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Executive Summary

The Financial Tools Portfolio offers a practical resource for addressing the financial challenges associated with renovating and modernising district heating (DH) sites in **Lithuania, Poland, and Slovakia**. These networks, frequently publicly owned and operating within stringent regulatory frameworks, face significant financial barriers due to the substantial CAPEX (Capital Expenditures) and OPEX (Operational Expenditures) required. This analysis provides clear strategies for securing financing, streamlining operations, and achieving long-term sustainability for these infrastructures.

It explores the most suitable **funding sources, management solutions, and financing structures**, alongside relevant elements such as **technical assistance facilities and government incentives**, all designed to address these challenges effectively. Additionally, it presents a **step-by-step framework for securing financing** and ensuring the successful implementation of DH renovation projects:

1. **Innovative classification of funding sources.**

   Funding options are organised based on their financial nature—redeemable or non-redeemable—rather than specific programmes or funds:

   - **Non-redeemable funding sources**: These include grants from European programmes (e.g., LIFE, Cohesion Policy Funds, Recovery and Resilience Facility, and Modernisation Fund) and donations, which provide upfront financial support. Although no fully funded national or regional programmes are currently active, the analysis highlights past initiatives that could be reinstated in the near future.
   - **Redeemable funding sources**: These include debt, equity, and hybrid instruments, with a focus on mechanisms such as the Public Sector Loan Facility, the Recovery and Resilience Facility, Cohesion Policy Sectoral Financial Instruments, InvestEU and the European Energy Efficiency Fund, alongside private investment options.

   The compatibility of EU funds is meticulously evaluated to optimise resource allocation and avoid overlap. Customised recommendations are offered for selecting funding sources, supplemented by a comprehensive map illustrating the interconnections between EU funding programmes and technical assistance facilities at the EU level.

2. **Management solutions.**

   The concept of management solutions, as introduced by the Low2HighDH project, promotes the adoption of innovative financing and operational models that minimise direct CAPEX investment while ensuring the efficient operation and maintenance of DH sites. Models such as **Energy Performance Contracting, Build Operate Transfer, Build Own Operate, Heat Pump Subscriptions, Operational Renting, and Transfer of Operating Rights** are thoroughly examined.

   Additionally, energy supply mechanisms, including **Power Purchase Agreements, Heat Purchase Agreements and Energy Supply Contracts**, are discussed as complementary strategies to optimise financial and operational outcomes.

3. **Flexible project financing structures.**

   - Financing frameworks are divided into **recourse and non-recourse structures**, with Special Purpose Vehicles (SPVs) emphasised as integral instruments for large-scale projects.
   - **Blended finance models** are presented as a combination of grants with private funding to mitigate risks and attract private investment effectively.
   - **Public-Private Partnerships and Energy Service Companies** are examined as essential mechanisms for delivering scalable and efficient projects.

4. **Steps for project funding.**

   A clear roadmap is outlined to help project promoters navigate the complexities of securing financing for DH renovation projects:

   - **Initiation phase**: Performing preliminary assessments to evaluate feasibility, identify funding opportunities, and define technical, regulatory, and financial parameters.
   - **Development phase**: Activating funding sources, refining project frameworks, and initiating procurement processes.
   - **Construction phase**: Executing infrastructure upgrades and addressing unforeseen challenges with adaptive financial strategies.
   - **Operation phase**: Sustaining long-term performance through robust management practices and ongoing maintenance plans.

5. **The portfolio addresses two key complementary areas:**

   - **EU technical assistance programmes**: These are recognised as indispensable tools for supporting feasibility studies, project preparation, and capacity building. They ensure DH renovation projects are prepared to secure financing and comply with technical and regulatory standards.
   - **Government incentives**: These are presented as strategic measures to improve the economic viability of district heating projects. They encompass mechanisms such as tax reliefs and regulatory incentives designed to promote renewable energy integration and align projects with national and regional energy policies.

As a result, this portfolio equips project promoters with actionable insights to facilitate efficient, scalable, and financially sustainable DH renovations across key regions.

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List of acronyms and abbreviations

Abbreviation	Definition
AMIF	Asylum, Migration and Integration Fund
APVA	Aplinkos projektų valdymo agentūra (Environmental Projects Management Agency of Lithuania)
BGK	Bank Gospodarstwa Krajowego
BOT	Building Operating Transfer
BOO	Building Own Operate
CEB	Council of Europe Development Bank
CF	Cohesion Funds
CINEA	European Climate, Infrastructure and Environment Executive Agency
CHP	Combined Heat and Power
DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
DH	District heating
EAFRD	European Agricultural Fund for Rural Development
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEEF	European Energy Efficiency Fund
EIB	European Investment Bank
EIF	European Investment Fund
EISMEA	European Innovation Council and SMEs Executive Agency
ELENA	European Local ENergy Assistance
EMFAF	European Maritime, Fisheries and Aquaculture Fund
EPC	Energy Performance Contract
EPEC	European PPP Expertise Centre
ERDF	European Regional Development Fund
ESC	Energy Supply Contract
ESCO	Energy Service Company
ESF+	European Social Fund Plus
ESG	Environmental, Social, and Governance
EU	European Union
EUCF	European Union City Facility
EU ETS	European Union Emissions Trading System
FI	Financial Instrument

GET	Green Economy Transition
HPA	Heat Purchase Agreement
HT DHC	High-temperature district heating sites
ICT	Information and Communication Technologies
ILTE	Investicijos į Lietuvos ekonomiką
IR-PME	Réduction d'Impôt Madelin
IRR	Internal Rate of Return
JTF	Just Transition Fund
JTM	Just Transition Mechanism
JTP	Just Transition Platform
L2H	Low2HighDH
MF	Modernisation Fund
NFOŚiGW	Narodowemu Funduszowi Ochrony Środowiska i Gospodarki Wodnej (National Fund for Environmental Protection and Water Management)
NIB	Nordic Investment Bank
NPV	Net Present Value
nZEBs	Nearly zero-energy buildings
OPs	Operational Programmes
PDA	Project Development Assistance
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PSLF	Public Sector Loan Facility
P2P	Peer-to-peer
RES	Renewable Energy Sources
RRF	Recovery and Resilient Facility
RFQ	Request For Quotations
R&D	Research & development
SMEs	Small and medium-sized enterprises
SMP	Single Market Programme
SNAPs	Strategic Nature Action Plans
SIEA	Slovenská inovačná a energetická agentúra (Slovak Innovation and Energy Agency)
SIH	Slovak Investment Holding
SIPs	Strategic Integrated Projects
SPV	Special Purpose Vehicle
TA	Technical assistance

TA-CAP	Technical Assistance projects for Capacity building of Member States authorities
TA-PP	Technical Assistance projects for the preparation of SNAPs and SIPs
TA-R	Technical Assistance projects for projects Replication of and up-scaling of results
TOR	Transfer of Operating Rights
SECAP	Sustainable Energy and Climate Action Plan
SSEF	Solas Sustainable Energy Fund
WP	Work Package
ZEB	Zero-emission building

1. Introduction

Low2HighDH is a transformative three-year EU-funded project under the LIFE CET programme that aims to facilitate the initiation of investments for the modernisation of **30 high-temperature district heating and cooling (HT DHC) sites in Lithuania, Poland, and Slovakia**. By encouraging the adoption of low-grade and waste heat technologies, the project lays the groundwork for a shift towards renewable energy sources (RES) and improved energy efficiency. This initiative aligns with the European Energy Efficiency Directive, supporting efforts to achieve compliance with the criteria for 'efficient district heating and cooling' within a ten-year timeframe.

District heating networks are one of the main systems used for heating and supplying warm water to residential areas in these countries. However, many of them remain heavily reliant on fossil fuels, which limits their efficiency and environmental performance. Low2HighDH seeks to address these challenges by establishing the framework needed to reduce dependence on conventional energy sources and providing tailored guidance to enable the integration of RES and waste heat into DH systems. At the core of this potential transformation are heat pumps, which upgrade low-grade heat to usable temperatures, fostering sector coupling and advancing environmental sustainability.

The project's overarching **goals** include:

- Demonstrating the benefits of low-grade and waste heat technologies.
- Facilitating the deployment of innovative solutions aligned with decarbonisation strategies.
- Attracting €454 million in investments in sustainable energy.
- Substituting 1 TWh/year of fossil fuel consumption.
- Cutting CO_2 emissions by 291,000 tonnes annually.

Collaboration and knowledge-sharing underpin the project's approach. Through two calls for applications, 30 projects will be chosen to benefit from **tailored guidance**, including capacity-building activities and facility services. This process is reinforced by:

- Establishing three national stakeholder communities.
- Setting up 30 local liaison groups to engage directly with DH operators.
- Creating a project-wide Ambassador community to extend the project's influence across and beyond the case study countries.

To achieve these objectives, Low2HighDH is implementing a strategic approach that began with a comprehensive analysis of the current state of HT DH systems in the target countries to identify challenges and opportunities. It also involved selecting and defining the most effective technologies for integrating low-grade RES and surplus heat into high-temperature DH networks. These efforts focused on bespoke solutions tailored to the specific typologies of each network. In parallel, the project analysed and identified innovative financing structures and mechanisms to support the implementation of these advancements.

As a result of these efforts and to amplify replication potential, Low2HighDH is developing the capacity-building materials and has documented a comprehensive portfolio of technical and financial solutions designed to address the common challenges faced by DH systems.

This financial and technological framework has been developed as part of the activities in Work Package 2 – *Market, Technical, and Financial Assessment*. It serves as the foundation for Work Package 4 – *Investment Plans Implementation*. **During this phase, project partners will guide beneficiaries from the calls for applications in formulating actionable financial and investment plans, beginning with the preparation of a pre-feasibility study to sustain this process**. These plans will serve as a cornerstone for realising DH renovations, ensuring the solutions developed in earlier phases are brought to fruition

Building on the financial assessment conducted in Work Package 2, this document outlines the financial framework established within Low2HighDH to overcome funding challenges. It provides a detailed exploration of:

- The most suitable **funding sources for DH site renovation projects**.
- Tailored **management solutions** proposed to meet specific project requirements.
- Potential **financing structures** that could be adopted by DH renovation projects.
- **Technical assistance facilities and government incentives** that should be considered to enhance the success of these structures.
- The integration of these components across the various phases of the **project funding lifecycle**.

By addressing both technical and financial barriers to decarbonising district heating systems, Low2HighDH positions itself as a catalyst for sustainable energy transitions in Europe.

This introduction provides the basis for understanding the methodology developed for strategic financing of DH site renovation projects, which aims to deliver environmental, economic, and societal benefits.

2. Methodology

The methodology behind the Financial Tools Portfolio was crafted to serve as a comprehensive and targeted knowledge resource for project promoters overseeing district heating (DH) site renovations in Lithuania, Poland, and Slovakia. The development process followed these key principles and steps:

1. Document focus and structure:

The theoretical part of the document begins with a **'General considerations'** chapter, offering essential context and an overview of how funding sources, management solutions, and technical assistance facilities interconnect in the financing structures that a project could adopt. This section sets the stage for the more detailed chapters that follow, where each component is presented separately to address the specific needs of project promoters.

This separation not only clarifies how these elements integrate within financing structures, but also across the steps of the project funding lifecycle. An essential aspect of this approach was categorising funding sources not by programme but by their redeemability. This classification distinguishes between redeemable (e.g., debt and equity instruments) and non-redeemable funding (e.g., grants and donations). This method enables project promoters to group funding mechanisms by their financial nature, rather than programme-specific conditions, enhancing clarity and accessibility.

2. Collaborative expertise and validation:

The content of the document leverages the collective knowledge and expertise of the Low2HighDH consortium partners. A robust review process involving all relevant Low2HighDH partners was implemented to validate the accuracy and reliability of the document at every stage. This iterative approach ensured that all data and recommendations aligned with best practices and the specific realities of DH site renovations in the target countries.

3. Stakeholder input through questionnaires:

At the outset of the project, questionnaires were distributed to 15 relevant stakeholders associated with DH sites in Lithuania, Poland, and Slovakia. These included representatives from energy consulting firms, DH associations and companies, and technical universities, among others. The questionnaires collected fundamental information on the challenges faced, the legal status of DH sites, the organisational structures of the managing companies, traditional funding methods, and potential new financing approaches.

The insights obtained contributed to shaping the focus of this methodology, emphasising the delivery of optimal support to beneficiaries. Moreover, these findings will also serve project partners in directing their support to project promoters during the development of their investment plans in Work Package 4 activities, ensuring continuity and alignment between project phases.

4. Consultation of official and sector-specific references:

To ensure the information presented is accurate and comprehensive, extensive research was conducted, incorporating data from the following sources:

- Official European Commission resources, including funding programmes and mechanisms.

- Official national resources from Lithuania, Poland, and Slovakia.
- Sector-specific references, such as websites, news, and documents generated by other EU-funded DH-related projects.

All consulted references are meticulously cited in footnotes, with a complete list aggregated in the appendix. References initially included in earlier sections and later consulted by the document's authors have not been repeated; instead, readers are directed to the sections where these references were originally cited for further details. These citations also include additional notes for readers and definitions contributed by Low2HighDH project partners.

5. Enhanced usability through tables, visuals, internal and external links:

To improve the document's accessibility, several tables and references were included at the beginning of the document:

- An acronym list compiling all abbreviations used. Relevant abbreviations are reintroduced at the start of each section to assist readers while consulting only specific parts of the portfolio.
- Figures and tables lists provide an overview of visuals and tables included, reinforcing key ideas.

These lists are strategically placed to ensure a seamless reading experience and to enhance the document's utility as a reference tool.

Additionally, since all concepts presented are linked to other programmes, facilities, or solutions, the text of each chapter includes internal links to relevant sections, enabling readers to navigate and reinforce their understanding of interconnected topics. Furthermore, embedded links within the text provide direct access to external websites, allowing users to apply to programmes, explore financial entities, or visit related platforms

6. Intentional reiterations for usability

The design of this document intentionally reiterates certain key details across chapters, reflecting the interconnected nature of programmes and concepts. These carefully chosen and subtle repetitions enhance accessibility, allowing readers to consult specific sections independently without needing to navigate back and forth. This approach is particularly valuable given the document's comprehensive scope and specialised nature, ensuring sufficient context and usability for professionals seeking targeted insights. As a result, these intentional reiterations serve a functional purpose, supporting the document’s role as both a comprehensive guide and a reference tool.

Conclusion:

The Financial Tools Portfolio was developed using a rigorous and collaborative methodology, integrating stakeholder insights, consortium expertise, and extensive research from official and sector-specific sources. Its structure balances comprehensive analysis with practical usability, allowing project promoters to access detailed information flexibly, tailored to their specific needs. By combining clarity, accuracy, and adaptability, this document equips project promoters with the flexibility needed to navigate the complexities of DH site renovations while aligning with the overarching goals of the Low2HighDH project.

3. General considerations

This chapter outlines the key financial considerations for DH site renovation projects to guide project promoters through the complexities of **funding and management solutions** discussed throughout the rest of the document.

Financial aspects, particularly how to finance the upgrading of infrastructure, technology, and equipment, are critical to the success of such projects. In countries like Lithuania, Poland, and Slovakia, project promoters face a wide range of options when defining the **financing structure** of their initiatives. In this process, the internal resources of these DH sites are generally insufficient to cover the full cost of modernisation. As a result, external funding sources and/or alternative solutions must be sought to ensure successful implementation.

Furthermore, the diversity of available funding sources—spanning private channels, national schemes, and European public programmes and funds—can make it challenging for promoters to identify the most suitable alternatives. Many programmes provide funding not only in a single form of grant, loan or equity, but may also offer access to a wide range of financial instruments, either independently or in combination. This diversity adds complexity to the process of selection and understanding.

