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BOOSTEE-CE

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Transnational Energy Efficiency Financing Strategy

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A.T4.2 Transnational Energy Efficiency Financing Strategy Development

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1. Introduction and aims of the document

A transnational strategic document, based on the **Comparative analysis of financial schema** and **Transnational methodological framework for a roadmap development**, showing how to look for, find and adopt different financing solutions for EE improvement.

The Transnational strategy for EE financing in CE defines, structures and reviews 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 assesses the potential of different financial models and gives recommendations, also based on BOOSTEE-CE pilot action outcomes.

The strategy will help partners and other stakeholders from partner countries to:

- Identify financing instruments (FI) that have never been used, assess its potential (based on legal framework, available capacities, market potential etc.) and propose measures for their implementation
- Assess opportunities and barriers to deploy financial instruments and models successfully used in other partner countries/regions and propose measures for their uptake
- Propose improvements in existing financial instruments and models to improve their usage

2. Key stakeholders and investment barriers in EE financing

This chapter deals with the identification of the key public and private actors responsible for the Energy Efficiency Financing Strategy, examination of barriers to investment of these actors and the ways to deal with barriers. This will result in the assessment of their knowledge and experience regarding financing models for energy efficiency upgrades in the **Chapter 4 - Assessment of the existing financing models and their deployment.**

2.1 Key stakeholders in energy efficiency financing and their roles

Firstly, the BOOSTEE-CE consortium tried to define key stakeholders and their roles in EE financing in order to be able to proceed with further steps like examination of barriers to investment of these actors, the ways to deal with barriers and their assessment of particular models of EE financing. When analysing and elaborating this part of the strategy, following questions were on stake:

- Who are the key stakeholders for energy efficiency strategy development and implementation in your area? What is their role?
- Who takes the legal responsibility?
- Can the legal responsibility be transferred to private companies?
- Is the ownership, maintenance and operation of EE projects always clearly defined?
- How do different stakeholders deal with potentially divided / shared responsibility in investment decisions?

In each country similar public and private stakeholder were identified, however, as the situation slightly differs from country to country and even from region to region, a brief analysis per each country/region follows. It may be interesting to compare the view from different perspectives of large and heavily populated regions on one side like for instance Emilia-Romagna in Italy, smaller NUTS3 regions like Zlín Region or Tolna County compared to small municipalities like for example Velenje in Slovenia or Judenburg in Austria on the other side.

Some other differences result also from slightly different legislation in each country or from the point of view of each particular subject compiling following subchapters. Especially the **Hungarian case** is described in a very precise as well as a comprehensive way which gives the reader a deep insight into the complexity of the issue.

2.1.1 Key stakeholders in energy efficiency financing in Poland

(Mazovia Energy Agency - Mazovia)

List of relevant stakeholders and their roles in Poland:

- **Private and public property managers (LGUs), owners** of the buildings with their infrastructure as well as of industry installations who see some benefits as well as necessities in implementing modernization of their property to lower energy consumption
- **Energy agencies**
- **Professional energy auditors**
- **Business Environment Institutions, financial institutions** providing money for modernization of energy generation and consumption economy
- **Energy Saving Company (ESCO)**
- **Fuel and energy suppliers**
- **Local government units**, which create energy efficiency policy as well as provide know-how supported by engineering and scientific institutions developing EE solutions in energy consumption (buildings and industry) and effective energy generation technology,
- **Legal advisors watch**
- **Inhabitants**

The role of stakeholders as seen in Poland is the definition of requirements as well as training arrangements and marketing to push it forward; creating visionary energy efficiency projects in their living and activity area of responsibility with support of proven engineering specialists to provide warranties for achieving project technical, financial and operational effectiveness targets as well as operational exploitation correctness by staff training; financial support for projects' engineering and completion with expected targets achievement, legal correctness of projects' execution.

Owners of buildings and local government units take legal responsibility; however, legal liability can be transferred to private companies in case of experienced PPP arrangements. Sometimes, ownership, maintenance and operation of EE projects are not always clearly defined, but the municipalities are able to clearly define the ownership, maintenance and operation of the EE projects, because they are managed by the relevant municipal companies. Stakeholders deal with responsibility for investment decisions due to advanced legal contracting as well as high-level project management, it requires advanced partners / legal and engineering specialists.

2.1.2 Key stakeholders in energy efficiency financing in the Czech Republic

(Energy Agency of the Zlín Region - Zlín Region)

In the case of the Czech Republic this issue is assessed from the regional perspective, from where it is easier to join together particular stakeholders from a larger area, to communicate with the national level and, at the same time to reach effectively even the smallest municipalities.

Relevant stakeholders in the financing energy efficiency on national level are mainly ministries and their institutions that participate in developing the national legislation in this topic as well as administrate financial support in energy efficiency. They are mainly:

- **Ministry of Environment** which is responsible for development and managing of the **OP Environment**, **National Programme Environment** and **New Green Savings Programme**.
- **State Environmental Fund of the CR** which is the intermediating body managing the operational phase of the OP Environment implementation, announces call for proposals, evaluates projects submitted, supervises project implementation and communicates with applicants on day-to day basis.
- **Ministry of Trade and Industry -** which is responsible for development and managment of the **Operational Programme Enterprise and Innovations for Competitiveness** and **EFEKT Programme**.
- **Ministry of Regional Development -** which is responsible for development and management of the **Integrated Regional Operational Programme (IROP)**.

On the regional and local level, the relevant stakeholders are:

- **Zlín Region** which is NUTS 2 region responsible for the development of the Energy Concept of the Zlín Region and of the Regional SEAP. It also intermediates a specific part of OP Environment priority axis 2 measures, namely the reduction of emissions from local energy heating sources. Particular organizations established by the Zlín Region like secondary schools, hospitals, social centers etc. send their requests for EE efficiency measures to be implemented in their building. Relevant departments of the Regional Office of the Zlín Region process these requests and incorporate them into middle-term and long-term investment plans which are regularly updated.
- **Municipalities –** there are over 300 municipalities in the Zlín Region. Most of them are just smaller municipalities with insufficient absorption capacitiy. Many times, they struggle with finding the way in EE financing and with financing at all. They need to operate many buildings like schools, cultural centers, kindergartens etc. and at the same time they face the risk of getting too much into debt. It is not sustainable for them to manage without an external support. Nowadays, OP Environment is prevailingly a way of financing EE for them.
- **Energy Agency of the Zlín Region** - EAZK was established by the Zlín Region as the executive tool for enforcement of national strategic documents into regional framework until the phase of incorporation of all national priorities into Zlín Region strategic documents and their implementation in land planning and building control such as Regional Programme of Landscape Development, Energy Action Plans etc. EAZK operates also as an advisor for particular departments of the Regional Office of the Zlín Region,

especially for those in charge of regional development. EAZK was primarily established as an implementing tool of the Zlín Region's energy policy. The agency operates also as an independent advisor for the public sector in the Zlín Region in the process of the development of energy plans and identification of suitable opportunities for investment, mainly in the field of RES, energy efficiency and low-energetic construction. EAZK has also a long-time experience in submitting and administration of projects approved within the OP Environment. This experience is based on very close and long-time cooperation with the more than 300 municipalities of the Zlín Region.

- **Energy auditors** are an important stakeholder group that can´t be omitted when implementing EE efficiency policy. When they work independently and separately, they cannot be aware of the complexity of the situation in the area they are suggesting their EE measures for. They tend to focus on isolated solutions instead, not taking into consideration that some other buildings in the neighborhood might face the same problem which they are solving separately. Here other complex and different solutions might bring better results because of synergy, economy of scale etc.
- **Environmental centres** are small advisory bodies who support the applicants locally. Their local experience is beneficial as a feedback to regional and national level.

2.1.3 Key stakeholders in energy efficiency financing in Slovenia

(E-zavod - Podravje Region)

In Slovenia the key stakeholders in energy efficiency financing are:

- **Municipalities**

In the Podravje region there are 41 municipalities, in the whole of Slovenia there are 212 municipalities. According to the Local Government Act, the municipality performs the following tasks regarding EE:

- planned spatial development, in accordance with the law, performs tasks in the field of environmental encroachments and construction of facilities and provides a public service, management of building land;
- concerns for the protection of air, soil, water resources, noise protection, collection and disposal of waste as well as other environmental protection activities;
- regulation and maintenance of water and energy communal facilities;

The legal responsibility can be partly transferred to private companies in the case of investments carried out with public private partnership. This is the case of municipalities' energy efficiency investments in public buildings.

- **Ministry for infrastructure**

The Ministry of Infrastructure manages, among others, tasks in the field of efficient use and renewable energy. Within the Ministry the Energy Directorate performs tasks relating to the efficient use of energy and to the provision of renewable sources of energy, energy supply, sources of energy and mining. Its key activities include:

- preparation and implementation of national energy policy;
- implementing measures to achieve energy and climate objectives also through measures for higher energy efficiency.

➢ **Association of Urban Municipalities of Slovenia -** The Association of Urban Municipalities of Slovenia (AUMS; *ZMOS – Združenje mestnih občin Slovenije*) is the only representative association of municipalities in Slovenia that exclusively represents the interests of 11 urban municipalities. They cover more than a third of the population and act as regional urban centres, with a high concentration of economic, social, governmental and other public services.

➢ **Eco Fund, Slovenian Environmental Public Fund -** Eco Fund is an independent legal entity of the Ministry of the Environment and Spatial Planning. Its main purpose is to promote development in the field of environmental protection. Eco Fund grants favorable loans and subsidies for various energy efficiency and renewable energy measures.

➢ **SID Bank (SID – Slovenska izvozna in razvojna banka, d.d., Ljubljana) - i**t is a promotional development and export bank, 100% owned by the Republic of Slovenia. With their banking and insurance services they promote sustainable development and improve the competitiveness of the Slovene economy.

2.1.4 Key stakeholders in energy efficiency financing in Italy

(Emilia-Romagna Region)

List of Italian key stakeholders in the field of energy efficiency and their roles from the regional perspective:

Public entities

Organisation-entity	Role-responsibility
➢ **Emilia-Romagna Region**	Regional policy - managing authority of EU funds
➢ **ANCI Emilia-Romagna - association of municipalities**	Local policy - local owners of public buildings
➢ **ACER - Emilia-Romagna social housing**	Management of residential real estate assets in public ownership
➢ **ART-ER - regional agency**	Services to the public and private sectors in support of sustainable growth
➢ **AESS - regional agency**	Energy services to the public and private sectors

➢ **ENEA - national agency for new technologies, energy and sustainable economic development**	Research, management and control of the correct application of national technical regulations
➢ **ARPAE - regional agency for prevention, environment and energy of Emilia-Romagna**	Supervision and control in activities that impact on the environment

Private entities

Organisation-entity	Role-responsibility
➢ **Unifidi Emilia-Romagna**	Financial services for businesses
➢ **ABI Italian banking association**	Private finance
➢ **CNA - national confederation of crafts and small and medium enterprises**	SME - energy consumers
➢ **Confindustria - association representing manufacturing and service companies**	Industries - energy consumers
➢ **ANCE - national association of builders**	Construction companies
➢ **Confservizi Emilia Romagna - regional association of companies and public and private entities**	Public services providers
➢ **BuildLab - laboratory of innovation and finance for sustainable building**	Support activities for investments in energy efficiency and sustainability in the construction sector
➢ **Clust-ER - association of research bodies and public and private companies**	Support activities for investments in energy efficiency and sustainability in the industrial sector
➢ **FederESCo - ESCo association**	Energy service provider companies
➢ **AssoEGE - association of energy management expert**	Energy managers and energy auditors
➢ **EPC facilitator**	Manager of the development and implementation process of an EPC contract, introduced with the GuarantEE EU project
➢ **CMVP - certified measurement and verification professional**	Design and implementation of energy performance measurement plans

2.1.5 Key stakeholders in energy efficiency financing in Hungary

(Tolna County)

For analyzing the possibilities and barriers of municipal energy investment financing in Hungary, especially in Tolna County, the following actors' roles and responsibilities must be taken into consideration:

- **Hungarian State Treasury**: Its role is unique in municipal investments, as public expenditures can be made only on the basis of authorization by law in Hungary. Therefore, the Treasury takes part in the evaluation of local municipalities' debt-generating transaction requests. The Hungarian State Treasury is a central budget agency with a separate operation and financial management. Its establishment was an important element during the process of modernization of the general government's financial system. It has an executive power and a national scope of competence, standing under the direction of the Minister for Finance concerning both the functional and the regulatory aspects. During the implementation of the budget, the Treasury is responsible for financing, money circulation, clearing of accounts, cash-, deficit- and state debt management, determined data supply as well as management and detailed registration of guarantees and loans extended by the state. Local municipalities are members of the treasury system, where real disbursements should only be carried out following the proof of the performance by invoice in the case of organizations outside the scope of the Treasury and private individuals. The money circulation is ensured through the Single Treasury Account, which is kept by the National Bank of Hungary, and the Treasury has an exclusive right of disposal over it. Besides, the Treasury must keep data records and provide information concerning budgetary appropriations, real expenses and public expenditures in a manner that it permits control over the real financial activity of the organizations belonging to the scope of the Treasury. ***Without the permission of the Treasury, local municipalities are not entitled to contract other entities for debt-financing (e.g. bank loans).***
- **Regional Government Office of the Tolna County:** Counties represent an intermediate territorial level between the settlements and the State. Their responsibilities are connected to strategic planning: counties are responsible for territorial development, rural development, spatial planning. Counties adopt the spatial plan, elaborate the NUTS3 level territorial development concept and prepare a territorial development programme. Counties also manage the Territorial and Settlement Development OP of Hungary, which supports regional, decentralized economic development and an increase in employment based on local resources. The programme allocates more than EUR 1 billion to integrated sustainable urban development actions in the framework of a dedicated priority. Its priority 3 supports the improvement of the energy efficiency of local government buildings. That means that the roles of the counties are inevitably important in preparing, evaluating and monitoring municipal energy efficiency and renewable energy projects. Concerning debt financing, the government office takes part in the evaluation of those local municipalities' debt-generating transaction requests, which are located in the geographical area of the county. Recently a new strategic document had to be elaborated by the Hungarian counties: the county level climate strategies. The Association of Climate-Friendly Municipalities was appointed by the State to elaborate the structures and content requirements of the climate strategies.
- **Association of Climate-Friendly Municipalities** - the association was formed in 2009 on the initiative of some proactive mayors and experts to mitigate the adverse effects of climate change. It supports its

members by regular and widespread information (open-access website, community site, publications), building a well-searchable knowledge base, developing a training programme and curriculum, methodological guide for climate strategies (published: 2017), providing a network of experts, developing local climate strategies, organization of educational, awareness-raising, and networking programmes among the various stakeholders. As the structure of climate strategies already had to be applied by county municipalities (NUTS3) and will have to be applied by local municipalities in the forthcoming years, their local energy strategy shaping role is unique.

