Interreg CENTRAL EUROPE
European Union European Regional Development Fund

BOOSTEE-CE

DELIVERABLE T4.2.4

Transnational report on development process and outcomes of roadmaps

Version 1
05/2020

D.T4.2.4: Transnational report on development process and outcomes of roadmaps

A.T4.2 Development of EE financing roadmaps for participating cities/municipalities

Issued by: Partner Nr. 03
Date: May 2020

Authors	
	Name (organization)
WP leader	• Energy Agency of the Zlín Region, PP3 (Tomáš Perutka, tomas.perutka@eazk.cz)
Contributing participants	• Energetická agentura Zlínského kraje, PP3 • Regione Emilia – Romagna, PP7 (with the support from FBK, PP1) • Mestna občina Velenje, PP8 (with the support from E-zavod, PP2) • TCDA, PP6 • Grad Koprivnica, PP9 (with the support from REAN, PP4) • Stadtgemeinde Judenburg, PP10 (with the support from EAO, PP11) • EUWT NOVUM, PP12 • Gmina Miasto Płońsk, PP13 (with the support from MAE, PP5)

Content

1. Introduction and aims of the document

This document follows the findings of all documents developed within WPT4 and it is a part of the key output of BOOSTEE-CE project which is the "Development of Energy Efficiency (EE) financing roadmaps for participating cities/municipalities".

It summarizes all prepared financial roadmaps along with recommendations for essential elements for EE financing roadmaps. Recommendations and needs received from key target groups are included.

Development of EE financing roadmaps for participating cities/municipalities involves four steps:

1. Creating the Transnational methodological framework for a roadmap development
2. Elaboration of 7 EE financing roadmaps for public infrastructures in CE cities/municipalities
3. Signing the documents confirming the adoption of roadmaps in CE municipalities
4. Transnational report on development process and outcomes of roadmaps

Within the logic of the whole financing part of the BOOSTEE-CE project, this report is the ultimate among WPT4 deliverables as shown in Figure 1.

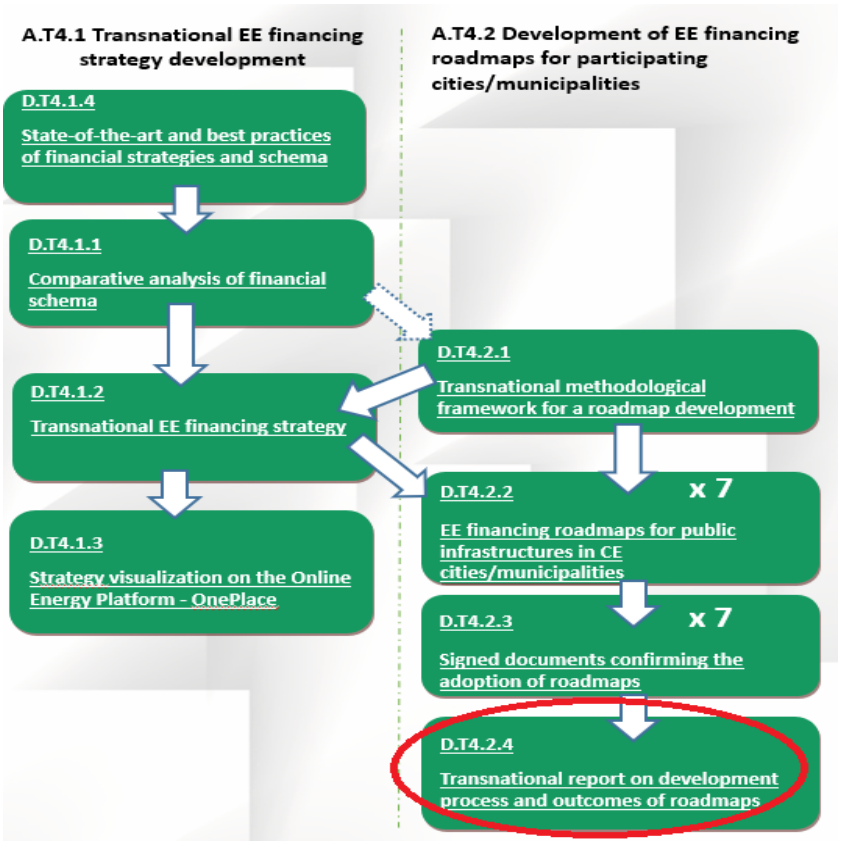

Figure 1 – logical framework of the Financing EE within BOOSTEE-CE according to the Application Form

2. Starting points for EE financing roadmaps development in CE countries

State-of-the-art and best practices of financial strategies and schema

As revealed in the ***"State-of-the-art and best practices of financial strategies and schema (D.T4.1.4)"***, the BOOSTEE-CE consortium partners have carried out SWOT analysis in their respective regions. The SWOT analysis was based upon the experience of partners as well as on a survey and questioning main target groups in order to their needs. Target groups include:

- Local public authorities
- Regional public authorities
- Sectoral agencies
- Infrastructure and (public) service providers
- Higher education and research sector
- Education/training centres and schools
- SMEs
- General public

The output of the SWOT analysis in each region forms a very comprehensive list of strengths, weaknesses, opportunities and threats reflecting each partner´s situation before developing BOOSTEE-CE financial roadmaps, however, some common issues were identified for the majority or even all partners and these are summarised in the table below.

