energy renovation of One-Stop-Shop buildings.
- Public buildings should set an example. The need to introduce uniform, ambitious guidelines on the standard of modernization of public buildings.
- The need to introduce an energy management system.
- Creation of a dedicated portal containing good practices, especially in the field of modernization of monuments, linked to the expanded CEEB database.
- The costs of thermal modernization of monuments are significantly higher and are rather unprofitable, therefore a new mechanism is needed to take into account the increased costs of thermal modernization, and the amount of the subsidy should allow for the repayment of the returnable part from energy savings.

8.1.4 Instruments and tools needed

The needs focus on support related to the preparation of projects for implementation, the Elena mechanism is particularly useful here and the use of FEDS mechanisms for thermal modernization of buildings.

There is a need for one-stop-shop advisory points and organization of conferences, seminars and training sessions on topics tailored to recipients, including designers, as part of the OSS. It is also necessary to cooperate with archaeologists, conservators of monuments, engineers and thermomodernization designers.

In addition, market proposals for energy renovation of buildings, i.e. ESCOs and PPPs.

8.1.5 RoundBaltic intervention support

The need for systemic actions in the field of education of all stakeholders and synergy of advisory, information and educational activities.

It is necessary to support activities for ELENA and OSS, e.g. in building a network of commercial regional advisors in the one-stop-shop formula.

It is necessary to organize trainings and seminars for local government units in the field of ESCO PPP and ELENA.

It is necessary to educate the KZ and change the attitude of the KZ to thermal modernization, and change the attitude of designers and auditors to conservation issues.

8.1.6 Map road - how to achieve goals and overcome challenges

Cooperation with UMWD in order to develop the most favorable financial mechanisms for construction belonging to local government units.

Strengthening the message on ESCO and PPP

Launching ELENA for large urban centers and agglomerations as well as for smaller associated communes.

Energy Clusters should be the initiator.

A common policy also on historic buildings in relation to the objectives of the Renovation Strategy.

8.1.7 stakeholders

At the regional level:

- Energy clusters,
- Environmental organizations,
- Association and commune unions,
- Counties,
- WFOŚiGW,
- Marshal's Office of the Lower Silesian Voivodship,
- RoundBaltic Project Advisory Committee,
- Banks.

At national level:

- Ministry of Climate,
- Ministry of Development and Technology,
- Ministry of Development Funds and Regional Development,
- Renovation Wave Association,
- National Fund for Environmental Protection and Water Management.

8.2 Residential buildings

8.2.1 Indicators

Category	in Lower Silesia		Final energy savings [GWh /year]	Energy savings in [%]
	estimated number of buildings	Estimated number for deep thermomodernization		
Multi-family residential buildings	44 547	28 956	4991.5	63.8%
Single-family residential buildings	451 433	316 003	6754.6	67.0%
Collective residence buildings	614	220	113.2	53.7%

It has been estimated that there are approximately 500,000 buildings in the housing and collective housing sector. The energy saving potential is over 11 TWh

8.2.2 Challenges

During the 1st Round Table, the following issues were discussed:

- Lack of support mechanisms for private multi-family buildings,
- Subsidies reaching 25-30% do not encourage comprehensive thermal modernization.
- In the case of buildings under the supervision of the KZ, the support of 25-30% is insufficient
- Little support for historic buildings with limited activities and definitely higher costs,
- Lack of understanding of the ecological and raw material situation by the communities leads to limiting the scope of activities and implementing only shallow thermal modernization
- The need for independent energy advisors - the idea of servicing everything in one place OSS concerns especially owners of single-family houses who get lost in complicated procedures and expect help
- There was also a comment that the constant increase in subsidies leads to an increase in prices for thermal modernization and makes investors lazy. This may be the cause of the investment collapse after 2028.
- The lack of contractors and a significant increase in the cost of thermal modernization discourages comprehensive activities, waiting for specialists and meeting all contractors on time is difficult, the prices adopted in the audit quickly devalue.

8.2.3 Framework needed support

- Financial support for low-income families should be proportionate to needs and capabilities
- One-stop-shop OSS will speed up the use of the "Clean Air" program
- By example and professional advice, OSS can increase the scope of thermal modernization, the development of OSS should be supported
- The training of contractors and the promotion of construction professions should also be supported

- It is necessary to launch a support program for multi-family tenement houses whose buildings are under the supervision of a monument conservator.

8.2.4 Instruments and tools needed

- Combining the "Stop Smog" and "Clean Air" programs and adapting one program to the capabilities and needs of property owners and simplifying procedures.
- For the implementation of thermal modernization of single-family houses, many more contractors with appropriate qualifications are needed. The instruments and tools necessary to carry out the renovation require:
 - prefinancing of investments,
 - professional energy consultancy,
 - increasing owners' awareness through education and consulting.
- Increased financial support for owners of single and multi-family houses, especially under the supervision of the Consecrator of Monuments.
- Greater financial incentive for deep thermomodernisation, e.g. through tax reliefs
- Elena for historic buildings should have an extended implementation time.

8.2.5 RoundBaltic intervention support

- Running Elena for multi-family buildings.
- Consultation on the extension of the ELENA implementation time. Adjust the ELENA leverage to the market situation.
- Consultations with banks in order to use funds and claim banking procedures.
- Action to increase the number of competent contractors.

Activation of the collateral and surety fund supporting thermomodernisation, especially deep one.

8.2.6 Map road - how to achieve goals and overcome challenges

- Presentation of regional recommendations on improving the framework at the national level in the forum of non-governmental organizations.
- Cooperation with the Fala Renowacji Association, which deals with the development of expert opinions justifying appropriate changes in national programs and programs co-financed by the European Union.
- Organization of follow-up Regional Round Table to determine the progress in implementing the recommendations, preceded by updating the regional diagnosis in communication with the Advisory Committee.
- Promotion of good practices obtained in regional governments, especially good practices for historic buildings. In Lower Silesia, over 30% of buildings are subject to conservation supervision.
- Presenting regional recommendations to improve the framework at the national level in the forum of NGOs.
- Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by updating the regional diagnosis in communication with the Advisory Committee.

8.2.7 Stakeholders

At the regional level:

- Marshal's Office of the Lower Silesian Voivodship,
- RoundBaltic Project Advisory Committee,
- Velo Bank (former Get -In Noble Bank),
- Environmental Protection Bank,
- BNP Paribas,
- PKO,
- Ecological organizations, unions and association,
- Local media,
- Guarantee funds.

At national level:

- Ministry of Climate,
- Ministry of Development and Technology,
- Ministry of Development Funds and Regional Development,
- The Renovation Wave Association,
- National Fund for Environmental Protection and Water Management,
- Bank Gospodarstwa Krajowego.

8.3 Modernization of SME buildings

8.3.1 Indicators

Estimated number of production, farm and warehouse buildings

Category	in Lower Silesia		Final energy savings [GWh /year]	Energy savings in [%]
	estimated number of buildings	Estimated number for deep thermomodernization		
Production, economic and warehouse buildings	412 122	288 485	105668.1	76.3%
Non-residential buildings	200 664	140 465	13243.8	56.4%
TOGETHER	612 786	428 950	118 912	73.4%

8.3.2 Challenges

Since facilities owned by entrepreneurs constitute a large part of all buildings, the potential is large (approx. 120 TWh, it is necessary to convince entrepreneurs to implement energy efficiency luminaires despite too long payback time.

Entrepreneurs' expectations include subsidies and low-interest loans or tax reliefs. An attempt should be made to develop various mechanisms for the implementation of thermomodernisation.

8.3.3 Framework needed support

Support for UMWD activities as part of creating financial mechanisms for SMEs with FEDS 2021-2027:

- Supporting the direction of legislative activities in the field of tax reliefs,
- Supporting refundable mechanisms, but with low interest rates (De mini mis aid),
- Creation of collateral and surety funds,
- Simple subsidy mechanisms also covering the improvement of energy efficiency of production processes,
- The support should also cover the education of entrepreneurs in the field of energy efficiency,
- In order to achieve the goals faster, it is necessary to provide assistance and cooperation under the OSS,
- Popularization of Elena among entrepreneurs.

8.3.4 Instruments and tools needed

- Supporting return mechanisms, but with low interest rates
- Creation of collateral funds
- Education of entrepreneurs, awareness of ecological threats
- Availability of ELENA for the largest possible group of entrepreneurs
- Extending the time of using ELENA

8.3.5 RoundBaltic intervention support

The intervention should include:

- Consultations with ELENA on extending the time of using support for thermal modernization of enterprises.
- Discussion with the Ministry of Finance on the introduction of a tax relief for enterprises implementing deep thermomodernisation.
- Introducing measures to improve energy efficiency in the programs of the Marshal's Office of the Lower Silesian Voivodeship
- Launching OSS having the skills and competences of cooperation with SMEs.

8.3.6 Road Map - how to achieve goals and overcome challenges

- Presentation of regional recommendations on improving the framework at the national level in the forum of non-governmental organizations.
- Presentation of conclusions to the Fala Renowacji Association and an ecological organization dealing with clean air, energy efficiency issues in the SME sector in order to develop support

and take into account the specific needs of entrepreneurs and propose appropriate changes in national programs and programs co-financed by the European Union.

- Organization of the 2nd Regional Round Table to determine the progress in implementing the recommendations made during the first meeting, preceded by updating the regional diagnosis in communication with the Advisory Committee.
- Promotion of good practices obtained in SMEs.
- Presenting regional recommendations to improve the framework at the national level in the forum of NGOs.
- Reaching chambers of commerce, associations of entrepreneurs, craft guilds with trainings and presentations and building awareness of entrepreneurs.
- Promotion of the ELENA mechanism

8.3.7 Stakeholders

At the regional level:

- Marshal's Office of the Lower Silesian Voivodship,
- RoundBaltic Project Advisory Committee,
- Chambers and organizations associating entrepreneurs,
- Bank and other financial organization,
- Ecological organizations, unions and association,
- Local media,
- Guarantee funds,

At national level:

- Ministry of Climate,
- Ministry of Development and Technology,
- Ministry of Development Funds and Regional Development,
- The Renovation Wave Association,
- National Fund for Environmental Protection and Water Management,
- Bank Gospodarstwa Krajowego.

8.4 Results summary

Summary of the declared tangible effects of RB:

Building type	buildings	Total EC	Total EC after	EK-EK after	total costs
	pcs.	GWh /year	GWh /year	GWh /year	MEUR
Historic	32	11,776	4.232	7.54	25.4
Multi-family	48	12.55296	4.25904	8.29	13.6
UP	40	19.5	5.88	13.62	27.5
SMEs	48	15.036	5.37	9.67	13.0
Religious worship and accompanying	25	6.51	2.2785	4.23	11.9
Together	193			43.35	91.3

Output	Outcome
1.1 Establishment of regional roundtables focused on financing energy efficiency	
<p>2(+1) regional round tables implemented</p> <p>A total of over 300 key stakeholders were involved, including about 100 key stakeholders from: UMWD, JST Clusters of energy, vocational education. Including local government units 22% and from the financial sector 19%</p> <p>Recommendations:</p> <ul style="list-style-type: none"> – Making stakeholders aware of the need for energy renovation of buildings - Renovation Strategy – Increasing the availability of attractive EE financing instruments, launching rather returnable mechanisms, but with favorable, preferential proposals when achieving deep thermal modernization – Development of the energy advisory network on DŚL. Cooperation with WFOŚiGW – creating OSS one-stop-shops – Launching ELENA, especially for smaller LGU organizations (creating a common investment matrix – Dissemination of information and exchange of experience – The need to conduct education – Training specialists and contractors 	<p>Dissemination of information on possible sources of financing</p> <p>Involvement of banks at the regional and national level (BGK, BOŚ, BNP PARIBA, WFOŚiGW and NFOŚiGW, TISE)</p> <p>Exchange of experience and discussion on financial mechanisms and their level of co-financing.</p> <p>Involvement of the UMWD in the education of contractors for thermal modernization.</p> <p>getting acquainted with the ELENA mechanism, the WFOŚiGW offer.</p>
1.2 Establish permanent structures involving all relevant stakeholders, including important financial actors	
<p>Establishment of the Regional Advisory Council, maintenance of expert contacts in the field of finance and thermal modernization</p>	<ul style="list-style-type: none"> • Transfer of recommendations from the region to the national level • Exchange of experiences and good practices • Cooperation with board members in social consultations of FEDS financial mechanisms • Performing an advisory function
2. Benefit from roundtables to increase the base of best practices, develop strategies, roadmaps and action plans	

<p>Proceedings reflecting the state of play and activities, and a road map indicating actions at the regional level</p>	<ul style="list-style-type: none"> • development of energy consultancy • participation in the advisory group at the Marshal of the UMWD affecting the final mechanisms for 2021-2027 • disseminating the idea of one-stop-shop, initiating a discussion on the need to launch OSS and the market need • awareness of the need for smart finance
<p>3. Together, we work out templates of documents, contracts, tools leading to better functioning of the market</p>	
<p>Preparation of an update of the Regional Diagnosis with the active participation of members of the Advisory Council, taking into account new tools resulting from the approved program of the Ministry of Economy for the improvement of EE - FEDS 2021-2027</p>	<ul style="list-style-type: none"> • Implementation of measures discussed in the Advisory Board meeting and in bilateral consultations with regional key stakeholders • Conducting a "permanent" discussion about new financial mechanisms • Participation of board members in the work and consultations for the adopted detailed mechanisms for selecting investments in the field of energy efficiency improvement
<p>Factors supporting the above activities</p>	
<p>Representatives of the council are recognized experts invited to cooperate with local government units, especially the City of Urban Development and participate in advisory functions as experts in the field of energy efficiency and ecology.</p> <p>DAES focused on solutions proposed by the EIB - ELENA using EU and national funds. For this purpose, supporting materials were developed for the implementation of the one-stop-shop (OSS) idea using the ELENA financial mechanism. The aim is to launch ELENA and lead to cooperation in the scope of the function of the operator of ELENA funds, e.g. by a union or association of municipalities. Therefore, attention was focused on associations associating several or even a dozen or so local governments jointly managing larger building resources for thermal modernization. Accepting the function of an operator allows you to carry out thermal modernization of buildings in smaller towns along with the organization of OSS service.</p> <p>For this purpose, after the 2ROS conference (November 16-17, 2022 and an additional conference on March 8, 2023), cooperation was established with the non-governmental organization: Center for Rational Entrepreneurship; Foundation of Business Practitioners (CPR) on launching ONE-STOP-Shop (OSS) comprehensive service points with the use of ELENA.</p> <p>The result of the established cooperation are jointly developed analyzes and training and marketing tools for the implementation of Elena and OSS:</p> <ul style="list-style-type: none"> • detailed analysis of the rules for launching the ELENA project, formal requirements, costs and settlement rules, • the minimum number of completed projects in a given period of time, risk assessment • development of a presentation on the principles of operation and activation of ELENA. 	

- development of a presentation describing the principles of operation of the one stop shop
- Preparation of a presentation discussing the principles of launching the ELENA program,
- Development of a survey for the appraisal audit, a template for a letter to the conservator and development of an investment matrix.
- Development of a model tripartite agreement between the BENEFICIARY commune - DAES - CPR
- Development of an action plan to extend the ELENA mechanism

Entities associating municipalities that are not metropolises, as well as unions or associations of municipalities and Kalstra were accepted for the implementation of Elena Energy. The Association of Karkonosze Municipalities, the Dzierżoniów Energy Cluster with the Bielawa Commune and the TBS Chamber of Commerce and Industry were selected

- **Bielawa Commune.** Meeting on January 8, 2023 with Andrzej Horda, Mayor of the City and Municipality of Bielawa, President Daniel Dubas managing municipal resources, and Ms. Magdalena Kołodziejczuk regarding the use of Elena financial mechanisms and launching a one stop shop in the municipality. Three meetings were held during which the number of buildings intended for thermal modernization, the scope of work and the ownership structure were discussed. Finally, about 50 buildings in the first stage with a swimming pool and about 40 buildings in the second stage are planned. The commune sent 97 surveys for the evaluation audit; 14 evaluation audits were prepared. The last meeting was held in Wrocław with representatives of the commune and MZBM. The launch of ELENA within the Bielawy Commune and Dzierżoniów Powiat was discussed. The commune finally decided to take advantage of ELENA's proposal at BOŚ Bank.
- **Association of Karkonosze Communes:** Meeting with the director of ZGK Łukasz Hada in Wrocław on March 8, 2023 at the conference "[Smart finances for intelligent buildings](#)". The idea of OSS and the Elena support program were presented at the conference. At the beginning of April 2023, in an interview with the management board of ZGK, the director received approval and from April 17, 2023, to August 1, 2023, negotiations regarding the draft agreement were underway. During this time, two meetings at the investor's site and two online meetings were held, during which the Elena and OSS rules were discussed in detail. The acceptance of the tripartite agreement took place on August 2, 2023. **The agreement will be signed after August 17, 2023**, and the stage of submitting applications to the EIB will begin. At the end of June, ZGK sent over 100 surveys for the appraisal audit, which were developed and sent to the investor and ZGK together with letters to the Conservator of Monuments (KZ). The resource manager is currently applying for a recommendation of the monument conservator on the basis of the letters sent.
- **Jelenia Góra** . Telephone conversations took place, materials about Elena and OSS were sent. During the second conversation, city representatives were not interested in implementing ELENA.
- **The Chamber of Commerce and Industry of the Social Housing Association.** Telephone conversations took place, materials about Elena and OSS were sent. TBS is preparing list investment.

Verification capabilities

- The result of cooperation with ZGK and other partners will be operating SAC points and the implementation of agreements with local government units on the implementation of financial assistance under ELENA

9 Kurzeme, Latvia

9.1 Public buildings

9.1.1 Type of intervention

The objective is to promote the increase of energy efficiency, intelligent energy management and the use of renewable energy resources in buildings owned or used by a direct public administration institution or its subordinate institution, or a derived public person performing state delegated functions.

In the new EU funds planning period, which implementation is just starting at the end of RoundBaltic project period in hand with Recovery and resilience fund, municipalities, and public bodies in Kurzeme Latvia will continue to support building energy efficiency performance including renewables launching innovative financial instruments and support tools to combine public (EU funds and government funds) and private funds.

The main intervention during the project implementation was two regional round tables of Kurzeme under which discussions about public sector were held, as well as involvement of Kurzeme representatives in national round tables and learning events, experience sharing.

9.1.2 Quantifiable Indicators

The below chart represents baseline data from the RoundBaltic proposal and the satiation progress until 2023 according to the available data about implemented projects. In the period from 2021 to 2023 there have been implemented 13 projects in Kurzeme planning region supported by European Regional Development fund (ERDF) in specific programs 4.2.2. and 4.2.1.

EE area	Primary Energy savings, GWh/year	Investment, MEUR
Baseline Latvia – grant agreement	$160 * 50\% * (15 * 3,000\text{m}^2) =$ 3,600 MWh/year 4,68 GWh	3,600 MWh/a * EUR 1800/MWh = 6,48 MEUR
Implemented EE projects in Kurzeme planning region with EU funding support (2021-2023) ²	547,46 t CO ₂ /year 2,850 MEUR 13 projects implemented	12,435 MEUR

9.1.3 Challenges

RoundBaltic roundtable discussions on promoting implementation of smart finance for energy efficiency in public buildings in Kurzeme has revealed two major government level challenges in this regard:

1) Political commitment

In the Kurzeme region in 2023, 4 out of 8 municipalities have made Sustainable energy and climate action plans (SECAP) until 2030, which is an important tool to be able to implement energy efficiency

² <https://www.esfondi.lv/istenotie-projekti>

measures as efficiently as possible. After the administrative territorial reform (the new setup of municipalities from July 1st 2021), these SECAPs have been revised and updated according to the actual situation. Of the remaining municipalities, 2 municipalities have plans in the development stage and 2 municipalities do not yet have them. However, it is interesting because many support tools are directly created in the process of developing these documents. Therefore, it can be concluded that creation and implementation of SECAP, afterwards implementing energy efficiency projects in Kurzeme municipalities is directly linked to the political will.