- **Association of Cities with County Rights** - the association was formed on December 19, 1990 by 16 cities, in accordance with the provisions of the law on association. The aim of the association is the collective representation of the municipal rights of cities with county rights, the protection and enforcement of interests, the development of the operation of local governments, and the cooperation with national and international local government associations. In 2018, the association joined the Under2 Coalition, a global community of state and regional governments committed to ambitious climate action in line with the Paris Agreement. Governments in the coalition commit to keeping global temperature rises to well below 2°C with efforts to reach 1.5°C. As a member of the coalition, the Association encourages all Hungarian cities with county rights to ensure the necessary planning for the achievement of these goals, i.e. to elaborate or renew their SECAPs and get prepared for the development of settlement level climate strategies.
- **Ministry of Interior -** The Ministry is responsible for the surveillance of the operation of local municipalities, and it takes part in the evaluation of local municipalities' debt-generating transaction requests.
- **Ministry of Finance -** The State Secretariat responsible for public finances operates under the Ministry. The Ministry of Finance is involved in the evaluation of local municipalities' debt-generating transaction requests. Also, the Managing Authority of the Economic Development and Innovation Operational Programme operates under the Ministry.
- **Ministry for Innovation and Technology** - The Managing Authority of Hungary's Environmental and Energy Efficiency Operational Programme operates under the Ministry.
- **National Development Bank, commercial banks** - the banks take part in debt financing.
- **Energy Service Companies (ESCOs) -** ESCOs provide financial and technological support for municipal EE&RES developments. The details of the capital involvement are set in the energy performance contract.
- **Licensing authorities** - The authorities are involved in the permission procedures; hence they surveil the fulfilment of professional and legal requirements at new investments. They are also involved in the strategy shaping processes.
- **Technology providers -** Enterprises of various size, offering different products and services for the developments.

- **Local municipalities** Settlements – with usually the involvement of energy experts - define their local energy needs, as they possess the detailed information on their building stock, energy production and consumption units. The also represent the needs of the inhabitants.

Summary of the situation in Hungary

To sum it up from the financial point of view, the Hungarian State Treasury, Regional Government Office, Ministry of Interior are responsible for the surveillance of investment financing, while the banks and ESCOs take part in providing the necessary funds and technologies.

If we examine the process of strategy development, energy efficiency and renewable energy policies exist on national level. They are initiated by the ministries and associations responsible for sectoral and regional development issues: the development of the National Energy Strategy, Hungary's Renewable Energy Action Plan and Hungary's National Energy Efficiency Action Plan 2020 have been coordinated by the Ministry of National Development. At the Ministry the Deputy State Secretariat for Green Economy Development and Climate Policies was in charge of publishing these national level policy documents. Concerning the local level, SEAPs, SECAPs, Local Agenda 21 and other policy documents are initiated, coordinated and renewed by the local municipalities. On this level, the General Assembly initiates the elaboration and approves the content.

ESCOs, technology providers and any other entities have the possibility to take part in the strategic planning process via the public consultation phase of the announcement of new policies, but the definition of the main targets and tools falls out of the scope of their activities.

The question of legal responsibilities can be divided into 2 parts: fulfilling the strategic goals on policy level, and implementing the technological developments and achieving the planned savings or energy generation on technical level. Regarding national level policies, the fulfilment of the strategic targets is the responsibility of the State. As these strategies are usually issued to meet the requirements of relevant EU directives, the State is obliged to report the achievements to the European Commission. On the local level, the successful implementation of energy action plans is the responsibility of the municipality. However, no sanctions are put in place in case of non-fulfilment of any targets, as the development of SE(C)APs – most frequently used energy action plans on local level – are undertaken on voluntary basis by the settlements, without any legal enforcement from any national or EU institutions.

From technological and financial implementation point of view, the roles and responsibilities of the actors (financing parties, technology providers, municipalities) are governed by contracts, like the energy performance contract in case of the cooperation of municipalities and ESCOs. Also, as almost all municipal energy investments are financed by different calls of the Structural Funds' operational programmes, responsibilities and indicators are governed by the subsidy contracts and regularly audited by the programme management bodies.

The ownership, maintenance and operation of EE projects must always be clearly defined. Without such official agreements on responsibilities, project financing is not possible.

2.1.6 Key stakeholders in energy efficiency financing in Croatia

(Regional Energy Agency North - Koprivnica-Krizevci County)

Key stakeholders for energy efficiency strategy development in the City of Koprivnica and in its wider area (municipality level and Koprivnica-Krizevci County) are:

- **National and Regional authorities** - will better support local authorities in providing the suitable environment for energy efficiency measures implementation, especially in terms of financial support;
- **Local authorities** - will be able to build their capacity, experience and skills in energy efficiency strategy implementation and exploit synergies and economies of scale as a result of multi governance collaboration;
- **Financial institutions/funding organisations** – it is necessary to reach market actors, commercial banks, Funds and other businesses that can provide certain innovative financing packages, grants or loans for financing energy efficiency measures implementation;
- **Energy companies** - which work on observed area and have a legal obligation (according to Croatian Energy Efficiency Act) to annually reduce energy consumption. Such energy companies operate both regionally and on national level in Croatia and will be tackled to join efforts and assist end users to mitigate energy consumption and enhance energy efficiency.

The national government has the obligation to meet the EU's 2020/2030/2050 goals so some legal responsibilities had to be defined. According to Energy Performance Building Directive, on a national level, new public buildings have to meet nZEB requirements and cities (construction departments) are in charge of monitoring implementation. As already mentioned, energy companies also have the legal obligation (according to the Croatian Energy Efficiency Act) to annually reduce energy consumption.

2.1.7 Key stakeholders in energy efficiency financing in Austria

(Energieagentur Obersteiermark – Judenburg)

In the federal republic of Austria there are three legislative and administrational levels with different competences. The superordinate federal state ("Bund") is divided into nine federal provinces ("Bundesland"). The municipalities ("Gemeinde") are the smallest units. They are independent administrative bodies with a defined sphere of competence. The main decision body for all policies under municipal competence is the municipal council. The mayor is the elected head of the municipality, all laws and measures are implemented by the administrational units on behalf of the mayor. The municipality is also responsible for the zoning plan and can make regulations on urban development.

Key stakeholders for energy efficiency strategy development and implementation in the Judenburg area are thus the **Municipality of Judenburg**, the **ESCO Stadtwerke Judenburg AG** and **private investors and companies**. The federal state and the province are responsible for their office and school buildings, buildings and the state and federal roads.

The municipality is responsible for the maintenance of the main part of the public infrastructure: most roads, office buildings, public lighting, public housing, public transport. Assistance is often given by the Energy Agency Upper Styria.

The Municipality of Judenburg is 100% owner of the ESCO Stadtwerke Judenburg AG and has the seat in the supervisory board. The Stadtwerke are a major producer of renewable energy (hydro, PV, wind), the main electricity supplier and distribution company in Judenburg and by order of the municipality responsible for water supply, waste and wastewater. The second energy supplier (superior network) is the Energie Steiermark AG which also runs the natural gas network. The district heating network is maintained by Stadtwerke Judenburg and the Kelag company.

In addition, there are private investors who run smaller projects like a biogas plant.

The legal and financial responsibilities are clearly divided and lie with the different stakeholders.

2.2 Barriers to investment into energy efficiency and ways to cope with them

The BOOSTEE-CE consortium carried out a comprehensive research and questioning in their respective organisations and among their stakeholders on various barriers to investment into energy efficiency. Four major area of barriers were identified, they are namely:

- **Finance and economy barriers**
- **Policy barriers**
- **Barriers in awareness and experience in financing energy efficiency**
- **Barriers in implementation capacity and procedures**

All aforementioned areas were analysed by the BOOSTEE-CE consortium and ways how to cope with them were suggested as indicated in the following subchapters. Each subchapter involves major barriers identified in relevant areas with some suggestions how to face them, resolve them or cope with them. The following list for each category is quite comprehensive, however, not all barriers are relevant to all countries, regions or municipalities. On the other hand, to go through the complete lists of barriers and recommendations helps to get a clearer idea of how complex the process of energy efficiency financing is.

2.2.1 Finance and economy barriers

Specific barriers	Ways to cope with them
Lack of financing in the public sector / Lack of own capital at municipalities *For example, in Austria municipalities are controlled by the government of the province, if they have a negative balance, they need an agreement if they want to take loans. Even if funds are granted by the federal or provincial state, pre-financing and financing of the co-payment can be difficult.*	**Contracting and private public partnership models are a good option to avoid loans and additional debts** Services can be outsourced to external partners (e.g. public transport). *For instance, the province of Styria (Austria) may provide specific financial resources for the implementation of projects.* **Municipalities need to apply for tenders under the various Operational Programmes and other funds on national level** as suggested in the Chapter 3 of this document, which provide up to 100% contribution. **Financial support from the EU is provided in a great extend** as indicated in the EU funding part of the BOOSTEE-CE Transnational Methodological Framework

Lack of adequate financing models, especially for citizens Citizens mainly rely on national subsidies for implementation of EE measures but these are not often available due to various administrative, regulatory or other constraints or they are not available at all	**All relevant stakeholders need to be engaged** in order to find innovative and financially viable business models or financing schemes as suggested for example in the BOOSTEE-CE - Transnational Methodological Framework to boost the energy efficiency renovation market and implementation of EE measures.
Accumulation of public debts *For instance, in Hungary between 2011 and 2014 the government consolidated the total debt of Hungarian local governments accumulated during the 2002–2008 period. In order to avoid the generation of further debts the Government has announced the 2011 CXCIV Act and the 353/2011 (XII.30) Government Decree. The Decree has to be applied for debt-creating transactions of local municipalities, associations of local municipalities, regional development councils, non-governmental organizations that are owned by local municipalities in 100% and companies owned in 100% by these entities*	**The municipality has to be prepared by adequate financial justifications to get the approval of the relevant organisations.** *Following the Hungarian case, after the adoption of its annual financial regulation but not later than March 16, the municipality is obliged to send information on the planned transactions for the Directorate with territorial jurisdiction of the State Treasury via the treasury-operated electronic data supply system. The Directorate examines the ratio of payment obligations compared to the own revenues of the municipality and forwards the request to the Government Office with territorial jurisdiction until 31 March. The Government Office examines whether the planned development goal results in the creation of the capacities required to perform the tasks of the municipality, specified by law. Once the goal is checked, the office forwards the request to the responsible ministers. The Government decides on the approval of the request on the basis of the joint proposal of the above-mentioned bodies.*
Risk of long payback periods, especially for expensive thermal insulation which results in long payback periods.	**Possible investments should be ranked** according to their payback periods. Municipalities have to calculate – often with the involvement of experts – the specific energy saving values (electricity and heating) of their buildings and decide on the retrofitting of the building with the highest saving potentials. An initial idea of the payback period can be obtained with the **BOOSTEE-CE simplified EE financing calculator** *In Poland, for instance, BKG (bank) operates the Thermal Insulation and Renovation Fund which offers compensations in form of partial repayment of loans used for thermal insulation projects*

High project risks Capital markets are not used to invest in energy efficiency and are unable to accurately assign the price of risk which results also in the lack of finance, especially for SMEs and start-ups. Investments in efficiency are considered at a level of risk such as to require high levels of interest rates or high level of subsidized financing.	**To acknowledge the regulatory level** and spread the knowledge on the technical procedures and the certified and shared professional figures that can contribute to reduce and manage the risks
The financial leverage ratio, understood as debt to equity ratio, **is considered too high** which is a problem especially for SMEs	**Creation of innovative financial instruments** at the level of managing authority, capable of attracting private capital with the sharing and guarantee offered by public funds such as **Multyscope Regional Fund** of public financing in Italy, also **using tools such as crowdfunding and the EPC**
Energy poverty Socially endangered groups and low-income groups may have not enough funds, as a result, they may be reluctant to take advantage of any EE measures	**Introduction of new regulations regarding personal income tax exemptions** which enable tax deduction of expenses related to thermal insulation;
Relatively high costs of EE solutions based on the newest technology	**Use of proven but still efficient technology**
The priority of EE implementation on local and regional level highly depends on co-financing opportunities and available funds in municipal budgets.	**To implement larger EE projects smaller municipalities need to join forces** to bring together higher amount of co-financing. Smaller municipalities usually invest in smaller EE projects, but because of lack of staff and knowledge they need technical assistance in preparing applications for financing those projects.