Internal and external conditions & environment for EE financial strategy development and implementation	
Strengths	**Opportunities**
- Experience in energy planning at regional / local level - Availability of Regional Operation Programmes - Innovation related to technologies - Well-developed infrastructure - Increase in the number of companies interested in innovation - High number of municipal improvements - Availability of reliable district heating system / networks - The energy efficiency issues have been integrated into the regional / local development strategies - Regional / local agencies have been established with the aim of best practices exchange, facilitating / coordinating the procedures - Good knowledge of EE behaviour of public buildings - Targeted Awareness-raising activities - Well-established cooperation between public sector and universities or development centres	- Opportunity to counteract rising energy costs - Improving level of innovation, development and modernisation in industrial sector - Maximal utilisation of EU funds - Exploitation of international loan programs for energetic purposes (e.g. ELENA) - Strengthening of international and cross border relations - Deployment of district heating networks - Systematic development of technologies enabling storage of surplus energy generated from RES. - Public sector sets a good example for other public and private infrastructure providers - Wide and competent network of national and EU partners

Weaknesses	Threats
- Long period of return from the initial investment - Indebted municipalities are unable to provide the down payment/prefinancing of the energetic developments - Lack of interest by owners of rented apartments for energy renovation - Lack of municipal energetic professionals - Absence (or insufficiency) of production capacity for waste management for energy purposes. - Sustainable energy projects are noticed too little by the general public - Lack of cooperation between economy and public administration - Lack of interest for challenging projects - Technical infrastructure partly requiring modernization	- Shortage of private funds - Low energy prices have an effect on project payoff - Historical building refurbishment focused on energy savings is connected with very long payback period - Foreign price and supply trends have strong influence on the home market - Life cycle thinking is not widespread, each technology is recommended by few manufacturers - Complexity of energetic tender systems, slow payments - Lack of (pre)financing for investments in EE in public buildings - Unsuitable criteria for approved co-financing of projects/actions - Significant decrease or lack of EU funding after 2020 - Conflict of interests of local energy producers and prosumers (including Cluster Partners) with large energy companies.

Comparative analysis of financial schema

Consequently, the ***"Comparative analysis of financial schema (D.4.1.1)"*** revealed that while regions mostly rely on own budgets, or in the case of Tolna County on funding from existing operational programmes, the municipalities have a slightly more variable portfolio in EE projects financing.

In the case of the Emilia-Romagna region an advanced way of EE financing supported by the region is used. They are so called "unsecured loans". Project municipalities, except for Judenburg, are relying to some extent on existing sources from EU funds which is the logical way of EE project financing when such funds are available. However, to lower the dependence on this way of financing and decrease the threat of not achieving these grants in the future it would be advisable to consider more diverse ways of EE financing in newly developed strategies and financial roadmaps.

As an integral part of the **Comparative analysis** there is enclosed a collection of the best practice examples from CE countries on various financial investments return models through which market-enabling actions for large investments are highlighted. These best practices are presented and analysed on attractive factsheets.

After elaborating the ***Comparative analysis***, two crucial documents of the WPT4 were developed – ***"Transnational EE financing strategy (D.T4.1.2)"*** and ***"Transnational methodological framework (D.T4.2.1)"***.

Transnational EE financing strategy

Transnational EE financing strategy is a review of the existing energy financing solutions and models that are or will be in the future the important enablers for EE and energy savings in public infrastructures. The strategy evaluates the potential of different financial models and gives recommendations. The key parts of the strategy are:

- Key stakeholders and investment barriers in EE financing
- Existing funds and assistance in CE countries on national level
- Assessment of the existing models of financing and their deployment
- Basic Principles of Energy Efficiency Financing Strategy development

Transnational methodological framework

The aim of the ***Transnational methodological framework*** is to help public authorities to deal with many different financing grants in the EE domain. The methodological framework builds upon the practical knowledge of public institutions and provides an overview of financing models used to finance EE upgrades in the public sector with the specific focus on:

→ Financial models to minimize the load on public budgets

→ Recommendations for decision-makers on identifying and implementing a suitable financing model

→ Risks and measures in case of financial investments

→ Case studies.

The key parts of the ***Transnational methodological framework*** are:

- Funding sources for energy efficiency (EU & national, self-financing, alternative ways, intermediaries)
- Financing models for energy efficiency
- Indicative structure for EE financing roadmap with specific tips and recommendations

Both ***Transnational methodological framework*** and ***Transnational EE financing strategy*** documents created a framework for developing EE financing roadmaps in BOOSTEE-CE participating municipalities and regions.