2) Lack of ESCO projects and motivation to implement them

EU funding and grants available for public buildings does not closely reach the actual needs of public sector energy efficiency, therefore one of the best solutions to accelerate this field is implementing ESCO projects in public sector. From what has been concluded in regional roundtables, municipalities (decision makers and energy efficiency managers) are lacking knowledge and expertise regarding ESCO model tenders and contracts. One of RoundBaltic Latvia partners Liepaja city municipality on June 1st, 2023, has contracted ESCO company “RCG Lighthouse” Ltd. for 0,9 mEUR for lightning in all Liepaja city educational entities. Since Liepaja city municipality in energy efficiency is one of the role models not only in Kurzeme but whole country, this lightning project is expected to be promoted as best practice of implementing ESCO. ESCO is a great tool to meet public sector needs together with private funding.

9.1.4 Needed supportive framework

Two RoundBaltic roundtables in Kurzeme planning region have showed the importance of discussion platform on energy efficiency matters between stakeholders. As mentioned above, two out of eight Kurzeme municipalities do not have SECAP as well as lack energy efficiency managers who would create holistic view about energy efficiency matters in their municipality. Mostly energy efficiency and deep renovation projects in public buildings are executed one by one by project departments according to the available public funding. Regular experience sharing and building knowledge is critically needed and it will be suggested to Kurzeme planning region to create such a **discussion platform**. There were also speakers from other regions which Kurzeme municipalities found very useful. Therefore, it is suggested to consider creating a platform that includes all 43 municipalities of Latvia in these discussions.

9.1.5 Stakeholders

- Kurzeme Planning Region;
- 8 Kurzeme region municipalities – Liepaja city, Ventspils city, Dienvidkurzeme county, Saldus county, Kuldīga county, Ventspils county, Talsi county, Tukums county municipality;
- Municipal-owned companies, such as “Liepājas namu apsaimniekotājs” Ltd.;
- Governmental institutions, SJSC “State Real Estate”, EPC providers and/or other service companies, Utility companies;
- NGOs (ESEB, LATEA, etc.);
- Local and EU financial institutions (LABEEF, EIB, EBRD, ALTUM, local commercial banks, Finance Latvia association etc.);

9.1.6 Needed instruments

Although there are no barriers from a regulatory perspective, in practice there are concerns on the public sector's side, mostly about ESCO projects and maximum contracting periods which has been declared as 5 years. At the same time, the Procurement Monitoring Bureau (PMB) during RoundBaltic discussions has made a clear statement in today's discussion that the contract term was no obstacle, as it could be extended in the case of municipalities given that the Municipal Council had adopted a decision to do so. Certainly, this would presume an ability to explain the economic rationale and the benefits of the contract necessitating an extension of its duration.

Since the start of RoundBaltic project there have been suggestions made about the need for **guidelines or a national pilot project in implementing ESCO projects**, however this topic or initiative has not been addressed for several years. From discussions in regional roundtables, it is heard there is very high interest from the public sector concerning implementation of such projects, but the main ministries and other authorities should issue a short circular with clarifications regarding the main obstacles listed above for mitigating any remaining concerns.

It will be suggested to policy makers to create such guidelines based on recent contract between Liepaja city municipality and "RCG Lighthouse" Ltd.

9.1.7 RoundBaltic support in identified actions

Kurzeme planning region experts identified RoundBaltic as the key actor of bringing together decision makers and energy efficiency managers of Kurzeme municipalities, also educating experts of Kurzeme planning region. Even though planning regions have quite big role in the sustainable development planning in Latvia, their funding is very limited and lots of actions are executed through projects. So far Kurzeme planning region has not implemented projects on energy efficiency topic, so RoundBaltic has raised huge interest. In future, Kurzeme planning region administration is continuing to apply with energy efficiency project ideas (discussions, knowledge sharing, learning, creating planning documents) for funding. They are willing to continue supporting Kurzeme municipalities and even without project funding they will bring together Kurzeme stakeholders.

9.1.8 Road map

Kurzeme planning region for supporting public sector should **create regional SECAP that is focused on cooperation** between municipalities in implementing energy efficiency projects and actions from perspective of soft actions and investments in infrastructure, creating common instruments of measurements etc.

As concluded in regional roundtable, the more urbanized the place is, more successful the performance indicators related to capacity and human resources and knowledge are. Accordingly, in Kurzeme it is Liepaja and Ventspils. Having **Liepaja and Ventspils as role models** potentially is the way to proceed.

The practical conclusions are that it is necessary to **search** even more and more aggressively to **achieve the goals** that are written in various planning documents and strategies. This means that, in addition to EU funds, other sources of financing must be sought, including private to ensure the principle of continuity.

9.2 Residential sector - multifamily buildings (MFB)

9.2.1 Quantifiable Indicators

The below chart represents baseline data from the RoundBaltic proposal and the saturation progress until 2023 according to the available data about implemented projects. In the period from 2021 to 2023 there have been implemented 57 projects in Kurzeme planning region with the support of finance institution ALTUM.

EE area	Primary Energy savings, GWh/year	Investment, MEUR
Baseline Latvia – grant agreement	$160 * 50\% * (20 * 3,000\text{m}^2) = 4,8$ GWh/year 6,24 GWh/year	$4,800\text{MWh/a} * \text{EUR}$ $158/\text{MWh}$ 7,2 MEUR
Implemented EE projects in Kurzeme planning region with ALTUM funding support (2021-2023) ³	8,59 GWh/year savings 2126 tCO ₂ /year savings 57 projects implemented	189,618 MEUR

9.2.2 Type of intervention

The objective is to promote the increase of energy efficiency with implementing deep renovation projects in multiapartment buildings in Kurzeme region.

9.2.3 Challenges

Even though RoundBaltic project in Latvia focuses on the three main sectors (public, housing and SME) both regional roundtables in Kurzeme region were focused mainly on housing. The main reason behind it is the outstanding Liepaja city example with deep renovation practice in housing sector. Very good performance is also showed in Ventspils and Saldus cities.

Until 2022 there was one financial support program in Latvia in the form of grants which covered 50% of the costs of implemented energy efficiency measures. With the limited EU funds available this support was available to rather small part of buildings in the need for energy efficiency measures. As calculated by stakeholders in 2021, the particular rate of building renovation it might take 175 years to renovate all buildings in the need of it. In practice 50% grant support of total project costs has not been motivating enough for MFB owners (owners of the apartments in these buildings).

From 57 implemented projects from 2021-2023 in Kurzeme region, almost half has been in Liepaja city with Saldus county and Ventspils city following which shows the tendency (figure below).

³ <https://www.altum.lv/pakalpojumi/iedzivotajiem/daudzdzivoklu-maju-energoefektivitate/>

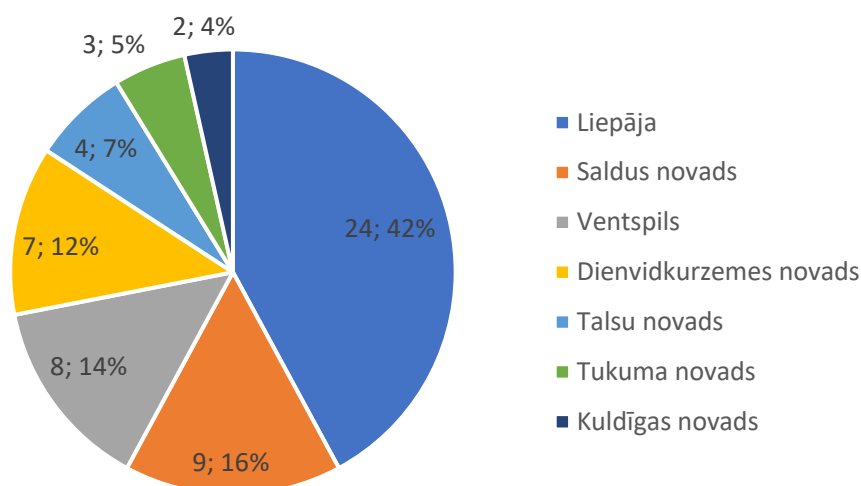


Figure 1. MFB deep renovation projects in Kurzeme region 2021-2023 by municipality, ALTUM

Starting from 2022 the new financial support program administrated by finance institution ALTUM is running, though in August 2023 only few MFB has applied. The program has been much improved and is financed by Recovery and resilience fund. Up to 49% of the renovation project costs can be granted. This program will be running until 2026 and currently the total fund of 57,2 mEUR is aimed for renovation of ~170 multiapartment buildings. As indicated before, the total amount of MFB in Latvia is more than six thousand and the current speed of renovation and available funds do not help in meeting set climate neutrality goals.⁴

Even though the available funds are seemingly not enough for the actual needs, MFB owners are not applying very actively. The main challenges in MFB sector are:

- Decision making process by MFB apartment owners;
- Low solvency of MFB apartment owners;
- Lack of support for MFB for the initiation and execution of deep renovation projects.

Deep renovation of the MFB requires increased household expenditures for many years following the project implementation, however the recent energy crisis and high inflation fostered by Ukraine-Russia war has helped to switch the mindset supporting energy efficiency and more people see the benefits of investment.

9.2.4 Needed supportive framework

Two RoundBaltic roundtables in Kurzeme planning region have showed the importance of **creating one-stop-shops** for supporting MFB owners. **Information campaigns** and building knowledge for MFB apartment owners is critically needed. Liepāja city municipality in Kurzeme region is the driving force and should be involved in future activities supporting other MFB owners in Kurzeme region and all the rest of municipalities in Latvia.

⁴ <https://www.altum.lv/pakalpojumi/iedzivotajiem/daudzdzivoklu-maju-energoefektivitate-2022-2026>

9.2.5 Stakeholders

- Kurzeme Planning Region
- Municipalities, municipal-owned, utility companies
- ALTUM, Ministry of Economics
- ESCO companies

9.2.6 Needed instruments

In Latvia urgent needs for renovation of MFB (improved energy efficiency included) exceed the available funding more than 25 times. Given that the current funding is intended for the renovation of apartment buildings over a period of 7 years, under the current scenario it will take 175 years to renovate all the buildings in Latvia that need overhaul. These buildings will not survive to see it, as they are already heavily worn out, so **alternative financing** scenarios must be considered at a much faster pace.

The alternative model proposed is that, instead of providing grants, the State would **subsidize the interest rate on** the loan and extend the loan maturity period to 20–25 years. This model would slightly increase the project implementation costs for citizens, but compared to the current (grant) model which presumes renovation of 400 houses at the cost of €100 million, the alternative model would provide for the renovation of 1,266 buildings (at a 20 years' loan maturity period) or 1,010 buildings (at a 25 years' loan maturity period), which means significantly more renovations at the same cost. The mechanism would provide advantages in terms of highest efficiency in absorbing public resources. After the buildings have been renovated, the loan package could be used for refinancing and acquiring of new resources; Easier coordination with the European Commission; Clear prerequisites for housing renovation relating to all the parties involved; Facilitation of ESCO service development; Absence of risky ineligible costs; Clarity about how to act when the EU funded support period comes to an end; We should say NO to any financial correction for citizens since that would demotivate them to engage in housing renovation projects.

Even though Kurzeme planning region have quite big role in the coordination of municipalities, their funding is very limited and lots of actions are executed through projects. In RoundBaltic discussions we have concluded that **one-stop-shops** could be made on the platform of planning regions, however, lack of funding has not helped this idea. Help of ALTUM also on regional, municipal level should be considered since they are administrating the support program and are consulting MFB owners on a daily basis.

Local media should be involved in **promoting EE projects** on municipal level to spread the best practices and knowledge about gains from the projects. Such informational campaigns also require funding and should be discussed.

9.2.7 RoundBaltic support in identified actions

Since residential housing sector is one of the largest energy consumers in Latvia, roundtable discussions organized by RoundBaltic, drew a lot of attention and in terms of attendance and interest attracted the highest number of participants. Discussions concentrated on soviet era multiapartment housing, where approximately lives 70% of the population in Latvia.

RoundBaltic roundtable discussions revealed a very one-sided perception of energy efficiency. Activities and investments in energy efficiency tend to be evaluated strictly from feasibility point of

view, considering such long-term factors as quality of life, health, social, and how energy efficiency benefits environment. Policymakers make assumption that society understands the other benefits by default and no explanation work on government level needs to be done.

Clear goals of the need for creating one-stop-shops and organizing informational campaigns were conducted.

9.2.8 Road map

Kurzeme planning region and local municipalities together with ALTUM finance institution in supporting multifamily building sector should **create and financially support informational campaigns and one-stop-shops.**

As concluded in regional roundtable, the more urbanized the place is, more successful the performance indicators related to capacity and human resources and knowledge are. Having Liepaja city, Saldus county and Ventspils city as role models potentially is the way to proceed.

Main action to meet the goals:

- Introduce regular informative / educational / motivating events / campaigns for the general public (involving the media - TV, Radio) in order to explain the long-term energy efficiency goals of the Latvian state and promote public awareness and connection with the national sustainability goals.
- To purposefully inform and educate the public about the ESCO's approach to the implementation of energy efficiency improvement projects - the essence, process, advantages, and disadvantages. ESCO in MFB sector the best would work in implementing EE projects in at least 3 building simultaneously.
- To standardize the documentation of the implementation of energy efficiency improvement projects and to develop practice-tested, standardized, free-of-charge sustainable solutions for the insulation of standard Soviet-era apartment buildings, as well as drawings of units to be insulated.
- Consider alternatives to EU financial support instruments, for example, instead of granting grants, the state subsidizes the loan interest rate and extends the loan term for 20-25 years.
- To modernize / simplify / facilitate the decision-making process of the community of apartment owners (electronic surveys, e-signature, votes, and decisions are made by those apartment owners who come to the general meeting / participate in the survey).

9.3 SMEs

9.3.1 Type of intervention

The goal is to promote opportunities for SME to get involved in energy efficient projects as well as to raise public awareness of the potential benefits and advantages of implementing such projects.

Type of initiative:

- Establish permanent centralized structure/institution energy efficiency competence center, which compiles and coordinates all energy efficiency-related processes in the country, as well as educates and advises and provides enterprises, financial institutions, and implementers

with the information necessary for decision-making and project undertaking - a knowledge center in Latvia responsible for reaching goals of energy efficiency.

- Establish a publicly accessible, national database of publicly credible data on energy efficiency projects executed in country, as well as real time energy consumption database.

9.3.2 Quantifiable Indicators

The chart below represents the baseline data from the RoundBaltic proposal and the satiation progress. Since ALTUM finance institution administrates the EE support programs for enterprises including SME's, they have provided data about actual situation from 2021-2023.

EE area	Energy savings GWh/year	Investment MEUR
Baseline Latvia GA SME and industry sector <i>15 SMEs</i>	4,5 – 9 GWh/year	6,85 – 13,7 MEUR
State of situation and progress per August 2023, Kurzeme	26,967 GWh/year 8.634 t of CO2 5 projects	6.7 MEUR

9.3.3 Challenges

Main aspects identified:

- The lack of a clear-cut and well managed policy, red-tape, procurement problems and lack of competence in the regions;
- Commercial banks have not offered finance for energy efficiency as a separate product until 2023;
- Availability and transparency of data is essential. At this point many sufficient data are not available, whereas they should be available under the law;
- There is a need for new financial instruments, longer loan periods and balanced interest rates.

9.3.4 Needed supportive framework

The SME sector is increasingly influenced by energy efficiency requirements. Energy efficiency of enterprises not only affects their competitiveness but also affects their ability to borrow and attract investments.

SME sector, just like the public sector voices the need of a **national sustainable energy efficiency competence center**, which compiles and coordinates all energy efficiency-related processes in the country, as well as educates and advises and provides enterprises, financial institutions, and implementers with the information necessary for decision-making and project undertaking. Within such center is a need to establish a **national database** of publicly credible data on energy efficiency projects executed in country.

9.3.5 Stakeholders

- Municipalities
- Governmental institutions
- EPC providers and/or other service companies
- Utility companies, SMEs, NGOs (ESEB, LATEA, etc.)
- Local and EU financial institutions (LABEEF, EIB, EBRD, ALTUM, local commercial banks, Finance Latvia association etc.)
- Energy Agencies

9.3.6 Needed instruments and tools

The national sustainable energy efficiency competence center should be created, which compiles and coordinates all energy efficiency-related processes in the country, as well as educates and advises and provides enterprises, financial institutions, and implementers with the information necessary for decision-making and project undertaking. It could be based on finance institution ALTUM (financial and informational support, execution).

Within such center is a need to establish a national database of publicly credible data on energy efficiency projects executed in country. It could be based on State Construction Control Bureau of Latvia. As Ministry of Economics leads both of these entities, common discussions should be facilitated in creating permanent structure for supporting EE in SME's.

9.3.7 RoundBaltic support in identified actions

These RoundBaltic round table events resulted in a list of concrete recommendations for the work to be performed as well as indications of responsible institutions in performing the work.

9.3.8 Road map

Main action to meet the goals:

- Most of the available sources of financing have already been acquired, so there is a need to create long-term funding solutions.
- Establish a nationwide center of excellence for sustainable energy efficiency, which compiles and coordinates all energy efficiency-related processes in the country, as well as educates and advises and provides information, decision-makers, funders and executors for decision-making and project implementation. Establish a national database of publicly credible energy efficiency projects within this center. The center of excellence may not be an institution; it may also exist as a website.
- Policymakers to listen more actively and consider the views and recommendations of the private sector and industry associations.

9.4 Summary

Output	Outcome
1.1 Establishment of regional roundtables focused on financing energy efficiency	
<p>2 regional round tables organized:</p> <ul style="list-style-type: none"> In the 1st – 125 registered participants, from which 20% from financial sector, 35% from governmental sector. In the 2nd – 60 registered participants, from which 20% from financial sector, 35% from governmental sector. 	<ul style="list-style-type: none"> Increased networking and interaction with municipalities, governmental institutions, banks, and utility and ESCO companies, other stakeholders on a regional and national level. Comprehensive knowledge and experience sharing.
1.2 Establish permanent structures and procedures involving all relevant stakeholders, including important financial actors	
<ul style="list-style-type: none"> The need of a discussion platform on energy efficiency matters between stakeholders. 	<ul style="list-style-type: none"> Ensuring active discussions between stakeholders, facilitated by the region. Involvement of RoundBaltic Advisory Board to ensure and develop cross-sectoral, territorial discussions.
2. Benefit from roundtables to increase the base of best practices, develop strategies, roadmaps and action plans	
<ul style="list-style-type: none"> The need for guidelines or a national pilot project in implementing ESCO projects. Information campaigns and building knowledge for MFB apartment owners is critically needed. 	<ul style="list-style-type: none"> Cooperation with Liepaja city municipality to create best practice guidelines in implementing ESCO projects. Supported by the Ministry of Economics to create informational campaigns.
3. Develop jointly template documents, contracts, tools leading it's better functioning of the market	
<ul style="list-style-type: none"> To create regional SECAP that is focused on cooperation between municipalities in implementing energy efficiency projects and actions. 	<ul style="list-style-type: none"> Kurzeme planning region will help missing municipalities to create their SECAPs, the idea about regional SECAP is fixed in future plans.
Viability Factors	
<p>The intention is:</p> <ul style="list-style-type: none"> to keep active discussions on regional and national level supported by stakeholders. to promote Liepaja example related to MFB renovation and ESCO project in public buildings. to help creating informational campaigns promoting EE in MFB and SMEs. 	
Means of Verification	
<ul style="list-style-type: none"> Proceedings and Road Maps Articles and cases studies Testimonials by stakeholders 	

10 Vidzeme, Latvia

10.1 Public buildings

10.1.1 Type of intervention

Vidzeme is the largest region of Latvia, with approximately 280,000 inhabitants. In the last 10 years, the number of systems using renewable energy resources has increased significantly. The objective is to promote the increase of energy efficiency, intelligent energy management and the use of renewable energy resources in buildings owned or used by a direct public administration institution or its subordinate institution, or a derived public person performing state delegated functions.