To address this challenge, this chapter is divided into three key sections:

- A **summary of the available funding sources for CAPEX**[1] of DH renovation projects in Lithuania, Slovakia, and Poland, including their categorisation based on repayment obligations, as well as an analysis of the interconnections and compatibility between various European funds and programmes[2].
- An overview of the **management solutions**, a concept used by the Low2HighDH project to refer to financial solutions or models that district heating site renovation projects can adopt to modernise infrastructure, technology, or equipment **without requiring direct investment in physical assets**. These assets are made available by entities external to the project.
- The presentation of the potential **financing structures** that a renovation project could adopt for its execution through the combination of one or several options from the existing funding sources, the management solutions, or both, to enable the efficient implementation of renovation projects.

Moreover, some of the European funds and programmes mentioned above also provide access to **technical assistance facilities**, which are described in Section 9.2 – *Technical assistance facilities*. Nonetheless, in this document, such technical assistance facilities are not initially considered as part of the project's financing structures. This is because, depending on the accounting systems and preferences of each case, when they finance feasibility studies (which they do not always fund), they may either be included as CAPEX of the project or, in other cases, recorded as part of the OPEX[3] of the implementing entity. In the latter case, they remain outside the specific CAPEX of the project.

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[1] CAPEX (Capital Expenditures) refers to the funds an entity or project allocates to acquire, upgrade, or maintain physical assets such as buildings, equipment, or infrastructure. It represents long-term investments intended to improve or extend their lifespan.

[2] **Note for the reader**: Programmes such as the Innovation Fund and Horizon Europe focus on innovative technologies, contrasting with Low2HighDH's support for DH projects that employ proven and consolidated solutions.

[3] OPEX (Operational Expenditures) refers to the ongoing costs a company or organisation incurs to run its day-to-day operations, such as utilities, maintenance, salaries, and other regular expenses. It represents short-term expenditures necessary for the operational continuity of the business or project.

3.1 Overview of available funding sources for district heating projects

Below is an overview of the funding sources identified as the most relevant for financing the renovation of district heating sites in Lithuania, Poland, and Slovakia. For the sake of clarity, these funding sources have been categorised according to the type of repayment obligations they entail and their role within the financing structure of each project. The focus is on those that support **direct investments in technologies, equipment, or physical infrastructure, which together constitute the project's CAPEX**.

A detailed description of each funding source, including the process to access them, the types of entities eligible, and other relevant characteristics, can be found in chapters 6 – *Non-redeemable funding sources*, and 7 – *Redeemable funding sources* of this document:

Non-redeemable funding sources	**Redeemable funding sources**		
	Debt	**Equity**	**Adaptable** (The funding source could be debt and/or equity)
European funds and programmes - Grants:	**European funds and programmes - Debt:**	**Equity crowdfunding**	**European funds and programmes:**
▪ Cohesion Policy Funds - Grants & subsidies	▪ Public Sector Loan Facility (PSLF)	**Traditional equity**	▪ Cohesion Policy Funds - Sectoral Financial Instruments
▪ LIFE Programme	▪ Recovery and Resilient Facility (RRF) - Debt		▪ EIB Funding
▪ Modernisation Fund	**Concessional debt** (Usually loans)		▪ European Energy Efficiency Fund (EEEF)
▪ Recovery and Resilience Facility (RRF) - Grants	**Non-concessional debt:**		▪ InvestEU
National, regional, and municipal grants & subsidies	▪ Commercial loans		**Private investment funds:**
Donations:	▪ Capital market debt		▪ Debt and equity funds
▪ Classic donations	▪ Crowdlending		▪ Impact funds
▪ Donation-based crowdfunding	▪ Financial leasing		▪ Infrastructure funds
Community financing	▪ Instalment purchases		▪ Institutional investor-backed funds
			▪ Revolving funds
			Mezzanine finance

Table 1 – Overview of available funding sources for district heating projects

3.1.1 Interconnections between European funds, programmes and other support platforms for DH site renovations[4]

Navigating the numerous interconnections between the **European** funds and programmes, their technical assistance facilities, and other support mechanisms can be challenging. The map below is designed to help readers better understand these connections within the broader framework available to project promoters:

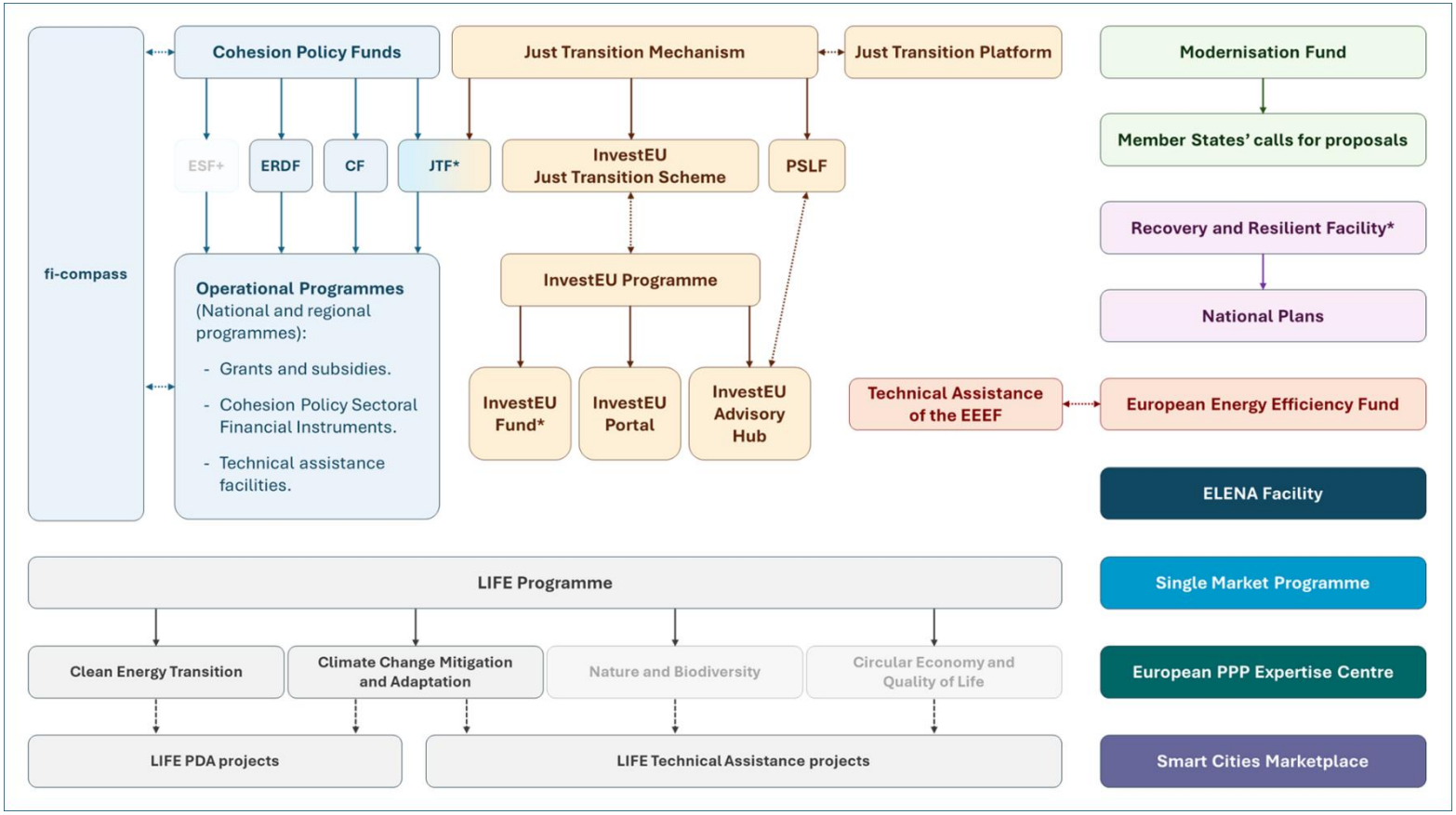

Figure 1 – Interconnections between European funds, programmes, and other support platforms for DH site renovations

[4] **Note to the reader:** Chapters 6, 7, and Section 9.2 provide valuable context that can help frame this section and the next. The asterisks in the image indicate that the JTF and the Recovery and Resilient Facility are part of the NextGenerationEU recovery plan. Similarly, a portion of the InvestEU Fund is financed through NextGenerationEU resources.

3.1.2 Compatibility among European funds and programmes

Compatibility among European funds depends on each programme's specific rules, the nature of the project, and any limitations set by the EU or Member States. The following guide provides an overview of compatibility and exclusivity considerations among these funds. For all funds deemed compatible, it is essential to highlight that **different funds cannot finance the same project elements**.

Cohesion Policy Funds:

- Compatible: Cohesion Policy Funds can be combined with LIFE subprogrammes, the Modernisation Fund (MF), the Recovery and Resilience Facility (RRF), and the InvestEU Fund. They may also complement the Public Sector Loan Facility (PSLF), particularly when public infrastructure is involved.
- Exclusion: Cohesion Policy Funds are generally not strictly exclusive with other funds (except in the case of the European Energy Efficiency Fund – EEEF), but duplication of funding for the same expense must be avoided.

LIFE subprogrammes:

- Compatible: LIFE can work alongside Cohesion Policy Funds, the RRF, InvestEU, and the EEEF, particularly for projects with innovative sustainability approaches. It may also align with the PSLF when targeting public-sector projects.
- Exclusion: LIFE typically does not combine with the MF, as LIFE prioritises innovation while the MF focuses on proven technologies. However, LIFE could finance the innovative aspects of a project while the MF funds its general implementation.

Modernisation Fund:

- Compatible: The MF may be compatible with Cohesion Policy Funds, the PSLF, and, in some cases, InvestEU, particularly for energy efficiency projects in the public sector. It may also complement the RRF if the funds are used to support distinct aspects of the project.
- Exclusion: MF is generally not combined with the EEEF, as both funds aim to finance similar types of expenses, and overlapping funding is prohibited.

Recovery and Resilience Facility:

- Compatible: The RRF can combine with Cohesion Policy Funds, LIFE, and InvestEU, provided each fund supports distinct aspects of the project. It can also align with the PSLF for public-sector projects.
- Exclusion: RRF and MF are generally exclusive due to their shared emphasis on modernisation and energy transition. RRF is also not combined with the EEEF to avoid overlapping funding.

InvestEU Fund:

- Compatible: InvestEU can complement Cohesion Policy Funds, RRF, LIFE, the MF, and the PSLF. It is particularly effective for financing large-scale projects that require significant private investment.
- Exclusion: InvestEU is generally not exclusive, but its use alongside other EU funds requires strict delineation of funded components. It cannot combine with the EEEF for the same project expenses.

Public Sector Loan Facility:

- Compatible: PSLF works well with Cohesion Policy Funds, the MF, LIFE, and InvestEU. It supports public-sector energy efficiency projects, particularly in regions with low investment capacity. It may also align with the RRF if funding covers distinct project components.
- Exclusion: PSLF is not typically exclusive but must respect the principle of non-duplication of funding for the same cost items, including any combination with the EEEF.

European Energy Efficiency Fund:

- Compatible: The EEEF can complement LIFE and PSLF by offering financial support for energy efficiency projects, particularly those led by local authorities or small and medium-sized enterprises (SMEs). It may also work with InvestEU to attract additional private investment.
- Exclusion: An EEEF investment is not feasible if the project receives subsidies from other EU programmes, such as Cohesion Policy Funds, the MF, or the RRF. Additionally, it cannot be combined with InvestEU for the same project expenses.

Key considerations for district heating project promoters:

While this section provides a general overview of the compatibility of funds and programmes, it is important to emphasise that the combination of funds from different EU programmes within the same project is **uncommon for district heating site renovations**. This is largely due to the length of time required to apply for and receive these funds, the administrative complexities associated with managing multiple European funding sources, and the need to clearly separate and justify the different components of the project. When such combinations do occur, they typically involve the integration of European funds managed directly by the national managing authorities with other funds managed at the EU level.

Project promoters are therefore encouraged to focus on the funding programme that best suits the specific characteristics and objectives of their project. This approach ensures a streamlined application process and an effective funding strategy.

3.2 Overview of management solutions

For the development of renovation, expansion, or creation projects for district heating networks, not all sites rely solely on their own financial resources or access to new funding sources for direct investments that would form part of their CAPEX and corporate assets.

There are **alternative financing and operational models** that, whether combined with such funding sources or used independently, can form part of a project's final **financing structure**. These models allow projects to move forward without the need for upfront investment in technology, equipment or physical infrastructure.

In the Low2HighDH project, we refer to these financing and operational models as **"management solutions"**. These solutions often involve the establishment of **Public-Private Partnerships (PPPs)** and the participation of **Energy Service Companies (ESCOs)**.

A comprehensive definition of Public-Private Partnerships is provided in the following section. Meanwhile, the management solutions identified as the most suitable for district heating renovation projects in Lithuania, Poland, and Slovakia, along with an in-depth explanation of ESCOs, are detailed in Chapter 8 – *Management solutions*.

The management solutions identified include:

- **Build Operate Transfer** (BOT): A model where an entity constructs, operates and manages the infrastructure for a defined period before transferring ownership to a third party, usually a government entity.
- **Build Own Operate Transfer** (BOOT): A model where a company constructs, owns, and operates the infrastructure permanently, generating income through its use and service.
- **Energy Performance Contract** (EPC): A performance-based contract in which a company implements energy efficiency improvements, financed through the energy cost savings achieved.
- **Heat pump subscription model**: A subscription model where users or district heating sites pay a fee to access heat pump services, including installation, maintenance, and operation.
- **Operational renting**: Leasing of operational equipment without the user or district heating site acquiring ownership, usually including maintenance and technical support.
- **Transfer of Operating Rights** (TOR): A model that involves transferring the operational rights of infrastructure to another entity, enabling its use for a specified period before control reverts. This transfer of rights is particularly relevant when the other entity is committed to renovating or modernising part of its facilities, technology, or equipment.

Energy supply models, such as **Power Purchase Agreements, Heat Purchase Agreements, and Energy Supply Contracts**, are also explored as supplementary approaches to enhance both financial and operational performance.

3.3 ENVISAGED GENERIC PROJECT FINANCING STRUCTURES

When defining the **financing structure** for the renovation or modernisation of a district heating site, project promoters who need to access funding sources and/or management solutions to supplement their own financial resources must determine the **optimal mix** of these components within the final structure.

This section offers a general overview of such combinations, introducing key concepts to support understanding, including **blended finance, project finance, and Public-Private Partnerships** (PPPs), which are referenced throughout this document.

3.3.1 Preliminary concepts

a) Blended finance

Combining **grants with other financial instruments (loans, guarantees, or equity)** from the public and private sectors is known as blended finance. This approach facilitates project financing by reducing costs, mitigating risks, and making projects more viable. Additionally, it **increases the availability of private funding for initiatives**.

Grants can also be used to fund project preparation activities, such as feasibility studies or technical assessments, for district heating site renovation projects. In many cases, grants cover a significant portion of these preparatory costs, ensuring that projects meet the necessary standards to attract further investment. The core value of blended finance lies in its ability to enhance financial viability by leveraging diverse funding sources. By blending grants with other instruments, additional private-sector funding can be unlocked, expanding the resources available for district heating modernisation. This is particularly valuable in addressing challenges such as high upfront capital requirements and the integration of advanced technologies.

It is important to **distinguish blended finance from a simple "combination of funds**". While a combination of funds refers to pooling resources without a structured strategy, blended finance involves a deliberate integration of grants with other financial instruments. This strategic approach maximises outcomes, particularly in district heating site renovations, by efficiently utilising diverse financial tools to address specific project needs.

Blended finance and the combination of EU funding sources are both mechanisms designed to catalyse investment in energy-efficiency projects, but they differ significantly in their focus and application:

- **Blended finance** strategically uses grants to de-risk projects and attract private sector investment. Grants act as concessional capital or guarantees, reducing perceived risks for private investors and making projects more attractive. This approach is particularly effective in closing financing gaps for district heating projects, which might otherwise struggle to secure sufficient private sector interest due to high risks or lower financial returns.
- **Combination of EU funding sources** integrates various EU programs and instruments, such as grants, loans, and guarantees, to support a wide range of projects across Europe. This mechanism promotes economic growth, regional cohesion, innovation, and sustainability within EU member states. Unlike blended finance, this approach focuses on utilising EU-provided funding streams to advance regional development, research and innovation, and specific policy objectives.