3. EE financing roadmaps for participating municipalities and regions

Financing roadmaps were designed to achieve a desired goal of energy efficiency in public infrastructures in specific municipalities and regions in Italy, Austria, the Czech Republic, Hungary, Slovenia, Poland and Croatia. The following regions and municipalities of BOOSTEE-CE have developed their 8 roadmaps which is even one more than supposed by the BOOSTEE-CE project:

- **Zlín Region**, Czech Republic
- **Regione Emilia – Romagna**, Italy
- **Mestna občina Velenje**, Slovenia
- **Tolna County**, Hungary
- **Grad Koprivnica**, Croatia
- **Stadtgemeinde Judenburg**, Austria
- **Lubawka**, Poland
- **Płońsk**, Poland

3.1 Zlín Region

The Energy agency of the Zlín Region (EAZK) developed within the BOOSTEE-CE project **The Energy Action Plan and the Energy Efficiency Financing Plan of the Zlín Region** (Action Plan) which is a programming document based on the approved strategic documents of the Zlín Region for the area of energy, environment, and air protection. The document builds on the current activities of the Energy Agency of the Zlín Region and defines its priority activities and current needs which the Energy Agency of the Zlín Region will address in next five years period in order to achieve the objectives of the Zlín Region energy policy and the five-year sustainability of the projects implemented by the Agency. The time frame of this financing roadmap covers the next years from 2020 to 2024.

The EE Action Plan of the Zlín Region outlines 5 priorities that are based on the Regional Energy Strategy:

→ Support for efficient use of energy in buildings owned by the Zlín Region
→ Support for efficient use of energy in the Zlín Region
→ Promoting the use of renewables, secondary and prospective energy sources
→ Increasing security and reliability of energy supply
→ Measures to support the implementation of the Action Plan

Wherever appropriate, projects will be identified in buildings owned by the Zlín Region where it would be possible to demonstrate the effectiveness, economy, and other benefits of the implemented measures (and projects). These projects will then be published and serve to motivate other entities in the territory of the

Zlín Region. A fundamental condition for the successful implementation of all planned activities in the spirit of the "Zlín Region by Example" is that a coordinated and, if possible, united approach of the regional organizational units at all levels will be applied.

The benefits of the Action Plan will be monitored and evaluated for all projects funded by the Zlín Region through a set of indicators collected both from information on supported projects and the outputs of the Zlín Region and the EAZK activities. The benefits of the Action Plan will be in particular in the field of energy savings, the use of renewable and secondary energy sources (both in terms of energy produced and the installed capacity of the technologies using them), energy and fuel cost savings, pollutant emissions, etc.

The possibilities of financing EE efficiency are in depth analyzed within the Energy Action Plan and the Energy Efficiency Financing Plan of the Zlín Region with suggestion to extend the current portfolio of EE financing involving as much as possible from EU level, national level, Intermediaries and alternative ways of financing which are properly described in this Action Plan.

The benefits of the Energy Action Plan and the Energy Efficiency Financing Plan of the Zlín Region will be monitored in the area of:

- Energy
- Economy
- Environment
- Social policy
- Other

The overall benefits of the implementation of the Action Plan for the 5-year period of the Action Plan will be quantified after implementation of the proposed measures in total:

- GJ / year in energy saving
- GJ / year in the use of renewable energy sources
- MW of installed capacity in RES or incineration plants

EAZK monitors existing consumption and will monitor and evaluate savings after the implementation of projects and measures.

3.2 Regione Emilia-Romagna

The financial roadmap of the Emilia-Romagna Region is a document based on the EE financing roadmaps for public infrastructures in CE cities / municipalities (D.T4.2.2), a document analyzing internal and external conditions of the energy strategy and policy of the area where it pertains, the strategic targets and priority areas, the action plan for future investments and the way to finance it.

For what concerns PP7 Emilia-Romagna Region, this area is identifiable with the whole regional territory.

The internal and external conditions are divided in two levels, national and regional. The National Energy Strategy - SEN - represents the tool for the general direction and planning of the national energy policy, on

the basis of the EU directives, while the regional one poses the direction for a more extreme objective scenario, in order to target EU scenarios for 2030.

The EE financing roadmap for public infrastructures in CE identifies, within a desirable timeframe, subsequent steps and appropriate financial solutions with the main objective of reducing energy consumption and improving energy performance in the various sectors. It is developed for the specific territory where it pertains, in cooperation with the relevant local stakeholders.

The roadmap assesses strengths, weaknesses, opportunities and threats of the actual energy system, in order to identify a path and adopt it for daily procedures and activities. The increase in energy efficiency from the technical, economic and social point of view represents the most effective tool to ensure the availability of energy at reduced costs and promote the reduction of greenhouse gas emissions.

The tool intends to focus attention on the public sector and encourage initiatives aimed at improving the energy performance of public assets, especially the Region's buildings, capable of achieving energy upgrading at least equal to 3% per year of the useful air-conditioned covered area.

In the sector of electricity production from renewable sources, the target scenario is approximately 34% of electricity consumption covered by renewable production, while in the thermal sector, the most important challenge in the development of renewable sources, the aims is to reach 29% of consumption for heating and cooling covered by renewable sources, supporting the development of high-efficiency renewable technologies that can meet the energy needs for heating and cooling of buildings and the production of heat for production purposes. Particular attention will be given to the topic of cooling, which is already a very high energy consumption item and is in constant growth. In this context, the support of energy efficiency and consumption optimization interventions will be both at the scale of the individual building and on an urban and local scale.