The main intervention during the project implementation was two regional round tables of Vidzeme under which discussions about public sector were held, as well as involvement of Vidzeme representatives in national round tables and learning events, experience sharing.

10.1.2 Quantifiable Indicators

The below chart represents baseline data from the RoundBaltic proposal and the saturation progress until 2023 according to the available data about implemented projects. In the period from 2021 to 2023 there have been implemented 27 projects in Vidzeme planning region supported by European Regional Development fund (ERDF) in specific programs 4.2.2. and 4.2.1.

EE area	Energy savings, GWh/year	Investment, MEUR
Baseline Latvia –GA (grant agreement)	$160 * 50\% * (15 * 3,000m^2) =$ 3,600 MWh/year 4,68 GWh	3,600 MWh/a * EUR 1800/MWh = 6,48 MEUR
Implemented EE projects in Vidzeme planning region with EU funding support (2021-2023) ⁵	3,7 GWh 709,99 t CO ₂ /year 27 projects implemented	21,959 MEUR

10.1.3 Challenges

Both of the RoundBaltic regional roundtable discussions in Vidzeme region were devoted to the public sector. First of all, public sector should be showing example on implementing EE projects so residential and SME sector can follow.

Main challenges identified:

- High needs financing public sector building renovation – **lack of financial resources;**
- **Publicly reliable data** - a prerequisite for planning measures to increase energy efficiency and attracting funding;
- **Lack of alternative tools** of financing public sector building renovation besides governmental financial programs. EU funding and grants available for public buildings does not closely reach the actual needs of public sector energy efficiency, therefore one of the best solutions to

⁵ <https://www.esfondi.lv/istenotie-projekti>

accelerate this field is implementing ESCO projects in public sector. Other alternatives should be thought of.

- Single, clear and supportive policy, **strategic planning** as well as assessment of results and benefits for better and more effective decisions in the future – creating SECAPs and implementing energy managers in all municipalities is a must.
- The role model such as Liepaja city municipality in Kurzeme region and a comprehensive vision.

10.1.4 Needed supportive framework

Two RoundBaltic roundtables in Vidzeme planning region similarly to Kurzeme have showed the importance of discussion platform on energy efficiency matters between stakeholders. Regular experience sharing and building knowledge is critically needed and it will be suggested to Vidzeme planning region to create such a **discussion platform**. Therefore, it is suggested to consider creating a platform that includes all 43 municipalities of Latvia in these discussions.

10.1.5 Stakeholders

- Vidzeme Planning Region;
- 11 Vidzeme region county municipalities – Aluksne, Cesis, Gulbene, Limbazi, Madona, Ogre, Saulkrasti, Smiltene, Valmiera, Valka, Varaklani municipality.
- Municipal-owned companies, such as “Aluksnes nami” Ltd.;
- Governmental institutions, SJSC “State Real Estate”, EPC providers and/or other service companies, Utility companies;
- NGOs (ESEB, LATEA, etc.);
- Local and EU financial institutions (LABEEF, EIB, EBRD, ALTUM, local commercial banks, Finance Latvia association etc.).

10.1.6 Needed instruments

Among the immediate goals, it would be important to create a **regional energy consumption database**, which is extremely important in the planning and implementation of energy efficiency projects, the creation of energy-efficient infrastructure, as well as the creation of the Eastern Latvian Energy Efficiency Center in Gulbene municipality. This would encourage and facilitate the implementation of energy efficiency projects both in households and in public buildings. All of this requires funding.

Few examples are given by municipalities on how to **gather and monitor data** about energy efficiency matters in public buildings – Aluksne and Gulbene county municipalities. For example, in Aluksne municipality they in the most energy-intensive buildings of the municipality they have installed microclimate, water consumption and electricity consumption, heat energy consumption monitoring sensors, which are remotely integrated into the monitoring platform. That allows to collect data in a structured manner, compare, highlight priorities, and eliminate problematic issues. However, such implementation also requires finances and without clear political and administrative support would not happen. Such instruments should be implemented in every municipality.

Although there are no barriers from a regulatory perspective, in practice there are no clear examples of ESCO projects in public sector in Vidzeme region. Also, Vidzeme municipalities have identified the need for **guidelines or a national pilot project in implementing ESCO projects**.

10.1.7 RoundBaltic support in identified actions

Even though RoundBaltic project in Latvia focuses on the three main sectors (public, housing and SME) both regional roundtables in Vidzeme region were focused mainly on public sector.

RoundBaltic has been the key discussion platform for Vidzeme region stakeholders on financing energy efficiency matters. Even though planning regions have quite big role in the sustainable development planning in Latvia, their funding is very limited and lots of actions are executed through projects. So far Vidzeme planning region has not implemented projects on energy efficiency topic in public sector, so RoundBaltic has raised huge interest. In future, Vidzeme planning region administration is continuing to apply with energy efficiency project ideas (discussions, knowledge sharing, learning, creating planning documents) for funding same as Kurzeme.

10.1.8 Road map

During Vidzeme region roundtables it was concluded that the **municipality is a role model** and example indicator for the citizens in successfully implementing energy efficiency projects and it must work with the latest technological solutions. The high capacity of procurement specialists in municipalities can help to purchase new and innovative technologies in energy efficiency matters, also in data monitoring.

Aspects that currently affect effective **data collection** are technical, administrative, awareness, political and regulatory. There is a need to go digital. Data must be as dynamic, open and publicly accessible as possible, so that all stakeholders, incl. entrepreneurs and scientists would be able to use this data to create new solutions. The goal should be to have real-time energy consumption data publicly available. Moreover, the data also has an economic effect - it should be used in making smart investment decisions and this is where real-time data is needed.

10.2 Residential sector - multifamily buildings (MFB)

10.2.1 Quantifiable Indicators

The below chart represents baseline data from the RoundBaltic proposal and the satiation progress until 2023 according to the available data about implemented projects. In the period from 2021 to 2023 there have been implemented 62 projects in Vidzeme planning region with the support of finance institution ALTUM.

EE area	Energy savings, GWh/year	Investment, MEUR
Baseline Latvia – GA	$160 \cdot 50\% \cdot (20 \cdot 3,000\text{m}^2) = 4,8$ GWh/year 6,24 GWh/year	4,800MWh/a * EUR 158/MWh 7,2 MEUR
Implemented EE projects in Vidzeme planning region with ALTUM funding support (2021-2023) ⁶	11,61 GWh/year savings 2229 tCO ₂ /year savings 62 projects implemented	324,188 MEUR

10.2.2 Type of intervention

The objective is to promote the increase of energy efficiency with implementing deep renovation projects in multiapartment buildings in Vidzeme region.

10.2.3 Challenges

From 62 implemented projects from 2021-2023 in Vidzeme region, the most has been in Valka and Valmiera following Madona and Cesis counties which shows the tendency (figure below).

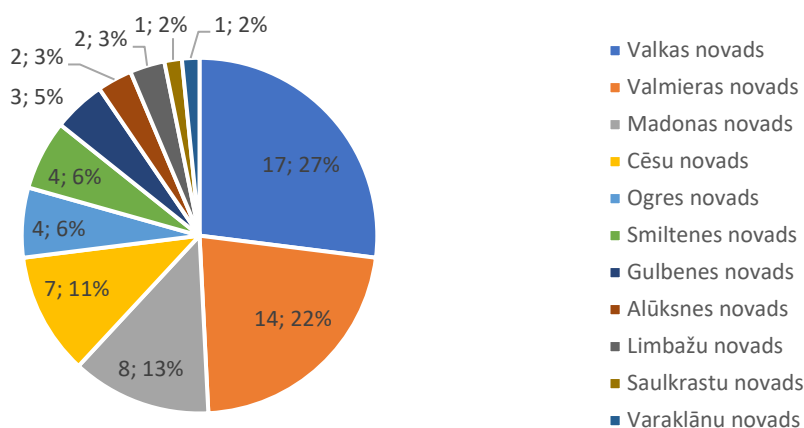


Figure 2. MFB deep renovation projects in Vidzeme region 2021-2023 by municipality, ALTUM

The main identified challenge in Vidzeme region is lack of central and coordinated support for MFB owners in a form of one-stop-shop.

10.2.4 Needed supportive framework

Two RoundBaltic roundtables in Vidzeme planning region have showed the importance of **creating one-stop-shops** for supporting MFB owners. Vidzeme planning region in 2023 has started the implementation of INTERREG project RenoWave which aims to create one-stop-shop. These one-stop-shops will help to increase the MFB stock renovation.⁷

⁶ <https://www.altum.lv/pakalpojumi/iedzivotajiem/daudzdzivoklu-maju-energoefektivitate/>

⁷ <https://interreg-baltic.eu/project-posts/renovation-wave-in-the-countries-of-the-baltic-sea-region/>

10.2.5 Stakeholders

- Vidzeme Planning Region,
- Municipalities, municipal-owned, utility companies,
- ALTUM, Ministry of Economics,
- ESCO companies.

10.2.6 Needed instruments

As for **one-stop-shop** it was discussed that these perspective functions are more important – consultations, participation in informative meetings, preparation of thermographic reports, sample documentation, support for the preparation of technical survey opinions. One-stop-shop which is 2023 is in creation process in Riga energy agency in addition, has also informational campaigns and public awareness, which include trainings 1-2 times a month, distribution of video materials, open door days, public events. The application of various tools provides for the creation of a climate platform, energy efficiency calculation and municipal energy management tools.

One-stop-shop in Vidzeme will be created as part of INTERREG RenoWave project, but this solution should be also executed in other regions so currently **more financial resources** for one-stop-shops are needed. Currently these activities are planned:

- Creation of a one-stop agency model in the Vidzeme region - face-to-face and remote consultations on the renovation process of multi-apartment buildings - financial sources, engineering solutions, etc.
- Educational seminars and workshops for residents, local government specialists and entrepreneurs with the aim of promoting building renovation.
- Research on the intensity, progress and territorial coverage of building insulation and renovation in the territory of the Vidzeme planning region.
- Five buildings will be provided with an energy efficiency audit.

Also, **local media** in Vidzeme should be involved in **promoting EE projects** on municipal level to spread the best practices and knowledge about gains from the projects. Such informational campaigns also require funding and should be discussed.

10.2.7 RoundBaltic support in identified actions

Roundtable discussions organized by RoundBaltic, drew a lot of attention to MFB sector.

RoundBaltic has helped to bring together stakeholders and create ideas about the needed actions Vidzeme planning region should proceed with, where INTERREG RenoWave project is an example.

Local governments of the Vidzeme region shared their experience of warming public buildings by attracting funds from EU funds. The KPFI⁸ mechanism was also used. Many of the projects were implemented, but it was a big challenge to achieve effective indicators. The situation is better for the largest counties, as they have a greater capacity to implement projects. On average, they are 60% of public buildings that were insulated and had energy efficiency measures taken. Lots of activity on

⁸ <http://www.kpfi.lv/>

sustainable energy action plans. Promotional measures to attract the private sector are a big reflection.

10.2.8 Road map

The next step is to create and run one-stop-shop of Vidzeme planning region. It should go in hand with informational campaigns to attract attention of MFB apartment owners and help taking positive decisions.

- The available resources must be synchronized when municipalities cooperate together.
- Development of a one-stop agency, combining similar activities and promoting citizen information.
- Creation, updating and adaptation of the energy resources action plan to the current situation.
- Attracting private capital to public buildings.
- The interest rate determines a lot when applying for a loan, it is lower and more profitable for the State Treasury than for banks.

10.3 SMEs

10.3.1 Type of intervention

The goal is to promote opportunities for SME to get involved in energy efficient projects as well as to raise public awareness of the potential benefits and advantages of implementing such projects. Information under Kurzeme planning region regarding SME's pretty much covers also Vidzeme planning region, because as for SME's not so many regional level activities have been conducted. Mostly finance institution ALTUM manages EE implementation in SME sector and this institution is national level.

10.3.2 Quantifiable Indicators

The chart below represents the baseline data from the RoundBaltic proposal and the satiation progress. Since AITUM finance institution administrates the EE support programs for enterprises including SME's, they have provided data about actual situation from 2021-2023.

EE area	Energy savings GWh/year	Investment MEUR
Baseline Latvia GA SME and industry sector 15 SMEs	45 GWh	6,85 – 13,7 MEUR
State of situation and progress per August 2023, Vidzeme	9,0 GWh	4,6 MEUR

10.3.3 Challenges

Main aspects identified:

- ensuring competence in the regions - knowledge, training, experts,
- lack of data available in SME's to be provided to financial institutions,

- lack of data on national level about businesses.

10.3.4 Needed supportive framework

The SME sector is increasingly influenced by energy efficiency requirements. There is an obligation to provide information about customers (SME's) to financial institutions already from 2022. Customers now request to provide data to their suppliers and stakeholders. Climate risks are also essential in non-financial reporting. Banks are likely to reduce their willingness to cooperate with businesses or sectors that are not sustainable.

The data is very important in the assessment of sustainability and would lead to a greener portfolio. Banks have faced the lack of structured data at the national level about businesses. However, data is the foundation to know how to measure energy efficiency and development. Those SME's which will start working with their data as soon as possible, collect and analyze it, will be step ahead in negotiations about attracting financing.

During regional roundtable discussions policy makers were reminded that in the SME sector, unlike in the housing sector, the attraction of private finance is always based on profitable investments, as only profitable investments will be successful and private financial investments will not be made in non-profitable activities. "Profitability" is the key word for promoting the use of private finance in Latvia's sustainable energy efficiency and government policies need to be developed accordingly.

10.3.5 Stakeholders

- Municipalities.
- Governmental institutions.
- EPC providers and/or other service companies.
- Utility companies, SMEs, NGOs (ESEB, LATEA, etc.).
- Local and EU financial institutions (LABEEF, EIB, EBRD, ALTUM, local commercial banks, Finance Latvia association etc.).
- Energy Agencies.

10.3.6 Needed instruments and tools

There should be a **discussion platform** for businesses to exchange and collect information about the best practices in EE measures and attracting funding.

Government must become the true **driver** in actively involving both public authorities and industry associations and, in close cooperation with the financial institutions sector, coordinate and implement concerted action to develop instruments to encourage private finance for energy efficiency projects. Policymakers should listen more actively and consider the views and recommendations of the private sector and industry associations.

10.3.7 RoundBaltic support in identified actions

These RoundBaltic round table events resulted in a list of concrete recommendations for the work to be performed as well as indications of responsible institutions in performing the work.

10.3.8 Road map

Developing cooperation between SME's and The State Construction Control Bureau which on a daily basis is ensuring control of the energy efficiency monitoring system, maintenance and administration of the register of company energy audit reports. Possibly The State Construction Control Bureau together with finance institution ALTUM and Vidzeme planning regions could establish a permanent structure for supporting SMEs in EE measures.

Policy makers need to be aware and understand that the use of private finance is always based on profitable investments, as only profitable investments will be successful and private financial investments will not be made in non-profitable activities. "Profitability" is the key word for promoting the use of private finance in Latvia's sustainable energy efficiency.

10.4 Summary

Output	Outcome
1.1 Establishment of regional roundtables focused on financing energy efficiency	
2 regional round tables organized: <ul style="list-style-type: none"> In the 1st – 94 registered participants, from which 20% from financial sector, 45% from governmental sector. In the 2nd – 84 registered participants, from which 10% from financial sector, 27% from governmental sector. 	<ul style="list-style-type: none"> Increased networking and interaction with municipalities, governmental institutions, banks and utility and ESCO companies other stakeholders on a regional and national level. Comprehensive knowledge and experience sharing.
1.2 Establish permanent structures and procedures involving all relevant stakeholders, including important financial actors	
<ul style="list-style-type: none"> The need of creating regional one-stop-shop for supporting MFB apartment owners 	<ul style="list-style-type: none"> Vidzeme planning region through INTERREG project RenoWave are planning to establish one-stop-shop. Ensuring active discussions between stakeholders, facilitated by the region.
2. Benefit from roundtables to increase the base of best practices, develop strategies, roadmaps and action plans	
<ul style="list-style-type: none"> The need for guidelines or a national pilot project in implementing ESCO projects. Information campaigns and building knowledge for MFB apartment owners is critically needed. 	<ul style="list-style-type: none"> Supported by the Ministry of Economics to create informational campaigns. Involvement of RoundBaltic Advisory Board to ensure national level discussion.
3. Develop jointly template documents, contracts, tools leading it's better functioning of the market	
<ul style="list-style-type: none"> To create regional energy consumption database. 	<ul style="list-style-type: none"> Vidzeme planning region in cooperation with governmental institutions
Viability Factors	

Output	Outcome
<p>The intention is:</p> <ul style="list-style-type: none">• to create regional one-stop-shop to support MFB apartment owners.• to create regional energy consumption database.• to keep active discussions on regional and national level supported by stakeholders.	
<p>Means of Verification</p>	
<ul style="list-style-type: none">• Proceedings and Road Maps.• Articles.• Testimonials by stakeholders.	

11 Central Denmark Region

Central Denmark Region is one of five regions in Denmark. Each region is led by a Regional Council, consisting of 41 politicians elected every four years. The Region consists of 19 municipalities (1,313,596 inhabitants). The regions' responsibilities are within the areas of health, psychiatry, social and regional development.

The role of local authorities in promoting energy renovation is mostly of a facilitating character in relation to local visions of CO₂ neutrality. Many local authorities (municipalities) have actively promoted energy savings at private end-users together with other local stakeholders, mostly supply companies, in the local strategic energy planning process. There is a long tradition for cooperation between the municipalities (multi-level), including coordinating spatial planning and energy strategies and monitoring of CO₂ Emissions. This cooperation mostly has been facilitated by the region.

13 of the municipalities have signed the Covenant of Mayor. Along with the energy accounts, the Central Denmark Region provides the data needed by the municipalities to monitor and report on their SEAPs/SECAPs. The Region has been a "Regional Covenant Coordinator" since 2017. Currently the region is starting up a cooperation to enhance the energy and climate planning in relation to the C40 standard for climate planning (DK2020). The goal is to focus on all sectors within the municipalities' geographical area, which define how they achieve CO₂ neutrality by 2050. In relation to this the region will cooperate with EC Network in the H2020 project "2ISECAP" to exchange know-how with other parts of Europe on participatory approaches within integrated strategic energy and climate planning.