2.2.2 Policy barriers

Specific barriers	Ways to cope with them
Although municipalities develop long term financial plans, the **municipal budget system allows effective planning for one year only** and makes it complicated to take into consideration financing of perennial projects as sometimes **other political targets are more important than energy efficiency** and the scarce financial resources are spent on other projects.	**A clear commitment of the municipality** is helpful to foster energy projects. *As an example, Judenburg in Austria has formulated clear targets in the SEAP and is also member of the European Energy Awards programme (e5* in Austria) and the Climate Alliance.* **) e5 is corresponding to the EEA (European Energy Award). An interdisciplinary team from different departments, politics, ESCO, energy agency works together on energy, climate and environment topics.*
General national policy about energy efficiency is subordinated to the achievement of the EU's EE goals but in some parts it **seems sometimes slightly unrealistic** if we take into account the level of economic development of the country as well as the level of technological development. EE is priority only to the extent that it meets the EU's objectives. *For Poland, for instance, the provisions of the European Union's energy and climate policy oblige Poland to reach massive energy consumption reductions in a short time. The Polish energy policy should therefore concentrate on the sources that are fast to do develop in order to cover the gap as quickly as possible*	**Energy efficiency strategies should become more realistic.** It means that all aspects of development that can have an impact on the implementation of energy efficiency measures, especially on the part concerning finance, should be considered and adjusted to the real needs of the end customers
Recommendations of national level policies are not binding for local actors. The national level policies define the main directions for energy developments: the share and types of exploitable renewable sources, energy efficiency measures, awareness raising activities. However, their recommendations are not binding for local actors.	**Commitments should be made on local level in accordance with the requirements set in the national level strategies.** Integrated Urban Development Strategies, Environmental Strategies and local sectoral action plans such as Sustainable Urban Mobility Plans, Sustainable Energy and Climate Action Plans, Local Agenda 21 have to define in detail the targets to be reached, the responsible actors, timeframe, financial and technological tools and the monitoring of the results. The elaboration of these documents should be motivated by the government:

	In Hungary, for instance the Territorial and Settlement Development OP provided financial support for the elaboration of SE(C)APs, the amount of subsidy was defined on the basis of the size of the settlement. *Moreover, the settlement level climate strategies – which will be elaborated from 2020 – will enforce the municipalities in improving their energy performance.*
Incoherent financial regulatory frameworks Framework of regulations exist particularly because of the transposition of the European directives, however, specific application norms are not completed or updated. There is not any **certainty** about the **timing of availability of financial instruments.**	**An adjustment to financial regulatory frameworks to better support capital market innovation** To ensure that risk assessment and related capital requirements for long-term energy efficiency investments correctly reflect their risks and develop market potential for more innovative sources of financing for energy efficiency
Risk assertiveness of the local authorities If an investment fails to achieve its goals there is always the risk that after elections the new authorities will accuse the former ones of mismanagement	**Authorities have already taken action including subsidies, preferred loans and tax deductions of expenses** related to this kind of investments.
Lack of coherent energy plans in border areas	**Mutual use of the potential of a neighbouring country** and communication between them, making use of, for example, **EU** **cross border cooperation programmes**
Control of the implementation of investments in EE is carried out mainly in terms of meeting the requirements of public procurement regulations, and not the actual quality of investments	**Creating the possibility for public authorities to choose the best contractor for the investment, not the cheapest.** Checking if the selected contractor is the most optimal option, as well as the quality of the investment, and not only the contractor selection procedure itself.
Prioritizing other types of investments (like roads and infrastructure), implementation of "soft-projects" etc. In some cases, also the priority of EE implementation on local and regional level depends on co-financing opportunities and available funds in municipal budgets.	**Defining a set of specific indicators on the national level**, to be met by the regions / municipalities in a specified period

2.2.3 Barriers in awareness and experience on financing energy efficiency

Specific barriers	Ways to cope with them
Low awareness of foreign and creative financial supports Municipal development plan implementations mostly focus on the calls of the country's regional development OP's Low Carbon priority. Municipalities are forced to apply for these OPs as they are under-financed and do not possess reserves to provide own contributions for the investments.	**Municipalities are advised to work with consultants** to increase their awareness of both **the importance of setting up financial portfolios** for their developments and **of the project development assistance on EU level** SEAPs, SECAPs and climate strategies might mention **all potential EU sources** and **market tools** (debt financing, community financing, etc.) to provide the possibility for the decision makers to apply for the best fitting financial solutions for their investments, **consultants experienced in EU financing and creative financing schemes** such as **crowdfunding, revolving funds, etc.**
Small measures to improve EE may be implemented continuously and financed from the current budget whenever money is available and not in the course of a separate project. This makes it difficult to obtain funding from outside sources.	***In Austria, for instance, specific financial resources from the province are received for important projects.*** ***Cooperative models with the ESCO*** *Stadtwerke Judenburg, 100 % from the municipality owned* ***Citizens' participation for financing a PV-system*** *(sale-and-lease-back model), similar to* ***citizen cooperatives***
Awareness of potential energy saving and alternative ways of financing exists but there is not much application of alternative ways of financing in practice due to skepticism and insufficient knowledge about alternative funding options. *Koprivnica in Croatia has a great experience with EU funding of smart metering, electric cars and buses, energy refurbishments etc. but they lack solutions that involve alternative funding sources.*	**People dealing with finances in a municipality should be adequately educated and trained on how to use and which type of alternative funding option to use depending on the particular situation** and also need to practice life-long- learning and professional development in order to keep up to date with new possibilities of financing.
Smaller local communities, companies as well as citizens are not able to carry out the application process as the application procedure is often very complicated and discourages them from applying for co-financing.	**Technical assistance in preparing applications from the side of regions, provinces, energy agencies** etc., and continual awareness raising campaigns from their side.

2.2.4 Barriers in implementation capacity and procedures

Specific barriers	Ways to cope with them
Responsibilities for financing, planning and EE are spread across different departments, therefore the exchange of information about planned financings and potential funding may suffer. Political sensitivities, bureaucracy and poor information sharing impede implementation.	**Cooperative planning and meetings of the cross-departmental teams** in order to facilitate and improve planning and implementation, provided that all important actors take part. *As an example, in Judenburg, Austria, the "e5" team (e5 corresponds to the European Energy Award) is an interdisciplinary team from different departments, politics, ESCO, energy agency which works together on energy, climate and environment topics.*
Municipalities do not have the financial capacities to employ energy referents, internal experts who are able to define the energy consumption patterns, detect lavish consumptions, leakages and define the investment priorities as a result, smaller municipalities usually invest only in limited, low scale EE projects eventually	**Relevant national laws and government decrees should specify the tasks** and methods of the energy advisors' network and auditors on how they should implement behavioral change in public buildings. **The employment of energy managers at municipalities and other public institutions should be supported** by relevant operational programmes among the eligible activities of the submitted project applications. **To promote at regional level the union of several small projects able to attract investors,** and provide regional agencies that already exist for the technical support necessary for project implementation
Municipalities fall under the regulation of the Law on Public Procurement. The preparation, launching and evaluation of a procurement requires special knowledge, which is not available at smaller settlements.	**Special programmes like ELENA can finance also the preparation and implementation of public procurement processes.** Municipalities have to be informed and motivated to apply for these programmes.

3. Existing funds and assistance in CE countries on national level

While the Transnational methodological framework for a roadmap development (D.T4.2.1) is dealing in a detailed way with intermediaries and funding sources provided by the EU as well as with a detailed description of self-financing and alternative schemes, this section is targeted directly at the specific support for EE financing by particular countries.

3.1 Poland

3.1.1 Funding leveraged by ESIF in Poland

EU funds from the Operational Programme Infrastructure and Environment 2014-2020 aimed at improving energy efficiency include the following measures:[3]

1.2 Promoting energy efficiency and the use of renewable energy sources in enterprises

1.3. Supporting energy efficiency in buildings (utility buildings and housing sector)

1.5 Effective heat and cold distribution

1.6. Promoting the use of high-efficiency cogeneration of heat and electricity based on the demand for useful heat (heating and cooling networks, sources of high-efficiency cogeneration)

Financing for energy efficiency is also provided by the Regional Operational Programme of the Lower Silesian Voivodeship 2014-2020. It has dedicated to such investments the priority axis 3 Low-emission economy and especially the sub-axes of 3.2 Energy efficiency in SMEs and 3.3 Energy efficiency in public buildings and the housing sector.

The Mazovia local government with support of MAE has been operating regional financing programme to support the modernisation of energy generation installations in order to improve Energy Efficiency in the Mazovia Region (RPO WM EE, activity 4.2).

Total value of the EUR allocated for the period of 2014 – 2020 amounts for 104 541 043 EUR, in PLN it amounts for 452 002 106. Total value of projects to be realised amounts for 618 652 325 PLN.

In 2019 the value of works performed amounts for 91,51%, so it is highly probable the works will be completed.

Results confirmed so far:

- Additional capacity to generate energy from renewable sources - 3.89 MW
- Number of energy-modernized buildings – 151
- Annual primary energy consumption reduction in public buildings - 32 094 032,66 kWh / year

Mazovia Energy Agency managed the JESSICA Programme till 2018 in cooperation with the Polish BGK bank. FROM managed PPP modernisation programmes financed by the low cost revolving investment programme Jessica. Five programmes were selected with an investment value of 13.4 mln PLN and completed successfully. Administration costs of the programme amounted to 352.122,16 PLN.

3.1.2 National Funding in Poland

One of the national institutions financing energy efficiency is the Environmental Protection and Water Management Fund (EPWMF), which is the main source of financing pro-ecological investments in Poland. Its offer includes both domestic and foreign funds (including EU funds). Funds dedicated to activities related to improving energy efficiency are part of programmes dedicated to protecting the atmosphere, including improving air quality and cross-domain.

The National Fund conducts independent financial management, acting on the basis of the Environmental Protection Act and in accordance with the EU principle "the polluter pays." It derives revenues mainly from fees and penalties for using the environment, exploitation and concession fees, energy sector fees, resulting fees from the Act on the recycling of end-of-life vehicles and from sale of assigned greenhouse gas emission units. The National Fund has a rich financial offer tailored to the expectations of a wide range of beneficiaries: local governments, enterprises, public entities, social organizations and individuals.[2]

3.1.3 Overview of programmes supporting energy efficiency in Poland

Programme Name	Period of Recruitment	Total Budget	Managing Authority
„My electricity“	2019 - 2025	PLN 1 billion	Environmental Protection and Water Management Fund http://nfosigw.gov.pl/moj-prad/
Co-financing on the general principles of EPWMF in Wrocław	continuous recruitment	-	Environmental Protection and Water Management Fund https://wfosigw.wroclaw.pl/zloz-wniosek/oa-ochrona-atmosfery/w_62,informacje
Partial repayments of loan capital at Environmental Protection Bank S.A.	Continuous recruitment at the branches of Bank Ochrony Środowisk S.A.	-	Environmental Protection and Water Management Fund and Bank Ochrony Środowiska S.A. https://wfosigw.wroclaw.pl/zloz-wniosek/czesciowe-splaty-kapitalu-kredytow-w-bos/w_223,informacje

Priority Programme for Reducing Low Emissions in the Lower Silesian Voivodship - Edition II	continuous recruitment	-	Environmental Protection and Water Management Fund https://wfosigw.wroclaw.pl/zloz-wniosek/wymiana-piecow-ii/w_426,cel-programu
Poviat Heating	continuous recruitment to 2025	-	Environmental Protection and Water Management Fund http://www.nfosigw.gov.pl/oferta-finansowania/srodki-krajowe/programy-priorytetowe/cieplownictwo-powiatowe--pilotaz/nabor-2019-cieplownictwo-powiatowe--pilotaz/
Fund for Thermo-modernization and Renovations	continuous recruitment	9,7 mln PLN	BGK Bank https://www.bgk.pl/samorzady/fundusze-i-programy/fundusz-termomodernizacji-i-remontow/
RPO WM – Regional Operational Programme 4.2 EE	2014-2020	618 652 325	Regional Government 91,51%
Jessica WM	2017	13 400 000	MAE 100,00%
Funding WFOŚiGW	continuous recruitment		WFOŚiGW – Regional Fund for Environmental Protection and Water Management http://wfosigw.pl/oferta-finansowania/programy/programy-2016/jst/#
"Czyste Powietrze" Clean Air Programme	2018-2029	103 mld PLN	Regional Fund for Environmental Protection and Water Management
Funding NFOŚiGW	continuous recruitment		NFOŚiGW – National Fund for Environmental Protection and Water Management http://nfosigw.gov.pl/oferta-finansowania/srodki-krajowe/programy-priorytetowe/

Norwegian funds	2014-2021	809,3 mln EUR	Ministry of the Environment and the National Fund for Environmental Protection and Water Management http://www.nfosigw.gov.pl/oferta-finansowania/srodki-norweskie/perspektywa-2014-2021/
POIŚ – Programme for Infrastructure and Environment Protection 2014-2020	2019	770 mln PLN	NFOŚiGW – National Fund for Environmental Protection and Water Management http://poiis.nfosigw.gov.pl/
INTERREG Lithuania – Poland 2014–2020	2019	70 769 277 EUR	Joint Secretariat http://lietuva-polska.eu/pl/interreg.html
INTERREG V A Brandenburg – Poland 2014-2020	2019	1.456.000	Joint Secretariat https://interregva-bb-pl.eu/pl/

3.2 Czech Republic

3.2.1 Funding leveraged by ESIF in the Czech Republic

Operational Programme Environment 2014-2020

The 2014-2020 Operational Programme Environment (OPE) has been built on its predecessor, 2007-2013 OPE. 2.506 billion EUR are ready from the Cohesion Fund and the European Regional Development Fund and have been earmarked for applicants.