The implementation plan of the tool actually envisages a series of actions, type of financial instruments and resources that will shape the next energy strategies and financial roadmaps in order to diversify and stabilize the sources for financing energy efficiency in the area and help partners and other stakeholders to:

- Identify selected successful financing instruments and resources for the public infrastructure sector that are covered by grants, guarantee funds, low-interest revolving loans, integrating them with innovative privately funded financial instruments such as lending crowdfunding that have been rarely used or have never been used in their areas;
- Propose improvements in the next Regional Operational Program of the European Regional Development Fund 2021–2027 (POR FESR) through the tool's outcomes and maintaining the continuity with the logic of the previous programming as a natural evolution of a system of integrated regional policies implemented over the last decade in favor of the growth and competitiveness of the regional productive and territorial system.

- Offer to other territories and other stakeholders the opportunity to connect with a different financial mix and to its level of success in a real-scale test bed. In addition, it can outline a path towards new innovative models of EE financing which are used nowadays but not available in all the countries.

The way to finance EE interventions relying on private funding, through project financing, private public partnership and crowdfunding, is a relatively new approach that can integrate very easily to incentives and guarantee funds, triggering the mechanism of EE efficiency.

3.3 Mestna občina Velenje

The prepared document focuses on issues related to the overall topic of energy efficiency in public buildings, that could be used to increase knowledge, capacities and skills of building owners, managers and decisions makers, enabling them to successfully implement sustainable energy measures in their buildings. The prepared document will help municipalities find cost savings and define the way to reinvest them in order to continuously improve energy efficiency in public and other buildings to reach some planned reductions of energy and CO2 use in the field of energy efficiency. The financing roadmap will help employees in the field of maintenance and construction in municipalities fund the diverse energy efficiency measures and technologies on one place and with that fulfill the short and long terms and plans on the field of energy efficiency.

The financial roadmap can help municipalities with preparing strategies for urban planning, with managing the energy efficiency measures for public buildings and other fields and for better and faster fulfilling planned reductions of CO2 according to strategies, with better estimation and planning energy consumptions, etc., preparing municipality budget.

The situation in the whole country is considered in the document. Other municipalities in Slovenia face the same restrictions in financing energy efficiency improvement in public buildings as the Municipality of Velenje. Presented ways or possibilities of financing energy efficiency improvement in public buildings are more suitable for bigger municipalities, but some of them are suitable also for smaller ones. The prepared document can also help some of the energy agencies.

It was identified in the process of preparing financing roadmaps that in this moment we are in between two periods. Some of the documents, strategies and plans about energy efficiency are expiring and others are under preparation phase. Also, a lot of possible different ways of financing improvement the energy efficiency of public infrastructures are found. There were also several obstacles identified in the use of certain funding options.

3.4 Grad Koprivnica

This document has been developed to address the lack of available funding sources problem, as well as adequate financial models for the implementation of energy refurbishment projects. Like most cities in Croatia (and the EU), the City of Koprivnica relied heavily on EU co-financing of energy refurbishment projects while a smaller proportion was secured from its own funds or from national funds. Since the EU Financing Programme 2014-2020 ends next year and the terms of funds use in the next period from 2021 to 2027 are relatively unknown, this document will consider, in addition to the traditional financing methods, some alternative sources of financing, private equity investment and innovative models that the City of Koprivnica could use to plan the implementation of medium-term and long-term energy efficiency projects. The structure of the document was formulated in a way that initially outlined the role of regional and local self-government in energy transition, emphasizing the importance of cooperation between state institutions and local/regional self-government, the importance of the bottom-up approach and how it can contribute to the achievement of the goals defined on a higher level (national, EU level).

Furthermore, internal and external conditions are presented as well as opportunities and barriers, the current situation and the legislative framework for the implementation of energy refurbishment projects and energy efficient construction and for the implementation of innovative financial models in the existing financial framework of the City of Koprivnica. A particularly important chapter is the definition of strategic goals and priority areas for the purpose of ensuring energy security, increasing energy efficiency and the use of renewable energy sources, environmental protection and sustainable development. Based on the identified financial models and funding sources, concrete measures (action plan) have been drawn up for planned medium and long-term projects for which the measures of implementation and the evaluation methods have been defined.

The City of Koprivnica, through the adoption of the “EE financing roadmap for public infrastructures” and other strategic documents, contributes to the achievement of energy efficiency goals at both the national and local level. Through the implementation of energy efficiency measures and projects, the local government creates a better basis for further development and positive environmental impact. A local and regional self – government can itself be an investor or promoter of energy efficiency and renewable energy projects, a generator of entrepreneurial ideas and essential logistics in their realization. It is desirable to link the activities of local and regional self-government in the social protection of needy citizens with the energy renovation of their buildings; thus, achieving two goals-the namely social acceptability of energy costs and the preservation of the climate. The implementation of the proposed measures of the “EE financing roadmap” offers numerous indirect benefits, all with the aim of increasing the quality of life in the City of Koprivnica, which is put ahead of economic benefits.

The presence of key target groups on brainstorming sessions and their active participation in the development of the EE financing roadmap guarantees the quality and sustainability of this output. The mayor of the City of Koprivnica has signed a Letter of Endorsement where he expressed his support for the "EE financing roadmap for public infrastructures in the City of Koprivnica" stating that the City of Koprivnica is considering the implementation of chosen measures of the aforementioned project's output in case of new investment opportunities so their future implementation is to be expected. Transferability of this output is guaranteed due to the involvement of numerous target groups, which will transfer key elements and objectives of this output within their organizations and beyond. The presentation of the "roadmap" during focus group meetings and national a training seminar will ensure its transferability to other institutions or regions.