In summary, while blended finance aims to attract private investment by mitigating risks and addressing specific development goals, the combination of EU funding sources focuses on leveraging financial resources provided directly by the EU to support member state initiatives. Both mechanisms are essential for advancing sustainable development, particularly in modernising district heating systems, but they differ in their methods and priorities.

b) Project finance

Project finance, particularly in the context of energy renovation projects, is a **structured financial arrangement designed to manage risks and attract investment**. A key feature of this model is the establishment of a **Special Purpose Vehicle** (SPV), a separate legal entity that allows for **non-recourse or limited recourse financing**. This means that project investors' financial liability is limited to the assets and cash flows of the SPV, protecting them from losses beyond their initial investment.

The SPV also serves as a **platform to combine funding and management solutions from various sources**. These may include equity contributions from investors, project-finance debt from lenders, financial agreements such as Power Purchase Agreements (PPAs) and Energy Performance Contracts (EPCs), or operating licenses provided by public authorities. This integrated approach allows the SPV to efficiently pool resources, distribute responsibilities, and ensure a robust financial and operational framework for energy renovation projects.

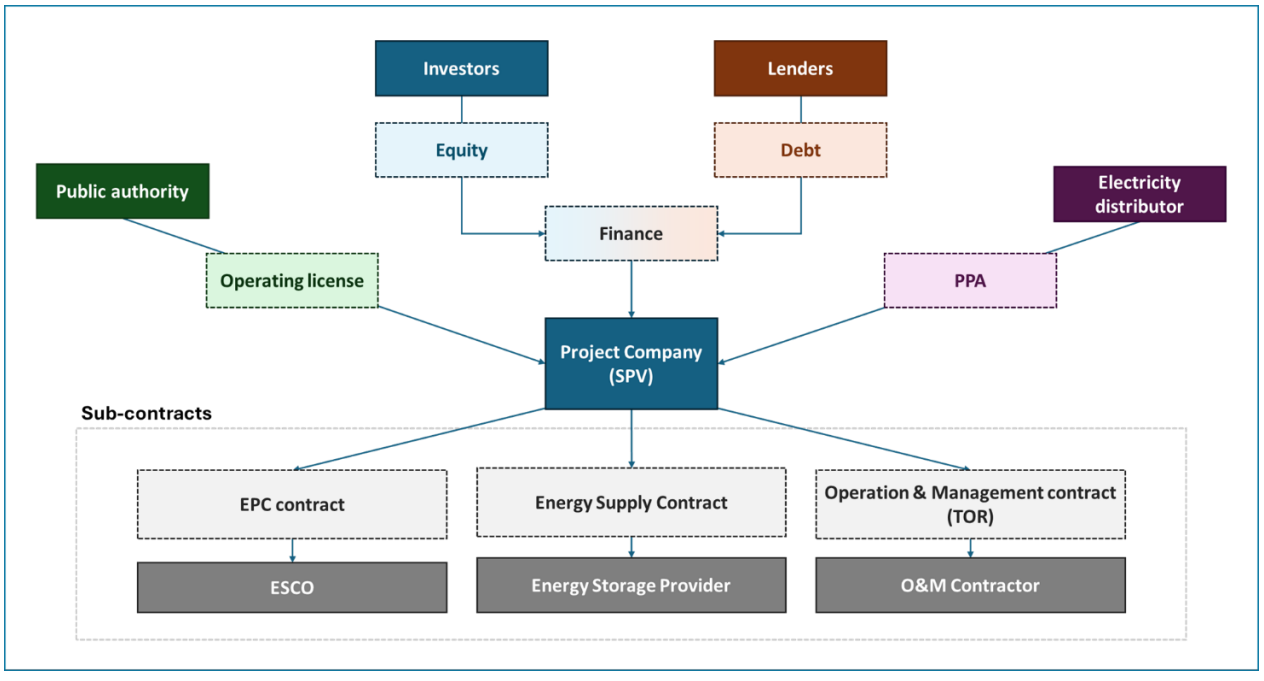

Figure 2 – Example of a project finance structure integrating various stakeholders, funding sources, management solutions, and energy supply mechanisms[5]

[5] Adaptation for DH site renovation projects inspired by the figure 'PPA Contract Structure with Project Finance' from Yescombe, E.R., Principles of Project Finance, Wiley, 2016.

In energy renovation projects, the **SPV independently manages the project's financial resources, assets, and revenue streams, separate from the originating company**. It is often constituted by different stakeholders who collectively capitalise and control the entity to ensure project-specific financial management and accountability.

Opportunities for district heating site renovation projects:

The SPV structure offers several advantages for energy renovation initiatives, such as district heating modernisation and renewable energy integration. By isolating the project from the parent company's financial obligations**, it enhances risk management and fosters investor confidence**. The non-recourse or limited recourse nature of project finance ensures that **investors are exposed only to the performance of the specific project**, making it an attractive option for external capital.

Despite these benefits, it is important to recognise the limitations of **complexity and size**. The establishment and management of an SPV require a sophisticated legal and financial framework, which can be challenging for smaller-scale projects or regions with limited expertise and regulatory support. Additionally, the transaction costs, such as legal fees and financial structuring expenses, may not be viable for smaller projects. These factors underline the importance of a comprehensive feasibility study to ensure the project scope, scale, and resources align with the requirements of a project finance structure.

While **regulatory constraints** in some countries have limited the adoption of SPVs by public administrations, successful examples across the European Union demonstrate their potential. These cases primarily focused on heating and cooling networks[6] or the installation of PV panels at the district level, serve as inspiration for broader applications in energy renovation projects.

How to access:

The success of project finance in energy renovation depends on careful **risk assessment, robust legal frameworks, and transparent contractual arrangements**. Investors are drawn to SPVs for their structured nature, offering a dedicated vehicle for project assets and revenue streams, which bolsters confidence in a project's financial viability.

For public administrations, establishing an SPV involves several **key steps**. The process begins with a comprehensive **feasibility study** to identify viable projects. A dedicated team of experts in finance, law, and project management is then assembled to oversee the SPV's creation, including defining its legal structure, objectives, and governance framework. Once the SPV is established, **effective communication** with potential investors is crucial. Engagement through forums or targeted outreach helps to attract private capital by highlighting the economic viability and expected returns of the projects.

To ensure success, **public administrations should prioritise fair risk-sharing mechanisms, revenue-sharing agreements, and partnerships with financial institutions** or development banks to enhance credibility. Adopting international best practices in SPV governance, coupled with transparent monitoring and reporting mechanisms, further instils investor confidence and ensures the long-term success of energy renovation projects.

[6] 37 MW solar district heating plant in the Netherlands with outstanding features: https://solarthermalworld.org/news/37-mw-solar-district-heating-plant-in-the-netherlands-with-outstanding-features/?utm_source=chatgpt.com

c) Public-Private Partnerships

A Public-Private Partnership (PPP) is a **long-term contractual agreement between a public authority and a private entity**, designed to finance, develop, implement, and/or operate infrastructure projects or services traditionally provided by the public sector. In a PPP, both parties collaborate by sharing responsibilities, risks, and rewards, leveraging the private sector's expertise, efficiency, and capital to deliver public services or infrastructure effectively.

PPPs are commonly used to **develop and operate infrastructure projects**, including highways, hospitals, water treatment plants, and district heating systems. In energy projects, they facilitate the modernisation of infrastructure, such as district heating networks, by combining public oversight with private sector innovation and investment.

A PPP is defined by several **key characteristics** that make it an effective framework for infrastructure and service delivery:

- **Shared responsibilities**: The public sector defines the service requirements, monitors compliance with agreed standards, and ensures public interest is prioritised, while the private sector provides financial resources, operational expertise, and innovative solutions.
- **Risk allocation**: Risks are distributed based on the capacity of each party to manage them effectively, whether they are financial, operational, or construction-related. This ensures an optimal balance of responsibilities.
- **Performance-based remuneration**: The private entity is often compensated based on achieving specific performance targets, incentivising efficiency and quality service delivery.
- **Long-term collaboration**: PPPs are typically structured over several decades, ensuring stability for complex infrastructure projects such as transportation systems, healthcare facilities, and energy networks.

PPPs **enhance efficiency** by leveraging the private sector's specialised skills, advanced technology, and management practices. They also provide **financial leverage** by enabling public authorities to access private capital, reducing the need for substantial upfront public expenditure. Additionally, performance-based contracts within PPPs prioritise **quality and reliability in public services**.

While PPPs offer significant advantages, they **require careful structuring** to ensure fair risk-sharing, transparent governance, and alignment with public policy objectives.

In summary, a PPP is a **collaborative framework** that integrates the strengths of the public and private sectors, enabling the delivery of essential infrastructure and services while maximising efficiency and resource utilisation.

3.3.2 Generic project financing structures

The financing structure of a district heating site renovation project depends on **multiple factors**, primarily influenced by the scope of the modernisation. This may involve a full refurbishment of the site, including its infrastructure, equipment, and technologies, or a more targeted renewal of specific components. These factors directly affect the project's scale and the expected lifespan of the upgraded elements.

The financing structure for each project typically **integrates various funding sources** outlined in this document and may be further complemented by one or more of the six **management solutions** identified as the most suitable for these initiatives. This approach enables millions of potential financing structure combinations for district heating site renovations. When the financing structure incorporates a mix of grants and other financial instruments, it is referred to as **blended finance**.

The incorporation of management solutions offers significant advantages, including a reduction in the required CAPEX—and, consequently, the need for additional funding sources—by transferring the financial burden of initial costs to external providers. Furthermore, project risks are mitigated by delegating operational responsibilities to third-party entities, such as ESCOs or other operators, who are accountable for ensuring the project's performance and outcomes.

Both funding sources and management solutions have distinct features shaped by their suitability for different components, financing mechanisms, regulatory considerations, and the economic scope they can cover. Therefore, **defining the financing structure requires project promoters to thoroughly evaluate each option to develop the most tailored solution for their initiatives**.

This section does not aim to list all possible combinations, as doing so would unnecessarily lengthen the document, potentially diverting the reader's attention and shifting focus away from its core objectives. Instead, it provides a **high-level overview by categorising financing structures into two main groups: recourse financing and non-recourse or limited recourse financing**. Both categories may include non-redeemable and redeemable funding sources, which can be further supplemented by management solutions:

- **Recourse financing**[7]: In this type of financing structure, lenders or investors have the right to claim repayment not only from the project's revenues but also from the broader assets or guarantees provided by the organisation promoting the project. This means that if the project fails to generate sufficient income, the financier can seek repayment through the organisation's other resources, such as company assets or additional guarantees. This approach provides greater security to lenders but increases the financial risk for the promoting organisation.
- **Non-recourse or limited recourse financing**: This type of financing structure restricts repayment obligations to the project's cash flows and assets alone. In other words, if the project does not generate enough revenue, lenders or investors cannot claim repayment from the promoting organisation's other assets. In the case of limited recourse financing, specific conditions may allow partial claims beyond the project's assets. This makes these financing structures particularly suitable for large-scale or high-risk projects, where promoters aim to limit their financial exposure.

[7] **Note for the reader**: In all the analysed recourse financing structures, it is assumed that the project or organisation contributes a percentage of its own economic resources.

The image below illustrates these two groups of potential financing structures at a high level[8], along with the generic combinations they may involve. The following subsections outline the general characteristics a project should fulfil to adopt one combination or the other.

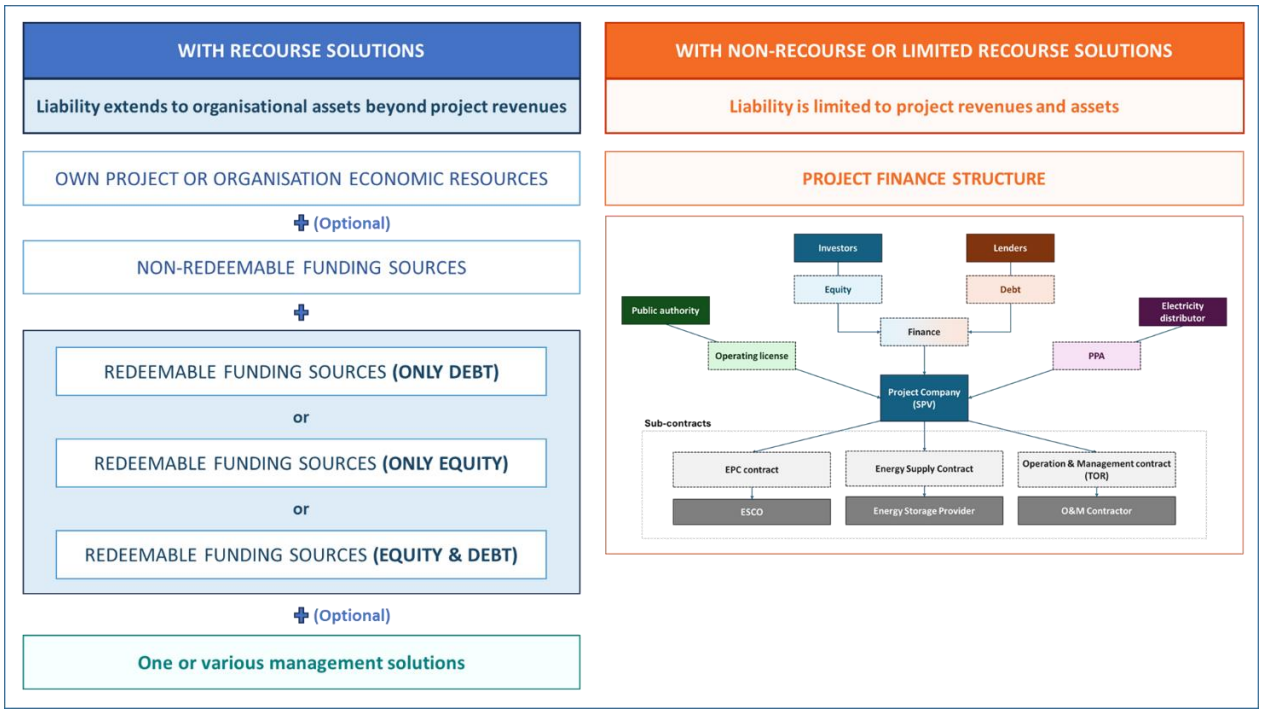

Figure 3 – Generic categorisation of financing structures based on liability

[8] **Note for the reader**: This document does not examine financing structures based solely on the organisation's or project's own resources. It focuses instead on Low2HighDH projects that define their structure through external funding sources and solutions.

a) Financing structure relying on internal resources and non-redeemable funding, with the optional integration of management solutions

Technically speaking, this financing structure is **not categorised as either a recourse solution or a non-recourse or limited recourse solution** because it primarily relies on internal resources and non-redeemable funding. These financing elements do not involve external financiers assuming liability tied to the organisation's broader assets, project revenues, or project assets.

The image below illustrates the general characteristics that projects adopting this structure should meet, providing a high-level overview of the required conditions and their potential combinations.

An additional feature of this structure is the **optional integration of management solutions**. While some management solutions may involve liability linked to the project revenues, they do not extend to the organisation's or project's assets. As such, the optional adoption of management solutions does not shift the categorisation of this financing structure into either recourse or non-recourse, maintaining its distinct nature.