The Operational Programme aims to protect and ensure the quality of the living environment of the Czech population, promoting the efficient use of resources, eliminating the negative impacts of human activities on the environment and climate change mitigation.

The Priority Axis 5 focuses on energy savings like building refurbishments, change of the heat source, renewable energy sources, better indoor climate and finally buildings with low energy consumption (lower than 15 kWh/m2.a).

The Priority Axis 5 allocated 495 636 080 EUR for the financing the energy savings.

The Managing Authority is the Ministry of Environment, the intermediary body the State Environmental Fund of the CR.

Integrated Regional Operational Programme

The Integrated Regional Operational Programme (IROP) 2014-20 was established by the Ministry of Regional Development in line with the Czech Republic's Regional Development Strategy for 2014-20.

IROP aims to achieve balanced territorial development, improve infrastructure, improve public services and public administration, and ensure sustainable development in municipalities, cities and regions. The aim of IROP is to strengthen the regional competitiveness and quality of life of all Czech citizens. The IROP financial allocation is 5.4 billion EUR. The support is directed to all regions of the Czech Republic except the capital city of Prague.

The IROP includes a component on energy efficiency and smart energy management for public and residential multifamily buildings. The aim is to reduce energy consumption by improving thermal performance of buildings, replacement heating and hot water equipment, and trigger the transition to low-carbon energy sources. The total budget allocated is EUR 625.2 million [CZK 16.9 billion] (for all components including energy efficiency). The government expects to reach 7.5 PJ in total final energy consumption savings

Operational Programme Enterprise and Innovations for Competitiveness 2014-2020

Operational Programme Enterprise and Innovations for Competitiveness (OPEIC) 2014 – 2020 was established by the Ministry of industry and trade. The financial support is set on 4.8 billion EUR. The priority axis 3 focuses on the energy effectivity and 1.3 billion were allocated in 2013.

OPEIC priority axis 3 aims at renewable energy sources, smart grids, energy savings, low carbon technologies, energy effectivity and local district heating.

3.2.2 National Funding in the Czech Republic

National Programme Environment

The National Programme Environment supports projects and activities contributing to environmental protection in the Czech Republic. The Programme is designed as a complement to other grant titles, especially to the Operational Programme Environment and the New Green Savings Programme.

The aim of the programme is to support projects that focus on the efficient and gentle use of natural resources, remedying the negative impacts of human activities on the environment, mitigating and adapting to the impacts of climate change, and effective prevention through environmental education, education and awareness.

Calls are announced continuously and the amount of money for each call is approximately 1-10 mil. EUR.

New Green Savings Programme

The New Green Savings Programme of the Ministry of the Environment is administered by the State Environmental Fund of the Czech Republic and is one of the most effective programmes in the Czech Republic focused on energy savings in family houses and apartment buildings.

It supports the reduction of the energy intensity of residential buildings (complex or partial thermal insulation), construction of houses with very low energy intensity, environmentally friendly and efficient use of energy sources and renewable sources of energy (RES).

Depending on the real energy savings, you can save up to 50% of the total eligible expenses. Approximately 0.8 billion EUR were allocated for the savings in houses.

EFEKT 2017-2021

EFEKT supports municipalities to increase energy efficiency with the reconstruction of public lights, reconstruction of heat sources, energy savings by EPC and all types of energy consultancy and preparation of energy strategies.

EFEKT focuses on the implementation of energy-saving measures, on increasing the efficiency of energy use and reducing energy intensity. EFEKT announces the Ministry of Industry and Trade with the intention to participate in the implementation of the State Energy Policy. 30 mil. EUR were allocated for this programme.

The EFEKT programme is a complementary programme to the operational and national energy programmes to increase energy savings.

Technology Agency of the Czech Republic – Theta

The Technology Agency of the Czech Republic is an organizational unit of the state that was founded in 2009 for the support of research, experimental development and innovation. The Technology Agency of the Czech Republic simplifies the state support of applied research and experimental development which has been fragmented and implemented by many bodies before the reform. One of the programmes is called THETA and focuses on the modernization of the energy sector, including public interest research and energy strategies. Already two calls were successfully carried out and at present the third call is in preparation. For each call there is an allocated budget of approximately 30 mil. EUR.

3.2.3 Overview of programmes supporting energy efficiency in the Czech Republic

Programme Name	Period of Recruitment	Total Budget	Managing Authority
OP Environment 2014-2020	2014-2020	2.506 billion EUR	Ministry of Environment https://www.opzp.cz/
IROP 2014-2020	2014-2020	5.4 billion EUR	Ministry of Regional Development http://www.irop.mmr.cz/cs/
OPEIC 2014-2020	2014-2020	4.8 billion EUR	Ministry of Industry and Trade, https://www.mpo.cz/cz/podnikani/dotace-a-podpora-podnikani/oppik-2014-2020/
National Programme Environment	2018-2020	0.3 billion EUR	Ministry of Environment https://www.narodniprogramzp.cz/
New Green Savings Programme	2015-2021	1.1 billion EUR	Ministry of Environment https://www.novazelenausporam.cz/
EFEKT 2017-2021	2017-2021	30 mil. EUR	Ministry of industry and trade https://www.mpo-efekt.cz/cz/programy-podpory/54039
Technology Agency of the Czech Republic – Theta	2018-2025	160 mil. EUR	Technology Agency of the Czech Republic – Theta https://www.tacr.cz/program/program-theta/

3.3 Slovenia

3.3.1 Funding leveraged by ESIF in Slovenia

The following programmes on EE are co-financed by EU funds on national level in Slovenia:

EKO Fund (Slovenian Environmental Public Fund)

EKO Fund is an independent legal entity within the Ministry of the Environment and Spatial Planning. Eco Fund allocates loan or grant financing programmes:

- **Loans to legal entities** (municipalities and/or providers of public utility services, enterprises and other legal entities) and sole traders for investments in environmental infrastructure, environmentally sound technologies and products, energy efficiency, energy saving investments, and use of renewable energy sources.
- **Loans to individuals** (households) for conversion from fossil fuels to renewable energy sources, energy saving investments, investments in water consumption reduction, connections to sewage system, small waste water treatment plants, replacement of asbestos roofs.
- **Grants to individuals** (households) for investments in electric cars and for investments in residential buildings (energy efficiency and use of renewable energy sources).
- **Grants to legal** entities (municipalities and/or providers of public utility services, enterprises and other legal entities) for investments in electric cars and buses for public transport on compressed natural gas or biogas.
- **Grants to municipalities** for investments in buildings where public education takes place (schools, kindergartens, libraries etc.), newly constructed as well as low energy and passive buildings or renovated in passive standard.

In the last 10 years EKO Fund has co-financed nearly 110,000 EUR investments in energy efficiency with approximately EUR 260 million in grants and provided around EUR 280 million in loans for over 10,000 environmental investments. The effect of all these investments is to reduce CO_2 emissions by almost 320,000 tonnes and to save 1,380 GWh of energy.

Association of Urban Municipalities of Slovenia

AUMS provides grants in the form of soft loans, primarily for revenue-generating projects. The projects must be designed in accordance with the urban development goals and priority areas of investment as defined by the Slovenian municipalities in their Sustainable Urban Strategies (TUS).

The loan can be used to finance the implementation of projects for the renovation or new construction of apartments and other projects aimed at the implementation of physical regeneration interventions in urban areas that are in accordance with the objectives of the TUS of eleven urban municipalities.

SID Bank (SID – Slovenska izvozna in razvojna banka, d.d., Ljubljana)

It is a promotional development and export bank, 100% owned by the Republic of Slovenia. With their banking and insurance services they promote sustainable development and improve the competitiveness of the Slovene economy. The fund is intended for the use of European cohesion funds.

- They offer municipalities financing for comprehensive energy renovation of public buildings.
- SID Bank issued a green bond to financing green projects and models of the circular economy.

SID Bank has issued a green bond with a maturity of five years in the closed circle of investors, in the nominal amount of EUR 75 million. This is the first green bond of this bank.

3.3.2 National Funding in Slovenia

Other programmes, tools and support on national level for EE in Slovenia:

Model for contracting energy savings

The Energy Efficiency Directive (2012/27 / EU), in point (c) of Article 18 (1), provides that Member States shall promote the market for energy services and access for this sector to small and medium-sized enterprises (SMEs) by publishing and regularly updating the list of available energy service providers.

The Ministry which is responsible for energy publishes a list of energy service providers that already provide energy contracting services according to the model of contractual provision of energy savings (updated November 2018):

- Petrol d.d. Bled
- Resalta d.o.o. Ljubljana
- Stin d.o.o. Dravograd
- Tames d.o.o. Ptuj
- Plistor d.o.o. Ptuj
- Interenergo d.o.o. Ljubljana

3.3.3 Overview of programmes supporting energy efficiency in Slovenia

Programme name	Period of Recruitment	Total Budget	Managing Authority
Operational Programme for the implementation of the European Cohesion Policy 2014-2020	2015 - 2023	306.600.000 EUR - CF 44.000.000 EUR - EFRD	• Ministry for infrastructure http://www.mzi.gov.si/ • The Ministry of Economic Development and Technology http://www.mgrt.gov.si

3.4 Italy

3.4.1 Funding leveraged by ESIF in Italy (Emilia-Romagna)

Emilia-Romagna Energy Fund Energy Fund - Multyscope Regional Fund of public financing

The Multiscope Regional Fund of public financing was set up with the Regional Act. n.791/2016 and 1537/2016.

It is a Financial Instrument, according to the previous art. 37 of the EU Reg. n.1303/2013, set up with public resources on the ROP ERDF of ERR 2014 – 2020 and in particular:

- Axis 3 - Competitiveness and attractiveness of the production system;
  - 3.5.1 Starter Fund
- Axis 4 - Promotion of low carbon economy in the territories and the production system.
  - 4.2.1 Energy Fund

The Fund is a revolving fund of soft loan financing, privately funded for the purpose of providing loans at a reduced rate.

Financial capacity

The Fund consists of a total initial public budget of about € 47,000,000.00 on the ROP ERDF of ERR for 2014 -2020 programming period divided into two sub-funds:

- Starter Fund of about € 11,000,000
- Energy Fund of about € 36,000,000

Beneficiaries

SMEs and large companies registered in the Register of Companies operating ONLY in the sections of the economic activity (ISTAT ATECO 2007 - B, C, D, E, F, G, H, I, J, L, M, N, R, S) with local units in which the investment project is implemented are located in Emilia-Romagna Region active at the time of submission of the application provided they are not "Undertaking in difficulty" complying with the European Guidelines on State aid for rescuing and restructuring non-financial firms in difficulty (2014 / C 249/01)

The instrument

The Fund provides new unsecured-loans at reduced rates with mixed provision resulting partly from the public share (70%) and partly from the private share (30%) for each admissible project.

- Every single funding covers 100% of the project
- The amount of funding must be between a min. of € 25,000 and a max. of € 500,000
- The duration of the amortization period is between a min. of 36 months and a max. of 96 months (including any pre-amortization period of up to 12 months).

The facilitation is determined by:

- an interest rate equal to 0 on the part of the public share of the Fund
- a rate on the private portion resulting from the spread on the EURIBOR 6

Eligible initiatives

- Interventions addressed to improve energy efficiency and to reduce gas emissions causing climate change
- Interventions to produce energy from renewable sources, favouring those in self-consumption, as well as high efficiency cogeneration plants, complying with the EU Directive 2012/27 (EU Parliament and Council)

Eligible costs

a) Works on buildings: expansion and / or restructuring, works functional to the project

b) Purchase and installation, machine adjustments, plants, equipment, hardware

c) Acquisition of software and licenses

d) Technical and targeted consultancy services for the investment project

e) Costs for preparing an energy audit and / or project development design to carry out the intervention submitted in the application

Expenditures must be submitted later than the date of submission of the application, except for preparation costs of technical documents (listed in "e"), which may be dated later than 01/06/2014.

Non repayable grants

The company may, at the time of submitting the application, require a non-repayable grant to be charged on technical costs such as energy audit and / or project, which are necessary for the submission of the investment project.

- This contribution, which covers up to a maximum of 100% of the aforementioned expenditure, taking into account the chosen aid scheme and the ceiling on the same amount of expenditure, will still be eligible for a maximum of 12.5% of the public funding admitted (up to 8.75% of the funding).
- In the grant communication, the manager will indicate the amount of the actually disbursed non-repayable grant, specifying the modalities and the timing for the delivery of it.
- The reimbursement of the expenses will be paid only after the final project finalization, after its verification. In the event of a difference between the intervention granted and the actual intervention, the deferred grant will be remodelled in order to respect the maximum permissible percentages.

Documents to submit for the application phase

- Pre-Banking Resolution
- Budget Estimates
- State aid statement
- Energy audit or project
- If available, the last two full balance sheets

Grant benefit and aid regime

The public share of funding, allocated at zero rate and the non-repayable grant create a public benefit for the beneficiary which will be granted on the basis of the choice made by the requesting party and in accordance with the regulatory constraints under the provisions of the “de minimis” regime according to the EU Regulation 1407/2013.

Preparation of the energy intervention

At the request of the chosen financial aid, an Energy audit will have to be provided, stamped and signed by a qualified technician, and drawn up in accordance with UNI CEI EN 16247 - (parts 1 a 4).