Moreover, the region is operating an ELENA project providing project development assistance to district heating companies across municipalities.

In the light of these ongoing cross municipal activities facilitated and coordinated by the region the aim is to investigate activities to support the financing and implementation of EE measures in private homes and SMEs, e.g., through a regional/cross municipal platform ideally operated as a one-stop-shop facility, both in relation to those connected to the DH systems and those outside the DH supply areas. An important aspect in this regard is looking into establishing a proper interaction between supportive measures at national level (Governmental institutions and national financial associations/institutions) and regional level.

Total number of housing units in Central Denmark Region (all types)	611,377
Total number of housing units in one- and two-family houses	413,474
Total number of apartments in multifamily buildings	197,903
Apartments in Housing Owner Associations	17,609
Apartments in Private Housing Cooperatives	6,878
Apartments in rented apartments	96,079
Apartments in Social Housing	77,337

2019 Figures

Implemented financing instruments and need for new instruments within the region

With DKK 21.5 mio. from the EU ELENA Programme, the **Central Denmark Region** assists district heating utilities against increasing prices, while simultaneously accelerating the green transition (**REFER-CDR project): Renewable Energy for Emission Reduction in Central Denmark Region**). The project, which runs until April 2021, ensures project development assistance to 24 DH Utilities, providing them with a solid foundation of information when investing in district heating solutions based on renewable energy or energy efficiency. The heating plants expect to implement investments for DKK 543.7 mio (heat pumps, distribution systems, biogas and solar heating), which are funded by loans from KommuneKredit (municipal credit association) with a municipal guarantee.

Need for new instruments, including financing instruments / schemes considered

Follow-up activities are needed in relation to supporting the implementation of EE measures in private homes and SMEs, e.g., through a regional/cross municipal one-stop-shop facility, both in relation to those connected to the DH systems and those outside the DH supply areas.

The associated investments in private homes are not eligible for financing through the above-mentioned Kommunekredit, which is only dedicated for public entities. Therefore, access to private capital must be created, i.e., through one-stop-shops building on aggregation mechanisms and de-risking tools.

The Region has also an increased focus on the role of the district heating utilities in the renovation process. Some DH utilities has started leasing out DH units inside the buildings to end-users to optimise the overall operation and to better prepare for the future DH system based on low temperature heating supply. There is a discussion to possibly expand such leasing arrangements to EE measures inside the buildings. Also, some private companies, e.g., ventilation companies, are exploring this area.

There is also a need to facilitate financing to energy efficiency measures to the relatively big share of buildings located outside the DH supply area, including the rural area, and where the creditworthiness of consumers is challenged by relatively low building values. This is to be seen in conjunction with change in energy supplies, as also this area is to be supplied with 100% RES in 2050. There are several initiatives on this issue in the region particularly in relation to heat pump systems. Recently the region joined an INTERREG project to explore financing opportunities and economic incentives for heat pump systems – the COOLGEOHEAT project. This project also includes the project developer SustainSolutions, which offers integrated solutions for energy renovation financed by Danish pension funds.

11.1 Home Renovation

11.1.1 Type of intervention

The overall aim is setting up a regional platform / focal point for financing energy efficiency in private homes ideally supporting homeowners through project development assistance and one-stop-shop services. The platform will be facilitated / operated by the Region and in a close cooperation with municipalities, DH utilities and advisors, as well as other key players.

The focus is both on one-family houses and multi-family houses inside and outside DH and gas supply areas. In the light of the current need to reduce gas consumption, there is currently a process of expanding the DH supply area within all municipalities, including converting natural gas areas to DH

areas or areas supplied by heat pumps. Further by connecting more consumers within the DH area. Outside the DH area various forms of energy supply is promoted, e.g , heat pump systems supported by state funds (subscription schemes ao) and collective heat pump systems (Termonet).

The process further supplements the recent ELENA project, REFER-CDR, which supported implementation of district heating supply systems in the region based on renewable energy sources. A supplementary project in relation to the residential sector would need further clarification of the needed financing (creating access to financing through documentation de-risking etc.), and which is more complex than the financing of the DH supply system, which is based on public available financing and guarantees.

From the regional side the primary focus is at the end of RoundBaltic at the areas outside the DH area, not least due to a high political priority in the region to ensure sustainable 7heat supply in these areas. There has been an increased focus on expanding the DH supply area to eliminate gas supplied areas, and to find alternative supply solutions for areas where DH is not feasible. This particularly concerns rural areas where the home equity is low and far from covering loans for new heat sources and energy renovations.

11.1.2 Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the projects and following refinement over the two regional workshops. The key figures are based on experience from previous projects in the regions.

EE area	Energy savings GWh/year	Investment MEUR
Home renovations - outside the DH and gas supply area.		
Baseline - Grant agreement	Each EE renovation = 10,000 kWh/year. Potential of 74,000 houses = 7,400 GWh/year Triggered within project period: 1,250 - 2,500 one-family houses in 8 municipalities = 12,5 - 25GWh/year	Investment of EUR 8,700 per house. Target of 74,000 houses = 643.8 MEUR 10,88 – 21,75 MEUR
Triggered by the project: Based on current activities addressed at the regional roundtables Initial support project with 10 villages	Energy renovations: 1,000 houses x 10,000k kWh/year = 10 GWh 10 collective heating systems (Thermonet): EE for each house 67% (Heat pump = COP 3, change from oil to heat pump) = 18.000 kWh/year. 10 systems with each 100 houses = 18 GWh/year Total = 28 GWh	Energy renovations: 1,000 houses x 8,700 EUR = 8.7 MEUR 10 collective heating systems (Thermonet): 24,000 EUR x 1000 houses = 24 MEUR Total = 32.7 MEUR

Home renovations in District heating areas		
Baseline - Grant agreement	<p>Each EE renovation = 2.900 kWh/year. Target of 433,000 houses = 1,255 GWh/year</p> <p>Within project period: 3,000 one-family houses in 8 municipalities = 6.6 - 13.2 GWh/year</p>	<p>Investment EUR 4,400 per house. Target of 433,000 houses = 1.905MEUR</p> <p>4.35 – 8.7 MEUR</p>
Triggered by the project: Based on current activities addressed at the regional roundtables addressing OSS based on the Integrated Home Renovation Services Concept	<p>The roundtables have addressed how to support this process, and enabled a proposal on an OSS set-up supporting home renovations in a holistic process towards deep renovation (2050 targets). Thought as a combined action with the French Centre Val de Loire</p> <p>The continuation of this process is postponed, as a further step after setting up a support structure for the rural area, and which is politically prioritised. In the meantime, municipalities are facilitating energy renovations in private homes supported by national funds and tools and increased capacity in the financial sector. This process is also coordinated across municipalities (experience exchange).</p> <p>A suggested pilot of 300 apartments in multifamily houses indicates an investment of 2.8 MEUR and 48 MEUR if implemented for 3,500 apartments over a period of years (deep renovation).</p> <p><i>No investment impact included for this process.</i></p>	

11.1.3 General Challenges

Setting up a one-stop-shop structure

Overall, the challenge is **establishing** and **funding** a network cooperation of municipalities and other stakeholders along the value chain in relation to coordinating efforts and sharing capacity and capability through a regional focal point (ideally operated as a one-stop-shop).

The region has taken an initiative towards establishing a regional structure supporting conversions to alternative heat supply (5G DH and cooling systems) and energy renovations in areas where DH is not feasible, and notably in the rural areas. Later this is planned expanded to energy renovations inside the DH area, which currently is facilitated by municipalities. There is some inter-municipal cooperation in relation to this, but a regional focus point may enhance this. Further there is an inter-municipal cooperation in relation to Strategic Climate and Energy Planning (DK2020), where all 19 municipalities have made plans according to C40 standards (comparable with SECAPs). The implementation phase of this is being planned at the end of the RoundBaltic project, including a new project financed by the philanthropic organization REALDANIA to monitor and follow up on all plans (involving all regions) plus a LIFE-project (LIFE ACT – Action for climate transition) in which all regions will work on implementation of climate mitigation and adaptation measures issues. The initiative is divided into 18 projects, including three focusing on climate mitigation i.e. strategic energy planning, utilization of surplus heat and energy home renovation.

The network should potentially aggregate and standardize project development assistance and documentation across municipalities to increase quality of projects and trust at homeowners and financing institutions.

As to the initial focus on rural areas it is worth underlining that this is an important part of the strategic development in the region, to create life and growth in outskirt areas. According to Statistics Denmark, almost 34% of the buildings in the region are heated with heat sources that must be replaced within a short number of years with a more sustainable and CO₂ neutral solution, most of these located in the rural area. 34% of the region's population lives in or outside cities with less than 3,000 inhabitants.

Central Denmark Region has by own means supported several projects with a view to exploring and creating a joint and solid decision-making basis for the choice of common alternative energy sources. The goal is to mobilize citizens, utilities, and decision-makers and to help them identify the right knowledge and decision-making basis to implement the right energy solutions locally.

Of other initiatives can be mentioned the Annual Village Day which was held two days after the second regional roundtable, and where villages and potential energy communities were invited to get inspiration for how they can energy-renovate their house, heat conversion and how they can be helped to start the conversion process.

Further follow up to the RoundBaltic Roundtable and the Village Day was a workshop in June 2023 exchanging ideas and experience among the 15 projects directly supported by the region.

Thermonet systems (5G DH heating and cooling)

Conversion to individual heat pumps is a possible alternative energy source in rural areas, but the collective alternative "Thermonet", which is based on a common primary circuit for heat pumps, is generally considered a more economical and technically advantageous solution

The Thermonet concept is a 5th Generation District Heating and Cooling (5GDHC) network. Operating at near ambient temperatures, these networks distribute heating and cooling to connected consumers through uninsulated distribution pipes and decentralized heat pumps. 5th Generation District Heating and Cooling (5GDHC) networks have the capacity to harness diverse energy sources, such as the ground, solar panels, domestic wastewater, traditional district heating return pipes, surplus building heat in summer (free cooling), and industrial and process waste heat. In contrast to individual heat pump installations, 5GDHC solutions offer improved collective benefits and scalability, especially beneficial for villages and city districts. The unified approach of 5GDHC allows for efficient and coordinated project execution in cohesive batches, addressing challenges like high upfront costs by spreading investment risks among building owners.

The heat pumps and the thermonet system (5GDHC) can be supplemented with electricity-producing renewable energy plants in the form of solar cells and possibly wind turbines and contribute to balancing the load on the collective electricity supply network. The region has within 2021 – 2023 been involved in the INTERREG-ÖKS project "COOLGEOHEAT" which has aimed at promoting thermonet systems supplying a smaller number of buildings in villages etc. In addition to the new project mentioned above, A COOLGEOHEAT 2 is planned with a particular focus on tools and capacity building for municipalities.

Within EUCF (European City Facility) two projects were initiated in 2022 involving two of the municipalities in the Region (and SUSTAIN) to develop an investment concept promoting investments of 96 MEUR in thermonet systems across the region and Denmark.

Deep renovation

Following the coming update of the EPBD directive it is relevant at national, regional and local level to target long term holistic deep renovation plans for the building segments considering Nearly Zero Energy Buildings levels, improved energy performance certificates, future energy supply, future smart home requirements including infrastructure for electric vehicles, strategic energy planning and spatial planning. This may involve promoting a step-by-step approach for renovation in relation to a holistic long-term plan. As such the initiative will support the ongoing DK2020 process where all 19 municipalities have prepared ambitious climate and energy plans aiming at CO2 neutrality in 2050.

There are various analyzes to consider in the process. for instance, The Danish Building Research Institute has prepared an overview of how deep the existing buildings can be expected to be renovated. The renovation level is based on recommendations given by the European Commission: **Easy:** Energy consumption is reduced by up to 30%; **Medium:** Energy consumption is reduced by 30% - 60%; **Deep:** Energy consumption has been reduced by more than 60%

Approx. 20% of the building stock built before 1980 is not energy renovated. 55-60% is slightly renovated (easy), approx. 20-25% is medium renovated, and deep energy renovation has yet only been carried out to an extremely limited extent. In Denmark, it is estimated necessary to reduce the energy consumption of the existing building mass by 50% on average to reach the Danish government goal of a fossil-free society by 2050. This is not possible for many buildings, therefore others, where possible, must go through a "**deep energy renovation**", which reduces energy consumption to a need corresponding to either the Danish Building Regulations 2015 (BR15) for new construction, or the Building Class 2020 (BK2020 – corresponding to an **NZEB** level).

11.1.4 Needed supportive framework

Legal challenges

As to the alternative heating supply in rural areas the most promising solution seems the Thermonet solutions, and discussions have focused on the technical and legal and especially financial challenges in relation to the establishment of plants above and below 250 kW. Installations above 250 kW are expected to be covered by the Heating Act (thus considered as district heating) and can therefore generally be financed with a municipality-guaranteed loan and established by DH companies, while the smaller plants below 250 kW, which can be financed through energy communities, for example, have a challenge in finding financing on the private market. The clarification about the legal framework, however, has been postponed until Autumn 2023, and thereby it is still unclear who to operate and own the systems. If Thermonet is not included in the Heat Law, such systems may primarily be run by private service providers and/or energy communities. This will put some extra challenges towards private financial resources. In any case there are challenges towards financing energy renovations in the rural areas, due to low equity of buildings.

Maximise use of public funds

There is running a national support programme where homeowners can get direct grants to heat pumps and energy renovation. There is a need to maximize the use of available public funds eg towards project development assistance, financial instruments or vulnerable consumers e.g. in rural areas.

Interaction between the national roundtables and actions at local/regional level has as indicated above identified needs for an improved policy framework towards better use of public funds (e.g. for project development assistance), tailored national support towards rural areas and clarification of legal aspects as to Thermonet systems. See further in roadmap and summary below.

11.1.5 Needed instruments and tools

OSS Concept

An effective OSS is needed ensuring smooth coordination with all stakeholders, including with the financial sector. This process is initiated but there is a continuous need to expand stakeholder involvement along the project journey to simplify the renovation process for the homeowners. This includes further interaction with the financial sector and other stakeholders to upscale project development assistance, facilitate more effective use of public funds, possibly bundle projects and develop de-risking tools.

The approach should combine various services in a packaged offer to homeowners, in order to create confidence and simplify their renovation process. Further it should be well integrated in its context, making best use of what is nationally and locally available, notably in terms of public support schemes and local market players.

The local and regional efforts should concentrate on project development assistance and a national OSS framework should provide the primary support as to tools and national framework conditions.

Integrating existing national, regional and local policies, initiatives, tools, projects and experience				
National	Regional	Projects	Tools	EU Strategies
National climate strategy	Regional climate strategy	RoundBaltic (creating momentum around EE Financing)	Sparenergi.dk (national portal)	Renovation wave
Conversion of gas supplied or rural areas to district heating or individual/collective RES supply	DK2020 (Strategic energy and climate planning in municipalities)	CrossCert (improving energy performance certificates for buildings)	Boliganalysen.dk	Green Deal
Long Term Renovation Plan	The Climate Alliance (follow up of DK2020)	CoolGeoHeat (collective heat pump in rural areas)	Diverse calculators established in the market (by banks etc.)	Revision of EPBD including Building Renovation Passport (stepwise implementation towards 2050)
DNGB (Certification of sustainable building construction)	Regional development strategy for rural areas	2ISECAP	Bedre Bolig (holistic audit and screening model)	
Partnership with Finance Denmark		a.o.		
Subsidy and guarantee schemes				
DK2020 initiative				

Partnering with the financial sector

Private banks are generally building up capacity to meet the demand for private capital to finance home energy renovations, i.e. in relation to a partnership between the Government and the Financial sector. In parallel with the RoundBaltic intervention each bank has made its own set-up with online

guidance and tools and offers for energy checks by qualified consultants. In addition, they have carried out extensive capacity building activities for their staff and hired new staff with relevant qualifications.

The inter-municipal cooperation must navigate in this landscape ensuring developing an appropriate link to the regional and municipal strategic initiatives and with a view to Identify proper financing sources in relation to the project portfolios, the de-risking measures, and the various user segments (leasing, bank loans, pension funds etc.).

This will also relate to de-risking of energy efficiency investments through standardization and documentation considering real risks and benefits of energy efficiency investments, including addressing creditworthiness at homeowners which differ across the market.

Issues are end-users in hard-to-support rural areas outside the district heating network which are challenged by low building values and thereby low collateral, and access to private capital in those cases where energy communities are to run and operate alternative heat supply systems in the rural area.

Up-scaling

Up-scaling of the project volume has been a general discussion point. In terms of investments mainly as an option to bundle heat supply systems in the rural area. As to home renovations it may more be a question of developing a common language between all stakeholders to understand and mitigate all risks (potentially including standardisation).

11.1.6 RoundBaltic support in identified actions

The added value of RoundBaltic in the process is related to interaction at the three national and two regional roundtables, the Advisory Board Meeting involving the regions and several bilateral consultations with stakeholders, including financial players. This has ensured an expansion of stakeholders and qualified dialogue in creating momentum at regional level towards concrete actions, which is politically prioritised.

11.1.7 Stakeholders involved

At regional level

- Central Denmark Region
- Pool of Municipalities (including frontrunners)
- energy suppliers
- House Owner Associations
- Local representatives of installers
- National and local branches of banks

At national level

- Finance Denmark - FIDA
- Pension funds
- Danish Rural Council
- Ministry of Climate and Energy
- Danish Energy Authority

- Danish Energy Association
- Suppliers of services and technology
- The Danish Council on Climate Change (Klimarådet)
- Danish Knowledge Center on Energy Renovation

11.1.8 Road map

Following the two regional roundtables in November 2021, the following actions and recommendations are agreed with the regional partners:

At regional level:

Actions already initiated by the region

- The region has by own means supported initiation of projects in the rural area to facilitate green transition (heat supply and energy renovations) – approx. 24 projects. The goal is to mobilize citizens, utilities, and decision-makers and to help them identify the right knowledge and decision-making basis for implementing the right energy solutions locally.
- Following the second regional roundtable a village day (see above) and a knowledge exchange workshop for projects directly supported by the region was held
- The feedback from these projects and the RoundBaltic roundtables will feed into setting up a regional support structure, in the first round for the rural area. Various project and funding opportunities are considered. This is done as part of the regional development strategy for rural development. European heat pump strategy, national goals and the Regions Climate Strategy (initiated in 2015).
- As part of the overall mentioned actions, the Region has, in cooperation with the European Heat Pump Association (EHPA), at the end of the project, submitted a LIFE-CET proposal with an aim to stimulate the adoption of heat pumps by enhancing and showcasing business models tailored for 5th Generation District Heating and Cooling (5GDHC) networks. The project aims at refining business models, tackling barriers such as financial obstacles, non-financial complexities, and upfront costs. This involves exploring alternative models, examining technical, organizational, and financial solutions, and creating digital tools for project assessment. Pilot projects in villages and city districts will serve as testing grounds for these business models, involving close collaboration with stakeholders across the value chain. LIFE HIT further seeks to empower key stakeholders through tailored capacity-building programs and a comprehensive process guide for planning and implementing 5GDHC networks. To ensure the project's lasting impact, the project further plans to establish regional, national, and European support structures, including potentially permanent mechanisms like one-stop-shops. Each target country will formulate a comprehensive project replication and exploitation.
- The roundtables have further contributed to enhance the link with the financial sector towards financing energy renovations as well as alternative heat supply systems in the rural area and including how to cope with the challenges in the rural area (private banks and pension sector).
- All municipalities have developed Strategic Climate and Energy Plans based on the same methodology (DK2020 plans comparable with SECAPS) and a new cross-regional project is starting up at the end of 2023 focusing on monitoring and implementation. This will investigate adopting experience and activities from the RoundBaltic project.