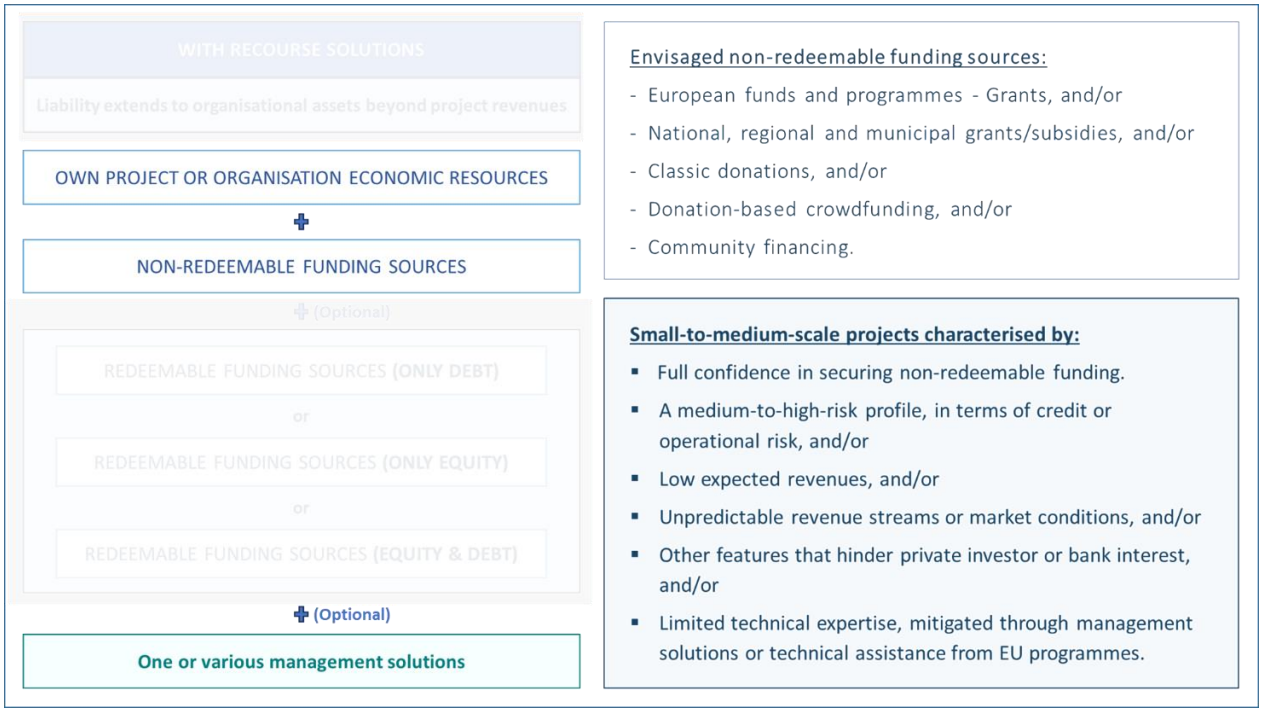

Figure 4 – Main characteristics of a financing structure relying on internal resources and non-redeemable funding sources

b) Recourse financing structures relying on internal resources, non-redeemable funding and debt, with the optional integration of management solutions

The image below outlines the main characteristics of a **recourse financing structure** relying on internal resources, non-redeemable funding, and **debt**. This structure involves external financiers—such as banks, investment funds, crowd lenders, European funds and programmes, financial leasing companies, bondholders, and entities offering instalment purchases—assuming liability tied to the organisation's broader assets, as well as project revenues and project assets.

This approach enables access to a broader range of funding sources, **facilitating the realisation of large-scale or capital-intensive projects**. However, it also increases the organisation's financial exposure, as external financiers may seek repayment from the organisation's general assets if project revenues are insufficient.

The **optional integration of management solutions** can further complement this structure by reducing operational risks and enhancing efficiency, particularly for projects requiring additional technical expertise or external partners for effective implementation. Moreover, **technical assistance facilities** from EU programmes can address limitations in technical expertise in this and subsequent structures.

Figure 5 – Main characteristics of a recourse financing structure relying on internal resources, non-redeemable funding sources, and debt

c) Recourse financing structures relying on internal resources, non-redeemable funding and equity, with the optional integration of management solutions

This financing structure relies on internal resources, non-redeemable funding sources, and **equity**, offering a debt-free approach to project implementation. It enables the mobilisation of equity capital, allowing investors to share financial risks in exchange for returns linked to the project's performance.

Unlike debt-based models, this structure **does not impose repayment obligations, but it requires projects to generate adequate returns to meet equity investors' expectations for remuneration**. The combination of internal resources and non-redeemable funding provides a stable capital foundation, reducing the reliance on external loans. For **ESG-driven** (Environmental, Social, and Governance) equity investors, these types of projects are particularly attractive, aligning with the growing demand for sustainable and impactful investments.

Equity financing is typically suited for **medium-to-large-scale projects** due to their higher capital requirements and potential for substantial returns, although certain smaller projects may access equity through crowdfunding or specialised investment funds.

The image below highlights the main characteristics of this structure, detailing the conditions projects must meet to attract equity funding. The **optional integration of management solutions** further supports project execution by addressing technical and operational challenges, ensuring optimal performance and risk management. Additionally, **technical assistance facilities from EU programmes** can provide support for addressing technical limitations, offering tailored guidance to improve the feasibility and attractiveness of projects within this structure.

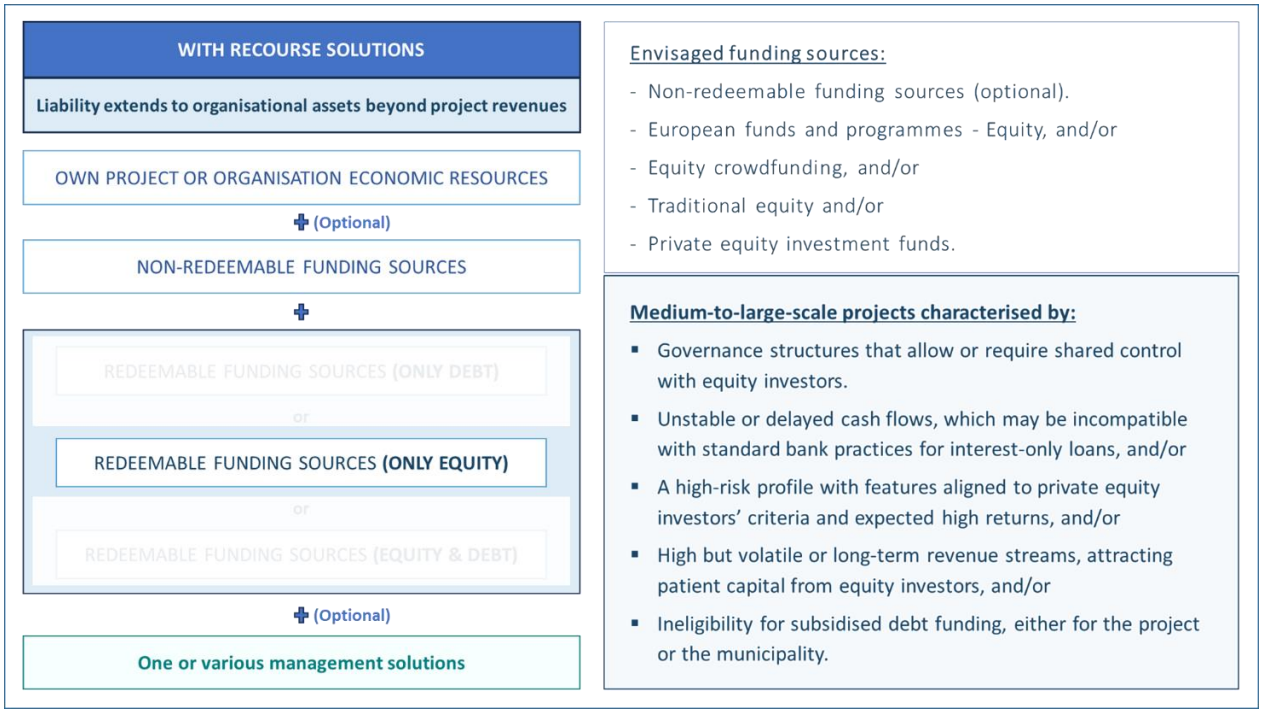

Figure 6 – Main characteristics of a recourse financing structure relying on internal resources, non-redeemable funding sources, and equity

d) Recourse financing structures relying on internal resources, non-redeemable funding, debt and equity, with the optional integration of management solutions

This financing structure integrates internal resources, non-redeemable funding, **debt, and equity**, making it particularly suited for **large-scale projects with significant capital requirements and operational complexity**. By combining these funding sources, it provides the flexibility to address diverse capital needs while distributing financial risks and responsibilities among stakeholders.

Debt financing ensures access to upfront capital with structured repayment obligations, while equity financing attracts investors aligned with the project's performance and governance framework. Together, these elements enable projects to navigate the complexities of large-scale initiatives while meeting the demands of external financiers and equity investors.

The viability of this structure heavily depends on the **regulatory framework governing the entity promoting the project**. Clear and supportive regulations can enhance access to external financing, mitigate risks, and increase investor confidence. Conversely, restrictive or unclear governance may hinder the feasibility of implementing this approach.

The image below presents the main characteristics of this structure, outlining the conditions projects must meet to secure both debt and equity financing effectively. The **optional integration of management solutions** further strengthens this structure by addressing technical and operational challenges, and improving efficiency and risk management. **Technical assistance facilities** from EU programmes play a crucial role in supporting projects, providing expertise to overcome technical barriers and ensuring alignment with the stringent requirements of external financiers and equity investors.

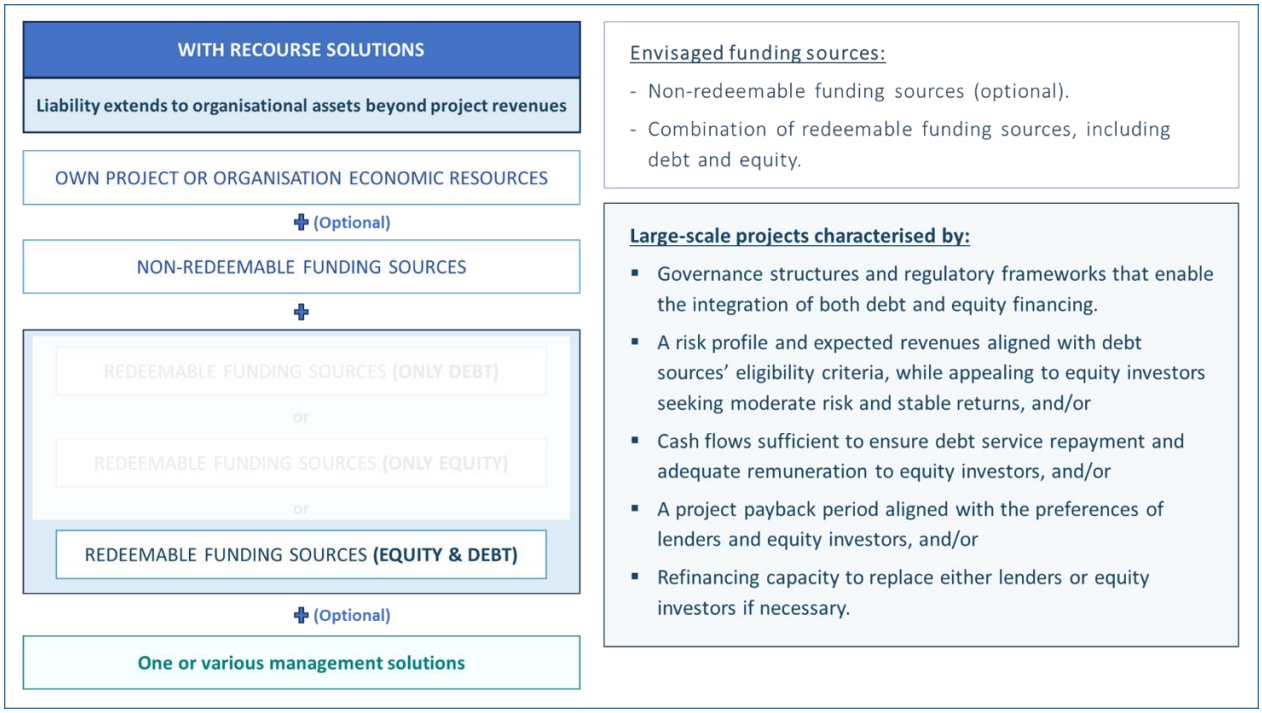

Figure 7 – Main characteristics of a recourse financing structure relying on internal resources, non-redeemable funding sources, debt and equity

e) Non-recourse or limited recourse financing structures

The financing structure characterised as non-recourse or limited recourse typically falls within the concept of **project finance**, as extensively detailed in section 4.3.1.b.

Non-recourse or limited recourse financing does not always require the creation of a Special Purpose Vehicle (SPV); however, within the context of the projects supported by Low2HighDH, the establishment of an SPV is presented as the most suitable approach.

Project finance usually employs an SPV to separate the project from the general assets of its sponsors, **enabling the integration of all the types of funding sources and management solutions** described earlier while ensuring clear accountability and governance.

To avoid repetition with the aforementioned section, the following outlines only the main characteristics of the types of projects that could adopt this structure.

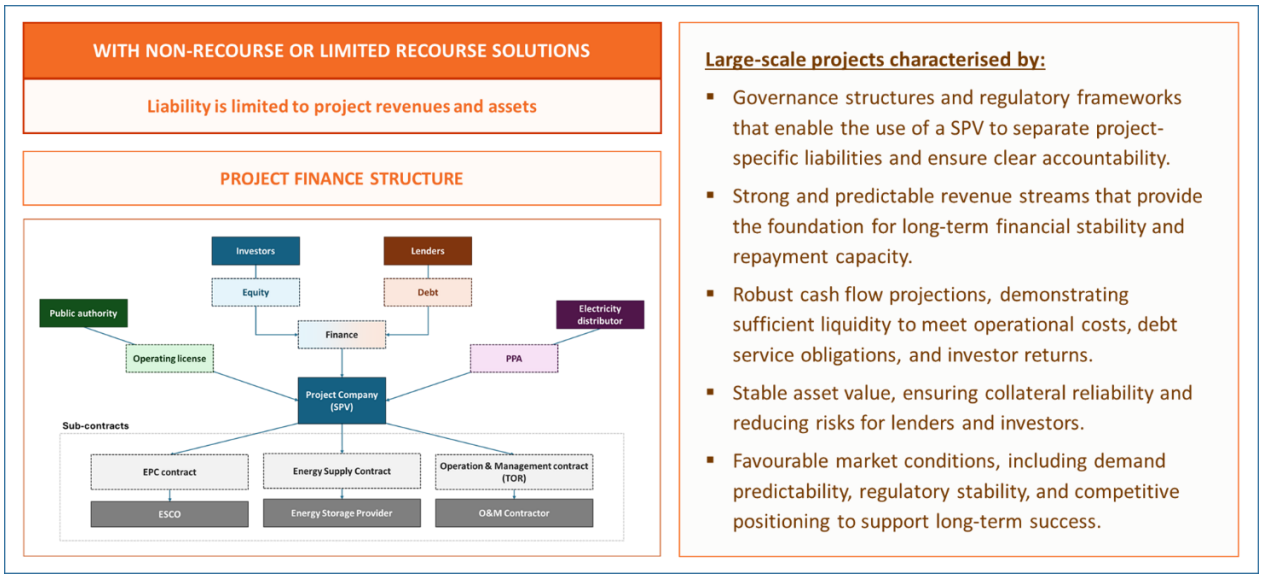

Figure 8 – Main characteristics of a non-recourse or limited recourse financing structure involving an SPV

4. Steps for project funding

Securing funding for district heating site renovations involves navigating a multifaceted process that integrates technical, financial, and operational considerations. Each project presents unique challenges, requiring a **tailored approach** that aligns with its specific objectives, regulatory environment, and financial constraints.

This chapter provides a structured framework for the project funding lifecycle, applicable to both recourse and non-recourse (or limited recourse) financing. The following steps outline a **general roadmap**, emphasising flexibility and adaptability to address the diverse financing needs of district heating projects.