- Definition of ENERGY AUDIT: "A systematic procedure aimed at obtaining an adequate knowledge of the energy consumption profile of a building or group of buildings, one industrial or commercial activity or plant or of public or private services, to identify and quantify cost-effective energy saving opportunities and report the results “
- Where the Energy audit procedure is not applicable, it will be necessary to attach to the request of the aid selected the project of the intervention, stamped and signed by qualified technician, which can be:
- A Feasibility Study / Preliminary Project / Final Project / Executive Project which shall, however, consist of the following elements:
  a) Technical report
  b) Graphic documents
  c) Analysis of project cash flows, where relevant

3.4.2 National Funding in Italy

National Energy Efficiency Fund

The National Energy Efficiency Fund, managed by Invitalia, envisaged by Legislative Decree n. 102 of 4 July 2014 for the implementation of the EU directive on energy efficiency, is aimed at supporting the implementation of energy efficiency measures implemented by companies, ESCOs and public administrations on buildings, plants and production processes and integrates the dedicated incentive tools to achieve national energy efficiency targets. It is aimed at:

- enterprises and ESCO in single form or in aggregate / associated form
- public administrations in single form or in aggregate / associated form

What it finances:

- reduction of consumption in industrial processes
- district heating and district cooling networks and systems
- efficiency improvement of public services and infrastructures
- energy upgrading of buildings

Financial allocation: 310.000.000 €, of which:

- 70% for subsidized loans (20% of which reserved for public administrations)
- 30% for guarantees (30% of which reserved for district heating networks)

Form of benefits:

- companies and ESCO:
  - guarantee on financing transactions up to 80% of the eligible costs. Guaranteed amount € 150.000 - € 2.500.000. Maximum duration 15 years
  - fixed rate mortgage 0.25%, max 70% eligible costs, for amounts between € 250,000 and € 4.000.000. Maximum duration 10 years
- public administrations:
  - fixed rate mortgage 0.25%, max 60% eligible costs and up to 80% for public infrastructure including public lighting for amounts between € 150.000 and € 2.000.000. Maximum duration 15 years.

Companies must guarantee the financial coverage of the investment (at least 15% with own means) and aggregate or associated companies can request the facilities in the same way: only guarantee, only financing or guarantee and financing.

Advisory costs are allowed up to 10% of the total eligible costs.

Public administrations must guarantee the financial coverage of the investment not covered by the facilities

3.4.3 Overview of programmes supporting energy efficiency in Italy (Emilia-Romagna)

Programme name	Period of Recruitment	Total Budget	Managing Authority	More information (link)
Emilia-Romagna Energy Fund	2014-2020	47.000.000	Emilia-Romagna Region	http://www.fondoenergia.unifidi.eu/
National Energy Efficiency Fund	from 20/05/2019	310.000.000	Invitalia	https://www.invitalia.it/cosa-facciamo/rafforziamo-le-imprese/fnee

3.5 Hungary

3.5.1 Funding leveraged by ESIF in Hungary

For Tolna County, three operational programmes are available to finance energy investments:

Territorial and Settlement Development Operational Programme

(different elements of energy investments could be financed at municipalities from TSDOP):

Priority 3. Conversion to low carbon emission economy especially in urban areas

Measure 2. Energetic refurbishments of municipality owned buildings, institutions and use of renewable energy sources as parts of those

Sub-measures: 321, 322.

The total available amount of the grant for 2014-2020 was 3,970,875,055.00 € (Total EU contribution from ERDF and ESF: 3,389,963,001.00 €)

Maximum rate of co-financing is 100% of eligible costs, the maximum grant requested varies by Hungarian counties.

Eligible activities of the projects are energy efficiency investments of municipality buildings and deployment of decentralised solutions of energy generation based on renewable energy sources and solutions of effectively operating the municipality buildings (heat pumps, solar panels, photovoltaic panels, upgrading of lightning infrastructure, ventilation of buildings, doors and windows, etc.), with related planning, project management and public procurement activities.

The evaluation criteria consider:

1) eligibility of the applicant,

2) amount of grant requested,
3) eligibility of planned activities,
4) time plan of the planned investment,
5) coherence of the proposal,

Proposals can be submitted in defined submission periods (defined in calls for proposals).

Environment and Energy Efficiency Operational Programme

(elements of smarts grids could be financed at state owned and public authorities from EEEOP)

Priority 5. Increasing energy efficiency, use of renewable energy sources (co-financed by Cohesion Fund)

Measure 2. Increasing energy efficiency and increasing use of renewable energy resources

Sub-measure 2. Energy efficiency refurbishment of buildings coupled with using renewable energy resources

Sub-measure 4. Programmes for raising awareness

The total available amount of grant for 2014-2020 was 3,784,832,361.00 € (Total EU contribution from Cohesion Fund and ERDF: 3,217,105,883.00 €). Maximum rate of co-financing: 100% of eligible costs, maximum grant requested: 1.000.000 HUF (3.225.806 EUR).

Eligible items are energy efficiency investments of public buildings, with related planning, project management and public procurement activities.

The relevant project indicators are:

1) further renewable energy generating capacity established,
2) amount of energy coming from renewable sources generated,
3) decrease in the emission of greenhouse gases,
4) decrease in the primary energy consumption of public buildings,
5) decrease in the use of primer energy consumption as a result of energy efficiency investments

The evaluation criteria are focusing on:

1) eligibility of the applicant,
2) amount of grant requested,
3) eligibility of planned activities,
4) time plan of the planned investment,
5) coherence of the proposal,

Proposals can be submitted in defined submission periods (defined in calls for proposals).

Economic Development and Innovation Operational Programme

Some elements of energy investments could be financed at small and medium enterprises from EDIOP, therefore this source is only a complementary option in case if the applicant is an SME.

3.5.2 National Funding in Hungary

In general, local governments in Hungary do not launch financing programmes due to the lack of their financial – and often also human – capacities. However, there are some exemptions mainly at municipalities with a higher income level, that is a result of the local industrial tax of larger local companies with seats in the settlement.

The Future Energy Regional Development Foundation (JETA) at Paks is a good example from Tolna County, which is supported by MVM Group, the state-owned dominant electricity wholesale trader in Hungary. MVM operates Hungary's only nuclear power plant (2000 MW installed capacity) at Paks. The power plant has been engaged in a broader range of environmental support activities for decades. This includes municipal and regional development, as well as assisting the work of various information or multi-purpose municipal associations, as well as health, education, cultural, ecclesiastical and sports support, and NGOs.

The affected geographical area consists of 47 settlements comprising Kalocsa, Paks and Tolna districts and the northern part of Szekszárd district. MVM Paks Nuclear Power Plant Ltd. provided the Foundation with a grant of 500 million HUF annually, as stated in the Articles of Association, but this commitment was terminated in 2014. In 2015 and 2016, the Foundation successfully applied to the Prime Minister's Office for the distribution of regional development subsidies in the beneficiary settlements through a tendering system. In order to carry out this activity, the Foundation received 750 million HUF in 2015 and 1 billion HUF in 2016. The beneficiaries of the grants may be the local governments of the settlements concerned, their associations and institutions operating in their administrative territory.

Eligible settlements: Bátya, Drágszél, Dunapataj, Dunaszentbenedek, Dunatetétlen, Dusnok, Fajsz, Foktő, Géderlak, Hajós, Harta, Homokmégy, Kalocsa, Miske, Ordas, Öregcsertő, Solt, Szakmár, Uszód, Újtelek, Újsolt, Bikács, Bölcske, Dunaföldvár, Dunaszentgyörgy, Gerjen, Györköny, Kajdacs, Madocsa, Nagydorog, Németkér, Paks, Pálfa, Pusztahencse, Sárszentlőrinc Tengelic, Harc, Kistormás, Kölesd, Medina, Sióagárd, Szedres, Szekszárd, Bogyiszló, Fadd, Fácánkert, and Tolna.

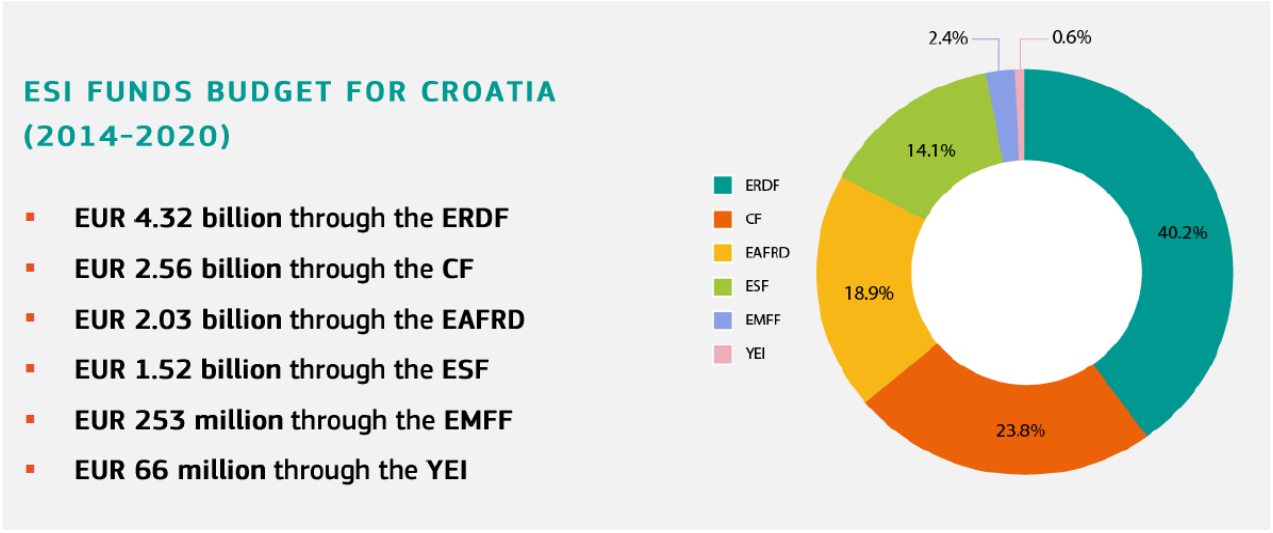
3.5.3 Overview of programmes supporting energy efficiency in Hungary

Programme Name	Period of Recruitment	Total Budget	Managing Authority
Territorial and Settlement Development OP	2014-2020 Calls are launched on diverse dates.	3.970.875.055 €	Hungarian State Treasury https://www.palyazat.gov.hu/doc/4384
Environment and Energy Efficiency OP	2014-2020 Calls are launched on diverse dates.	3.784.832.361 €	Ministry for Innovation and Technology https://www.palyazat.gov.hu/doc/4382

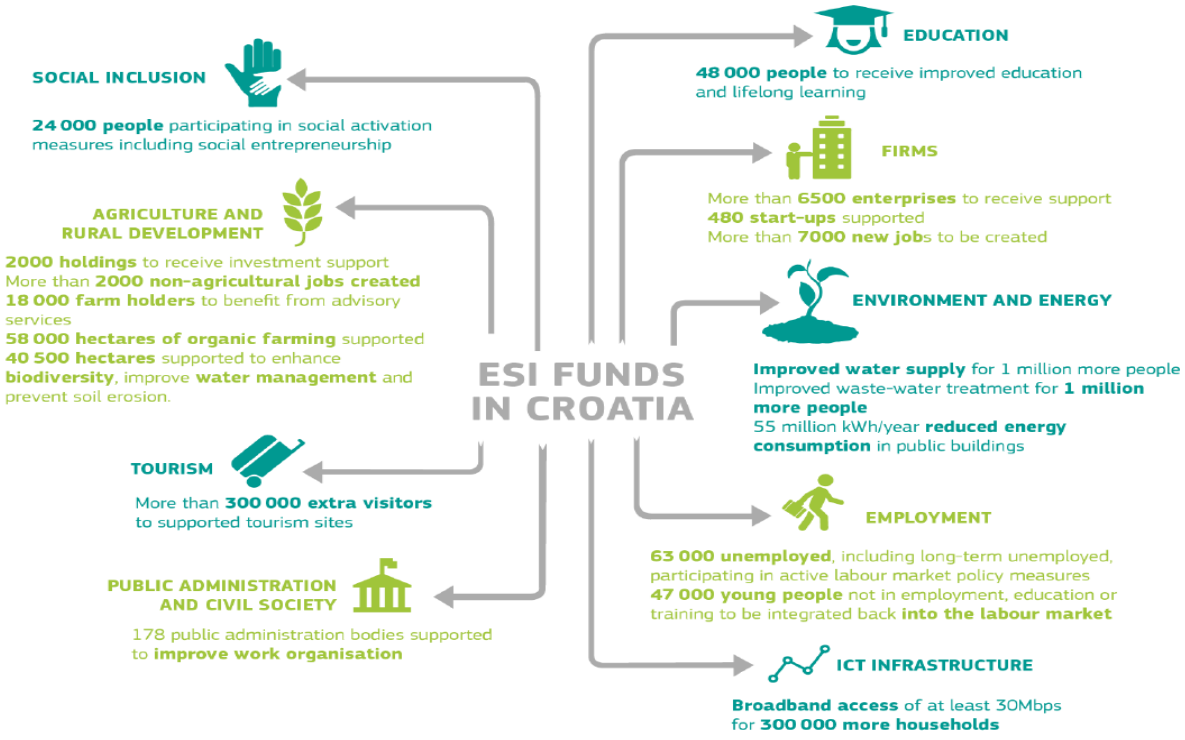
3.6 Croatia

3.6.1 Funding leveraged by ESIF in Croatia

Through four national programmes, Croatia has been allocated EUR 10.74 billion from ESI Funds over the period 2014-2020. With a national contribution of EUR 1.9 billion, Croatia has a total budget of EUR 12.67 billion to be invested in various areas, from research and innovation to employment, education and training, social inclusion, public administration and civil society as well as infrastructure and environmental protection.