- In relation to the future set-up (as well as funding opportunities), the EU recommended concept “Integrated Home Renovation Services” (one-stop-shop), has been considered as a general good framework for a possible inter-municipal collaboration. A concept towards home energy renovation has been made in relation to already existing regional and national initiatives.

Actions ahead

- Further gathering of interested municipalities and other actors, including financing institutions and utilities around the further development of the regional cooperation (taking point of departure in the recommendations from the proceedings of roundtables and other parallel activities): defining objective, scope, activities, etc. This will also include home renovation inside the DH Supply area.
- Link this action to the ongoing DK2020 process and the implementation hereof (SECAPS for 19 municipalities).
- At planning level, there is an actual need to further coordinate with the ongoing conversion of gas areas to district heating or heat pumps, which is done by all municipalities.
- Investigate various funding opportunities via Danish programs and EU programs (LIFE, ELENA, etc.) to supplement own funds.
- Ensure funding for a regional set-up that can continue without public funds.
- Applications via LIFE PDA and ELENA as to technical assistance for generating investments in home renovations, possibly combined with conversion of gas supply areas to district heating expansion, should also be considered (weighed in relation to the above support option on Integrated Home Renovation Services).
- In relation to an inter-municipal co-operation, learning may be drawn from the ongoing ECSMV project in the region, which has established a co-operation structure in the SME area, and which is anchored in all municipalities

At national level:

The following recommendations from the roundtables should be addressed by the regions at the national level through concept paper and continuation of the dialogue already initiated within RoundBaltic

- Ensuring need for better use of public funds. Ineffective grant schemes should be replaced by campaigns and grants for project development (technical assistance ala ELENA for example). The region has presented a concept paper on this to the Danish Energy Authority.
- Developing an improved national framework for heat planning in relation to the ongoing conversion of gas areas to district heating, the use of surplus heat and the conversion of Area 4 (outside DH) to other forms of supply than fossil fuels (heat pumps, etc.)
- The challenges in the rural area should be addressed at national level, as it may be a society issue to guarantee investments in energy renovation and alternative heat supply systems for vulnerable end-users. A joint initiative of Finance Denmark and the National Council for Rural Affairs has proposed [a range of measures](#) towards supporting financing of energy efficiency in the rural areas, and which was presented and discussed at the second regional roundtable. Further cooperation with Finance Denmark and the Council needed. The problem also addressed by the branch organisation SYNENERGI, who has suggested national guarantee schemes.

- In relation to the establishment of a regional setup, eg, around the concept of “Integrated Home Renovation Services” there is a need for coordination with national campaigns, including the use of standard assumptions and tools – dividing and coordinating actions and support at regional and national level.
- As part of strengthening the national regulatory framework, it is also important to ensure as efficient and action-oriented energy label as possible. There is already a dialogue between the Danish Energy Agency and Finance Denmark in connection with the X-Tendo project. Furthermore, EC Network and the Energy Service (Energitjenesten) are involved in EU CrossCert projects which follows up on e.g. the X-Tendo project (involving the Danish Energy Authority and Finance Denmark), and with pilot projects in the Central Denmark Region.
- Clarification of legal aspects as to whether Thermonet is considered as a district heating system and thereby covered by the Heat Act. This is currently a main barrier for project progress, as it is unclear who to own and operate the systems (DH companies or private entities e.g. energy communities).

11.2 Summary Home Renovation - Central Denmark Region

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
<p>2 regional roundtables implemented addressing challenges in areas inside and outside DH supply</p> <p>Respectively 33 and 36 involved at the two roundtables, in total 69 key stakeholders 22% from the financial sector</p> <p>Initiating regional OSS structure in two steps: 1. Outside DH particularly addressing problems in rural areas 2. Inside DH supply area</p> <p>Increased cooperation with local and national stakeholders</p>	<p>Increased networking and interaction with banks at regional and national level on focal points towards financing of energy efficiency</p> <p>Increased networking and interaction with other stakeholders</p>
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
<p>Support Structure for green transition in the rural area initiated by the Region.</p> <p>General OSS structure for energy renovation discussed at first roundtable and concept developed in relation to the EU Concept “Integrated Home Renovation Services”. However, politically it has been decided to prioritise the rural areas in the first instance. Buildings inside DH supply areas currently supported by increased municipal heat planning and various support measures at national level</p>	<p>The region has by own means supported a number of projects in the rural area (approx. 24). with a view to create a common and solid basis for decision-making.</p> <p>The region and the municipalities are committed to establish a regional support structure for supporting energy renovation and choice of alternative energy sources in the rural area (OSS structure) - Development of project initiated</p> <p>Increased networking and partnering with financial actors – a.o in relation to a new cooperation</p>

	between Finance Denmark and the National Rural Community Council
2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans	
<p>Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level (coordinated with others regions)</p> <p>Initial Investment Plan for Rural OSS:</p> <ul style="list-style-type: none"> • Energy renovations of 1000 one-family houses = energy savings of 10 GWh/year and investments of 8.7 MEUR • Thermonet solution for 10 locations with 100 homes each = energy savings of 1.2 GWh/ year + investments of 32.7 MEUR 	<p>OSS initiated to generate investments in investment plan among private homes based on mapping of potential in areas outside district heating supply and project supported by regional funds</p>
3. Develop jointly template documents, contracts, tools leading to as better functioning of the market	
<p>Measures suggested at regional roundtables:</p> <ul style="list-style-type: none"> • Concept of one-stop-shop / regional support structure • Combined approach of green heating and energy renovation (REPowerEU) • Improved national framework, incl. heat planning and better use of public subsidies for example towards project development assistance. • Improvement of the framework for regional and municipal planning in linkage to the DK2020 initiative. • National and regional measures needed to support financing of energy efficiency in rural areas (technical assistance and guarantee instruments). 	<p>Uptake of measures proposed and discussed at Advisory Board meeting and in bilateral consultations with regional and national key stakeholders.</p> <p>OSS concept and combined approach initiated by the region in cooperation with RoundBaltic – in combination with direct support to rural areas.</p> <p>Finance Denmark and the National Rural Community Council has suggested 13 measures in a publication to support financing in rural areas.</p> <p>Banks and other financial actors have actively participated in the RoundBaltic Intervention in parallel with building up capacity and business models for loans to green transition.</p>
Viability Factors	
<ul style="list-style-type: none"> • The intention is to develop the one-stop-shops at regional / inter-municipal level as a driver for sustainable energy projects beyond RoundBaltic. • The national and regional initiative DK2020 is intended to serve the long-term planning framework for the effort, including the new cross regional initiative focusing on monitoring and implementation of the DK2020 plans (strategic climate and energy plans) 	

Means of Verification
<ul style="list-style-type: none"> • Proceedings and Road Maps • Articles • Testimonials • Documentation of investments in relation to private homes (ownership of investments) • Qualitative assessment (change in national framework conditions etc.)

11.3 SMEs, Central Denmark Region

11.3.1 Type of intervention:

Establishment of a regional focal point for EE in SMEs, e.g., a regional or cross municipal one-stop shop for SMEs assisting small and medium-sized businesses in identifying, documenting, financing, and implementing their potential for EE.

In this context it has been decided to support and enhance an already existing regional initiative, the ECSMV project.

The ECSMV project - Energy efficiency and CO₂ savings in companies in the Central Denmark Region "- aims to increase energy efficiency and reduce CO₂ emissions among small and medium-sized companies in the Central Denmark Region. The project covers all 19 municipalities in the region and is led by Ringkøbing-Skjern, Skive and Aarhus Municipalities. Each municipality participates with a local contact person and one or more executive screening agents. The project is supported by the Central Denmark Region, the Danish Business Authority, and the EU Regional Development Fund.

Companies participating in the project can receive grants for advice on developing a green business model that indicates specific potentials for energy and material savings and for CO₂ reduction in the company and within its value chains. Subsequently, companies that have developed a green business model can receive up investment grants (max. 32% of the investment sum). The consultancy work is conducted by pre-qualified consultants. A total of 10 consulting firms and approx. 60 consultants are associated with the project.

As such, ECSMV is a concrete example of organized inter-municipal cooperation in promoting energy efficiency in SMEs.

11.3.2 Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the projects and following refinement over the two regional workshops. The key figures are based on experience from projects in the region.

EE area	Energy savings GWh/year	Investment MEUR
Home renovations - outside the DH and gas supply area.		
Baseline - Grant agreement	Each EE renovation = 10,000 kWh/year. Potential of 74,000 houses = 7,400 GWh/year Triggered within project period: 1,250 - 2,500 one-family houses in 8 municipalities = 12,5 - 25GWh/year	Investment of EUR 8,700 per house. Target of 74,000 houses = 643.8 MEUR 10,88 – 21,75 MEUR
Baseline - Grant agreement Investments triggered in 25 – 50 SMEs within project period	0.12 GWh/year per SME Total 3 - 6 GWh/year	EUR 110,000 per SME Total 2.75 -5.5. MEUR
Triggered by the project Based on activities supported in the ECSMV project Investments triggered in 178 SMEs (Green Business Plans)	ECSMV Project 83.3 GWH/year	ECSMV Project 33.6 MEUR

The ECSMV project has screened more than 600 SMEs, which has resulted in green business models for 178 SMEs which indicates 250 million DKK private investments. Implementation of these investments will result in 60,000 tons of CO₂ reductions, 300,000 GJ of energy savings, and 30,000 tons of material savings.

11.3.3 General Challenges

The last [SEI Forums Roundtable](#) in May 2019 concluded a need to promote a one-stop-shop concept at the municipal or inter-municipal level that can assist SMEs throughout the value chain. This could be through a consultant who possesses a broad understanding regarding business, process and technical matters.

In this context RoundBaltic has focused on strengthening the ECSMV-initiative with focus on establishing partnerships with the financial sector, inclusion of more stakeholders (research, installers, service providers, branch organisations etc.), the use of a more holistic approach, coordination with national measures and initiatives etc.

Inter-municipal co-operation is generally highlighted as beneficial in relation to assisting SMEs in planning and implementing energy efficiency measures. The close contact between the municipalities and the SMEs is important in relation to motivating the SMEs. SMEs think locally and are motivated by local initiatives. The municipalities have a profound knowledge of the local business community and have a general interest in strengthening this and maintaining local working places.

Ideally, this collaboration will function as one-stop-shops that assist SMEs throughout the value chain and through a permanent local process consultant who regularly visits and guides companies throughout the process (referred to as boots on the ground). An OSS set-up must create an appropriate interface for SMEs that can motivate and facilitate the implementation of measures, including ensuring the connection of all relevant actors, as well as the use of the necessary tools and documentation that can ensure implementation and quality of energy efficiency measures in SMEs.

In general, there will be a need for further development of competences among advisers, banks and municipalities in relation to assisting companies in relation to a holistic approach that, in addition to energy savings, also envisages circularity and side benefits from energy savings (including business drivers).

Interaction with the Financial Sector

The financing sector has actively taken part in the Roundtables, and as part of their internal capacity building programme. At the beginning of RoundBaltic the financial institutions were mostly focusing on financing energy efficiency in private homes but has increasingly also focused on sustainability and energy efficiency in businesses.

Furthermore, it was pointed out that the general requirements for green conversion will increasingly influence the banks' lending policy in connection with the financing of sustainable measures (including energy efficiency) in SMEs. The EU taxonomy and the associated classification system should be included in the business models to the extent relevant.

Develop financing models for the future operation of the network, possibly based on funds and contributions from the various actors involved throughout the value chain

RoundBaltic, together with the ECSMV project, has proven the added value of setting up a regional focal point, ideally functioning as a one stop shop, that can support the SMEs on their project journey on developing and implementing green business models. There are no sufficient resources to support this within the municipalities, due to tight budgets and various priorities. So, this will mostly depend on further project financing or better use of the current national grant schemes, which only focuses on grants to individual investment projects. New business models may also be elaborated based on financing from private actors. For now, the municipalities are applying new project funds at EU and national level (business promotion programme).

In relation to the future structure, there is a need to coordinate local and regional efforts and especially seen in relation to the new Act on Business Promotion, which has established regional business centres as part of the regional business promotion system. One of the business centers' core tasks is to offer specialized and targeted 1:1 guidance to all types of companies and entrepreneurs. It is still unclear how this can play together with other inter-municipal initiatives such as ECSMV, including how to build on the clear success ECSMV has had and the factors that have ensured this success.

11.3.4 Needed supportive framework

RoundBaltic has identified various gaps in the current supportive framework and developed a set of recommendations to fill these gaps. This includes better coordination between business promotion programmes and climate programmes, including creating continuity in relation to previous successful initiatives. Further, better use of public funds towards assisting SMEs in identifying proper EE investments as well as several other measures described above.

The better use of public funds is also supported by seven branch organisations in a proposal sent out in June 2023. This proposal states a lack of technological knowledge as a major barrier for SMEs. According to the organization, more advice is part of the solution. However, the current Business grant scheme, which has been the focal point of the last two governments' ambitions for the green transition of the business community, does not offer subsidies for advice that is not tied to a specific investment. [PM: Udvid Erhvervspuljen og giv virksomhederne den nødvendige hjælp til grøn omstilling - SYNERGI \(synergiorg.dk\)](#)

This is also supported by RoundBaltic. However, it is also proposed to allocate funds for supporting municipalities and other actors in setting up project development cooperation structures. Further to coordinate assumption at national level to develop a common language.

The regional roundtables have followed up on the recommendations from the national roundtables and has provided feedback to the national follow-up roundtables as to needed supportive measures and coordination at national level. This is a complex process, due to many new business and climate related reforms launched in parallel with RoundBaltic, including lack of proper coordination between business reforms and climate strategies. However, the RTs have created a consensus among the stakeholders involved about needs at the national level, and as such contributed actively together with key stakeholders.

11.3.5 Needed instruments and tools

OSS Concept

An effective cooperation structure is needed ensuring smooth coordination with all stakeholders, including with the financial sector. This process is initiated by the ECSMV project but there is a further need to expand stakeholder involvement. This includes further interaction with the financial sector and other stakeholders to upscale technical assistance, facilitate more effective use of public funds, possibly bundle projects and develop de-risking tools.

The approach should combine various services in a packaged offer to SMEs, in order to create confidence and simplify their project development process. Further it should be well integrated in its context, making best use of what is nationally and locally available, notably in terms of public support schemes and local market players.

Stakeholders	Motivation / Identification of options	Analysis and decision	Implementation	Verification of savings	Operation and Maintenance
Building owners, SMEs					
National authorities					
Regions					
Municipalities					
Energy Clusters					
Business Advisory Centers					
Accountants					
Financing Institutions					
Energy Consultants					
Installers					
Facility management					
Suppliers					
ESCO/EPC					
Supply companies					

Partnerships with the financial sector

The representatives of the participating banks have unanimously concluded the traditional credit rating as the most crucial factor when SMEs apply for energy efficiency loans. However, the credit rating will be seen in the context of the proposed project, including the project's impact on the company's cash flow. The latter requires good project documentation.

Furthermore, it was pointed out that the general requirements for green conversion will increasingly influence the banks' lending policy in connection with the financing of sustainable measures (including energy efficiency) in SMEs. It is important that companies generally have well-developed strategy plans, which also consider sustainability, including circularity. It is important that the green business model is used actively in the dialogue with the banks to secure access to financing. The EU taxonomy and the associated classification system should be included in the business models to the extent relevant. It may be relevant for SMEs to adapt to the taxonomy if they are part of the value chain for other larger companies covered by the scheme. Furthermore, a "green" profile can be an asset in relation to their general competitive situation and financing of green investments, which lead to CO₂ savings and energy savings.

Banks have stated that it can be helpful if they can refer companies/SMEs to a one-stop-shop or similar structure, e.g. to create an overview of the many support schemes across industries, etc.

Green business models could be standardized to some extent, and this can make it easier for banks to see the sense in a possible investment. It could be in the form of a checklist as suggested by RoundBaltic.

Holistic approach

In general, there will be a need for further development of competences among advisers, banks and municipalities in relation to assisting companies in relation to a holistic approach that, in addition to energy savings, also envisages circularity and side benefits from energy savings (including business drivers).

In this connection, there is a need for the involvement of a wide circle of actors around the projects, both in terms of advice and guidance, but also with respect to knowledge gathering, exchange of experiences, etc. which, overall, can help the SMEs through the project processes in the most appropriate way.

Furthermore, the roundtables have made it clear that there is a need for national coordination regarding prerequisites, methods and competence building and which forms the framework for concrete actions and initiatives at the regional / cross-municipal level.

Standardisation

The RoundBaltic action has shown a consensus that a common language and something recognizable is needed. Something that creates trust on both the SME side and the financial side. At the same time, there is a need for further qualification among advisors around a common understanding of the process and the holistic approach. A reduction in transaction costs requires specialization.

It is important for the banks that the documentation does not become too complex. A standardized approach could help make it less complex, and also for SMEs. However, it was also pointed out that a standard model can take a long time to develop, and thus it may be better to develop a guide based on a **checklist** that the various actors can adjust to.

The need for standardization should be constantly assessed, and there is a need for a closer dialogue with the financial sector on how to most appropriately, among other things in relation to complexity, include the green business models in the dialogue with the banks, including in relation to the necessary documentation for loan uptake. This also relates to taxonomy and ESG reporting.

Upscaling

A pooling of projects can be an advantage in relation to standardization and resource sharing. In principle, this can be done in two ways 1. Standardization of approach and prerequisites in relation to the development and implementation of measures. 2. Pooling of investments in relation to funds / funding sources (joint tender). The latter was highlighted as an opportunity in relation to micro SMEs such as e.g. bakeries, and where a certain volume can be created via e.g. 20 bakers.

According to Denmark's Green Investment Fund pooling is not logical, unless it is done under the auspices of an Investment fund. This will require an intermediary organisation in the form of an aggregator/mediator who can validate the investments.

Guarantee Scheme

In relation to SMEs that do not immediately have the opportunity to take out loans due to low credit ratings, consideration could be given to establishing a guarantee scheme under for example Denmark's Investment Fund. Alternatively, the European Investment Fund can be used. The Danish cooperative bank "Merkur Andelskasse" has in 2023 signed an increased allocation of its existing EGF guarantee with the European Investment Fund (EIF) to channel new financing to Danish companies. The Bank has received a doubling of an existing guarantee, which falls under the "[European Guarantee Fund](#)", originally signed in August this year. This ensures that Danish SMEs will be able to benefit from an extra DKK 148,76 million (€20 million) in new lending on more favourable terms, bringing to total EGF-facility for Merkur to DKK 297.60 million (€40 million).

RoundBaltic support in identified actions

The added value of RoundBaltic in the process is related to interaction at the three national and two regional roundtables, the Advisory Board Meeting involving the regions and several bilateral consultations with stakeholders, including financial players. This has ensured an expansion of stakeholders and qualified dialogue in creating momentum at regional level towards concrete actions, which is politically prioritised.