3.5 Stadtgemeinde Judenburg

The developed tool is a financial roadmap for the municipality of Judenburg. The document is intended to provide a summary of the climate and energy efficiency targets of the municipality of Judenburg on EU, national, federal and local level as well as the implementation measures planned for the coming years, with proposals for alternative financing methods to supplement the municipality's own financial resources. The financial roadmap builds upon the Sustainable Energy Action Plan "Judenburg 2020" which includes targets and measures for the reduction of energy consumption and CO2 emissions from 2012 to 2020 and continues these actions. The time frame of the financing roadmap covers the next years from 2020 to 2023 and starts with projects from 2020 onwards.

The financial roadmap contains a description of the internal and external framework influencing the town's scope of action, a SWOT analysis of Judenburg's energy and climate policy, a description of Judenburg's strategic goals in energy efficiency and climate protection, an analysis of financing models, an action plan and finally a description of monitoring and evaluation procedures.

The action plan covers eight major fields of actions:

1. reduction of the energy consumption of municipal buildings, facilities and equipment,
2. reduction of the energy consumption of residential buildings,
3. reduction of the energy consumption of public lighting,
4. expansion of green electricity production,
5. increasing the security and reliability of energy supply in the region/community,
6. creation of framework conditions for energy improvements, promotion of renewable energy sources (RES),
7. awareness raising and networks for the sustainable use of energy and
8. reduction of CO2 emissions and energy consumption of mobility. Measures in these areas of action are described in detail with concrete implementation plans and financing possibilities. Special emphasis is laid on available funding possibilities and consultant services.

The strategic objectives of the Municipality of Judenburg in the areas of energy efficiency and climate protection are currently set out in the Sustainable Energy Action Plan "Judenburg 2020", which implements the 20-20-20 goals of the EU. It was adopted in 2011 and includes targets and measures up to 2020. The primary objective of the SEAP “Judenburg 2020” is to reduce energy consumption in the town area, combined with an increase in energy generation from renewable sources. In 2020, a Sustainable Energy and Climate Action Plan (SECAP) is to be drawn up and adopted as a successor to the SEAP for the period 2021 to 2030, which takes up and continues the objectives of the SEAP.

The financial roadmap which has been developed during the project BOOSTEE-CE provides the municipality with assistance in creating a new SECAP. Much of the research carried out on the currently valid legal requirements relating to the reduction of energy consumption and greenhouse gas emissions can be included in the SECAP.

The research and listing of the concretely planned and for factual reasons pending measures in public buildings provides the municipality with an overview of the expected costs. The special reference to possible co-financing from alternative financing models and state subsidies has raised awareness among those responsible for the renovation plans when looking for additional funding.

The financial roadmap was drawn up in close cooperation with the e5 team of the municipality of Judenburg and was accepted by the team members and the mayor. The e5 team is the working team of the e5/European Energy Award programme (a programme for the planning and implementation of energy and climate protection policy goals and measures in municipalities, including a quality management system and a certification process) and comprises key players of the building and planning authorities, environmental department, infrastructure management, municipal utilities and energy provider, city marketing, Energy Agencies of Upper Styria and Styria and citizens. The e5 team members are mainly responsible for the implementation of the measures in the roadmap which concern the municipal sphere where there is a large potential for energy savings and increase of the share of green energy. These measures in the public sector have an exemplary role model effect and should – together with financial incentives - incite action in the private sector.

The general framework conditions can easily be transferred to other Austrian resp. Styrian municipalities affected by the same legal regulations, also funding regulations are the same at least in the province of Styria. Concerning the planning of concrete measures exceptional endeavors can serve as best practices for others.

Since the financing of projects such as construction projects and refurbishments must be covered in full some implementations are often postponed for years because the financing is not secured. For this reason, many small RES/RUE measures in public buildings (e.g. replacement of lighting equipment) are often financed from the regular budget as part of ongoing maintenance, but this means that the opportunity for project funding is missed when no larger overall measure is implemented.

In the roadmap it is therefore recommended to check whether the planned or upcoming measures are subsidized within the framework of a funding programme and, if so, to combine them into a larger project and apply for funding. However, it is important to ensure that the conditions for funding (right time for purchase or contract, comparative offers, etc.) are adhered to and that a badly planned procedure does not result in the chance of being awarded funding. If the responsible staff members do not have the necessary experience in researching funding opportunities, grant applications and accounts, they should not shy away from asking other colleagues for support. The expertise of the Energy Agency Upper Styria should definitely be called upon when researching, applying for and accounting for subsidies.
In addition to proven funding methods, the use of alternative funding should be considered in funding planning, where possible. In the transnational BOOSTEE-CE project many lessons have been learned from other project partners who use financing methods which are not so well-known and used in Austria.

3.6 Gmina Lubawka

EE financing roadmaps for public infrastructures is the document based mainly on the Comparative analysis (D.T4.1.1) and Transnational methodological framework for a roadmap development (D.T4.2.1), showing how to look for, find and adopt different financing solutions for EE improvement.