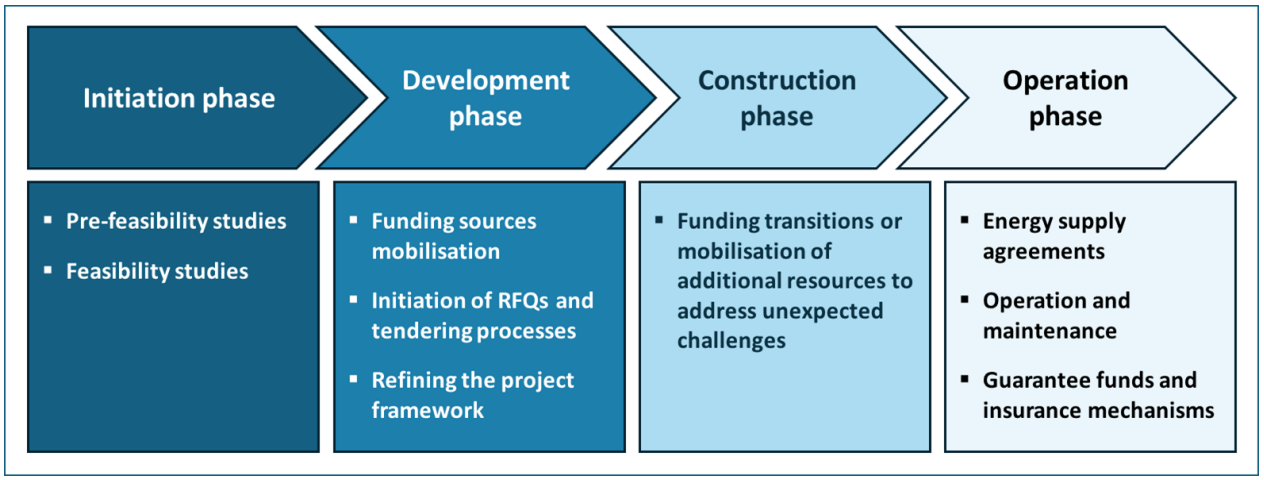

Figure 9 – Generic phases in the project funding lifecycle[9]

The **Low2HighDH** project will assist the selected initiatives from its two calls for applications in conducting **pre-feasibility** studies during the **initiation phase**.

Upon completing the pre-feasibility studies—encompassing an in-depth market analysis, a detailed evaluation of the technical and financial viability of each pilot, and the identification of the funding landscape to support the renovation and modernisation of each district heating site, Low2HighDH will provide support for the preparation of comprehensive **investment plans**, tailoring the optimal financing structure for their execution.

Furthermore, the project aims to establish a framework for jointly defining the procedures that will facilitate the initiation of **RFQs** (Request For Quotations) **and tendering processes during the development phase**.

While this framework is broadly applicable, it is essential to acknowledge that **each phase may need to be customised to address the complexities and unique characteristics of individual projects**.

[9] Structure inspired by the *Guidelines on community Heating and Cooling*, REScoop, 2023: https://www.rescoop.eu/uploads/rescoop/downloads/Guidelines-on-CHC.pdf

4.1 INITIATION PHASE

The initiation phase is the starting point for successful project funding, involving preliminary studies and subsequent analysis to assess feasibility and identify potential funding opportunities. This phase is also essential for refining the project definition, ensuring a full understanding of the technical, regulatory, financial and funding contexts that will shape its development. Establishing a **robust, credible and well-structured framework** at this stage not only opens the door to small grants, but also significantly increases the project's potential to secure larger funding from European or national programmes at later stages.

1. **Prefeasibility studies**: Prefeasibility studies aim to evaluate the overall **viability of the project** at a conceptual level. These studies determine whether pursuing the project further is justified and lay the foundation for more detailed feasibility analyses. Various technical assistance facilities and capacity-building activities can support the development of these studies. Key areas of analysis may include:

    - **Market analysis**: This component evaluates the market environment in which the project will operate, focusing on key factors such as current and projected demand for district heating services, the competitive landscape, and the regulatory framework influencing market dynamics. It involves assessing population growth, energy efficiency trends, and the potential adoption of renewable energy sources, while also identifying existing competitors and the project's unique advantages, such as cost-effectiveness or environmental benefits. Additionally, it maps stakeholders, including end-users, local authorities, and potential partners, to align the project with their needs and interests. Price sensitivity and consumer willingness to pay are analysed to ensure affordability and competitiveness, alongside emerging market trends and risks, such as regulatory shifts or the adoption of disruptive technologies. This analysis helps substantiate the project's market potential, strengthen its financial strategy, and identify opportunities while mitigating risks.

        - **Regulatory and institutional constraints**: A thorough examination of the policy environment and regulatory framework is a fundamental component of market analysis, particularly for district heating renovation projects in Lithuania, Poland, and Slovakia. This involves identifying potential barriers and opportunities, such as assessing whether national energy laws or local regulations permit access to specific funding sources. The review of existing district heating tariff structures and their regulatory boundaries is essential to establishing competitive pricing while ensuring long-term financial viability. Tax relief incentives and supportive policies aimed at facilitating district heating renovations must also be considered, as they can significantly enhance the feasibility and attractiveness of such projects.

    - **Technical viability**: Assessing the current state of the district heating system to identify required upgrades and evaluate the potential for integrating renewable energy sources. This includes analysing system performance, existing inefficiencies, and available technologies for modernisation.

    - **Financial viability**: Building on the technical and market analyses, this step begins with gathering financial data to estimate the project's Capital Expenditures (CAPEX) and Operational Expenditures (OPEX). Initial cost estimates provide a baseline for evaluating the project's economic feasibility and shaping its financing structure.

    - **Funding landscape**: Mapping out potential funding sources, including grants, donations, subsidies, debt, and equity, that can be leveraged to support the project. At this stage, it is also advisable to

explore management solutions that can reduce CAPEX by involving external service providers and will outline how the development, construction, and operation phases will be executed.

2. **Feasibility studies**: If the pre-feasibility studies demonstrate that the project is viable, the next step involves conducting feasibility studies to delve deeper into its technical, financial, and operational dimensions. These studies provide a comprehensive evaluation, laying the groundwork for the project's initiation and subsequent implementation. This phase is crucial for transforming conceptual ideas into actionable plans and ensuring that the project is robust and ready for execution. It often requires close collaboration with external experts, consultants, and technical advisors to guarantee thorough analysis and meticulous planning.

   At this stage, projects can continue leveraging technical assistance facilities provided by EU programmes or similar initiatives. These facilities may cover part of the costs for activities such as detailed studies, energy modelling, and business plan development. Additionally, project promoters may rely on internal budgets or secure small-scale loans to address any remaining funding gaps. Such loans can finance critical feasibility activities, including engaging external consultants or conducting advanced technical assessments.

   Key activities may include:

   - **Preparation of a business plan**: The business plan serves as the cornerstone of the feasibility stage, integrating and expanding on the analyses conducted during the pre-feasibility studies. This plan provides a detailed roadmap for the project, including:
     - **Technology selection**: Finalising the specific technologies to be employed, such as heat pumps, boilers, or hybrid systems, and defining the upgrades or modernisations required to optimise the district heating system.
     - **Scope of renovations**: Identifying the precise scope of physical renovations, including components to be replaced, upgraded, or optimised, to ensure maximum efficiency and sustainability.
     - **Supplier selection**: Evaluating and selecting potential contractors and suppliers for equipment, materials, and services, ensuring alignment with the project's technical, operational, and financial objectives.
     - **Financial plan**: Developing a comprehensive financial plan that consolidates the project's CAPEX and OPEX estimates. This plan includes detailed financial projections and key project performance metrics, such as Internal Rate of Return (IRR), Net Present Value (NPV), Payback Period, profit and losses statements, and envisaged cash flows.
       - **Investment plan**: As part of the financial plan, it defines the project's final financing structure. It involves selecting specific funding sources and the most appropriate management solutions to optimise CAPEX and effectively allocate risks, as well as outlining tendering processes and requests for quotations (RFQs) to streamline procurement.
   - **Refinement of project scope and strategies**: Feasibility studies refine the technical, operational, and financial details of the project to ensure alignment with overall objectives. This may include:

- Conducting **advanced simulations and energy modelling** to validate technology choices and optimise efficiency.
- Preparing detailed **engineering designs and implementation strategies** to guide the construction phase.
- Ensuring **full compliance with regulatory and environmental requirements**, mitigating risks related to permitting and policy adherence.

4.2 DEVELOPMENT PHASE

This phase **bridges the initiation and construction stages** by mobilising resources and refining the project's financial, legal, and operational frameworks. In the context of the Low2HighDH Project, it is also referred to as the **Investment Plan Initiation phase**.

Throughout this phase, the project can continue leveraging technical assistance facilities to support key activities. These facilities can provide guidance on tendering processes, regulatory alignment, and capacity-building for project promoters.

Key activities may include:

1. **Funding sources mobilisation**: During this stage, the project promoter secures the funding sources defined in the proposed financing structure. This may involve accessing **larger grants** to cover significant portions of CAPEX and securing **redeemable funding sources**, such as concessional and non-concessional loans and other debt and equity instruments, to fill any financial gaps. Effective mobilisation ensures that all necessary resources are in place for the construction phase.

   At this point, it must be clear which **management solutions will be implemented**, as these will largely determine who will execute the construction and operation phases, as well as how they will be carried out. Similarly, depending on the adopted management solutions, these stakeholders may have already become involved during this stage in adjusting the project framework.

2. **Initiation of RFQs and tendering processes**: The initiation of Requests for Quotations and tendering processes is a critical step in this stage. These processes involve:

   - Preparing detailed specifications for the goods and services required for the project, ensuring alignment with technical and financial objectives.
   - Publishing tender documents through appropriate channels to attract qualified bidders.
   - Engaging with potential contractors and suppliers to clarify project requirements and expectations.
   - Evaluating bids transparently and objectively to select the most suitable partners for the project.

   A well-structured tendering process not only ensures compliance with regulatory standards but also fosters competition, which can lead to cost savings and higher-quality outcomes.

3. **Refining the project framework**: During this stage, further adjustments to the project's framework may be necessary to address unforeseen challenges or refine previously defined elements. Key activities include:

   - Establishing contracts and legal structures: Finalising contractual agreements with selected suppliers and partners. If the project adopts a non-recourse financing structure, establishing a Special Purpose Vehicle (SPV) may be required to isolate project-specific liabilities and streamline management.
   - Preparing regulatory documentation: Ensuring all necessary documentation is in place for regulatory approvals. This includes aligning the project with EU or national policies, particularly in areas such as environmental compliance and permitting.

4.3 CONSTRUCTION PHASE

The construction phase marks the **physical implementation of the project**, focusing on tangible activities such as infrastructure upgrades and technology installations. Although funding sources and the financing structure are typically defined and secured by this stage, unforeseen circumstances may necessitate **funding transitions or the identification of additional resources to address unexpected challenges**. Projects may need to adapt to fluctuating costs, delays, or technical issues, requiring promoters to secure additional grants, short-term loans, or private contributions to bridge financial gaps. Flexibility and a proactive approach to reassessing funding options are essential to maintaining momentum during this phase.

The execution of the construction phase depends on whether the project is managed directly by the promoter through selected construction companies or delegated to **management solutions** that extend beyond the execution of works or technology upgrades. Management solutions, such as Energy Performance Contracting, Build Operate Transfer or Build Own Operate models, often transfer construction responsibilities to external entities that integrate financial and operational expertise.

If the promoter retains direct oversight of construction, meticulous coordination with contractors and suppliers becomes paramount. Clear contractual agreements, adherence to timelines, and compliance with regulatory standards are critical to avoid disruptions. However, unexpected challenges, such as supply chain issues or technical obstacles, may arise and necessitate agile decision-making and potential adjustments to the project framework.

Even during this phase, **technical assistance facilities** can play a vital role in supporting the project. These facilities may provide advisory services to navigate procurement challenges, refine execution strategies, and ensure compliance with EU or national regulations. Additionally, they can support capacity-building efforts, particularly when innovative technologies or complex construction methods are involved, further enhancing the project promoter's ability to manage this phase effectively.

The construction phase is a critical juncture where planning transitions into tangible outcomes. Success depends on adaptability, precise execution, and the effective management of unforeseen challenges, ensuring the project progresses toward its objectives without compromising quality or financial sustainability.

4.4 Operation phase

The operation phase begins once the project becomes fully functional, shifting the focus from construction to ensuring **long-term sustainability, efficient performance, and reliable revenue generation**. This phase encompasses daily operations, routine and preventive maintenance, and the continuous optimisation of the district heating system to meet expected energy savings and service quality standards.

A robust management framework is essential during this phase, leveraging previously adopted or newly introduced **management solutions**. Models such as Energy Performance Contracts or Transfer of Operating Rights are instrumental in achieving operational efficiency. These solutions delegate responsibilities to specialised entities, ensuring expertise-driven operations while linking payments to measurable outcomes, such as energy savings or system performance. This alignment of incentives promotes accountability and drives continuous improvement.

Maintenance plays a central role in this phase, ensuring the reliability and longevity of the upgraded infrastructure. Preventive maintenance schedules, combined with advanced performance monitoring systems, reduce the likelihood of unexpected failures and operational disruptions. The integration of digital tools, such as remote monitoring and predictive analytics, further enhances efficiency, enabling operators to address potential issues proactively.

Key energy supply agreements must also be finalised during this phase, including **Energy Supply Contracts and Power Purchase Agreements**. These agreements define the terms for energy delivery, pricing structures, and responsibilities between operators and end-users. They can ensure stable revenue streams while distributing risks equitably among all parties involved.

Financial stability is another critical focus of the operation phase. To mitigate risks and protect revenue streams, projects often rely on **guarantee funds and insurance mechanisms**. Guarantee funds provide financial stability in the face of market fluctuations or unexpected events, while comprehensive insurance coverage safeguards critical assets and income against disruptions such as equipment failures or natural disasters.

The operation phase also provides an opportunity to refine **system performance**. Feedback from end-users, combined with operational data, can inform adjustments that enhance efficiency and reduce costs. Continuous improvement programmes allow operators to integrate lessons learned into their strategies, further optimising service delivery and operational outcomes.

For example, a district heating site operating under a Transfer of Operating Rights model may lease its facilities to a private operator, transferring responsibility for daily operations and compliance with service standards. This arrangement enables the project promoter to focus on strategic oversight while leveraging the operator's expertise to manage the system effectively and efficiently.

In summary, the operation phase represents the culmination of all prior efforts, where the success of the project depends on maintaining high performance, ensuring financial stability, and consistently delivering value to stakeholders. By adopting well-defined operational frameworks, engaging appropriate management solutions, and securing robust financial mechanisms, projects can achieve long-term sustainability and maximise their impact.

5. Non-redeemable funding sources

This chapter focuses on **non-redeemable funding sources**, which play a critical role in supporting district heating site projects, particularly for direct investments in elements that constitute CAPEX (Capital Expenditure) during their renovation, expansion, or new construction, with a strong emphasis on renovation. These funding sources include **grants and donations**, both providing financial resources **without repayment obligations**, allowing projects to enhance financial sustainability and minimise debt.

For district heating sites, especially in Eastern European countries, this funding supports long-term environmental and economic goals without imposing substantial financial strain on municipalities or developers.

Grants, a key form of non-redeemable funding, **act as subsidies** offered by public or private entities to achieve broader social, economic, or environmental goals. In the context of district heating sites, grants help lower the cost barriers associated with green energy upgrades. European funds and programmes, alongside national, regional, and municipal grants available in countries like Lithuania, Poland, and Slovakia, are tailored to support projects that align with national and EU sustainability targets. These subsidies, directly and indirectly foster the adoption and improvement of district heating systems across these regions.

While grants are often linked to governmental and institutional sources, **donations**, another form of non-redeemable funding, come from individuals or organisations without expectation of financial return. Donations, sometimes associated with **crowdfunding or community financing** in public-benefit projects, offer an alternative route to finance district heating projects.

5.1 EUROPEAN FUNDS AND PROGRAMMES - GRANTS

This section presents the most **suitable European programmes for funding district heating site renovations in Lithuania, Poland, and Slovakia through grants**. These include the Cohesion Policy Funds (2021–2027), LIFE Programme (2021–2027), Modernisation Fund (2021–2030), and the Recovery and Resilience Facility (2021–2026).

Each **programme's funding period** is a crucial timing consideration for planning and executing project proposals within Low2HighDH, ensuring alignment with available resources and deadlines.