11.3.6 Stakeholders involved

National governmental authorities involved

Danish Energy Authority, National Green Investment Fund, Danish Business Authority

National Branch organisations involved

SMV Denmark, Synergi, Tekniq, Danish Industrial Fund

Private financial institutions involved

Finance Denmark, Danske Bank, Nordea, Totalcredit, Jyske Bank, Merkur Bank: SUSTAIN (PKA Pension Fund); Local banks: Vestjysk Bank, Ringkjøbing Landbobank, Skjern Bank

As to other initiatives, a cooperation was launched with the "Afkobling 2030" project (Decouple 2023). Decoupling 2030 is an initiative launched by "Industriens Fond" (Danish Industrial Fund), which started in the Triangle area in Region South Denmark in 2023. The intention is, in the long term, to spread the project to the whole country.

The triangle area has a strong concentration of manufacturing companies with 41,000 jobs spread over approximately 3,000 companies. 56.3% of Regions Syd's companies are in the Triangle area

Decoupling 2030 is an eight-year program that helps production companies with high ambitions for sustainability to decouple their value creation from their climate and environmental impact. In the program, the sustainable transition becomes a lever to pursue new business opportunities that strengthen the companies' competitiveness.

11.3.7 Road map

Following the first roundtable in November 2021, the following actions and recommendations are agreed with the regional partners:

Actions already initiated by the region

- The region is seeking funding for financing of new initiatives supporting SMEs in developing green business models, which will also focus on further cooperation with the financial sector, which was initiated within the RoundBaltic intervention.
- Within the region the roundtable process has been used to initiate new initiatives building further on the success of ECSMV and the support from RoundBaltic. 5 municipalities are committed in a new project proposal focusing on taxonomy and partnerships with local banks (GREENBIZ). Further other initiatives are discussed, including proposals on enhancing the OSS structure in relation to attracting private capital.
- A new project on “Circular Economy” was initiated in August 2023 (EU Regional Funds)
- All municipalities have developed DK2020 plans (strategic energy and climate plans) and a new cross-regional project is starting up at the end of 2023 focusing on monitoring and implementation. This will investigate adopting experience and activities from the RoundBaltic project.
- Coordinating local and regional efforts and especially in relation to the new Act on Business Promotion, which has established regional business centres as part of the regional business promotion system. One of the business centres' core tasks is to offer specialized and targeted 1:1 guidance to all types of companies and entrepreneurs. It is to be clarified how this can play together with other inter-municipal initiatives such as ECSMV.

Actions ahead

- Further gathering of interested actors, including financing institutions and utilities around the further development of the regional cooperation (taking point of departure in the recommendations from the proceedings of roundtables and other parallel activities): defining objective, scope, activities, etc.
- Build further on the initiated dialogue with the regional and local financial actors, among other things by involving them in future initiatives and events
- Expand the stakeholder group in the ECSMV initiative with the regional energy centers established under the new business promotion act, local business associations, research institutions, energy installers, auditors, banks, etc.

- Link the action to the ongoing DK2020 process and the implementation hereof (Plans similar to SECAPS for 19 municipalities).
- There is a need to develop financing models that can ensure the future operation of the inter-municipal cooperation. This could, for example, be a mix of public funds and contributions from the various actors involved throughout the value chain. Different options via Danish programs and EU programs should be explored.
- On the model side, there is a need to specify requirements regarding taxonomy, circular economy, and side benefits of energy savings (including non-energy benefits). This can primarily be done through existing projects and initiatives and needs coordination at national level.

At national level

- There is an overall need for standardization (requires further dialogue with a.o. Finance Denmark and the Danish Energy Agency) and a common language expression in a green business model accepted by all actors.
- Need for Competence building of the various actors. Alternatively, a training can be made for project developers around a standard business case.
- In general, there is a need for national coordination around prerequisites, methods and competence building and which forms the framework for concrete actions and initiatives at the regional / inter-municipal level-.
- In relation to the national framework, continuity should be ensured in relation to initiatives that work or have worked. ECSMV and the previous energy efficiency obligation scheme are examples of successful and efficient solutions in relation to both identifying and implementing projects. The lessons learned from this should be used better and integrated into future solutions and initiatives. In this connection, there may be a need for closer coordination between the Danish Business Authority and the Danish Energy Agency (coordinate what works well in relation to both business promotion and climate goals).
- In relation to the current grant schemes, it should be considered to include the possibility that impartial advisers can undertake energy saving obligations in relation to a pool of projects, for example via tenders from the Danish Energy Agency (like in the previous energy efficiency obligation scheme)
- It should further be considered to use current grant schemes for project development rather than only investment grants. The grants are currently bound to already identified investments. This is a clear barrier as the SMEs need knowledge and resources to screen and analyse investment options. This is addressed to the Danish Energy Agency.
- In relation to the further necessary capacity building among the various actors, there is a need for concerted coordination at national level as well as in the various sectors. Finance Denmark has a coordinated training program, and here there is also a potential to coordinate matters around standardization and documentation across the banks.
- In relation to SMEs that are not immediately able to take loans due to low credit ratings, consideration could be given to establishing a national guarantee scheme.
- There is a need to coordinate the process in relation to the inter-municipal cooperation in relation to Strategic Climate and Energy Planning (DK2020), where all 19 municipalities in the Central Denmark Region have made plans according to C40 standards (comparable with SECAPS). The

implementation phase of this is being planned at the end of the RoundBaltic project, including a new project financed by the philanthropic organization REALDANIA to monitor and follow up on all plans (involving all regions) plus a LIFE-SIP project in which all regions will work on implementation issues.

11.4 Summary SMEs – Central Denmark Region

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
<p>2 regional roundtables implemented addressing inter-municipal cooperation to assist SMEs in developing green business models and establishing partnerships with the financial sector (two topic sessions).</p> <p>69 key stakeholders involved at regional level, 22% from the financial sector</p>	<p>Increased networking and interaction with banks at regional and national level on focal points towards financing of energy efficiency</p> <p>Increased networking and interaction with other stakeholders</p> <p>the roundtables have supported the intermunicipal cooperation in Central Denmark Region, involving all 19 municipalities (i.e. the ECSMV project) and through these increased the number and types of stakeholders involved along the value chain. These includes national and local banks (> 30%), governmental institutions, research institutes, service providers, installers and branch organisations. Further, the roundtables have led to an increased interaction with national stakeholders and created a qualified dialogue on needed national support measures.</p>
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
<p>The roundtables have supported the intermunicipal cooperation in Central Denmark Region, involving all 19 municipalities (i.e. the ECSMV project) and through these increased the number and types of stakeholders involved along the value chain.</p> <p>As such RoundBaltic has contributed to reinforce an existing OSS structure that can function as a future permanent structure regionally. At national level various initiatives have been launched by the financing sector, interest organisations and governmental institutions, which needs to be coordinated with the regional initiatives. As such the topic has been adopted in already existing discussion fora.</p>	<p>The financial sector has in parallel with the RoundBaltic Actions carried out a targeted capacity building programme towards preparing for delivering loan products to green business models in SMEs (including ESG - Environmental, social, and corporate governance reporting, and taxonomy requirements). As such the roundtables have been actively used by the financing sector in this capacity building process, e.g. in relation to understand the needs of the SME segment, how to deal with the ESG and taxonomy requirements and how to cooperate and create partnerships with relevant actors related to the sector.</p> <p>The RTs has further led to Increased networking and interaction with other stakeholders, including</p>

	<p>research institutions, branch organisation, accountants etc. with a view to broaden the stakeholder involvement around a regional set-up. This also embrace an increased interaction with national stakeholders addressing regional and local needs, including increasingly adopting financing as an important topic in various forums.</p> <p>Through the Roundtable all stakeholders have Increased their capacity in relation to specific needs within the sector and holistic process and project approaches to meet these.</p>
<p>2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans</p>	
<p>Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level.</p> <p>The ECSMV project has triggered and documented investments for 178 SMES documented which have been supported by RB in relation to particularly further stakeholder involvement and financial matters (partnerships with banks, taxonomy etc.).</p> <p>The ECSMV project has screened more than 600 SMEs, which has resulted in green business models for 178 SMEs which indicates 250 million DKK private investments. Implementation of these investments will result in 60,000 tons of CO2 reductions, 300,000 GJ of energy savings, and 30,000 tons of material savings.</p>	<p>Enhanced cooperation structure initiated to generate further investments in SMEs and in cooperation with the financial sector.</p> <p>Broader circle of stakeholders involved around action plans.</p> <p>SMEs implementing investments indicated in the Green Business models (survey by ECSMV).</p>
<p>3. Develop jointly template documents, contracts, tools leading to a better functioning of the market</p>	
<p>Measures suggested at regional roundtables:</p> <ul style="list-style-type: none"> • Concept of one-stop-shop / regional support structure • Partnerships with the financial sector • Holistic approach • Standardisation • Upscaling • Guarantee scheme for vulnerable SMEs 	<p>Uptake of measures proposed and discussed at Advisory Board meetings, roundtables and in bilateral consultations with regional and national key stakeholders.</p> <p>Enhanced OSS concept initiated by the region in cooperation with RoundBaltic.</p> <p>Banks and other financial actors have actively participated in the RoundBaltic Intervention in parallel with building up capacity and business models for loans to green transition.</p>

Viability Factors

- RoundBaltic, together with the ECSMV project, has proven the added value of setting up a regional focal point, ideally functioning as a one stop shop, that can support the SMEs on their project journey on developing and implementing green business models. There are no sufficient resources to support this within the municipalities, due to tight budgets and various priorities. So, this will mostly depend on further project financing or better use of the current national grant schemes, which only focuses on grants to individual investment projects. New business models may also be elaborated based on financing from private actors. For now, the municipalities are applying new project funds at EU and national level (business promotion programme)..
- In relation to the future structure, there is a need to coordinate local and regional efforts and especially seen in relation to the new Act on Business Promotion, which has established regional business centres as part of the regional business promotion system.
- RoundBaltic has identified various gaps in the current supportive framework and developed a set of recommendations to fill these gaps (position paper).
- In parallel with the RoundBaltic Action the financial sector has increased their capacity to support the green transition and deal with new requirements as to EU Taxonomy and ESG. RoundBaltic has in this context worked closely with financing institutions to build bridge between the financial and the EE sectors through the Advisory Boards, the roundtables, bilateral consultations, the follow up activities and European Exchange workshops.

Means of Verification

- The SMV topic addressed in 5 proceedings (including 2 regional roundtables in Central Denmark Region)
- Testimonial from Ringkoebing Skjern Municipality (project manager ECSMV)
- 2 articles
- 1 case study
- Road map developed (addressing actions at regional level and national level) – see WP4
- Participant lists (from RTs)
- External evaluation of the ECSMV project
- Position paper developed by RoundBaltic

12 The Region of Southern Denmark

12.1 Private Homes

12.1.1 Type of intervention

Setting up a One-stop-shop facility or regional/intermunicipal platform for private homes with the Region as facilitator and in cooperation with DH utilities and advisors, as well as other key players.

There has been focus on both one-family houses including connected houses inside and outside DH and gas/oil supply areas as well as the new concept for sustainable collective heating Thermonet.

12.1.2 Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the project intervention (to be followed up under the COHEAT project) and following refinement over the two regional workshops. The figures are based on calculations done as part of COHEAT and previous projects in the regions.

EE area	Energy savings GWh/year	Investment MEUR
<u>Target according to RoundBaltic proposal</u>		
Home renovations in District heating areas	Within project period: 1,250 - 2,500 one-family houses = 10.88 - 21.75 GWh/ year	Investment of 11.000 EUR per house. 1,250 - 2,500 houses = 13.75 - 27.5 MEUR
Private homes outside district heating area	Within project period: 1,000 - 2,000 one-family houses = 8.7 - 17.4 GWh/ year	Investment of 12.000 EUR per house. 1,000 - 2,000 houses = 12 - 24 MEUR
<u>Triggered by RoundBaltic</u> 7 municipalities committed to run one-stop-shops		
Home renovations	Within project period: 700 one-family houses = 1.75 GWh/ year	Investment average of 4.430 EUR per house. 700 houses = 3.1 MEUR
Green heating of homes	Within project period: 2,300 one-family houses = 30.8 GWh/ year	Investment average of 10.480 EUR per house. 2,300 houses = 24.1 MEUR
Private homes outside district heating area in form of the thermonet concept	Within project period: 150 one-family houses = 1.2 GWh/ year	Investment average of 10.480 EUR per house. 2,300 houses = 1.9 MEUR

12.1.3 Challenges

- Establishing a network of municipalities and other stakeholders in relation to coordinating efforts and sharing capacity and capability through a regional focal point for OSS actions.

- Identifying and coordinating the needed actions and the supportive framework at national and regional level
 - Targeting a business concept related to running of one-stop-shops suiting the characteristics of the region and optimising the relation with the region's strategic energy planning and spatial planning
 - Learning from/upscaling Danish best practise within and outside the region as well as international best practice
 - Establishing and funding a regional / cross municipal one-stop shop, assisting and guiding homeowners / residents in relation to technical, legal, and financial issues through the whole journey of the renovation process and facilitate access to financial mechanisms and institutions.
 - Interacting with the financial sector and other stakeholders to upscale project development assistance, facilitate more effective use of public funds, bundle projects and develop de-risking tools.

12.1.4 Needed supportive framework

Working within the green agenda, it is often possible to involve stakeholders on management level. However, it is difficult to implement these objectives at the ground level of the organisations. Therefore, it is necessary to implement tools at ground level followed by education, to make it easy for, for instance, bank adviser to talk about energy renovations with the customer.

RoundBaltic has assisted in ensuring a strong commitment from the region's key stakeholders, incl. the regional authority. Further steps are to optimise the support from the national level as well.

12.1.5 Existing key experience and initiatives

In the Region of Southern Denmark, the municipality of Sonderborg has experience to run one-stop-shop services under the REFURB project as well as the parallel Interreg project Stronghouse project, incl. associated financial instruments and how to reach different house owner segments, that can be refined and upscaled.

In addition to energy renovations there is big interest in the region to phase out existing oil and gas boilers of houses that provide considerable CO₂ and other emissions as well a financial burden with the increased prices on oil and gas. A key intention is to convert the houses to energy effective heat pumps that are to large extent based on renewable energies, notably wind energy.

Moreover, Region of Southern Denmark is active in the national DK2020/Climate Alliance initiative that helps municipalities in developing strategic energy plans in similar fashion as under Covenant of Mayors and the regional authority intends coordinating the efforts under RoundBaltic with this initiative, incl. what points ahead for permanent structures (RoundBaltic task 2.4).

12.1.6 Need for new instruments, including financing instruments

The session on home renovations at the RoundBaltic regional roundtable, 21'th Sept 2021, revealed an interest for a regional approach of setting up one-stop-shop structures. This is to be anchored around the single municipalities to serve the key operators in reaching out to the homeowners in partnership with relevant stakeholders.

OSS Concept

An effective OSS is needed ensuring smooth coordination with all stakeholders, including with the financial sector. This process is initiated but there is a continuous need to expand stakeholder involvement along the project journey to simplify the renovation process for the homeowners. This includes further interaction with the financial sector and other stakeholders to upscale project development assistance, facilitate more effective use of public funds, possibly bundle projects and develop de-risking tools.

The approach should combine various services in a packaged offer to homeowners, to create confidence and simplify their renovation process. Further it should be well integrated in the context, making best use of what is nationally and locally available, notably in terms of public support schemes and activation of local market players.

Integrating existing national, regional and local policies, initiatives, tools, projects and experience				
National	Regional	Projects	Tools	EU Strategies
National climate strategy	Regional climate strategy	RoundBaltic -creating momentum around EE Financing	Sparenergi.dk (national portal)	Renovation wave Green Deal
Conversion of gas supplied or rural areas to district heating or individual/collective RES supply	DK2020 (Strategic energy and climate planning in municipalities)	REFURB – energy renovation project involving Sonderborg	Boliganalysen.dk	Revision of EPBD including Building Renovation Passport (stepwise implementation towards 2050)
Long Term Renovation Plan	The Climate Alliance (follow up of DK2020)	Stronghouse – tools for energy renovation	Diverse calculators established in the market (by banks etc.)	
DNGB (Certification of sustainable building construction)	Regional development strategy for rural areas	CrossCert - improving energy performance certificates for buildings)	Bedre Bolig (holistic audit and screening model)	
Partnership with Finance Denmark		a.o.		
Subsidy and guarantee schemes				
DK2020 initiative				

Partnering with the financial sector

Private banks are generally building up capacity to meet the demand for private capital to finance home energy renovations, a.o. in relation to a partnership between the Government and the Financial sector. In parallel with the RoundBaltic intervention each bank has made its own set-up with online guidance and tools and offers for energy checks by qualified consultants. In addition, they have carried out extensive capacity building activities for their staff and hired new staff with relevant qualifications.

In the Region of Southern Denmark, the municipality of Sonderborg and its Project Zero organisation already have good experience working with banks as part of various projects and initiatives in recent years. Hence this experience has been highly useful for the entire process of building links with the financial sector and consequently was presented at the second national roundtable Sept. 2022.

Up-scaling

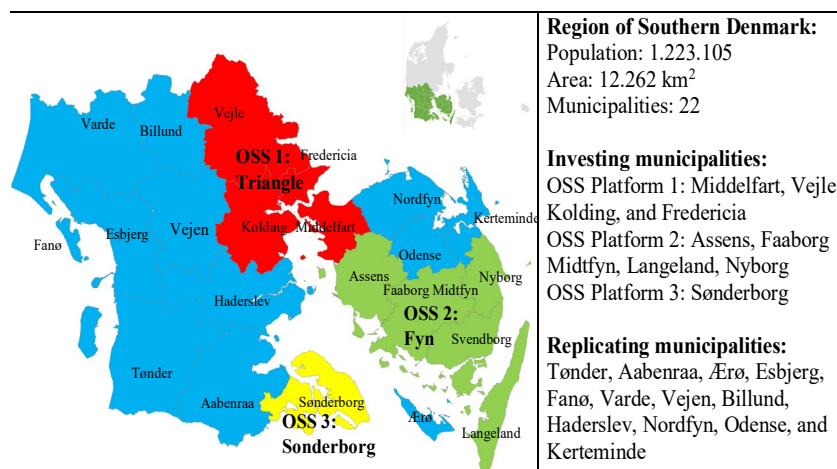
The example from Sonderborg via the REFURB and Stronghouse projects provide useful learning on how to establish a customer journey that can be adapted/upscaled to other municipalities in the region. It was agreed to opt for a hybrid approach of green heat supply in combination with energy renovations of the homes that suit the specific local conditions. Part of this is to put in place a local, municipal planning to help steering an investment process in accordance with appropriate technical and socio-economic principles. Representatives of the financial sector declared willing to enter such type of initiatives.

12.1.7 Performed intervention by RoundBaltic (enabling actions)

The added value of RoundBaltic has been related to three national and two regional roundtables, the Advisory Board Meeting involving the regions and supplementary bilateral consultations with stakeholders, including financial players. This has ensured an expansion of stakeholders and qualified dialogue in creating momentum at regional level towards concrete actions, which is politically prioritised.

Following the first regional roundtable, Sept. 2021, it was decided to develop an initiative for one-stop-shops to drive the implementation of green heat supply in combination with energy renovations of private homes (and possibly connected public buildings). Specifically, it was agreed to seek funding from EU's LIFE PDA Programme to achieve the needed momentum and hence RoundBaltic has helped to gain momentum for a proposal.