All funds are designed to support Croatia's socio-economic development. The expected results (targets) give an overall view of where Croatia should be on key parameters by 2020.[4]



The list of programmes available in Croatia:

National

Competitiveness and Cohesion - HR - ERDF/CF, Efficient Human Resources - HR - ESF/YEI, Croatia - National Rural Development, Maritime and Fisheries - Croatia

Cross-border

Interreg V-A - Hungary-Croatia, Interreg V-A - Slovenia-Croatia, Interreg V-A - Italy-Croatia,

Transnational

Interreg V-B – Danube, Interreg V-B - Central Europe, Interreg V-B – Mediterranean, Interreg V-B - Adriatic-Ionian,

Interregional

Interreg Europe, Interact, Urbact, ESPON

IPA-CBC

IPA CBC Croatia – Serbia, IPA CBC Croatia – Bosnia and Herzegovina - Montenegro

The strong focus on smart and sustainable development in Operational Programmes for 2014-2020 paved the way for more intensive engagement on 13 concepts such as smart cities, social innovations, green cities, green energy, green mobility, green economy, green tourism and others. The importance of these themes is widely acknowledged in Croatia as relevant for the development of sustainable local communities and cities, with meaningful contributions aiming at raising quality of life. A positive fact is that all these concepts and new themes are given due attention both in the main regional development document – the National Strategy for Regional Development 2020 - as well as in county development strategies and strategies for the development of urban areas eligible for the ITI instrument.

Along with the very strong financial and investment impact, through participation in cohesion policy Croatia has had the chance to significantly change the structure of its public investments and, consequently, increase their effects on the country's long-term competitiveness. This is clear if we consider the sectoral distribution of ESI funds. The most abundant allocations are in the area of environmental protection which mostly covers large infrastructure projects in water and waste treatment facilities. The support for the competitiveness of small and middle-sized enterprises (SMEs) is the second most significant funding area. Research, development and innovation (RDI) has also been allocated significant funds earmarked for various types of support, ranging from investments into public and private RDI facilities to support for the development of new products and services. Other areas with significant investment increases are energy efficiency and other activities supporting the transition to a low-carbon economy.

3.6.2 National Funding in Croatia

Environmental Protection and Energy Efficiency Fund

Within the Priority axis 4, the main priorities of financing will be aimed at promoting the measures for renewable energy sources and energy efficiency in the sectors with the highest share in energy consumption, meaning in the: industry, transport, service activities, agriculture, and households.

Priorities:

- Increasing energy efficiency and use of RES in manufacturing industries
- Increasing energy efficiency and use of RES in the private service sector (tourism, trade)
- Reducing energy consumption in the public sector buildings
- Reducing energy consumption in residential buildings (multi-apartment buildings and family houses)
- Increasing the efficiency of the district heating system
- Increasing energy efficiency of public lighting
- Smart Grids pilot-project – distribution system which operates at low and medium voltages

Croatian Bank for Reconstruction and Development

The financial instrument "ESIF Energy Efficiency Loans for Entrepreneurs" is the third financial instrument within the framework of the Specific objective 4 "Supporting the transition to the economy with low CO2 emission levels in all sectors", beside the financial instruments "ESIF Loans for Energy Efficiency for Public Buildings" and "ESIF Loans for Public Lighting" also placed by Croatian Bank for Reconstruction and Development, and are intended for public sector borrowers. Pursuant to the Agreement, EUR 68 million, i.e. HRK 511 million, are available to micro, small, medium and large private entrepreneurs with registered activities in the manufacturing industry and service sectors (tourism and trade).

3.6.3 Overview of programmes supporting energy efficiency in Croatia

Programme name	Period of Recruitment	Total Budget	Managing Authority	More information (link)
Competitiveness and Cohesion OP	2014-2020	Cohesion Fund (CF): 2.509.755.644 € Regional Development Fund (ERDF): 4.321.499.588 €	Ministry of Regional development and EU Funds	https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/croatia/2014hr16m1op001
IPA CBC Croatia – Serbia	2014-2020	Total OP budget: 40.344.930 € Total EU contribution: 34.293.188 €	Agency for Regional Development of the Republic of Croatia – Directorate for Managing Cooperation Programmes and Regional Development	https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/croatia/2014tc16i5cb003
IPA CBC Croatia – Bosnia and Herzegovina – Montenegro	2014-2020	Total OP budget: 67.241.552 € Total EU contribution: 57.155.316 €	Agency for Regional Development of the Republic of Croatia – Directorate for Managing Cooperation Programmes and Regional Development	https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/croatia/2014tc16i5cb004

3.7 Austria

3.7.1 Funding leveraged by ESIF and National Funding

On behalf of the Federal Ministry for Sustainability and Tourism, KPC – Kommunalkredit Public Consulting handles grants in the fields of energy, climate and environment. The motto is "Consulting. Funding. Protecting the environment".

KPC sees itself as a specialist for climate and environmental protection projects in the fields of renewable energy, energy efficiency, mobility management, urban water management, protection water management and remediation of contaminated sites.

Both National and European subsidies (EFRE, ELER) are awarded, depending of the type of project.

Via the portal www.umweltfoerderung.at, interested parties can select the areas of companies, municipalities or private individuals; on the next level they can call up the desired areas, ranging from renewable energies to energy efficiency, electricity, heat, buildings, light, mobility, model regions, R&D, water/wastewater, waste and resource management.

https://www.umweltfoerderung.at/

3.7.2 Overview of programmes supporting energy efficiency in Austria

Programme name	Period of Recruitment	Total Budget	Managing Authority
UFI – Umweltförderung im Inland (climate, energy and environmental subsidies like: renewable energy, energy efficiency, mobility management, urban water management, protection water management and remediation of contaminated sites)	submission is possible on an ongoing basis.	Different budgets for different topics, most of them are available the whole year.	KPC – Kommunalkredit Public Consulting https://www.umweltfoerderung.at/
Ökostromgesetz – Green Electricity Law	call for proposals at the beginning of the year. First come – first served principle	Limited budged for PV, wind, biomass/ biogas, small hydro power and energy storage	OeMAG www.oem-ag.at

4. Assessment of existing financing models and their deployment

This chapter deals with assessment of each financial instrument / model from the stakeholders' point of view based on the research of all BOOSTEE-CE partners in their countries / regions / municipalities, taking into consideration experience of all stakeholder groups described in detail in the Chapter 2.1 of this document. Recommendations for further improvements, suggestions for deployment as long as typical activities or projects for each instrument or model come along with each assessment.

How BOOSTEE-CE partners have developed their own EE financing plans and deploy various EE financing instrument is possible to look up in the section EE financing roadmaps of the BOOSTEE-CE OnePlace Platform.

4.1 Assessment of Self-financing Through Energy Savings

Features favourable for municipalities	Features NOT favourable for municipalities
➢ Can be financed from own budget ➢ Favourable for municipalities when the audit has identified that initial savings can be achieved through low-cost replacements or operational changes and the municipality is unable to access capital funds, neither internally nor externally ➢ works well when energy costs are a budget item and accumulated savings can be "banked" (internally) and used later for more capital-intensive projects. ➢ No debt service costs	➢ If municipalities lack skills and capacity because this method is self-managed and projects must be identified, selected, implemented and monitored internally. ➢ Without an energy management plan there is a tendency to do simple, short-term measures that could effectively eliminate some more effective but more costly measures later and may result in lost opportunities to save energy. ➢ Transaction costs associated with economic exchange, not of a financial nature, but due to the time and effort required to obtain sufficient information to make a decision and organize the work to be done, may be too demanding for the municipality

Types of EE projects or EE services suitable to be financed this way

- Smaller projects with lower investment costs and short payback period
- Each EE project or service for which it is expected to have big energy savings achieved, meaning also huge money savings.
- Small investments in established and well-known technologies with short payback time

Recommendations for deployment

- The prerequisite for self-financing through energy savings is having a good energy monitoring system for benchmarking on energy consumption and costs. Energy audits and planning skills are necessary, as well as know-how about optimization and operation of the investments. Otherwise the saving target can be missed.
- Creating partnerships in the field of exchange of experience in financing energy efficiency - some organizations may have the flexibility to reallocate resources to free up working capital for investment in energy efficiency retrofit projects. For example, organizations that have large sustainability teams dedicated to implementing energy conservation measures, may benefit from outsourcing the function of project design, project management and project implementation to a single-point-of-contact service provider that can deliver fixed price services and guaranteed savings.
- The owner and operator of the facility where the savings are achieved should be the same entity (e.g. the municipality or its public service company), otherwise these two actors have to agree on sharing the savings. ***With public buildings owned by the state (school buildings) this is hardly manageable in Hungary, there are no experiences in sharing savings between the State (owner) and the municipality or the school management (operator).***

Examples

- Self-financing through energy savings is **constantly practiced and suitable for all measures in buildings in Austria**. It is important to install a detailed energy monitoring for benchmarking the planning and the reality, optimization for reaching energy saving targets.
- A combination of self-financing with European funds and national programmes is **the most popular and used model of EE financing in the City of Koprivnica**. The main reason for this situation is a wide availability of grants on both European and national level. The great advantage of this model is the fact that there is not any additional burden laid on taxpayers but the opposite, projects financed this way can themselves even improve municipal budgets. Prerequisite for the deployment (upgrade) of this financial model is the formation of an experienced team which consists of competent and relevant individuals who will do a detailed and thorough preparation of each planned investment. A portfolio of EE projects that will guarantee sufficient savings or revenues will be developed and accompanied with an action plan for financing public infrastructures.
- Reconstruction of boiler room plant in General County Hospital "Dr. Tomislav Bardek" Koprivnica – investment return model without any external support.

4.2 Assessment of Debt Financing (commercial loans)

Features favourable for municipalities	Features NOT favourable for municipalities
➢ Advisable in times of low interest rates and if municipalities have the necessary financial resources in their running budget to redeem the loan. ➢ In the case the municipality needs to bridge the period between pre-financing of the EE project and lately paid subsidy from Operational Programme ➢ For large municipality with lines of credit already open for ordinary business ➢ Easy availability and quick acquisition	➢ Sometimes not possible for municipalities with a negative budget because loans have to be approved by higher public level (the provincial government, national government) ➢ Other specific legal constraints of municipalities concerning borrowing financial sources ➢ There are usually not any special conditions for energy saving projects ➢ Need of collateral which, in the case of insolvency, is claimed by the bank to seize the asset that has been used as collateral ➢ Debt service costs

Types of EE projects or EE services suitable to be financed this way

- Projects generating income to pay back the loan (e.g. rental income, energy savings, revenues from sales of energy etc.)
- In some countries (Hungary, for instance) the government doesn't support debt-generating activities in general, instead it provides support for municipalities via the relevant OPs. Therefore, this financing can be recommended only in well-justified cases.

Recommendations for deployment

- The prerequisite for debt-financing and loans through energy savings is having a good energy monitoring system for benchmarking on energy consumption and costs. Energy audits and planning skills are necessary as well as know-how of optimization and operation of the investments, otherwise the saving target can be failed.
- The customer arranges loan financing through the manufacturer, vendor, or installer of the energy equipment being purchased or, if unavailable, directly with a third-party bank or other lender. Regional and local banks have been the primary drivers of these offerings to date, but larger banks have shown increasing interest in energy efficiency and renewable energy. In addition, project financiers specializing in energy projects are increasingly offering commercial loans or other debt products to fund these projects. The customer owns the equipment from day one and pays down the loan over time.

- The commercial loan market may vary in different countries; however, trainings about calculating the use of the leverage effect can be introduced for subjects who do not use it by those who do so successfully.
- **The case study on effects of loans** as well as subsidies is the part of the **BOOSTEE- CE Transnational Methodological Framework.**

Examples

In Austria the debt-financing through energy savings is constantly practiced and suitable for all measures in buildings. It is important to install a detailed energy monitoring for benchmarking the planning and reality, optimization for reaching energy saving targets.

In Croatia the municipalities, whose own funding resources are limited, obtain debt which is then paid back from the tax revenues of municipalities and saved energy costs and revenues generated by the projects themselves. Municipalities can obtain a loan from a commercial bank. The main idea for this financial model upgrade is to identify financially sustainable infrastructure projects of various sizes (similar to the previous one) which could be appealing for financial institutions in order to get from them lower interest rates which can considerably (in a positive way) influence the profitability of the EE project implementation.

In Slovenia they have established the debt financing system at a lower interest rate for municipalities at EKO fund. **The fund co-finances following EE investments**:

- Remote heating
- Purchase of cars or working machines on hybrid, electric or gas propulsion or with EURO 6 engine installed.
- Heating or cooling from renewable energy sources
- Construction of almost zero-energy buildings of general social importance
- Installations for cogeneration of heat / cold and electricity from renewable energy sources
- Renovation of existing lighting.