The energy Efficiency financing roadmap for public infrastructures for the municipality Lubawka is based also on the documents and strategies created by the municipality of Lubawka, furthermore taking into account all conditions of the Lubawka commune, both territorial, social and economic.

The key parts of the Energy Efficiency financing roadmap for public infrastructures for the municipality Lubawka are following:

- *Introduction & Internal and External Conditions*
  This section is targeted directly at the basic information about the region, presenting plans and strategies in the field of energy efficiency of the Lubawka municipality, as well as other conditions for its financing, and presenting a SWOT analysis.
- *Strategic Targets & Priority Areas*
  This chapter discusses in detail the goals set by the Lubawka municipality and shows for which priority areas the answer will be an Energy Efficiency financing roadmap.
- *Action plan & Financing*
  In this section five financing instruments are discussed / models recommended for the municipality of Lubawka: self-financing through energy savings, European funds and operational programmes, Energy Performance contracting, green municipal bonds, revolving loan funds. Each financing instrument / model was discussed and then possibilities of using it by the commune were presented.
- *Monitoring & Evaluation*
  This chapter summarizes the whole document and shows which indicators could be used to monitor progress in energy efficiency and its financing within the municipality.

The Energy Efficiency financing roadmap for public infrastructures for the municipality Lubawka will help the municipality:

- → look at the energy efficiency situation in the municipality and determine the changes needed;
- → learn about new financial instruments and models of financing energy efficiency previously unused by the commune;
- → assess opportunities and barriers to deploy financial instruments and models presented in the document.

The Energy Efficiency financing roadmap for public infrastructures of the municipality Lubawka also introduced instruments/models that are timeless and independent of EU funding.

Frequently financing energy efficiency is carried out only through EU subsidies and only dependent on them, which is why this document presents other forms of financing that the municipality can use when EU subsidies or access to them will be difficult. Possible stagnation in financing the improvement of energy efficiency in municipalities should be prevented in advance.

The Energy Efficiency financing roadmap for public infrastructures can be used not only by the Lubawka municipality but also by other municipalities of similar size and specificity. The municipality of Žacléř involved in the project could also use this document.

Financing energy efficiency in a municipality is a complicated and time-consuming process. Unfortunately, this is not a vital need perceived by residents who are also voters, therefore there is a huge need to inform both employees of the municipality and its residents on the importance of this venture.
The EE financing roadmaps for public infrastructures support such activities and equip municipalities with knowledge about financial possibilities that will even engage residents.

The exchange of transnational experiences is invaluable for municipalities. The state of energy efficiency in Poland is not at the highest level in Europe, and therefore drawing good practices and experience from countries that use financing instruments/models not yet utilized in Poland is important and necessary. Thanks to projects like BOOSTEE-CE, municipalities have a chance to exchange these experiences, which is not always possible without projects.

3.7 Gmina Miasto Płońsk

The roadmap for financing the energy efficiency of public infrastructure in Płońsk contains guidelines showing the direction of improving energy efficiency. Additionally, it contains an overview of all relevant overarching strategic documents according to which it was developed. It also includes a description of the current state, where Płońsk is in terms of energy efficiency, which has already been implemented and with what effect. In addition, the document describes the planned further activities and investments in Płońsk to improve energy efficiency with the schedule and budget. It also specifies how the monitoring process should proceed and who is responsible for it. The document contains selected effect monitoring indicators that are designed to

help and support in assessing results. An important element are recommendations in which direction Płońsk can search for and use other ways of financing energy efficiency measures, and which options may be most effective in the case of Plonsk.

The roadmap concerns the City Municipality of Płońsk (CMoP), so the local authorities have obtained a new strategic document that indicates the direction to improve energy efficiency. In addition, it contains the guidelines on how Płońsk can and should work. It was also developed in accordance with existing documents in the region. The Płońsk authorities also received in the document recommendations on other financing options that can be used and implemented in Płońsk. This document may also affect further investment plans to improve EE in Płońsk.

The sustainability of the roadmap has been confirmed using real actions, implementation times and budget, which will certainly be implemented (some of them are already at the implementation stage). In addition, there are opportunities to apply this type of strategic document in other cities, municipalities, or regions with appropriate adaptation to the conditions there.

CMoP obtained the new strategic document developed as part of the BOOSTEE-CE project, giving a new direction in searching for ways of financing energy efficiency measures. In addition, the document contains updates of parent documents for the Mazovia region, including Płońsk, which set out a legal framework important for making decisions about investments in EE. The most important conclusions are to realize that soon it may be more and more difficult to obtain funding that may decrease and it is worth seeking and developing alternative EE financing options. In addition, the document clearly presents the great commitment of CMoP in improving EE through numerous completed and planned activities and investments.