The Region of South Denmark (subcontractor of RoundBaltic) served coordinator of the proposal under the acronym COHEAT. The proposal was associated with a lot of motivation across the stakeholders and 7 out of the 22 municipalities decided to participate as 'investing municipalities', corresponding to local one-stop-shops, divided into three OSS platforms as shown in the map below:



The other 15 municipalities in the region agreed to participate as 'replication municipalities', meaning they will follow the project aiming to consider the value of replicating the concept of one-stop-shops.

The PDA COHEAT proposal was favourably evaluated and hence this project has been put in action to follow-up from what RoundBaltic triggered of motivation and commitment.

Since the activation of COHEAT Nov. 2022 the main added value of RoundBaltic has been to bring the contacts established with the financial sector into the development of the municipal anchored one-stop-shops. This has been addressed at the roundtables, notably the third national roundtable May 2023 and a planned regional session 21st August 2023. Though the regional session was cancelled associated enabling actions has helped to engage the financial sector in the OSS development, and post-RoundBaltic an event will be organised with such purpose on 21st January 2024.

12.1.8 Stakeholders involved

At regional level

- Region of Southern Denmark in cooperation with EC Network
- Pool of Municipalities
- Energy utilities, incl. district heating companies
- Craftsmen
- ESCO companies
- Local branches of banks

At national level

- Finance Denmark - FIDA
- Pensions funds
- Ministry of Climate and Energy
- Danish Energy Authority
- Danish Energy Association
- Suppliers of services and technology
- The Danish Council on Climate Change (Klimarådet)
- Danish Knowledge Centre on Energy Renovation

12.1.9 Road map for private homes

Following the roundtables in the Region of South Denmark and the supplementary stakeholder dialogue, the following actions and recommendations are agreed with the regional partners:

At regional level:

- Further gathering of interested municipalities and other actors, including financing institutions and utilities around the further development of the regional cooperation (taking point of departure in the recommendations from the proceedings)
- Link this action to the ongoing DK2020 process and the implementation hereof (SECAPS for 22 municipalities in the Region of Southern Denmark)
- Investigate various funding opportunities via Danish programs and EU programmes
- The second regional roundtable can support this process, but consultations are needed beforehand. Experiences and lessons learnt from the REFURB and the StrongHouse project should be considered. Further it is relevant to look into EU best practice related to “Integrated Home

Renovation Services”. The intention is to combine this with conversion of gas areas to district heating expansion.

- There is the possibility of EU support for this process (LIFE) if it can be documented that a regional set-up can continue when there are no more EU funds. The latter is a point for consideration. It must thus be the process that governs and not a concrete application option.
- Applications via LIFE PDA (eventually ELENA) as to technical assistance for generating investments in home renovations.

At national level:

- There is a need for better use of public funds. Ineffective grant schemes should be replaced by campaigns and grants for project development (technical assistance ala ELENA for example).
- There is a need for a state framework for heat planning in relation to the ongoing conversion of gas areas to district heating, the use of surplus heat and the conversion of Area 4 (outside DH) to other forms of supply than fossil fuels (heat pumps, etc.).
- In relation to the establishment of a regional setup, e.g. around the concept “Integrated Home Renovation Services” there may be a need for coordination with national campaigns, including the use of standard assumptions and tools.
- As part of strengthening the national regulatory framework, it is also important to ensure as efficient and action-oriented energy label as possible. There is already a dialogue between the Danish Energy Agency and Finance Denmark in connection with the X-Tendo project, which can be followed up in the further work under RoundBaltic. Furthermore, EC Network and the Energy Service (Energitjenesten) are involved in EU CrossCert projects which follows up on e.g. The X-Tendo project (involving the Danish Energy Authority and Finance Denmark).

12.2 Summary Private Homes – Southern Denmark Region

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
2 series of regional roundtables implemented 52 participants from key stakeholders involved in regional roundtables, 20% from the financial sector Initiating OSS structure Increased cooperation with national stakeholders	Increased networking and interaction with banks at regional and national level Increased networking and interaction with other stakeholders
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
OSS Structure initiated	<ul style="list-style-type: none"> • 7 municipalities committed to run one-stop-shop • Other municipalities committed for replication (Letter of Supports) • Increased networking with financial actors

2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans

Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level (coordinated with other regions)

Investment Plan for OSS:

- Energy renovations of 700 one-family houses = 1.75 GWh/ year
- Green heating of 2,300 one-family houses = 30.8 GWh/ year + investments of 24.1 MEUR
- Termonet solution for 150 homes = energy savings of 1.2 GWh/ year + investments of 1.9 MEUR

OSS initiated to generate investments in investment plan among private homes based on mapping of potential for heat pump systems or DH in areas outside district heating supply

3. Develop jointly template documents, contracts, tools leading to a better functioning of the market

Measures suggested at regional roundtables:

- Concept of one-stop-shop due to a combined approach of green heating and energy renovation (REPowerEU)
- Improved national framework, incl. heat planning and subsidies
- Regional and municipal planning in linkage to the DK2020 initiative
- Interacting with EU Financing Coalition and a national hub

Uptake of measures discussed at Advisory Board meeting and in bilateral consultation with national key stakeholders

OSS concept and combined approach initiated in OSS

Viability Factors

- The intention is to develop the one-stop-shops at municipal level as driver of sustainable energy projects beyond RoundBaltic
- The national and regional initiative DK2020 is intended to serve the long-term planning framework for the effort

Means of Verification

- Proceedings and Road Maps
- Articles
- Testimonials
- Documentation of investments in relation to private homes (ownership of investments)
- Qualitative assessment (change in national framework conditions etc.)

Learning of performed actions

The prospects of one-stop-shops and required funding have been discussed at Advisory Board meetings as well as the final national roundtable.

RoundBaltic has been catalyst for the COHEAT project that together with other national and regional initiatives can serve driving force in the roll out of green heat supply and home renovations in the South Denmark region. This process has created a big drive to transform the region's climate goals into an implementation phase.

The learning has also incorporated experiences of the REFURB and Stronghouse projects as well as other previous and related initiatives that have been reviewed in the relation to the roundtables (cf. proceedings).

12.3 Social Housing

12.3.1 Type of intervention:

The overall scope of the intervention has been to explore the potential for energy efficiency finance within the social housing sector in the Region of Southern Denmark.

A key starting point for this concerns the EU PDA HAPPI project that helped to generate energy efficiency investments in the 9,400 public housing units distributed among 6 social housing companies in the Municipality of Sønderborg. Hence the RoundBaltic intervention aimed to upscale these achievements to other parts of the region.

12.3.2 Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the project intervention, following refinement over the two regional workshops and enabling actions.

EE area	Energy savings GWh/year	Investment MEUR
<u>Target according to RoundBaltic proposal</u>		
Social housing sector in South Denmark	Replicating practise from the HAPPI project 5.85 - 11.7 GWh/year	8 - 16 MEUR
<u>Triggered by RoundBaltic</u> Investment potential of the following SHCs: <ul style="list-style-type: none"> • AAB Vejle of 3,200 social housing units • Østerbo Vejle of 4,200 social housing units • AAB Varde of 716 social housing units • HAB Haderslev of 2,300 social housing units 		
Social housing sector in South Denmark	Road map: 10,400 social housing units = 13.2 GWh/ year	Investment average of 1.600 EUR per house. 10,400 housing units = 16.6 MEUR

The scope of enabling actions has been upscaling the achievements of the HAPPI project to the above-mentioned four SHCs involved in roundtables and enabling actions under RoundBaltic.

The assumptions behind the impact assessment are to use the findings of HAPPI in terms of achieved energy savings and investment volume transferred to the four SHC's AAB Vejle (3,200 social housing units), Østerbo Vejle (4,200 social housing units) and AAB Varde (716 social housing units) and HAB Haderslev (2,300 social housing units).

12.3.3 Challenges

- The discussion at the roundtables has shown a reluctance among some of the stakeholders to move from 'business as usual' to innovative financing, incl. aiming for attracting private capital. The reasons for this are complex and so the ways to introduce innovative financing is to consider this complexity.
- One key challenge is to get new actors on board to bring the desired drive and where ESCOs are important. The examples shown and discussions taken have both shown the potential benefits that ESCOs can bring, but also some representatives of SHC's expressed that the drawbacks of using the ESCO model is considered too big in relation to the potential gains.
- Another key barrier is the issue of trust, as the implementation of energy efficiency projects requires most of the residents' votes to decide on investments. Hence it is essential to develop investment plans that are trusted by the residents.
- A linked barrier lies in overcoming the critical first phases of project development and what can be done to resolve this. It has been suggested that the combination of technical advice and financing could be strengthened. This would suit well together with the PDA mechanism within relevant EU programmes.

12.3.4 Needed supportive framework

- One way of encouraging the required trust is to introduce dynamic accounts based on three measuring points – CO₂, humidity and heat – in addition to providing a more holistic overview of consumption. This can help forming basis for increased fairness in the settlement between consumers. The insurance model aims to modify the risk of the consumption savings not occurring, including the risk as regards tenant behaviour. There have been attempts, including demo projects, to introduce this model to the market, but there are still legal barriers to overcome plus reluctance among heat service companies
- Aggregation of projects / Up-scaling
It has been pointed out at roundtables that many social housing companies have relatively small projects, so it may be beneficial to pool/aggregate projects, across housing companies to optimize project development and manage the interface with the financial sector. However, the advantages and disadvantages of this are to be carefully weighed. This entails, among other things, enabling of:
 - Expanded collaboration on facilitation, documentation, and development of projects, including resident involvement, etc. This can help reduce transaction costs through resource sharing and ensure a recognizable project basis for all parties and a common interface to the financing side.
 - Joint tenders e.g. in line with the dedicated builder model, which gives private builders the opportunity to enter collaboration with social housing companies to build a mixed

construction with both private and social housing, and in relation to large project portfolios.

- The role of municipalities as facilitators
The municipalities can be a facilitator for the public housing associations regarding their options, and in relation to bundling investments across municipal boundaries. This must also be seen in relation to the municipalities' responsibility to be proactive in facilitating the green transition. In the South Denmark Region a climate partnership has been created between ØsterBO and Vejle Municipality, which helps to strengthen such development.
- The Green model
Acknowledging the need to develop joint investment-oriented actions across the social housing sector key stakeholders have joined forces on the 'Green model' to make the green transformation of the social housing sector as simple, uniform, experience-based and effective as possible. The Green Model helps to establish clearly defined processes for the housing associations to expand an already complex renovation process with energy optimization. The Green Model incorporates a guarantee instrument of the associated energy savings meaning the social housing companies are assured of a financial long-term gain, which can give the tenants confidence in the investments as part of the housing association democracy. It also includes a gateway on how to better introduce ESCO in the energy renovation of the social housing sector.

12.3.5 Stakeholders

At regional level

- Social housing companies in the region
- Region of Southern Denmark, driven by the region's policies for sustainable development
- Pool of Municipalities, driven by commitments in local energy- and climate plans
- Suppliers of services and technology/ESCO companies
- Local branches of banks

At national level

- Danish Federation of Non-Profit Housing Providers/BL
- Finance Denmark - FIDA
- Pensions funds
- Ministry of Climate and Energy
- Danish Energy Authority
- Suppliers of services and technology/ESCO companies
- The Danish Council on Climate Change (Klimarådet)

12.3.6 Road map for social housing

Following the first roundtable in September 2021, the following actions and recommendations are agreed with the regional partners:

At regional level:

- The roundtables and enabling actions have provided useful input to the potential drivers and bottlenecks to be overcome in terms of boosting energy efficiency in the region's social housing sector.
- A key starting point for the effort is the PDA project HAPPI that generated documented energy efficiency investments of approx. 12 MEUR across 6 social housing companies (SHC) in the municipality of Sønderborg.
- The roundtables and enabling actions have explored the experiences of HAPPI in conjunction with other relevant initiatives, aiming to replicate the achievements. The four SHC's AAB Vejle (3,200 social housing units), Østerbo Vejle (4,200 social housing units) and AAB Varde (716 social housing units) and HAB Haderslev (2,300 social housing units) have been subject for enabling actions due to an estimated investment potential of 16.6 MEUR.
- The roundtables have helped to identify the potential drivers and needed supportive framework. The drivers and support framework are both to be found within the region as well as on national level.
- The regional authority of Southern Denmark commits to explore these potentials as part of the regional strategy for sustainable development and representatives of the region participated in both regional roundtables and enabling actions.
- Moreover, the intention is to link the regional road map with the ongoing DK2020/Climate Alliance process and the implementation hereof (SECAPS for 22 municipalities in the Region of Southern Denmark). As reviewed at the roundtables, energy efficiency finance in the social housing sector can be integrated in the SECAP, cf. the example where a climate partnership has been created between the SHC ØsterBO and Vejle Municipality.
- EU's PDA mechanism has proved very effective in supporting an investment process across the SHC in Sønderborg and it seems obvious to investigate similar type of funding opportunities within national and EU programs.
- The Region of Southern Denmark is currently gaining important experiences on running one-stop-shops as part of the COHEAT project targeting private homes. These experiences will feed into how the regional road map can replicate the achievements of HAPPI to other SHC in the region, notably the four SHC addressed by the RoundBaltic intervention.

At national level:

- Danish Federation of Non-Profit Housing Providers/BL is a key actor to support a better framework for sustainable energy finance in the Danish social housing sector.
- The Green model, driven by BL and other key stakeholders, is a key initiative to guide the green transformation of the social housing sector, which can also help the development in the South Denmark Region. This entails innovative financing and ways to provide tenants with confidence in the investments as part of the social housing company democracy.
- The financial sector has shown interest in this development and RoundBaltic has in tandem with the parallel Super-I project explored how to manage the engagement. The findings of this are to be integrated in the regional road map.

12.4 Summary Social Housing – Southern Denmark Region

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
<p>2 series of regional roundtables implemented (social housing addressed at two topic sessions)</p> <p>52 participants from key stakeholders involved in regional roundtables, 20% from the financial sector</p> <p>Initiating investment projects at municipal level and in relation to DK2020 process (Strategic Climate and Energy Planning)</p> <p>Increased cooperation with local and national stakeholders</p>	<p>Increased networking and interaction with banks and investors (pension funds etc.) at regional and national level</p> <p>Increased networking and interaction with key stakeholders, including social housing companies</p>
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
<p>The investment process will be integrated into the inter municipal DK2020 project comprising strategic energy and climate action plans in all municipalities and will take into account the current “Green Model” initiative around establishing a communicating methodological model that is applicable and usable for all of Denmark’s social housing associations.</p>	<ul style="list-style-type: none"> • 1 municipality (Furesoe) supported by RoundBaltic to develop an investment concept and interacting with other municipalities • Increased interaction with the financial sector and other stakeholders to develop a common guide and model (also supported by 1st national roundtable after which the Green Model was decided)
2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans	
<p>Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level (coordinated with other regions)</p> <p>Replicating practise from the former PDA project HAPPI to develop an investment concept for three municipalities (four social housing companies): Investments of 16.6 MEUR and savings of 13.2 GWh/year</p>	<p>Municipal / Inter-municipal Investment Concept being developed to generate investments in Social Housing Companies in the region</p>
3. Develop jointly template documents, contracts, tools leading to a better functioning of the market	
<p>Measures suggested at regional roundtables:</p> <ul style="list-style-type: none"> • Investment Concept 	<p>Uptake of measures discussed at Advisory Board meeting and in bilateral consultation with national key stakeholders</p>

<ul style="list-style-type: none"> • Improved national framework, incl. developing a common methodological model • Coordination with regional and municipal planning in linkage to the DK2020/Climate Alliance initiative • Interacting with EU Financing Coalition and a national hub 	
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Viability Factors
<ul style="list-style-type: none"> • The national Green Model Initiative in progress involving all key stakeholders and social housing companies • The national and regional initiative DK2020/Climate Alliance is intended to serve the long-term planning framework for the effort at local /regional level
Means of Verification
<ul style="list-style-type: none"> • Proceedings and Road Maps • Articles • Testimonials • Documentation of investments in relation to social housing companies (ownership of investments) • Qualitative assessment (change in national framework conditions etc.)

13 East Denmark - Capital Region / Zealand Region

East Denmark consists of the Capital Region and the Region of Zealand, and all together 46 municipalities. Both regions of East Denmark and Region Skåne and Region Halland in southern Sweden, are joint together in the collaborative organisation Greater Copenhagen, which strives to promote growth and development in the Nordic metropolitan area. Through strategic partnerships, 5 key development areas are lifted (Green transition, Labor market, Infrastructure, digitalisation and life science). In the green transition area, increasement of energy renovations in the built environment is in focus.

The municipalities have a tradition for cooperation, and actively promoting energy savings together with other local stakeholders and utilities, in the local strategic energy planning process. In many cases, the cooperation has been facilitated by the regions. As a partnership organisation for green transition, Gate 21 plays an important role in several cross municipal projects. Relevant projects where Gate 21 has organising role will be presented in the next paragraph.

In the project **FREO** (Regional energy transition) 25 actors in the energy field works together to reach the goals of the Zealand region, which is that the regional energy system will consist of 40% renewable energy in 2020. The project is in its ending phase. The project **Energy Across (EPT)** gathers 33 municipalities and 11 utilities in the Capital Region of Copenhagen and a few others from the region of Zealand in the transition towards a renewable energy system. A shared energy plan for the participating municipalities has been developed and will be implemented for the last period of the project, that runs until the end 2023. The last period of Energy Across will run alongside the **DK2020**

program, where Danish municipalities will develop their climate action plan for how to reach the national 70% reduction goal in 2030. Financing investments will play an important part in these actions. Energy efficiency and renewable energy will be an important part of these plans. **DK2020** is organized by the Danish fund Realdania and supported by the green think tank Concito. In the Region of Zealand Gate 21 will be the local support for the municipalities in their development of climate action plans. 20 Danish municipalities are close to finish their plans and 46 new ones will begin in February 2021. The last group will start in November 2021. Financing investments will play an important part in these actions. Another new project, that will run alongside Energy Across and DK2020 is the **KKR VIP project**, initiated by the mayors of the municipalities of the Capital Region. The VIP project is divided into 7 smaller projects that cover different areas in the green transition. One of these are focused upon energy renovations in buildings and have almost all municipalities in the Capital Region participating.

Through these projects, Gate 21 supports the municipalities in East Denmark in their implementation of solutions for energy savings.

Implemented financing instruments

Private house is mainly financed by mortgage credit loans and bank loans with security in the building. There are big differences between municipalities in rural areas with low housing prices to rich municipalities in the northern part of Zealand close to Copenhagen. In some areas it is easy to finance renovations due to the high building value and their free value. This is not possible in other areas, and therefore renovations must be financed in other ways. Banks is now offering 0% green loans to approved costumers, and a few upcoming compagnies is starting to lease out heat pumps.

Leasing is a possible solution for SME's who often do not possess the capital or do demand a short return of investment (down to 3 years), because the lifespan of the companies is usually very short.

Social housing mainly renovates when they can get a funding from the National Building Fund, possibly with additional loans from mortgage credit institutes. The high numbers of applicants for loans and grants can delay renovation projects.

Need for new instruments, including financing instruments

To double the rate of renovation in single family houses, it is crucial to make the decision-making process and investment easy. A One Stop Shop (OSS) could be a solution for how to motivate more homeowners and help them through the process. This can partly be carried out by new business models where ESCO compagnies leases or subscribes heat pumps, lightning and even insulation or solar panels. This will make it easy and more secure to invest for both SME's and private homeowners.