While these programmes primarily provide **grants**, certain ones, such as the Recovery and Resilience Facility and the Cohesion Policy Funds, also offer access to **debt, and debt or equity financing**, as detailed respectively in sections 7.1.1.b *– Recovery and Resilient Facility (RRF) - Loans*, and 7.3.1.a *– Cohesion Policy Sectoral Financial Instruments*. Additionally, the Cohesion Policy Funds may include technical assistance, further explored in Section 9.2.1 *– Technical assistance facilities – Cohesion Policy Funds*.

It is worth noting that other programmes, such as the Innovation Fund[10] and Horizon Europe[11], are not addressed in this document, as their focus on breakthrough or highly experimental technologies does not align with the scope of the district heating projects supported by Low2HighDH. These projects centre on established and scalable solutions for renovation and expansion, rather than the early-stage innovations these programmes typically support.

5.1.1 Cohesion Policy Funds – Grants & subsidies

a) General description

The Cohesion Policy Funds are funding mechanisms that implement the **EU's Cohesion Policy**[12], focused on **reducing regional disparities and promoting balanced economic, social, and territorial development** across the EU. These funds aim to encourage equitable development by supporting job creation, economic growth, environmental sustainability, and improving the overall quality of life in less-developed areas.

Focusing on regions with lower income levels, the funds help these areas catch up with more prosperous regions by financing projects in key sectors such as infrastructure, innovation, environmental protection, and social inclusion. Lithuania, Poland and Slovakia are among the countries eligible for Cohesion Policy Funds due to having regions with development levels below the EU average:

- **Poland** is one of the largest recipients of these funds, using them to improve infrastructure, boost innovation, and promote regional development.
- **Slovakia** benefits from Cohesion Policy Funds, particularly for projects in sectors such as transportation, energy, and environmental sustainability, as many of its regions qualify as less developed.

[10] https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund_en

[11] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

[12] https://ec.europa.eu/regional_policy/policy/what/investment-policy_en

- **Lithuania**, while having made significant progress since joining the EU, still qualifies for funding to enhance social, economic, and territorial cohesion.

Cohesion Policy Funds vary in geographic scope; some are available across the entire EU, while others specifically target less-developed regions that receive more substantial financial support. It's important to mention that these programs are co-financed by member states, increasing the overall funding beyond the EU's original contribution. The total for Cohesion Policy Funds amounts to €392 billion, with co-financing from member states expected to bring the budget to nearly half a trillion euros, significantly amplifying the impact of these programmes.

For the **2021-2027 period**, Cohesion Policy Funds are distributed across five key **policy objectives (POs)**[13]:

- **PO1**: Promotes a smarter Europe through innovation, digitalisation, economic transformation, and support for SMEs.
- **PO2**: Seeks to create a greener, carbon-neutral Europe.
- **PO3**: Aims to improve connectivity across Europe by enhancing transportation and digital networks.
- **PO4**: Works towards a more social Europe by supporting employment, education, skills, social inclusion, and healthcare equality, aligning with the European Pillar of Social Rights.
- **PO5**: Focuses on bringing Europe closer to citizens by encouraging local initiatives and sustainable urban development.

When planning financial strategies for district heating site projects using Cohesion Policy Funds, it is essential to align the project's goals with these objectives to maximize resource utilisation. Linking renovation projects to objectives such as PO2 for sustainability and PO5 for urban development increases the likelihood of securing funding.

Cohesion Policy Funds are distributed through several distinct funds, each with its own focus aligned with the EU's Cohesion Policy objectives:

- **Cohesion Fund (CF)[14]:** Focuses on promoting a greener (PO2) and more connected Europe (PO3) by investing in environmental and transport infrastructure in less prosperous EU countries.
- **European Regional Development Fund (ERDF)[15]:** Supports all five POs, with a particular focus on fostering a smarter (PO1) and greener Europe (PO2), by investing in the social and economic development of all EU regions and cities.
- **Just Transition Fund (JTF)[16]:** Mainly supports PO2, assisting regions in their transition to a green economy through the **Just Transition Mechanism[17] (JTM)**, focusing on those most affected by the shift towards climate neutrality.

[13] https://www.fi-compass.eu/funds/erdf-cf

[14] https://ec.europa.eu/regional_policy/funding/cohesion-fund_en

[15] https://ec.europa.eu/regional_policy/funding/erdf_en

[16] https://ec.europa.eu/regional_policy/funding/just-transition-fund_en

[17] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en

In addition to being part of the EU's Cohesion Policy, the JTF also received additional funding through the **NextGenerationEU**[18] as part of the post-COVID recovery effort. This provided the JTF with an additional €10 billion to accelerate the green transition.

- **European Social Fund Plus (ESF+)**[19]: Primarily targets PO4, promoting a more social Europe by supporting jobs and fostering a fair and socially inclusive society in EU countries.

Given the variety of funds available, it is relevant to identify the most appropriate **funds for district heating** site renovation projects. In this case, the **CF, ERDF and JTF are applicable**.

It's important to note that these funds do not typically provide direct subsidies to individual projects. Instead, they **finance projects through national or regional programs, where local or national authorities select which projects to support, usually distributing funds in the form of grants or subsidies**[20].

In fact, Cohesion Policy funds are managed directly by the **Member States**, through partnership agreements with the European Commission (EC). These agreements outline the framework for various investment programs, directing funds to specific regions and policy areas. Each country develops its own **Operational Programmes (OPs)**, which guide how funds are allocated and spent.

Within this framework, each Member State assigns a **Managing Authority**, often a branch of the national or regional government, responsible for administering these programmes. This authority plays a critical role in ensuring the correct implementation of the Cohesion Policy Funds. They are tasked with managing and executing the OPs, making sure that funds are used appropriately and in compliance with both EU and national laws. They also oversee the selection of projects, monitor progress, and evaluate the results to ensure that the Cohesion Policy objectives are met.

Before applying for funding, it's crucial to review the specific OP of the region in question to ensure that the project aligns with the selection criteria and investment priorities. To be eligible, the project must address the thematic and specific objectives outlined in the relevant OP.

[18] https://next-generation-eu.europa.eu/index_en

[19] https://european-social-fund-plus.ec.europa.eu/en

[20] **Note for the reader**: Member States also use these funds to create financial instruments (FIs), such as loans equity and guarantees, and technical assistance facilities. Detailed explanations of the FIs are in Section 7.3.1.a, and technical assistance is in Section 9.2.1.

b) Lithuania

The **Managing Authority is the Ministry of Finance of the Republic of Lithuania**[21] **(*Lietuvos Respublikos Finansų Ministerija*)**. This ministry coordinates the administration of EU funds, including the Cohesion Policy Funds, ensuring proper fund allocation to support economic and social development, with a focus on environmental sustainability and regional development.

For the 2021-2027 period, Lithuania has implemented the following Operational Programmes within the Cohesion Policy Funds, which may be suitable for district heating sites:

- **EU Funds Investment Programme**[22] (*Europos Sąjungos fondų investicijų programa*).
- **The Regional Development Programme**[23] (*Regionų plėtros programa*).

The EU Funds Investment Programme (national programme) focuses on larger-scale, strategically important projects that drive national economic and social development. In contrast, the Regional Development Programme supports smaller, locally focused projects that address specific regional needs and reduce disparities, fostering balanced growth across Lithuania's regions.

At the administrative level, various institutions are involved in the management and administration of the Cohesion Policy Funds[24]:

- The **Home Office** (*Vidaus reikalų ministerija*) identifies regional development issues, conducts analyses of the territorial distribution of regional progress measures, approves the Regional Development Programme, advises Regional Development Councils in the preparation of Regional Development Plans, coordinates Regional Development plans, and analyses the outcomes of projects implemented through regional progress measures.
- The **Central Project Management Agency** (*Centrinė projektų valdymo agentūra*) issues calls for project implementation plans, evaluates and selects project implementation plans, signs project contracts with executors, supervises project implementation, submits financial contribution requests, and **makes funding decisions for selected regional projects**.
- Supporting the Central Project Management Agency is the **Environmental Projects Management Agency**[25] *(Aplinkos projektų valdymo agentūra - APVA)*, under the Ministry of Environment (*Aplinkos ministerija*), an institution that manages environmental sector projects funded by the European Union and the Republic of Lithuania.
- The **Regional Development Councils** (*Regionų plėtros tarybos*), play a central role in directly overseeing and guiding projects funded by the Cohesion Policy Funds, ensuring compliance with established objectives.

[21] https://finmin.lrv.lt/en/

[22] https://2021.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/apie-2021-2027-m-es-fondu-investiciju-programa

[23] https://www.esinvesticijos.lt/igyvendinimas-1/regionu-pletros-planai

[24] https://2021.esinvesticijos.lt/apie-programas/valdymo-ir-kontroles-sistema-1

[25] https://apva.lrv.lt/lt/apie-agentura-150/

Additionally, concerning district heating site projects, the **National Energy Regulatory Council** of Lithuania[26] (*Valstybinė energetikos reguliavimo taryba*) does not manage or allocate the Cohesion Policy Funds, but it provides advice on investment feasibility and their inclusion in the heat tariff for district heating companies. This independent regulatory authority oversees activities in the energy, heating, and water management sectors in Lithuania.

EU Funds Investment Programme:

The country has launched the programme with a **budget** of approximately €8 billion aimed at ensuring long-term economic and social well-being, as well as the resilience and competitiveness of the Lithuanian economy. Of this budget, €6.4 billion comes from EU funds allocated to the country, with an additional national contribution of €1.7 billion.

The programme's funds are planned to **reduce regional disparities within the country**. To achieve balanced regional development, Lithuania was divided in 2016 into two regions[27]: the capital region and the central and western regions. The capital region, which includes the districts of Elektrėnai, Šalčininkai, Širvintos, Švenčionys, Trakai, and Ukmergė, as well as the Vilnius city and district municipalities, is characterised by significant internal inequalities in economic and social development.

The EU Funds Investment Programme of the EU Cohesion Policy Funds targets the following **main areas**[28]:

- Innovation and digitalisation, fostering cooperation between science and business, and commercialising knowledge.
- Education, skills development, and a qualified workforce capable of innovating and responding to changing needs while addressing the challenges of social exclusion.
- **Green transformation**: promoting renewable energy sources, sustainable mobility, and a circular economy.
- Strengthening the resilience of health systems.
- Advanced, safe, and diverse transportation, including improvements in cross-border, national, and regional mobility.
- **Sustainable and integrated development of cities and regions**, guided by region-specific decisions to enhance attractiveness, economic potential, investment appeal, and quality of life.

This classification of areas allows **district heating site projects to fall under the "Green transformation" and "Sustainable and integrated development of cities and regions"** categories for renovation, expansion, and construction projects, provided they meet the specified environmental and sustainability criteria. Specifically, an allocation of €1.156 million has been set aside to, among other topics, increase the energy efficiency of centralised heating, hot water, and cooling supply systems. Similarly, from the €828 million allocated for regional development, provisions include the availability of public services in cities,

[26] https://www.regula.lt/

[27] https://www.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/apie-2021-2027-m-es-fondu-investiciju-programa

[28] https://finmin.lrv.lt/lt/es-ir-kitos-investicijos/es-investicijos/

considering heating networks.

Within these budget allocations, there is a **specific provision**[29] of €321,481 for investments in four regions (Telšiai, Kaunas, Šiauliai, and Klaipėda), where greenhouse gas emissions are highest due to the polluting industries operating there.

The 2021-2027 EU Funds Investment Programme has implemented **four essential horizontal conditions**[30] that must be met for project selection and fund execution: public procurement, state aid, the application of the Charter of Fundamental Rights, and the United Nations Convention on the Rights of Persons with Disabilities.

In the case of **district heating site projects**, the funds allocated to them are usually provided in the form of **grants and subsidies**, with **priority given to**:

- Promoting the use of measures that increase **energy efficiency and reduce greenhouse gas emissions**.
- Encouraging the use of **renewable energy sources**.
- Supporting the transition towards a **circular and resource-efficient economy**.

It is important to highlight that although projects related to district heating sites are categorised within this Operational Programme, **no calls for proposals have been issued for them in 2024**. Therefore, given that most calls correspond to calendar years, it is recommended to check for updates in the coming years through their **project/open call listings page** via this **link**.

In Lithuania, **eligible applicants** for Cohesion Policy Funds include public authorities (local and regional governments), non-governmental organisations (NGOs), educational and research institutions, private companies (especially SMEs), as well as associations and cooperatives representing shared interests in key sectors.

Each call establishes specific **eligibility criteria** and investment priorities. Therefore, interested entities should consult specific calls and programme documents to ensure they meet the established requirements. There are **no predetermined amounts** specified for each type of funding within each programme or call.

Regional Development Programme:

Lithuania's **National Regional Policy**[31] is a part of public policy and includes targeted activities by state institutions and other entities. Its purpose is to reduce social and economic disparities between and within regions, fostering uniform and sustainable development across the country. The main objective of the national regional policy is to promote balanced, sustainable growth throughout Lithuania.

The **key tasks** to achieve this policy goal include:

- Supporting regions in adapting to changing economic and social conditions, building on each region's competitive strengths and competencies.

[29] https://2021.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/investiciju-programos-prioritetai-1

[30] https://www.esinvesticijos.lt/uploads/documents/files/NewFolder/horizontalios%20reikiamos%20salygos.docx

[31] https://vrm.lrv.lt/lt/veiklos-sritys/regionu-pletra/

- Improving the efficiency of infrastructure and service networks in functional areas, ensuring accessibility for all residents.
- Reducing social and economic disparities both between and within regions.

The **Regional Development Programme**[32], approved by the Government on 29 June 2022, is specifically designed to support these objectives by promoting sustainable, balanced development and addressing regional disparities. With an allocated budget of over €1.6 billion sourced from national funds and Cohesion Policy Funds, the programme is set to run from 2022 to 2030, exceeding the timeframe of the EU Funds Investment Programme. It encompasses **10 individual Regional Development Plans**, each designed for Lithuania's official regions.

Every Regional Development Plan targets specific **action areas**, including:

- Education.
- Public health and long-term care.
- **Development of complex functional zones.**
- Security and damaged territories.
- Waste management.
- Air monitoring.
- Social services and social housing.
- Sustainable mobility and traffic safety.
- Development of complex urban areas.
- Water management.
- **Green infrastructure.**

District heating site projects are generally aligned with the **"Green Infrastructure" and "Development of Complex Functional Areas"** categories.

The projects outlined in each of the Regional Development Plans are managed directly by their respective **Regional Development Councils**. The following links provide access to each **Plan, calls and projects promoted, specific selection criteria**, and other relevant information in the different regions:

- *Alytaus regiono plėtros taryba*.
- *Kauno regiono plėtros taryba*.
- *Klaipėdos regiono plėtros taryba*.
- *Marijampolės regiono plėtros taryba*.
- *Panevėžio regiono plėtros taryba*.

[32] https://www.esinvesticijos.lt/igyvendinimas-1/regionu-pletros-planai

- *Šiaulių regiono plėtros taryba*.
- *Tauragės regiono plėtros taryba*.
- *Telšių regiono plėtros tarybl*.
- *Utenos regiono plėtros taryba*.
- *Vilniaus regiono plėtros taryba*.

Assistance is primarily offered through **grants or subsidies**. Additionally, these projects can benefit by pairing this support with various **loan types, private capital** injections as equity (as referenced in Section 7.3.1.a – *Cohesion Policy Sectoral Financial Instruments*, and/or **technical assistance**, as specified in Section 9.2.1 – *Technical assistance facilities – Cohesion Policy Funds*.

As with the EU Funds Investment Programme, **eligible applicants** for Cohesion Policy Funds include a variety of entities, such as public authorities (local and regional governments), non-governmental organisations (NGOs), educational and research institutions, private companies (especially SMEs), as well as associations and cooperatives representing key sector interests.

Each call outlines **specific eligibility criteria and investment priorities** tailored to each region, in line with the core principles of EU Cohesion Policy Funds. Interested parties should consult relevant calls and programme documents to confirm they meet these requirements. It is also worth noting that funding amounts are not pre-allocated by type within each programme or call.

c) Poland

The **Ministry of Development Funds and Regional Policy**[33] **(*Ministerstwo Funduszy i Polityki Regionalnej*)** is the Managing Authority in Poland.