3.8 Tolna County

The EE Financing Roadmap was prepared by the Tolna County Development Agency, after discussing the main expected outputs, project development and management possibilities with local stakeholders (County Council and Climate Office staff). Local circumstances were considered in terms of already available local and national strategies and plans that deal with energy efficiency issues, national regulations. Most importantly, this EE Financing Roadmap is connected to the Climate Strategy of Tolna County, as that is the most important document that is related to EE issues. Based on those, the strategic targets and priority areas to be pursued in Tolna County with regards to energy safety, competitiveness, economical, societal and environmental sustainability could be identified. With reference to priority areas and based on the content of the Climate Strategy of Tolna County, concrete energy efficiency actions could be identified. According to the terminological logic of BOOSTEE-CE project, these actions can be classified as EE services or EE Projects, and a total of 25 actions were proposed for implementation along with a wide range of general suggestions. The section “Financial possibilities” then lists all available funding sources, such as national Ops, direct EU funds and innovative financial instruments (e.g. revolving funds, crowdfunding, etc.). As a summary, the proposed

actions then were paired with recommended financial tools, and an approximation of the costs related to each action. As a last step, monitoring and evaluation of the actions will be carried out.

The Tolna County Council was the main target organization of the EE Financing Roadmap, however it will be disseminated to local municipalities and the Government Offices in order to reach the most important actors, who are implementing EE investments in public buildings. A short, easy-to-use Hungarian version was created to boost visibility of the EE Financing Roadmap. Local authorities will be expected to use this tool as a helpful tool especially in matching actions with funds. The main limitation to the use of this tool is that most municipalities are relatively inexperienced in obtaining and managing funds outside national Operational Programmes, therefore capacity building in fundraising will be required that could work in synergy with the EE Financing Roadmap.

The EE Financing Roadmap was tailor-made to suit the needs of Tolna County, however most territories have similar issues, therefore other counties could use this roadmap with ease. Stakeholders and local actors dealing with energy efficiency can benefit from the wide selection of funding sources listed in the roadmap. Since there are different actors operating public buildings (Municipalities, the County Council, national authorities, etc.), they can still use most of the roadmap as they face similar issues with regards to EE in public buildings.

The development of the EE Financing roadmap was beneficial for both TCDA and the involved stakeholders as a very fruitful discussion took place prior to the creation of the roadmap. The tool being quite specific for Tolna County might boost the local actors' willingness to engage in EE investments as they now have a useful but quite focused tool in their hands to help them in choosing appropriate funding sources to implement EE investments.
BOOSTEE-CE provided a specific outlook on a wide range of EE financing best practices (D.T4.1.1 – D.T4.1.4) and the funding possibilities listed in D.T4.2.1 gave quite an exhaustive list of possibilities while helping matching project ideas with appropriate funding sources.

4. Recommendations for essential elements for EE financing roadmaps

4.1 Strategical background

When creating an EE financial roadmap, it is necessary to have some strategical framework to be able to put the financial roadmap into relevant conditions and environment.

Some basic principles of Energy Efficiency Financing Strategy development were suggested in ***Transnational EE financing strategy (D.T4.1.2)***

- The municipality's EE financial strategy must consider both the energy management needs and possibilities and the financial constraints. That means that on one hand it must reflect the settlement's energy strategy's/action plan's content and the financial needs of the energy investment plans listed in these documents. On the other hand, it has to consider the annual and long-term budget planning regulations and processes (deadlines, shares of dedicated tasks in the budget, decision making bodies, etc.) It also has to respect the particular regulations on debt-generating, which is a heavy burden for investment financing.

- The financial strategy should introduce a wide scale of potential sources: above the well-known OPs it has to mention other EU programmes directly applicable at the Commission, EIB or any other central bodies (e.g ELENA, MLEI PDA). It has to pay attention to creating a **favorable mix of financial sources for investments**: involve funds for preparation, implementation, awareness raising, multiplication of results. **Creating a portfolio of financial tools** might also reduce the risk of an investment failing due to lack of funds, rejected applications or suspended Operational Programmes calls. Alternative funding methods such as crowdfunding should be listed as complementary, additional financial tools which might also improve the image of the municipality.

- It is advisable to integrate incentives into the strategy. If the different departments and responsible bodies of the municipality are able to take further profits from the investment, the sound implementation of the planned actions can be better ensured. A good example for such a tool is the 50-50 system, where the maintainer and owner of a municipality building share the energy savings resulting from the investment. That means for instance, that the management a school has the possibility to keep and reinvest 50% of the energy savings, procure tools for children or further improve the energy performance of the building.

4.2 Basic elements for EE financing roadmaps

When developing an **EE financing roadmap** which is put within pre-defined strategical framework, some basic rules and recommendations on the structure should be followed. The suggested structure should involve at least 4 sections as outlined in the ***Transnational methodological framework (D.T4.2.1)***:

1. Introduction & Internal and External Conditions

In this part the public body should outline the basic ambition of the EE financial roadmap, financial roadmap timeframe, what are the starting points and the legislative framework and what are related policies and strategies the financial roadmap is linked to, for example:

- Regional Innovation Schema RIS
- Existing regional energy strategies and national energy strategies
- Regional development strategies
- Legislative demands related to energy safety and reliability of energy supply
- EU directives related to energy efficiency, buildings' energy performance, RES, common energy markets etc.