For the social housing sector more money is needed from the National Building Fund or easy ways to supplement with other loans, for example from pension funds. This will mean more renovation projects and better projects because they can carry out deep renovations.

13.1 Action on Home Renovations in East Denmark

The focus will be to develop an OSS across many municipalities and in cooperation with many private actors. The facilitator of the OSS will be the municipality itself or a cooperation of many municipalities. To reach this goal Gate 21 intends to apply for an Elena project focusing on single family houses in cooperation with the municipalities.

13.1.1 Type of intervention

Combining actions and results from the projects Stronghouse (Interreg Northsea), Energy Across (funded by the Capital Region), FUTURE (Interreg ØKS), FREQ (funded by Zealand Region) and local experiences from tests in the municipalities, we will develop an OSS for single family houses. This will be done in dialog with the other Danish regions participating in RoundBaltic. In the project Stronghouse, a cooperation with the organisation ProjectZero is established. As ProjectZero is based in Region South, this will be a cooperation to develop further.

The OSS is to include:

- Directed digital mail to relevant target groups with information and invitations to citizens meeting concerning energy renovations.
- Information about when citizens contact their energy utilities.
- Contact to newcomers and “red consumers”.
- Information through bank advisers about possible energy investments
- Energy audits through home visits or virtual by phone or computer
- Call center for all participating municipalities or national call center
- Education of craftsmen to guide for energy efficient solutions (not only in their own field)

It is intended to include the OSS in an Elena application and over time establish a regional platform for energy efficiency concerning single family houses, social houses, SME's and municipal buildings.

The intervention in social housing is based on some other projects and actors:

- Energyspring is a part of Energy across. Here we develop a network to inspire each other, with educational events. In Addition, a benchmark tool is developed.
- Databased energy management, where we are optimizing operations based on data and communicated to the energy managers in a way that is easy to act on.
- The company Sustain Solutions, which is developing, managing and financing green renovation projects together with the pension Fund PKA.

These interventions can be supplemented with new cooperation with Danish pensions funds and other stakeholders in financing. The result will in time also be a part of the regional platform for energy efficiency.

13.1.2 Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the project intervention and following refinement over the two regional workshops and enabling actions:

EE area	Energy savings GWh/year	Investment MEUR
<u>Target according to RoundBaltic proposal</u>		
Home renovation	Each EE renovation = 3,500 kWh/year. Target of 1,000 - 2,000 houses = 3.5 - 7 GWh/year	Investment of 12,000 EUR per house. Target of 1,000- 2,000 houses = 12 - 24 MEUR
District heating / energy savings in rural areas (thermonet development)	EE for each house 67% (COP = 3, change from oil to heat pump) = 18.000 kWh/year. 5 - 10 systems with each 50 houses 4.5 - 9 GWh/year	Investment of 24.000 EUR per house. 5- 10 projects with 50 houses 6 - 12 MEUR
<u>Triggered by RoundBaltic</u> - 17 municipalities committed to run one-stop-shops		
Home renovations	Expected results from per household: 9.330 kWh/year 2.913 houses = 27 GWh/year	Investment average of 15.803 EUR per house. 2.913 houses = 46 MEUR
<u>Triggered by RoundBaltic</u> Initiation of thermonet in 11 villages		
Private homes outside district heating area in form of the thermonet concept	Expected implementation of project proposals in 11 villages. Energy savings of 18.000 kWh/year/household = 40 GWh/year	Investment average of 27.000 EUR per house. 2,300 houses = 60 MEUR

The RoundBaltic intervention has run two separate tracks on resp. home renovations and thermonet.

Within home renovations the intervention has resulted in 17 municipalities committed to run one-stop-shops for energy renovations in combination with related sustainable energy investments like installation of heat pumps to replace oil- and gas boilers in the homes. As the table shows the dialogue with the 17 municipalities and related stakeholders have led to a goal of targeting nearly 3,000 households across the municipalities and where is estimated average investment of 15.803 EUR per house, adding up to around 46 MEUR.

Within Thermonet the intervention resulted in 11 villages aiming to implement thermonet projects, covering 2,300 houses. Here is estimated an average investment of 27,000 EUR per house, adding up to a total around 60 MEUR.

13.1.3 Challenges

- Establishing a network of municipalities and other stakeholders in relation to coordinating efforts and sharing capacity and capability through a regional focal point for both OSS and social housing actions.
- Identifying and coordinating the needed actions and the supportive framework at national and regional level
 - Targeting a business concept related to long term holistic deep renovation plans for the building segments considering Nearly Zero Energy Buildings levels, improved energy performance certificates, future energy supply, future smart home requirements including infrastructure for electric vehicles, strategic energy planning and spatial planning.
 - Learning from/upscaling Danish best practise within and outside the region as well as international best practice
 - Establishing and funding a regional / cross municipal one-stop shop, assisting and guiding homeowners / residents in relation to technical, legal, and financial issues through the whole journey of the renovation process and facilitate access to financial mechanisms and institutions.
 - Interacting with the financial sector and other stakeholders to upscale project development assistance, facilitate more effective use of public funds, bundle projects and develop de-risking tools.

13.1.4 Needed supportive framework

Working within the green agenda, is often possible to involve stakeholders on management level. However, it is difficult to implement these objectives at the ground level of the organisations. Therefore, it is necessary to implement tools at ground level followed by education, to make it easy for, for instance, bank adviser to talk about energy renovations with the customer.

Municipalities has a facilitating role in many of the interventions. The municipality has a good contact with local companies, and the citizens find them trustworthy. But it takes time, especially if they must invent everything themselves. Therefore, a supportive platform is needed to deliver tools and materials, education, energy audits, network meetings and so on, so that the effort to keep facilitating the process over many years will be made much easier, and there for realistic.

13.1.5 Performed intervention by RoundBaltic (enabling actions)

RoundBaltic has done a big effort to mobilise the stakeholders in East Denmark on energy efficiency finance within the private homes sector. A key part of this has been to commit municipalities to take actions linking to the municipal goals for bringing down CO₂ in local energy- and climate plans. Another part has been to engage related stakeholders, notably the financial sector. Roundtables and associated enabling actions have comprised dialogue with representatives of the financial sector on how to engage incl. OSS development. Part of the process has been to seek fund-raising, realising that the full-scale implementation cannot be done within RoundBaltic alone.

13.1.6 Stakeholders

At regional level

- Region Zealand and Capital Region in cooperation with Gate 21
- Pool of Municipalities (including frontrunners)
- Energy utilities
- Craftsmen
- ESCO companies
- Local branches of banks

At national level

- Finance Denmark - FIDA
- Pensions funds
- Ministry of Climate and Energy
- Danish Energy Authority
- Danish Energy Association
- Suppliers of services and technology
- The Danish Council on Climate Change (Klimarådet)
- Danish Knowledge Centre on Energy Renovation

13.1.7 Road map for private homes in East Denmark

Following the roundtables in East Denmark and the supplementary stakeholder dialogue, the following actions and recommendations are agreed:

At regional level:

- Further gathering of interested municipalities and other actors, including financing institutions and utilities around the further development of the regional cooperation (taking point of departure in the recommendations from the proceedings). This can link to the regional cooperation EPP and the DK2020/Climate Alliance initiative.
- Continue developing a regional structure as the framework for the investment process and where the public-private organisation of Gate 21 represents a natural anchor point for such structure. This can build on the lessons learned of the roundtables and enabling actions of RoundBaltic as well as parallel projects like REFURB and the StrongHouse projects. Further it is relevant to investigate EU best practice related to "Integrated Home Renovation Services".
- Part of the process is to seek fund-raising to ensure the resources required for the effort, having in mind it must thus be the process that governs and not a concrete application option.
- Moreover, it is important to coordinate the effort with other Danish regions and the process on EU level. Ideally this could interact with the new EU Financing Coalition and a national hub under this initiative.

At national level:

- There is a need for better use of public funds. Ineffective grant schemes should be replaced by campaigns and grants for project development (using the leverage mechanism).

- There is a need for a state framework for heat planning in relation to the ongoing conversion of gas areas to district heating, the use of surplus heat and the conversion of Area 4 (outside DH) to other forms of supply than fossil fuels (heat pumps, etc.).
- In relation to the establishment of a regional setup, e.g. around the concept “Integrated Home Renovation Services” there may be a need for coordination with national campaigns, including the use of standard assumptions and tools.
- As part of strengthening the national regulatory framework, it is also important to ensure as efficient and action-oriented energy label as possible. There is already a dialogue between the Danish Energy Agency and Finance Denmark in connection with the X-Tendo project, which can be followed up in the further work under RoundBaltic. Furthermore, EC Network and the Energy Service (Energitjenesten) are involved in EU CrossCert projects which follows up on e.g. The X-Tendo project (involving the Danish Energy Authority and Finance Denmark).

13.1.8 Summary Home Renovation – East Denmark

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
2 series of regional roundtables implemented – private homes addressed in two topic sessions 131 participants from key stakeholders involved in regional roundtables, 10% from the financial sector Initiating OSS structure Increased cooperation with national stakeholders	Increased networking and interaction with banks at regional and national level Increased networking and interaction with other stakeholders
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
OSS Structure initiated	<ul style="list-style-type: none"> • 17 municipalities committed to run one-stop-shop • Increased interaction with financial sector
2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans	
Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level (coordinated with other regions) Investment Plan for OSS: <ul style="list-style-type: none"> • Energy renovations and green heating of 2,913 one-family houses = energy savings of 27 GWh/year + investments of 46 MEUR 	OSS initiated to generate investments in investment plan among private homes based on mapping of potential for heat pump systems or DH in areas outside district heating supply

<ul style="list-style-type: none"> • Thermonet solution for 2,300 homes = energy savings of 40 GWh/ year + investments of 60 MEUR 	
3. Develop jointly template documents, contracts, tools leading to a better functioning of the market	
<p>Measures suggested at regional roundtables:</p> <ul style="list-style-type: none"> • Concept of one-stop-shop • Combined approach of green heating and energy renovation (REPowerEU) • Improved national framework, incl. heat planning and subsidies • Regional and municipal planning in linkage to the DK2020/Climate Alliance initiative • Interacting with EU Financing Coalition and a national hub 	<p>Uptake of measures discussed at Advisory Board meeting and in bilateral consultation with national key stakeholders</p> <p>OSS concept and combined approach initiated in OSS</p>

Viability Factors
<ul style="list-style-type: none"> • The intention is to develop the one-stop-shops at municipal level as driver of sustainable energy projects beyond RoundBaltic • The national and regional initiative DK2020/Climate Alliance is intended to serve the long-term planning framework for the effort
Means of Verification
<ul style="list-style-type: none"> • Proceedings and Road Maps • Articles • Testimonials • Documentation of investments in relation to private homes (ownership of investments) • Qualitative assessment (change in national framework conditions etc.)

13.2 Social Housing

Type of intervention:

The overall scope of the intervention has been to explore the potential for energy efficiency finance within the social housing sector in East Denmark.

The intervention has focused on exploring the investment opportunities in the municipality of Furesø and let this be an example for other municipalities and social housing companies in the region as part of an upscaling effort.

Quantifiable Indicators

The table below represents the baseline data from the RoundBaltic proposal and compared with the status at the end of the project intervention, following refinement over regional roundtable and enabling actions.

EE area	Energy savings GWh/year	Investment MEUR
<u>Target according to RoundBaltic proposal</u>		
Social Housing in East Denmark	Addressing 7 -15 SHC's during project period 11.7 - 23.4 GWh/year	16 -32 MEUR
<u>Triggered by RoundBaltic</u> Investment project for the social housing sector in Furesø Municipality		
Social housing sector in Furesø Municipality	Energy savings related to 8 SHC in Furesø 4.651 GWh/ year	17.8 MEUR

The scope of enabling actions has been to explore the potential of energy renovation and associated sustainable energy investments like renewable energy in 18 social housing companies in Furesø Municipality due to enabling actions under RoundBaltic. This has been done in interaction with Furesø Municipality obtaining a grant from the EU City Facility to develop an investment concept for the municipal social housing sector.

The findings were presented and discussed at the regional roundtable at Gate 21, 1st June 2023, in conjunction with a presentation by the ESCO SUSTAIN on what can drive innovation onwards.

Investigations have been done of investment opportunities in the 18 social housing companies, covering measures like insulation, conversion to green heat supply, renewable energy etc. The figures shown in the table above are the accumulated figures of the investment volume and associated energy savings of the measures.

An Investment Concept is currently being developed as part the EU City Facility that can serve driver for the implementation process in Furesø and as inspiration for the entire region.

13.2.1 Challenges

- Like in South Denmark Region a key challenge is to get new actors on board to bring the desired drive and where ESCOs are important. The ESCO SUSTAIN shared its perspective at the regional roundtable 1st June 2023.
- Also in East Denmark Region a key barrier is the issue of trust, as the implementation of energy efficiency projects requires a majority of the residents' votes to decide on investments. Hence it is essential to develop investment plans that are trusted by the residents.

13.2.2 Needed supportive framework

- Aggregation of projects / Up-scaling
There is a need to aggregate relatively small projects across social housing companies as part of optimizing project development and manage the interface with the financial sector, covering aspects like:
 - Expanded collaboration on facilitation, documentation and development of projects, including resident involvement, etc. This can help reduce transaction costs through resource sharing and ensure a recognizable project basis for all parties and a common interface to the financing side.
 - Joint tenders e.g. in line with the dedicated builder model, which gives private builders the opportunity to enter into collaboration with social housing companies to build a mixed construction with both private and social housing, and in relation to large project portfolios.
- The role of municipalities as facilitators
The municipalities can be a facilitator for the public housing associations regarding their options, and in relation to bundling investments across municipal boundaries. This must also be seen in relation to the municipalities' responsibility to be proactive in facilitating the green transition. This is what we see with the investment project in Furesø and that can serve as a case for replication in other municipalities.
- The Green model
Acknowledging the need to develop joint investment-oriented actions across the social housing sector key stakeholders have joined forces on the 'Green model' to make the green transformation of the social housing sector as simple, uniform, experience-based and effective as possible. The Green Model helps to establish clearly defined processes for the housing associations to expand an already complex renovation process with energy optimization. The Green Model incorporates a guarantee instrument of the associated energy savings meaning the social housing companies are assured of a financial long-term gain, which can give the tenants confidence in the investments as part of the housing association democracy. It also includes a gateway on how to better introduce ESCO in the energy renovation of the social housing sector. These prospects were presented by the ESCO SUSTAIN at the regional roundtable 1st June 2023, and the Green Model can be key to drive innovation onwards.

13.2.3 Stakeholders

At regional level

- Social housing companies in the region
- Gate 21, driven by the region's policies for sustainable development
- Pool of Municipalities, driven by commitments in local energy- and climate plans
- Suppliers of services and technology/ESCO companies
- Local branches of banks

At national level

- Danish Federation of Non-Profit Housing Providers/BL
- Finance Denmark - FIDA
- Pensions funds
- Ministry of Climate and Energy
- Danish Energy Authority
- Suppliers of services and technology/ESCO companies
- The Danish Council on Climate Change (Klimarådet)

13.2.4 Road map for social housing

Following roundtable and enabling actions, the following actions and recommendations are defined as part of a regional road map for social housing in East Denmark:

At regional level:

- The roundtables and enabling actions have provided useful input to identify the potential drivers and bottlenecks to be overcome in terms of boosting energy efficiency in the region's social housing sector.
- RoundBaltic has helped to initiate an investment project of the social housing sector in the municipality Furesø in tandem with the EU City Facility. Investigations show an investment potential of 17.8 MEUR across 18 social housing companies (SHC) in the municipality. Moreover, the roundtables have helped to identify the potential drivers and needed supportive framework. The drivers and support framework are both to be found within the region as well as on national level.
- Gate 21 is committed to explore these potentials in coordination with the regional authority and municipalities in East Denmark. This can be linked to the regional road map with the ongoing DK2020/Climate Alliance process. As reviewed at the roundtables, energy efficiency finance in the social housing sector can be integrated in the SECAP, as it is seen in the example of Furesø Municipality.
- EU's PDA mechanism has proved very effective in supporting an investment process across the SHC in Sønderborg and it seems obvious to investigate similar type of funding opportunities within national and EU programs.
- The Region of Southern Denmark is currently gaining important experiences on running one-stop-shops as part of the COHEAT project targeting private homes. These experiences will feed into how the regional road map can replicate the achievements of HAPPI to other SHC in the region, notably the four SHC addressed by the RoundBaltic intervention.

At national level:

- Danish Federation of Non-Profit Housing Providers/BL is a key actor to support a better framework for sustainable energy finance in the Danish social housing sector.
- The Green model, driven by BL and other key stakeholders, is a key initiative to guide the green transformation of the social housing sector, which can also help the development in the South Denmark Region. This entails innovative financing and ways to provide tenants with confidence in the investments as part of the social housing company democracy.
- The financial sector has shown interest in this development and RoundBaltic has in tandem with the parallel Super-I project explored how to manage the engagement. The findings of this are to be integrated in the regional road map.

13.3 Summary Social Housing – East Denmark

Output	Outcome
1.1 Set up national roundtables focused on energy efficiency investment	
<p>2 regional roundtables implemented – social housing addressed in two topic sessions</p> <p>131 participants from key stakeholders involved in regional roundtables, 10% from the financial sector</p> <p>Initiating investment projects at municipal level and in relation to DK2020 process (Strategic Climate and Energy Planning)</p> <p>Increased cooperation with local and national stakeholders</p>	<p>Increased networking and interaction with banks at regional and national level</p> <p>Increased networking and interaction with other stakeholders, including social housing companies</p>
1.2 Establish a structure and procedures on a permanent set-up involving all relevant stakeholders, including important financial actors	
<p>The investment process will be integrated into the inter municipal DK2020 project comprising strategic energy and climate action plans in all municipalities and will take into account the current “Green Model” initiative around establishing a communicating methodological model that is applicable and usable for all of Denmark's social housing associations.</p>	<ul style="list-style-type: none"> • 1 municipality (Furesoe) supported by RoundBaltic to develop an investment concept and interacting with other municipalities • Increased interaction with the financial sector and other stakeholders to develop a common guide and model (also supported by 1st national roundtable after which the Green Model was decided)
2. Use the roundtables to upscale existing best practices from the national and European level, develop strategies, roadmaps and action plans	
<p>Proceedings reflecting status of progress and actions and roadmap indicating actions at national and regional level (coordinated with other</p>	<p>Municipal / Inter-municipal Investment Concept being developed to generate investments in Social Housing Companies in the region</p>

regions) Investment Plan for the Municipality of Furesoe: 17.8 MEUR	
3. Develop jointly template documents, contracts, tools leading to a better functioning of the market	
Measures suggested at regional roundtables: <ul style="list-style-type: none"> • Investment Concept • Improved national framework, incl. developing a common methodological model • Coordination with regional and municipal planning in linkage to the DK2020/Climate Alliance initiative • Interacting with EU Financing Coalition and a national hub 	Uptake of measures discussed at Advisory Board meeting and in bilateral consultation with national key stakeholders

Viability Factors
<ul style="list-style-type: none"> • The national Green Model Initiative in progress involving all key stakeholders and social housing companies • The national and regional initiative DK2020/Climate Alliance is intended to serve the long-term planning framework for the effort at local /regional level
Means of Verification
<ul style="list-style-type: none"> • Proceedings and Road Maps • Articles • Testimonials • Documentation of investments in relation to social housing companies (ownership of investments) • Qualitative assessment (change in national framework conditions etc.)