For the 2021-2027 period, and based on the Cohesion Policy Funds, Poland has implemented the following Operational Programmes suitable for district heating site renovations:

- **European Funds for Infrastructure, Climate, and Environment** (*Fundusze Europejskie na Infrastrukturę, Klimat, Środowisko*)[34].
- **European Funds for Regions** (*Fundusze Europejskie dla Regionów*)[35].

The main distinction between the European Funds for Infrastructure, Climate, and Environment (national programme) and the European Funds for Regions (regional programmes) lies in their **scope and project scale**. The national programme **targets large, strategic initiatives** that advance energy, infrastructure, and climate objectives nationwide, while the regional programmes are tailored to **local priorities, focusing on smaller-scale projects** that promote regional development and social infrastructure.

For district heating renovations, construction or expansion, the **national programme supports large-scale upgrades in urban areas**, focusing on decarbonisation and renewable energy integration. In contrast,

[33] https://www.gov.pl/web/fundusze-regiony

[34] https://www.feniks.gov.pl/

[35] https://www.funduszeeuropejskie.gov.pl/strony/o-funduszach/fundusze-2021-2027/fundusze-dla-regionow/

regional programmes address localised needs, such as improving energy efficiency in district heating systems in smaller towns, customised to the specific priorities of each voivodeship.

European Funds for Infrastructure, Climate, and Environment:

The programme focuses on enhancing Poland's energy security, promoting and funding the development of renewable energy sources, protecting the environment, and supporting safe, eco-friendly transportation. Additionally, it provides support for healthcare improvements and the promotion of culture, including the preservation of cultural heritage. With a **total budget** of PLN 125.8 billion (approximately €29 billion), 83% of the funds come from the European Union, while the remaining 17% is contributed by the national government.

The programme will finance over **110 different types of projects**[36], aiming to modernize the country's infrastructure while aligning with EU climate and energy goals. This includes significant contributions to the European Green Deal[37], helping Poland transition to a greener and more resilient economy. As of September 2024, the programme **has already financed 85 projects**[38], leaving the budget available to support additional projects up to the target of 110.

Among the sectors targeted by the programme, **the renovation, modernisation, and/or expansion of district heating sites is considered**, **with efforts focused on decarbonisation** and transitioning to a circular, environmentally friendly economy, provided that a set of requirements is met.

The programme's **primary goal** is to advance Poland's development by building technical and social infrastructure in line with sustainable development principles. The projects supported by the fund are categorised according to **8 priorities**:

- **Priority I:** Support for the energy and environmental sectors through the Cohesion Fund.
- **Priority II:** Support for the energy and environmental sectors through the European Regional Development Fund (ERDF).
- Priority III: Urban transport.
- Priority IV: Support for the transport sector through the Cohesion Fund.
- Priority V: Support for the transport sector through the ERDF.
- Priority VI: Health.
- Priority VII: Culture and protection of cultural heritage.
- **Priority VIII:** Technical assistance.

The Ministry of Development Funds and Regional Policy, as Managing Authority of the programme, may delegate some of its tasks to **Intermediate Bodies** and transfer responsibility for their execution. However, the Managing Authority remains ultimately responsible for the overall implementation of the whole programme.

[36] https://www.gov.pl/web/fundusze-regiony/fundusze-europejskie-na-infrastrukture-klimat-srodowisko-2021-2027

[37] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

[38] https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/poznaj-realizowane-projekty/lista-projektow/

For district heating projects, the Intermediate Body is the **Ministry of Climate and Environment** (*Ministerstwo Klimatu i Środowiska*)[39], overseeing priorities I, II and VIII.

With the Managing Authority's consent, the Intermediate Body may delegate tasks related to direct support provision or project control to an **Implementing Authority**. For example, the Implementing Authority may be a unit attached to ministries or agencies responsible for entrepreneurship or regional development. In the case of district heating, the Implementing Authority is the **National Fund for Environmental Protection and Water Management**[40] (*Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej - NFOŚiGW*).

The programme's offer for district heating sites and their **owners/responsible entities is directed at** companies, local government units (municipalities), entities providing public services as part of the implementation of their own obligations from local government units, state budgetary units, public administration, and energy service providers.

Support is mainly provided in the form of **grants or subsidies**. These projects can also benefit by combining them with different types of **loans**, as outlined in Section 7.3.1.a – *Cohesion Policy Sectoral Financial Instruments*, and/or **technical assistance facilities**, as detailed in Section 9.2.1 – *Technical assistance facilities – Cohesion Policy Funds*.

Projects are evaluated according to common horizontal and specific criteria, depending on the scope of Priorities I to VII. Applications for Priority VIII will be assessed only using criteria specific to technical assistance projects. The **selection criteria**[41] for district heating projects are:

1. **Mandatory criteria**: Projects must meet basic energy efficiency requirements. If a district heating renovation or expansion proposal is not energy efficient enough, it will not be considered for funding.
2. **Construction or modernisation projects**: Projects involving the construction or modernisation of district heating networks can be financed, but it must be demonstrated that they significantly improve energy efficiency and/or include renewable energy sources.
3. **Binary evaluation**: Criteria are assessed on a yes/no basis and failure to meet any criterion will disqualify the project from receiving funding.
4. **Score-based classification**: In addition to the mandatory criteria, some projects may receive extra points for specific features, such as the inclusion of renewable energy or the use of innovative technologies, which improve their ranking on the funding list.

   Meeting the mandatory criteria is essential for a project to receive funding, while classification criteria award extra points to determine its position on the ranking list.

The **call for applications** is available on the designated **website**, where projects can check the timetable for open applications and complete the entire application process. **The amount of funds each project can receive varies depending on the call**, its type, and the instrument that will fund it, with no fixed limits established. Therefore, it is recommended to consult the programme and the available calls at the time of

[39] https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/instytucje-w-programie/instytucje/

[40] https://www.gov.pl/web/nfosigw/

[41]https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/prawo-i-dokumenty/metodyka-i-kryteria-wyboru-projektow-dla-programu-fundusze-europejskie-na-infrastrukture-klimat-srodowisko-2021-2027/

determining the financial needs for the development of each project.

If, after evaluation, the application is selected for funding, a **grant agreement**[42] will be signed, containing information such as general project information, beneficiary details, EU fund transfer rules, project accounting procedures, beneficiary obligations, project monitoring and control principles, and conditions for terminating the co-financing agreement.

European Funds for Regions:

The European Funds for Regions in Poland have been established through the creation of **16 regional programmes** (*Programów Regionalnych*), covering all 16 regions/voivodeships (województwa) into which the country is administratively divided.

Each voivodeship has its own programme to finance investments within its territory, supporting key areas such as entrepreneurship, education, healthcare, and culture, with an additional focus on social infrastructure, **environmental sustainability**, digital technologies, **energy**, and transport.

The **total budget** for all regions amounts to PLN155.4 billion (approximately €35 billion), and it is funded by three of the European Union's Cohesion Policy Funds (ERDF, JTF, and ESF+), as well as by the state of Poland. The distribution of funds among each voivodeship was carried out according to an algorithm based on criteria such as population or GDP per capita.

Potential beneficiaries of these funds can access **details and characteristics, such as eligible expenses, funding and the call for application processes** for each of the regions through the following websites:

- *Fundusze Europejskie dla Dolnego Ślqska 2021-2027*.
- *Fundusze Europejskie dla Kujaw i Pomorza 2021-2027*.
- *Fundusze Europejskie dla Lubelskiego 2021-2027*.
- *Fundusze Europejskie dla Lubuskiego 2021-2027*.
- *Fundusze Europejskie dla Łódzkiego 2021-2027*.
- *Fundusze Europejskie dla Małopolski 2021-2027*.
- *Fundusze Europejskie dla Mazowsza 2021-2027*.
- *Fundusze Europejskie dla Opolskiego 2021-2027*.
- *Fundusze Europejskie dla Podkarpacia 2021-2027*.
- *Fundusze Europejskie dla Podlaskiego 2021-2027*.
- *Fundusze Europejskie dla Pomorza 2021-2027*.
- *Fundusze Europejskie dla Ślqskiego 2021-2027*.
- *Fundusze Europejskie dla Świętokrzyskiego 2021-2027*.
- *Fundusze Europejskie dla Warmii i Mazur 2021-2027*.

[42] https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/zobacz-wzory-dokumentow/

- *Fundusze Europejskie dla Wielkopolski 2021-2027*.
- *Fundusze Europejskie dla Pomorza Zachodniego 2021-2027*.

Each of the 16 programmes has set its own **priorities for the distribution of funds**, and in every case, one or more priorities include the **construction, improvement, or extension of district heating networks**. As in the national programme, the selection criteria for these types of projects are primarily based on energy efficiency, with the use of **renewable energy being considered a distinguishing factor**.

As is the case with the European Funds for Infrastructure, Climate, and Environment, the **Managing Authority is the Ministry of Development Funds and Regional Policy**, which has delegated responsibility to the **Board of each voivodeship** for the administration and execution of the funds as **Intermediary Bodies**.

Additionally, depending on the European fund being utilised and the priority referred to in each project, in each voivodeship, the Intermediary Bodies have appointed different and various **Implementing Authorities**. In some cases, these are pre-existing regional public administration departments, while in others, new departments have been created for this purpose.

The European Funds for Regions in Poland target a wide range of beneficiaries, including **private companies**, **local government units (municipalities)**, **public institutions**, and **non-governmental organisations**. These entities can apply for funding depending on the specific focus and priorities of each regional programme.

The main form of support is usually through **grants or subsidies**; however, they provide access to other Financial Instruments without needing to be combined with subsidies. These include **loans, technical assistance facilities** and, as a new feature compared to the national programme, access to **capital (equity) or quasi-capital investments (mezzanine finance[43])**.

In addition to the structure set by each regional programme, **specific rules and criteria** determine which projects receive funding. These criteria are tailored to meet regional priorities, ensuring projects are financially sound and technically feasible.

In general, all programmes follow **public procurement laws** to ensure fairness and transparency in the selection process. Applications are reviewed in **multiple stages**, assessing eligibility and merit, with additional requirements for contracts, reporting, and monitoring to guarantee that projects meet the expected outcomes.

Calls for applications are typically posted on each programme's website, where potential projects can find a detailed schedule of upcoming calls, usually announced 12 months in advance. The funding available varies depending on the call, the type of project, and the financial instrument used, with **some calls offering up to 100% funding**. There are **no fixed limits** for the amount a project may receive, so it is recommended to consult the programme's website and available calls to tailor financial plans according to the project's specific needs.

[43] https://www.investopedia.com/terms/m/mezzaninefinancing.asp

d) Slovakia

Slovakia Programme

Unlike Lithuania or Poland, which operate a national programme alongside several regional programmes to address both local and national needs, Slovakia has opted to centralise its Cohesion Policy Funds into a **single national programme: the Slovakia Programme**[44] (*Program Slovensko*). Spanning the 2021-2027 period, this comprehensive initiative manages EU Cohesion Policy Funds with the **primary goals** of enhancing regional development, boosting economic competitiveness, and promoting social cohesion across the country.

The Slovakia Programme is designed to support projects that drive sustainable growth, foster innovation, improve infrastructure, and promote environmental sustainability, ultimately enhancing the quality of life for all citizens. These **requirements are well-suited for district heating site projects**, whether for renovation, expansion, or new construction.

By covering the entire country and all its regions, the Slovakia Programme simplifies management and reduces bureaucracy in fund implementation. It establishes a unified methodology and consistent standards for public procurement, ensuring efficient use of resources. Previously, Slovakia managed European funds through six separate programmes and over 30 administrative structures. However, each region in Slovakia can still define and prioritise its own projects within the Slovakia Programme framework through the **Integrated Territorial Development approach**[45] (*Integrovaný územný rozvoj*). This flexibility allows regions to adapt the funds to their specific needs while contributing to national objectives.

The **Managing Authority in Slovakia is the Ministry of Investments, Regional Development, and Informatisation**[46] (*Ministerstvo investícií, regionálneho rozvoja a informatizácie*). It is responsible for the preparation, implementation, and revision of the Slovak Partnership Agreement[47] *(Partnerskej dohody SR)*, which outlines the strategic approach for utilising Cohesion Policy Funds in the 2021-2027 programming period. This includes coordinating the programming, implementation, monitoring, and evaluation of these funds to achieve the goals of "Investment in Growth and Employment" and "European Territorial Cooperation."

The Managing Authority also provides guidance to entities involved in the management system of the Cohesion Policy Funds and ensures the operation of the **ITMS2021+ system**, which tracks the progress and results of funded projects. Additionally, it coordinates the development of key legislative and strategic documents related to the Cohesion Policy at the national level.

[44] https://eurofondy.gov.sk/program-slovensko/

[45] https://eurofondy.gov.sk/program-slovensko/integrovany-uzemny-rozvoj/

[46] https://mirri.gov.sk/

[47] https://www.partnerskadohoda.gov.sk/programove-obdobie-2021-2027/
https://www.eurofondy.gov.sk/wp-content/uploads/2022/07/220713_SK_Partnersk%C3%A1-dohoda-SR_21_27_do-SFC.pdf

For the appropriate use and execution of the funds, Slovakia has established various **organs, bodies and authorities**[48], including the following:

- **10 Intermediary Organs** (*Sprostredkovateľské orgány)*: These entities define national priorities, launch project calls, and handle project selection.

  For **district heating site projects**, depending on the specific call, the relevant organs are the Ministry of the Environment of the Slovak Republic[49] (*Ministerstvo životného prostredia SR*), the Slovak Innovation and Energy Agency[50] (*Slovenská inovačná a energetická agentúra - SIEA*), and the Public Procurement Office[51] (*Úrad pre verejné obstarávanie*).

- A **Paying Authority**[52]: The Ministry of Finance of the Slovak Republic (*Ministerstvo financií SR*), which is responsible for setting financial management guidelines, funding strategies, and auditing the selected projects.

- A **Monitoring Committee**[53] (*Monitorovací výbor*), composed of representatives from various ministries, intermediary bodies, civil society organisations, and experts from different sectors, oversees programme evaluation and conducts project monitoring at a general level. This diverse group ensures comprehensive oversight and effective evaluation of the programme's implementation.

- **8 Regional Partnership Councils**[54] (*Regionálne rady pre partnerstvo*), one for each autonomous region, and **18 Urban Development Cooperative Councils** (*Kooperačné rady udržateľného mestského rozvoja*), which are responsible for the Integrated Territorial Development approach and for providing close assistance to projects in their respective regions and cities.

It is also important to highlight that, as a result of creating a single programme for the entire country, efforts have been made to establish a **network of Regional Centres** (*Regionálne centrá*) in each of Slovakia's administrative regions. These centres serve as **information hubs**, providing comprehensive assistance during the preparation and implementation of projects, as well as free guidance on securing European funding. Their goal is to strengthen support for the development of high-quality projects and their subsequent implementation. The following **link** provides information on the location and contact details of each centre.

The Slovakia Programme will receive a **total budget** of €12.8 billion[55] from the EU through the ERDF, JTF, ESF+, and CF, and has allocated these funds across the following **areas of action**[56] (with those applicable to district heating site projects marked in bold):

- **A greener Slovakia**, with €4.2 billion. The investments support energy efficiency, the reduction of greenhouse gas emissions, renewable energy sources, and energy storage, reflecting the global context

[48] https://eurofondy.gov.sk/program-slovensko/sprostredkovatelske-organy/

[49] https://www.minzp.sk/fondy/

[50] https://www.siea.sk/

[51] https://www.uvo.gov.sk/

[52] https://www.mfsr.sk/sk/financne-vztahy-eu/povstupove-fondy-eu/programove-obdobie-2021-2027/

[53] https://eurofondy.gov.sk/wp-content/uploads/2024/09/zoznam-clenov-MV-P-SK-2021-2027-12.pdf

[54] https://www.eurofondy.gov.sk/wp-content/uploads/2022/07/220713_SK_Partnersk%C3%A1-dohoda-SR_21_27_do-SFC.pdf

[55] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4510

[56] **Note for the reader**: The remaining resources are allocated to technical assistance.

and the need to reduce Slovakia's economic dependence on external energy sources. Additionally, investments focus on climate change adaptation, access to water, enhanced nature protection, biodiversity, green infrastructure, and sustainable urban mobility.