Although a comprehensive SWOT analysis might also be the part of a regional energy strategy some crucial findings on strengths, weaknesses, opportunities, threats, barriers and ways to overcome should be included even in the financial roadmap. These might be structured according to various points of view, for example

- Technical and economical availability of primary energy sources
- Structure and efficiency of energy usage
- Level of local/regional energy management
- Maturity of EE financial market and availability of different sources of financing
- Economical features of the municipality/region, demography

2. Strategic Targets & Priority Areas

With relation to the legislative and strategic framework and the SWOT analysis outlined in the previous section each region / municipality should set strategic targets and priority areas to be pursued with regards to energy safety, competitiveness, economical, societal and environmental sustainability, for example:

- Balanced local / regional energy mix
- Increasing the energy efficiency in public buildings
- Infrastructure development (smart technologies)
- Support to research and development (involvement in international projects, further education…)
- Increasing the share of Renewable Energy Sources
- Increasing energy safety and self-sufficiency (district heating systems, energy islands…)
- Improving the air quality

Upon the strategic targets the concrete priority areas should be identified to ensure meeting the strategic targets, for example:

- Support to energy management
- Bulk energy purchase, introduction of ISO 50001
- Search for, support and implementation of concrete projects on RES utilization and on-conventional and more effective sources of energy inside existing infrastructure
- Increasing safety and reliability of energy supply in the region / municipality
- Awareness raising

3. Action plan & Financing

With reference to priority areas it is advisable to identify concrete energy efficiency activities and energy efficiency projects to be implemented, for example:

- EE services that are the core activities which must be continuously provided to fulfil regional / local energy efficiency strategic objectives including development and maintaining of energy management, energy efficiency advice services provided, training and educational activities in the field of energy efficiency monitoring of implementation of energy efficiency policy etc.
- EE Projects as short-term, self-contained activities that augment the EE services, boost the energy efficiency by reducing the amount of energy required to provide services and products.

Setting a **balanced funding mix** is another step that should be when developing EE financial roadmap and it is an issue all municipalities and regions are facing with a growing urgency. This may be viewed from different perspectives, for example:

- According to levels of restriction and the continuity and security of funds
- According to sources of financing

Regions and municipalities are encouraged to diversify the sources of financing so that they are not dependent mostly only on the conventional ways of financing but increase their portfolio also in alternative ways of financing:

- Energy Performance Contracting
- Citizen Cooperatives
- Crowdfunding
- Green municipal bonds
- On-bill financing
- Revolving loan funds
- Leasing

4. Monitoring & Evaluation

Organizational provisions should be suggested on how, how often and by whom the monitoring and evaluation of the EE financing roadmap will be ensured, including the tools, staff personnel requirements and cost foreseen for monitoring and evaluation. Qualification and quantification of results of the EE financing roadmap implementation should be enlisted as well. They might be economic, energy related, environmental, social etc.

It is highly advisable to establish a set of concrete indicators against which the EE financial roadmap will be monitored and evaluated.

4.3 EE projects planning and implementation specifics

Last but not least, when specifics of **concrete EE projects** are discussed and considered, a feasibility analysis should be carried out, including a rough planning of the project and an estimation of the costs, as well as legal and environmental aspects. Prior to the final decision of the project development and implementation we should also answer several important questions, such a:

→ Is the objective of the project clear?

→ Which technologies for the use of renewable energies should be used?

→ Should energy and CO2 be saved?

→ How big should the project be?

→ Should citizens and other stakeholders be involved in the implementation and what should their role be?

→ Are subsidies that reduce the need for financing available?

→ Can and should the amount be financed from own resources or could a loan be taken?

→ Is a loan possible or desired, or does it increase the debt ratio (total debt/total assets) too much?

→ Is the structure of financing balanced and sustainable?

→ If variants are sought which do not increase the debt ratio but innovatively outsource the financing, then models such as leasing, contracting or bonds can be considered etc.

5. Conclusion

In the course of the BOOSTEE-CE project, the preparation of financing roadmaps has proven to be a very useful tool for the energy planning of municipalities. The preceding analysis of financing practices for EE-projects provides a longer-term overview of municipal expenditures and their sources of financing and allows a reflection of previous practices. Since municipalities are used to planning in financial years and political terms, analyses of the financing matrix can open up a new perspective on established financial practices and initiate a reflexion process and new orientation.

Looking outside the box, as made possible by a transnational analysis, can be very rewarding for municipalities and open up new sources of funding for them. This is particularly useful in a phase of uncertainty about what the future European funding landscape will look like. Moreover, the financial crisis resulting from the COVID19 pandemic will also have a serious impact on local authority budgets, making alternative financing all the more necessary.

Financial roadmaps can lend more depth to the development of sustainable energy action plans and climate change adaptation strategies which provide guidelines for the energy related projects of municipalities because they not only indicate which targets in terms of emission and energy consumption reduction targets should be met but also how and with what means.

The documents developed in the BOOSTEE-CE project, “Comparative analysis of financial schema” (D.4.1.1), “Transnational EE financing strategy” (D.T4.1.2), “State-of-the-art and best practices of financial strategies and schema” (D.T4.1.4), “Transnational methodological framework” (D.T4.2.1), therefore provide a wide overview of available tried and tested financing practices across Central Europe with an assessment of their particular strengths. The financing roadmaps developed for the pilot regions can be seen as a collection of best practices which reflect the diversity of Central European municipalities and their framework conditions. Other municipalities can draw from this rich fundus of strategies, concepts and ideas and adapt them to their own needs.