4.3 Assessment of European Funds and Operational Programmes

Features favourable for municipalities	Features NOT favourable for municipalities
➢ OP Funds can provide a large portion of the costs for large investments like perennial projects or projects with high investment sums. ➢ The relevant OPs are accessible financial sources for municipal energy investments when planned developments meet the programme indicators (e.g. saved energy in kWh, reduction of COeq in tones, etc.) and respect the limits set by the calls (e.g. price limit of PV panels in HUF/kW) ➢ Big subsidy rates which in some cases can go up to 80 % of the total investment or even up to 100 % in case of project development assistance. ➢ No debt service costs	➢ For many fund programmes certain special criteria have to be fulfilled by an investment to be eligible which excludes many projects. (E.g. LED adaptions are funded for investments in municipal commercial enterprises but not in school and office buildings.) ➢ Reporting procedures are often very complicated and requirements hard to fulfil for municipalities which follow own regulations. ➢ Even if funds are granted by the federal or provincial state, pre-financing and financing of the co-payment can be difficult and there might be a need to get a commercial loan to bridge the period until the fund redistributes money. ➢ There is no absolute certainty that a funding will be granted therefore realization may depend completely on funding approval. ➢ This method is not favourable for municipalities if they do not implement the planned investments and fail to meet the pre-set indicators the grants must be returned

Types of EE projects or EE services suitable to be financed this way

- Energy efficiency investments of municipality buildings and deployment of decentralized solutions of energy generation based on renewable energy sources and solutions of effectively operating the municipality buildings (heat insulations, solar panels, photovoltaic panels, upgrading of lightning infrastructure, ventilation of buildings, doors and windows, etc.), with related planning, project management and public procurement activities. Elaborating SECAPs is often supported, too.
- Major or capital projects, such as low-energy schools or kindergartens, new technology parks, energy renovation of buildings, cultural heritage buildings renovation, e-mobility projects, infrastructural projects – smart city etc.

Recommendations for deployment

- Seek assistance from energy agencies and other information centres to find a suitable and available funding programme.
- Develop competent staff resources to handle application and reporting procedures.
- To support the EPBD, the Union's European Structural and Investment Funds (ESIFs) and the European Fund for Strategic Investments (EFSI) have sought to improve the availability of finance for energy efficiency investments.
- It is considered very useful to collaborate with the structures created specifically by the EU Commission for assistance in the use of European funds, such as fi-compass (https://www.fi-compass.eu/)
- **The case study on effects of subsidies** as well as loans is the part of the **BOOSTEE- CE Transnational Methodological Framework**

Examples

- European funds and national operational programmes are widely utilised in Croatia, Poland, Slovenia, the Czech Republic and Hungary which has a considerable effect on the whole financing of the EE projects. Undisputable advantage of these funds is the financial stability, certainty and relatively short payback period. There are numerous EU financing Programmes, each of them having different requirements and eligibility conditions. Therefore, the crucial activity for deployment of this financial model is to have well organized teams that are capable of developing and implementing quality infrastructure project or business plans which will be financed with EU funds. Experience and skills are required in order to meet strict rules of such Programmes.
- In Italy the Structural Funds (ESIF) already used in the 2014-2020 programming will be confirmed in the next programming period and developed by seeking the most effective combination to exploit other available European funds (in particular EFSI funds) and to attract private capital and increase consequently the leverage effect.
- Upon the experience from Austrian partners European funds should be employed more. Therefore, skills of staff and information exchange between different responsibilities should be improved.
- **The case study from the Zlín Region** is available on the OnePlace Platform related to the influence of OP involvement in public sector EE projects.

4.4 Assessment of the Energy Performance Contracting

Features favourable for municipalities	Features NOT favourable for municipalities
➢ The contractor provides his know-how, develops, invests and operates the plant. ➢ The contractor is involved in the success of the savings, so that higher savings can also be achieved because he has self-interest. ➢ The project does not appear in the debt of the municipality, the contracting rate is recorded as an operating expense in the accounts, therefore repayment of obligations related to the investment does not block the creditworthiness of municipality. ➢ Not charging the commune with the initial costs of investing in energy saving. ➢ Technical and financial risk of investment is transferred to an external company if the contract is well developed. ➢ The remuneration of the contractor is paid from the savings generated by the investment.	➢ For small projects, the cost of project development and contract preparation is high and unprofitable. ➢ When the market with EPC is not fully developed and there are not many competing and credible companies available the risk of inconvenient agreements for municipaliti increases. ➢ Hardly suitable for small municipalities ➢ Complicated terms of a legal contract between partners ➢ Choosing only those parts of the investment that will be most economically advantageous to implement
BOO (Build - Operate - Own) specifics ➢ The municipality is guaranteed an immediate saving relative to its current bill. The ESCO takes on the responsibility for providing the agreed level of energy service for lower costs than the current bill or for providing an improved level of service for the same bill. The more efficiently and cheaply it can do this, the greater its earnings.	**BOO (Build - Operate - Own) specifics** ➢ Deliberate estimation of lower value of savings is a standard practice for the ESCO to secure itself for the guaranteed performance with some buffer. The real questions are how big this buffer is and how the 'excess' savings above the estimated ones are split between the client and the ESCO.

BOT (Build - Operate - Transfer) specifics ➢ Risk transfer from municipality to ESCO firm which bears a substantial part of the risk (political risk, technical risk and financing risk). ➢ When the payback period is shorter than the physical lifetime of the project, ➢ When the municipality intends to avoid financial risks that might be caused by different factors (exact amount of savings is not calculable due to meteorological or technological reasons, new technologies are integrated, etc.) ➢ When the necessary competences and capacities are not available at the municipality to run the investment and related technologies.	**BOT (Build - Operate - Transfer) specifics** ➢ Due to the long-term nature of the arrangement, the fees are usually raised during the contract period. ➢ When the necessary competences and capacities of running the investment's technology (e.g. a geothermal plant) are available at the municipality; ➢ When the financing can be solved in 100% by other sources (own sources or OP calls) and the municipality intends to avoid the risk of cooperating with third party.
BOOT (Build - Own - Operate - Transfer) specifics ➢ Municipality enters into long term supply contracts with the BOOT operator and is charged accordingly for the service delivered where the service charge includes capital and operating cost recovery and project profit. ➢ Same as BOT with the additional feature that the municipality is entitled and intends to forward the ownership of the investment to the contracted concession company.	**BOOT (Build - Own - Operate - Transfer) specifics** ➢ Not favourable for municipalities that don't want to be obliged by contract for a long term. ➢ Same as BOT, in addition the municipality does not have the legal possibility or does not intend to forward the ownership to third party. ➢ In this way, the municipality finances the investments in its own property, but transfers its management to companies that provide public services.

Types of EE projects or EE services suitable to be financed this way

- Generally, the projects with a high energy cost savings potential
- New heating systems or improvements and optimization in heating systems, public lighting, thermal insulation of buildings

BOO (Build - Operate - Own)

- Useful where the municipality wants to outsource facility services and investment (building heating, public lighting, roads maintenance etc.)
- Usable for projects with long payback period for which the contractual duration coincides with the useful life of the asset.

BOT (Build - Operate - Transfer)

- Popular type of co-operations with ESCOs. Usually these investments contain energy generation based on renewables (heat-pumps, solar panels, biomass-based district heating, geothermal heating, etc.).
- Interventions of new construction of medium-large sized technological systems and public services structures.

BOOT (Build - Own - Operate - Transfer)

- Large projects for public services with long contractual durations

Recommendations for deployment

- This tool is considered the most useful for the effective implementation of interventions in EE, the financial scheme should be chosen accordingly to it: for this reason **it is deemed necessary to have a clear legal definition of the EPC in accordance with national and EU legislation** (https://www.eib.org/attachments/pj/guide_to_statistical_treatment_of_epcs_en.pdf)

- It requires an administrative structure with adequate skills to manage project finance of long duration and technical skills for O&M.

- For all kinds of contracting there is a strong need for a clear definition of the goal, intended and experienced energy experts for project definition and development of technical solution and contract. Different offers should be obtained and compared!

- Design of comprehensive EPC demonstration projects for pools of public buildings to provide market development on demand side

- Development of innovative financing schemes targeting small and medium ESCOs

- Provision of improved standardized contracts, procurement procedures, savings measurements and verification protocols

- Establishment of focal point in charge of the EPC in the public sector

- Introduction of permanent training of key actors (decision makers in the public sector, officials in public sectors, project developers)

Examples

In Austria the Energy performance contracting is probably the most favorable way to finance energetic improvements in public buildings like change of heating system, energetic refurbishment, thermal insulation and lighting etc.

Municipalities can choose from different models. For the development of a contracting model, an independent consultant like an energy agency should assist the municipality in the development of the actions and measures, and analyzing the best fitting contracting model and contract for the needs of the municipality.

- A lot of success stories are available in Austria just like **District heating grid based on waste heat from pulp&paper mill Zellstoff Pöls AG**. Some other examples can be provided by Energieagentur Obersteiermark upon request.

In Tolna County, Hungary, BOT *(Build - Operate - Transfer)* energy performance contracting will be suggested by integrating also the savings generated by consumer behavior campaigns. This special type of EPC is referred as EPIC, Energy Performance Integrated Contract. At EPIC, technical and social aspects of energy consumption are considered together, and an improved energy performance of buildings is guaranteed not only by technological investments, but also by a better organization of the use of spaces and by the involvement of building users towards a more aware behavior in the use of buildings. According to the experiences of demand side management campaigns in different countries' public buildings, further 4-5% energy saving can be achieved beyond the savings generated by the technological interventions.

In Slovenia, the Ministry responsible for energy publishes a list of energy service providers that already provide energy contracting services according to the model of contractual provision of energy savings (updated November 2018):

- Petrol d.d. Bled
- Resalta d.o.o. Ljubljana
- Stin d.o.o. Dravograd
- Tames d.o.o. Ptuj
- Plistor d.o.o. Ptuj
- Interenergo d.o.o. Ljubljana

4.5 Assessment of Citizen Cooperatives

Features favourable for municipalities	Features NOT favourable for municipalities
➢ Direct involvement of citicens into implementation of municipal energy strategies ➢ Transformation from a centralised market dominated by large utilities to a decentralised market with many active energy citizens ➢ When they can decrease unemployment by integrating inhabitants into the cooperative to produce energy/ necessary raw materials (energy plants, etc.) ➢ Increase of both energy and financial independency	➢ Suitable mainly for large and complex projects ➢ Hardly possible without active involvement of citizens and their participation in benefits coming out of these cooperatives ➢ If the cooperative operates contrary to local regulations

Types of EE projects or EE services suitable to be financed this way

- Renewable energy projects – solar power plants, micro hydro power plants, wind farms etc.
- Projects producing fuel for renewable based energy generation (e.g biomass), similar developments with low technological but high human work intensity characteristics
- Renovation or new construction of condominium buildings

Recommendations for deployment

- All citizens should be eligible to join. After purchasing a cooperative share and becoming a member or co-owner of local RES and EE projects, members share the profits and are given the opportunity to buy the energy at a favourable price.
- Setting up »platform« with respect to specific regulatory and market conditions of region/country bringing together all market players: citizens, associations and economic actors in their territory.
- Social campaigns showing the success of this method in other regions and countries

Examples

- In Judenburg, Austria a **PV park of the Stadtwerke Judenburg was partly financed by a citizens' cooperative**. It was organized as a Sale & Lease back model. Citizens could buy up to 10 PV modules for 650 € per unit and got an interest rate of 3.125 % on their investment. The interest is balanced on the customer's electricity bill. The minimum time of the contract is five years.

- Participation in an e-car-sharing model together with other private and business users is a way to use an additional vehicle for official trips.
- The examination of the legal and social background of setting up citizen cooperatives will be recommended in the roadmap for Tolna County in Hungary. Expected areas of activities are producing fuel for renewable based energy generation (e.g biomass).

4.6 Assessment of Crowdfunding

Features favourable for municipalities	Features NOT favourable for municipalities
➢ Crowfunding gives many interested people the possibility to participate with small sums in the realization of projects which are in public interest. ➢ Financial risk is spread among a larger number of individual investors. ➢ Can develop non obligatory communal infrastructure which improves standards of living ➢ Attracts additional private investors ➢ When capital from citizens is needed just for the procurement and installation, and the operation tasks and costs are not remarkable ➢ Interesting form of innovative financing to be evaluated as a way of attracting private capital and integrating with the use of public funds to increase effectiveness, leverage and introduce competition with traditional commercial loan	➢ Crowdfunding involves many different stakeholders which might make more challenging decisionmaking because of involvement of many different investors ➢ Questionable legal and financial responsibility in case of difficulties or damage. ➢ National regulatory framework needs to be developed. ➢ No guarantee of sufficient funds raised ➢ Risk of investors´ withdrawal in the case of a general discontent with the results of the project

Types of EE projects or EE services suitable to be financed this way

- Crowdfunding is suitable for investments which are in the direct interest of citizens or directly accessible to a large group of the public, e.g. regional public transport or meeting places.
- Deployment of solar panels, sharing the revenues of produced electricity among the municipality and the involved citizens
- EE projects for small-medium public service structures

- Generally suitable for small innovative projects of public interest, but not very feasible for municipality buildings

Recommendations for deployment

- Crowdfunding legislation varies greatly from country to country in the EU. Before engaging in detailed preparatory work, it is pertinent to investigate the rules that apply in respective country, or the country in which the project is situated. Complying with the existing regulatory framework might require compromises in terms of the amount of funds raised, type of investor participation, prospectus requirements, etc.
- Crowdfunding requires a web-platform and some organizational measures that facilitates the intervention launching, financing, applying and sharing crowdfunding.
- It is worth using technical and legal solutions offered by special portals, which in most cases provide protection for both project authors and people supporting good ideas through them.
- Promoting on social media among friends and encouraging each person to share information about the collection.

Examples

- In Tolna County, Hungary crowdfunding will be suggested mainly at the following areas: deployment of solar panels, installation of decentralized energy generating systems such as geothermal plant, biomass plant, etc. with sharing the revenues of produced electricity among the municipality and the involved citizens. Besides, it will be also suggested as a voluntary contribution to the improvement of the energy performance of public buildings:
- In Judenburg, Austria, a fair-trade shop was financed in a form of public private partnership which involved crowdfunding.
- The Municipality of Velenje / Slovenia will strive for co-financing the reconstruction of the People's University Velenje (Ljudska univerza Velenje - **public non-profit institution)** with the help of Crowdfunding. The crowdfunding campaign is at the moment in its starting phase: advertisements through Facebook about People's University Velenje (when it was built and established, and what is its role in every day's life of residents of Velenje). The municipality plans to open a special account only for donated contributions of residents, legal organizations and companies.

4.7 Assessment of Green Municipal Bonds

Features favourable for municipalities	Features NOT favourable for municipalities
➢ It enables municipalities to provide socially beneficial and environmentally responsible projects and, at the same time it provides both financial returns for investors and environmental and other benefits for state and local governments. ➢ Relatively fast way of obtaining funds for investments ➢ Positive social effects ➢ Direct access to the capital market. ➢ Lower financing costs. ➢ Transparent financing that assures investors the funding will be used exclusively for green projects. ➢ Good alternative to conventional financing. Municipalities can use successfully implemented examples, especially in the financing of PV and wind farms, as a model. Citizens can participate in the projects in the form of bonds and participate in their success	➢ If citizens aren´t 'touched' by the topic – e.g. refurbishment of the schools of their children touches them emotionally and creates willingness to finance the works ➢ Municipality as the green bond issuer needs to understand the whole complex process of issuing green bonds before entering into a transaction. ➢ Hardly suitable for small municipalities ➢ Legal constraints of municipalities concerning borrowing financial sources

Types of EE projects or EE services suitable to be financed this way

➢ Infrastructure modernization or other EE related projects intended to benefit local communities like:
- sustainable waste management
- sustainable land use
- biodiversity conservation
- clean transportation, clean water, and various climate adaptation projects

Recommendations for deployment

➢ As the green municipal bond market is growing, it is important that issuers understand **the process of issuing green bonds** before entering into a transaction.

- **Identifying and qualifying green projects and assets -** municipalities, city governments, and states should first define the kind of green projects they seek to support with green bonds, while clearly stipulating that the proceeds from the green bond sale would be earmarked for green projects or assets.
- Evaluating the creation of a taxable green bond programme - connection of green bonds to tax deductions is very helpful to make them more attractive.
- Trainings for municipalities on the benefits and formalities related to green municipal bonds, using the experience of partners who implemented the method
- Creating a handbook showing step by step the formalities related to the issue

4.8 Assessment of On-bill Financing

Features favourable for municipalities	Features NOT favourable for municipalities
➢ On-bill financing and repayment programmes offer some of the most elegant solutions to energy financing as the savings are on the same bill as the repayment and are paired directly with repayment. ➢ Enjoys relatively simple implementation ➢ Convenient form of investment repayment financing investments from savings generated	➢ If the loan is not transferable to the next owner of the building, municipality must pay off entire loan upon sale of property, which could result in not all of the energy savings being realized. ➢ Utilities are often reluctant to take on role of financing entity or changing the billing system ➢ Face lack of experience as the model is rare in Europe ➢ When universal service prices are quite favorable for householders, then, residential consumers enjoy decreased energy and public utility prices. As this method provides financial benefits on one hand for the consumers by the reduced energy costs, while on the other hand it doesn't motivate the households to better control and cut back their electricity consumption, or support more effective generation or transfer technologies.

Types of EE projects or EE services suitable to be financed this way

- Projects in the building sector where the savings are on the same bill as the repayment

- investments that include charges on a utility bill for commercial, industrial or residential owners and tenants
- Low-energy renovation of schools or kindergartens, e-mobility projects etc.

Recommendations for deployment

- As with other specialized energy efficiency financing programmes, the availability of on-bill financing is dependent on where you live. The good news is many utilities want to encourage their customers to be more energy efficient and see on-bill financing programmes as an effective way to do it. In some cases, the state or local government in your area might also provide support – financial or otherwise – to pave the way for on-bill financing.
- The best way to find out whether your utility offers an on-bill financing or on-bill repayment programme for energy efficiency is to contact them directly. Some utilities offer programmes exclusively for commercial or residential properties, while others have broader eligibility criteria.

Examples

- UK Green Deal - https://www.gov.uk/green-deal-energy-saving-measures

4.9 Assessment of Revolving Loan Funds

Features favourable for municipalities	Features NOT favourable for municipalities
➢ Financial savings through energy efficiency measures are returned to a dedicated part of the municipality budget (Revolving fund) from which new measures can then be financed. ➢ When municipalities do not have access to other types of loans from financial institutions, or for those that can't get loans with acceptable rate of interest. ➢ Preferential interest rate on the loan (for public buildings) ➢ Municipality can reuse capital with designing a self-sustaining and long-time oriented fund ➢ Involvement of private investors ➢ merging funds if municipalities are small	➢ After the initial pool is lent out the lending activity slows down as the repayments that replenish the pool of capital come in over many years. ➢ Additional administrative costs related to sourcing funds and administering loans. ➢ In the event that the municipality is not able to directly manage the risks associated with the intervention ➢ Tensions resulting from merging private and public capital

Types of EE projects or EE services suitable to be financed this way

- Revolving funds at city/municipality level can be a sustainable solution for providing long-term financing of EE investments in public buildings and infrastructure. Under typical revolving EE funds, loans are provided to cities/municipalities to cover the initial investment costs of EE projects. The savings resulting from reduced energy consumption and improved EE are then used to repay the loan to the fund until the original investment is recovered, plus interest and any fees or service charges. The repayments can then be utilized to finance additional investments in EE, thereby leading to the revolving fund. Such funds can often offer lower cost financing with longer tenors and reduced security requirements than commercial loans, since both the borrower and lender are publicly owned.
- The loan can be designed to permit only the purchase of certain technologies or products, or to fund projects with explicit goals but it can also be designed to fund entire portfolio—such as greenhouse gas (GHG) emissions reduction in public buildings—and may target specific building types to reach that goal.
- In general, suitable for multi-aimed orientated EE projects and generating savings for repayment of loans.

Recommendations for deployment

- Utilities, state and local governments, nonprofits, state energy offices, and universities can operate revolving funds. Programmes can be administered entirely by one agency or operated in conjunction with a third party.
- Another option is a loan-participation model, where a third party (such as a state energy office) lends part of a loan at a below-market rate and a private lender provides the rest. The two thus lend in partnership, resulting in a loan that offers more attractive funds than would be possible with private financing alone.
- Creation of a platform for exchange of information on available options revolving loan funds
- To establish a revolving fund, it may involve the municipality's own funds (from the budget), government allocations or grants/loans from donors or other external sources. Such funds may be established and managed by a single city/municipality, but often they are established also at regional or even national level offering financing to multiple cities/municipalities.

Examples

- KAWKA - regional financing scheme in Jelenia Góra, Poland
- Energy Fund - Multyscope Regional Fund of public financing in Emilia-Romagna, Italy

4.10 Assessment of Leasing

Features favourable for municipalities	Features NOT favourable for municipalities
➢ The acquisition costs are not recorded as an investment in accounting, only the leasing rate is recorded as operating expense. This brings advantages and does not increase the indebtedness. ➢ It allows a municipality to use energy efficiency, renewable energy, or other state-of-the-art equipment without purchasing it outright. ➢ Low level of effort to execute and administer, particularly for smaller scale projects. They are well understood by most finance teams.	➢ The straightforward structure of leases means that they do not provide the benefits of some of the more specialized financing options, such as performance guarantees or automatic transferability. ➢ Difficulty in assuming the financing risk and the risk of availability of the use in the contractual terms. ➢ Usually higher costs compared to self-financing

Types of EE projects or EE services suitable to be financed this way

- Investments with relatively high up-front cost based on the purchase of equipment, not modernization or renovation
- Acquisition of movable goods like vehicles, working machines, office equipment that can be returned resp. exchanged after the end of the utilization period. It is possible to keep up to the technical state-of-the-art.

Recommendations for deployment

The choice for leasing depends on many aspects such as:

- The direct financing costs compared to the lease payments
- Legal aspects, such as the ownership situation and its implications, conditions for contract cancellation
- Securities required by the lease provider
- Tax issues

Examples

In Austria leasing is a standard procedure in purchasing purchase vehicles, working and office equipment.

In Poland this financial instrument can be introduced / further developed following the example of the PolSEFF programme

5. Conclusion

5.1 Common practice

In recent years many countries have successfully used **EU funds** for municipal investments in various EE financing activities and projects. The last EU financial perspective 2014-2020 puts great emphasis on implementing and financing various climate change mitigation and environmental protection measures and energy efficiency investments are also linked to this. The states are using cohesion and regional development funds to EE investments through the ministries, agencies, various funds and banks.

Larger municipalities systematically benefit from such funds as they have strategic documents for co-financing EE investment available based on their middle or long-term plans. Smaller municipalities, however, face a lack of information, lack of awareness and other barriers. Therefore, on the state and regional level a mechanisms to connect smaller users in terms of education, awareness-raising and financing of energy efficiency should be established.

In many cases, investment decisions focus firstly on the technical planning and feasibility of the project. When it comes to financing, we often think very traditionally - can we finance the project from our own resources, do we get subsidies, how much credit do we need, at what conditions do we get this?

Self-financing, and eventually **debt-financing,** are standard options when manageable measures and costs are planned. Implementation takes place after technical planning, tendering and investment decision. After the implementation, the investor himself is responsible for the success of the savings, he must check whether the plans are well adjusted and whether the savings are also achieved.

Generally, municipalities rely to a great extent to existing sources from EU funds which is the logical way of EE 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.

5.2 Possible future developments of municipalities EE portfolio

Complex and larger investment measures also require greater know-how in planning, implementation and financing. During the planning phase, municipalities should look for a suitable specialist planner for planning and support during implementation, i.e. specialised experts for financing from energy agencies or consultants with special expertise who support the municipalities in the development of implementation and financing models and then help to find alternative model of EE financing like ESCO, or contractors, or develop participation models for citizens in order to involve them in the implementation and success, as is often the case with PV or wind farms.

Equity and credit financing are standard possibilities and good for manageable measures and costs, however, even good projects sometimes fail, because the municipality cannot and is not allowed to get into debt further due to Maastricht or other criteria and cannot raise the financing from its own strength.

Often, truly innovative financing instruments are not considered because knowledge and experience are lacking. There is a variety of instruments that make it possible to implement projects as indicated in this last short overview:

- Energy Performance Contracting: energy saving projects can be implemented by a contractor making the investment in energy saving measures and financing them, the municipality only pays the contracting rate, i.e. the previous energy costs until the investment has amortized, after which the energy costs decrease. The advantage is that the municipality gets a more energy-efficient building without having to invest itself, it does not get into debt, but enters into a partnership with a specialised contractor.
- Energy supply contracting, a contractor (ESCO, private companies) establishes an energy supply, which can be, for example, a biomass heating system. The contractor constructs, operates and finances the plant. A heat supply contract is concluded with the municipality; the municipality only pays for the energy supply and the heat actually obtained, and therefore has full service and no risk. For both **EPC and ESCO you can get more info in the Transnational Methodological Framework**
- **Green municipal bonds** can be a good alternative to the conventional financing. Municipalities can use successfully implemented examples, especially in the financing of PV and wind farms, as a model. Citizens can participate in the projects in the form of bonds and this way participate in their success. The citizens contribute the necessary equity capital and receive an attractive interest rate in return.
- **Citizen cooperatives** which can be defined as cooperatively-owned renewable energy projects whose financial revenues stay within the local community. One of their important roles is transforming a centralized market dominated by large utilities into a decentralized market with many active energy citizens. However, without active involvement of citizens and their participation in the benefits coming out of cooperatives this energy transition is not possible.
- **Crowdfunding**, the collective effort of many individuals who network and pool small amounts of capital to finance a new or existing business venture. Each campaign is set for a goal amount of money and a fixed timeframe, each day is counted down and the money raised will be tallied up for visitors to follow its success. Actually, crowdfunding for sustainable energy and climate projects is the natural extension of the citizen cooperative model to even larger communities.
- **On-bill lending**, a method of financing energy efficiency improvements that uses the utility bill as the repayment vehicle. Energy suppliers collect the repayment of a loan through energy bills. It leverages the relationship, which exists between a utility and its customer in order to facilitate access to funding for sustainable energy investments.
- **Revolving loan funds**, sources of money from which loans are given for multiple sustainable energy projects. Revolving funds can provide loans for projects that do not have access to other types of loans from financial institutions or can provide loans at a below-market rate of interest (soft loans).

5.3 Basic Principles of Energy Efficiency Financing Strategy development

5.3.1 The Strategy

The municipality's EE financial strategy has to consider both the energy management needs and possibilities and the financial constraints. That means that on one hand it has to 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 at investment financing.

The financial strategy has to introduce 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.

Creative funding methods such as crowd-funding 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 resulted by 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.

5.3.2 Particular projects

The first step is to describe the project with a clear objective. 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? What should their role be?

According to this target definition, a feasibility analysis should be carried out, including a rough planning of the plant and an estimation of the costs, as well as legal and environmental aspects. For the selection of financing instruments, we recommend to examine the following points:

- 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?
- 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.
- Is structure of financing balanced and sustainable?
- Could / should citizens be involved in implementation and financing and which way?

It is recommended to outline different options and to assess the opportunities and risks. Experienced experts should be consulted. It is also advisable to look at successfully implemented examples and exchange experiences with those affected. Such an approach makes it possible to single out opportunities and possibilities, decide the direction and continue in developing a model.

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