- A more connected Slovakia, with €2 billion.
- A more competitive and smarter Slovakia, with €1.9 billion.
- A more social and inclusive Slovakia, with €3.3 billion.
- Bringing Europe closer to citizens, with €400 million.
- **Just Transition Fund**[57], with €441 million. It addresses the social, economic, and environmental consequences for the regions most affected by the transition to carbon neutrality: Horná Nitra, Košický, and Banskobystrický. Specifically, among all the supported activities, investments in the areas of greenhouse gas emission reduction (decarbonisation), energy efficiency, and renewable energy sources are specified, which district heating projects can benefit from. In this case, it is worth noting that projects related to the sectors of **natural gas and fossil fuels are excluded** from this fund.

Typically, funding is provided in the form of **grants or subsidies**; however, certain calls may combine these with **loans, private investment, and/or technical assistance** (as outlined in sections 7.3.1.a – *Cohesion Policy Sectoral Financial Instruments*, and 9.2.1 – *Technical assistance facilities – Cohesion Policy Funds*).

The Slovakia Programme supports a variety of **beneficiaries**, including public authorities (local, regional, and national), private companies (especially SMEs), non-governmental organisations (NGOs), educational and research institutions, and associations or clusters aiming for shared objectives

To facilitate applicants in finding and applying to calls, the Programme has developed a **dedicated portal within the ITMS2021+ system**, mentioned at the beginning of this section. This portal provides detailed information on the Programme from an applicant's perspective, enables users to search for different types of calls, submit applications, check their application status, and access additional resources.

When applying for the Slovakia Programme, it is advisable to carefully review each call, as **selection criteria** may vary depending on the region where the project will be implemented. The **calls are periodic and evolve over time** to address emerging needs. In general terms, projects at the national level and those stemming from Integrated Territorial Development must meet the following criteria[58]. This information can also be supplemented with the **beneficiary manual**[59], provided to offer general guidelines:

- **Alignment with programme objectives**: Projects must align with the strategic objectives defined by the Slovakia Programme and specific regional priorities.
- **Social and economic impact**: The project's potential to generate social and economic benefits is evaluated, especially in disadvantaged areas or those transitioning towards sustainability.

[57] https://mirri.gov.sk/sekcie/program-slovensko-2021-2027/fond-spravodlivej-transformacie/faq-zoznam-najcastejsich-otazok/

[58] https://mirri.gov.sk/wp-content/uploads/2020/01/Jednotn%C3%BD-metodick%C3%BD_ramec_pre_pr%C3%ADpravu_I%C3%9AS_I%C3%9AI_finalna-verzia_28072022_pdf-1.pdf

[59] https://www.minzp.sk/files/prirucka-prijimatela-mzp-sr-so-psk-v.1.1-01.10.2024.pdf

- **Environmental sustainability**: Projects must meet sustainability criteria and contribute to emissions reduction, energy efficiency, or environmental preservation.
- **Technical and financial viability**: Projects must have a solid financing structure and a feasible implementation plan.
- **Applicant capacity**: The applicant's experience and technical capacity to carry out the project are also key factors in the selection process.

As an additional point of interest for this section, readers are encouraged to consult the **detailed list of projects funded by the programme**, which is updated every four months. This resource provides greater insight into the district heating projects that have been implemented and may serve as inspiration for their own proposals.

e) Recommendations for Low2HighDH-supported projects

- Cohesion Policy Funds are used for **direct investments,** and potential beneficiaries must apply through the online portals provided by the authorities of their respective countries.
- Its primary focus is to **reduce regional disparities** across the EU and within individual countries. Therefore, applicants from Lithuania, Poland, and Slovakia should consider the **economic situation of the region** where their projects will be implemented to enhance their chances of success and selection. While they can finance district heating projects, they usually require a strong justification of the project's **regional impact** and economic development potential.
- These funds pay **special attention to regions with high greenhouse gas emission levels**, which is an important factor regarding project location.
- All three countries have specific national and regional programmes and/or calls. Generally, there are limited district heating projects funded through calls of national strategic importance, so it is advisable to **focus on specific regional calls** to improve selection chances.
- Furthermore, the funds prioritise projects that not only improve the energy efficiency of heating systems and reduce greenhouse gas emissions but also incorporate technologies that promote the use of **renewable energy**; this could be a distinctive factor in securing funding.
- There are no fixed calls for potential projects; each organisation in every country and region designs specific, temporary, and periodic calls for applications. Projects that consider themselves potential beneficiaries of these funds should continuously check the provided links to **verify the availability of calls** in their regions and assess the specific criteria, amounts, and types of funding available.

Table 2 – Recommendations for Low2HighDH-supported projects on Cohesion Policy Funds

5.1.2 LIFE Programme

a) General description

Since its establishment in 1992, the LIFE Programme[60] has been a fundamental pillar for **financing environmental and climate action projects** across the European Union. Launched by the European Commission, it contributes to the EU's transformation into a climate-neutral and resilient society. During the **2021-2027 period**, the LIFE Programme will continue to operate with a total budget of €5.4 billion.

The **primary goal** of the LIFE Programme is to support **public authorities, non-governmental organisations, and private actors, particularly small and medium-sized enterprises**, in fostering a transition towards a sustainable, energy-efficient, renewable energy-based, climate-neutral, and resilient economy. This, in turn, contributes to sustainable development across the EU.

To achieve these objectives, the LIFE Programme is structured into distinct **areas**, each containing subprogrammes that target specific themes:

Environment Area:

- Subprogramme "Nature and Biodiversity".
- Subprogramme “Circular Economy and Quality of Life”.

Climate Action Area:

- Subprogramme "Climate Change Mitigation and Adaptation".
- Subprogramme "Clean Energy Transition" (CET).

Figure 10 – LIFE Programme logo

Unlike other European programmes, which are administered at the national level by the managing authorities of each country, the LIFE Programme is **administered directly by the European Climate, Infrastructure and Environment Executive Agency[61] (CINEA)** since April 1, 2021, following the dissolution of the Executive Agency for Small and Medium-sized Enterprises (EASME).

As a common requirement across all subprogrammes, prospective applicants must respond to specific **calls for proposals**, which are typically announced annually on CINEA's website and the **European Commission’s Funding & Tenders portal**. The application process includes the following steps:

- Identifying appropriate funding opportunities and understanding the application requirements.
- Developing a strong proposal that aligns with the objectives of the call.
- Submitting the proposal for assessment, where it will be subject to admissibility and eligibility checks.
- Awaiting evaluation by an independent committee.

[60] https://cinea.ec.europa.eu/programmes/life_en

[61] https://cinea.ec.europa.eu/index_en

In the following sections, the available opportunities for promoters of district heating site projects will be outlined according to the applicable subprogrammes for them, which are **Climate Change Mitigation and Adaptation, and Clean Energy Transition**.

Before delving into the specifics of each initiative, it is relevant to mention that selected district heating site projects are categorized into **three size ranges**, with **co-financing available of up to 60%** of the project value:

- Projects less than €1.5 million.
- Projects from €1.5 million to €5 million.
- Projects from €5 million to €10 million.

Additionally, for all subprogrammes, CINEA has established **national contact points**[62] in each EU Member State, as well as in two non-EU countries: Iceland and Ukraine. These contact points can assist district heating site projects with their applications, as well as with the communication and dissemination of project results. They also organise information and networking events, along with proposal writing workshops.

b) LIFE Climate Change Mitigation and Adaptation

The Climate Change Mitigation and Adaptation subprogramme[63] is **designed to facilitate the transition** towards a sustainable, energy-efficient, renewable energy-based, climate-neutral, and resilient economy, thus contributing to overall sustainable development.

This subprogramme supports a range of projects across various sectors, including agriculture, land use, peatland management, **renewable energies, and energy efficiency**. It focuses on **funding pilot initiatives, demonstration projects, and best practices** that aim to reduce greenhouse gas emissions and advance the implementation of EU policies and legislation. It also supports the operation of the European Climate Pact and co-finances sustainable finance activities, awareness-raising initiatives, training, capacity building, and stakeholder participation in climate change mitigation and adaptation efforts.

Additionally, the programme encourages integrated approaches to develop and execute climate change strategies and action plans at both regional and national levels. It co-finances projects that enhance **urban adaptation**, improve land-use planning, and **strengthen infrastructure resilience**. Moreover, it addresses sustainable water management in drought-prone areas, flood and coastal management, and the resilience of the agricultural, forestry, and tourism sectors, particularly in the EU's outermost regions, with an emphasis on preparedness for extreme weather events.

The subprogramme provides **action grants** for projects led by **local authorities, local agencies (city stakeholders), and NGOs.**

[62] https://cinea.ec.europa.eu/programmes/life/life-european-countries_en

[63] https://cinea.ec.europa.eu/programmes/life/climate-change-mitigation-and-adaptation_en

Considering this**, for district heating projects to qualify as beneficiaries** of grants under the Climate Change Mitigation and Adaptation subprogramme, the following conditions should be met:

- **Pilot projects, demonstration and innovation**: The project should introduce innovative approaches or new technologies, such as the integration of renewable energy technologies or significant improvements in energy efficiency.
- **Urban adaptation**: The initiative should enhance the resilience of urban infrastructure against climate change impacts, such as extreme weather events, by implementing systems that can better respond to changing climatic conditions.
- **Sustainable Energy and Climate Action Plan (SECAP)**[64] **development and/or implementation**: The project must align with the SECAP of the municipality where it will be implemented.
- **Sustainability and energy efficiency**: Modernisation efforts must demonstrate contributions to sustainability and energy efficiency, with a clear focus on reducing emissions.
- **Stakeholder engagement and awareness**: Incorporating elements of awareness-raising, training, or stakeholder participation in climate change initiatives is essential, including the development of best practices and cooperation platforms for knowledge sharing.

Overall, aligning district heating site projects with the goals of the subprogramme is essential for maximising funding opportunities and enhancing sustainability.

c) LIFE Clean Energy Transition

The LIFE Clean Energy Transition subprogramme[65] aims to facilitate the shift towards an energy-efficient, renewable energy-based, climate-neutral, and resilient economy across Europe. This is achieved by funding coordination and support actions, known as Other Action Grants, which address market barriers that impede the socio-economic transition to sustainable energy.

Building on the foundations of previous initiatives such as the Intelligent Energy Europe programme[66] (2003-2013) and the Horizon 2020 Energy Efficiency Programme[67] (2014-2020), the LIFE CET plays a crucial role in **advancing EU policies related to sustainable energy**. This includes supporting the goals outlined in the European Green Deal, the Energy Union's 2030 energy and climate targets, and the European Union's long-term decarbonisation strategy for 2050.

Projects funded under the LIFE CET focus on **five key areas of intervention,** which, in turn, define the requirements that the projects must meet:

- **Policy framework development**: Establishing national, regional, and local policy frameworks that support the clean energy transition.

[64] https://publications.jrc.ec.europa.eu/repository/handle/JRC112986

[65] https://cinea.ec.europa.eu/programmes/life/clean-energy-transition_en

[66] https://ec.europa.eu/cip/iee/index_en.htm

[67] https://cinea.ec.europa.eu/programmes/horizon-europe/energy-use-horizon-europe/horizon-2020-energy-efficiency_en

- **Technology and digitalisation**: Accelerating the roll-out of new technologies, digitalisation, and innovative services, while enhancing related professional skills in the market.
- **Private finance attraction**: Mobilising private investment to support sustainable energy initiatives.
- **Local and regional investment projects**: Supporting the development of local and regional investment projects aimed at promoting clean energy solutions.
- **Citizen engagement**: Involving and empowering citizens in the clean energy transition to ensure a more inclusive approach.

Among the requirements for these projects, there must also be SECAP alignment, or they must be directly involved in its development or implementation.

By engaging a **diverse range of stakeholders**—including small and medium-sized enterprises, local and regional public authorities, non-profit organisations, and consumers - LIFE CET aims to deliver high EU-added value and foster a collaborative environment for sustainable energy advancement.

d) Recommendations for Low2HighDH-supported projects

- **LIFE Climate Change Mitigation and Adaptation** is focused on **research and innovation**, while **LIFE CET** addresses **market barriers**, and potential beneficiaries must apply through the European Commission's Funding & Tenders portal.
- While both sub-programmes share certain similarities, the **main difference** for district heating site projects to qualify for LIFE CET lies in the fact that, unlike LIFE Climate Change Mitigation and Adaptation, the initiatives don't need to involve **pilot or highly innovative solutions**, but they must include at least novel and **modern tested technologies**.
- However, for **LIFE CET**, a much greater emphasis on **citizen engagement** is required, not only to be aligned with their municipalities' SECAPs but also to contribute to the development of policies for the energy transition.
- Another significant difference lies in their main objectives; although both address sustainability and energy efficiency, the **LIFE Climate Change Mitigation and Adaptation** focuses on urban adaptation to **tackle adverse climate phenomena**, while **LIFE CET** concentrates on the use of **clean energy solutions** at local and regional levels.
- Moreover, the scope of **LIFE CET** projects must be capable of attracting **private financing**, which is not a requirement for LIFE Climate Change Mitigation and Adaptation projects. Therefore, it is advisable for applicants to consider private financing sources in their investment plans, whether through loans, equity, or other forms explained in this document.

Table 3 – Recommendations for Low2HighDH-supported projects on LIFE subprogrammes

5.1.3 Modernisation Fund

a) General description

The Modernisation Fund (MF)[68] is a European Union programme designed to support 13 lower-income EU Member States in achieving energy targets by **modernising energy systems and improving energy efficiency**, thereby accelerating the transition to climate neutrality. It is a key part of the **European Green Deal Investment Plan**, aligning with the ETS Directive[69], the Union's 2030 climate and energy policy framework, and the long-term goals established in the Paris Agreement.

Established in 2018 for the **2021-2030 period**, the MF operates under the responsibility of the beneficiary **Member States**, in close collaboration with the **European Commission** and the **European Investment Bank**.

The eligible Member States are Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, **Lithuania**, **Poland**, Portugal, Romania, **Slovakia**, and Slovenia. Resource allocations from the fund have already been designated as percentages for these countries.

To date, the MF has disbursed a total of €12.65 billion across 176 proposals within these Member States. The confirmed and recommended investment proposals in the beneficiary Member States can be found at the following **link**.

At least 80% of the MF's resources must be allocated to **priority areas** outlined in Article 10d(2) of the ETS Directive. Investments in these areas, termed **'priority investments',** also present significant **opportunities for district heating site projects**, with a particular focus on the following aspects of each one:

- **Renewable energy**: Targeting heating and cooling systems powered by renewable sources.
- **Energy efficiency**: Enhancing industrial energy efficiency.
- **Energy networks and storage**: Prioritising district heating pipelines as a central element.
- **Energy equality**: Supporting low-income households, particularly in rural and remote areas, to address energy poverty and modernise heating systems.
- **Just transition support**: Assisting carbon-dependent regions in transitioning towards sustainability.

As demonstrated, projects involving **district heating site renovations** may fall within one or multiple priority areas under the Directive and the MF.

It is important to note that district heating projects seeking MF funding must meet **two essential criteria**:

- Investment proposals must incorporate **well-developed technologies**, meaning the technologies proposed should have a track record of successful implementation and proven effectiveness in operational settings with comparable conditions, scale, and reliable references.
- Except in certain cases, **energy generation cannot rely on fossil fuels**.

[68] https://modernisationfund.eu/

[69] https://eur-lex.europa.eu/eli/dir/2023/959/oj

Member States are responsible for identifying and selecting the investments they intend to propose for MF support. Only the Managing Authorities of Member States may submit their investment proposals to the EIB, the EC, and the Investment Committee at any time during the year.

Upon submission, the EIB conducts an initial assessment to determine if the proposal meets the requirements for priority status consideration. Following this, the EC evaluates the proposal to confirm its eligibility. Once confirmed, the disbursement process is initiated, with funding usually provided in the form of **grants**.

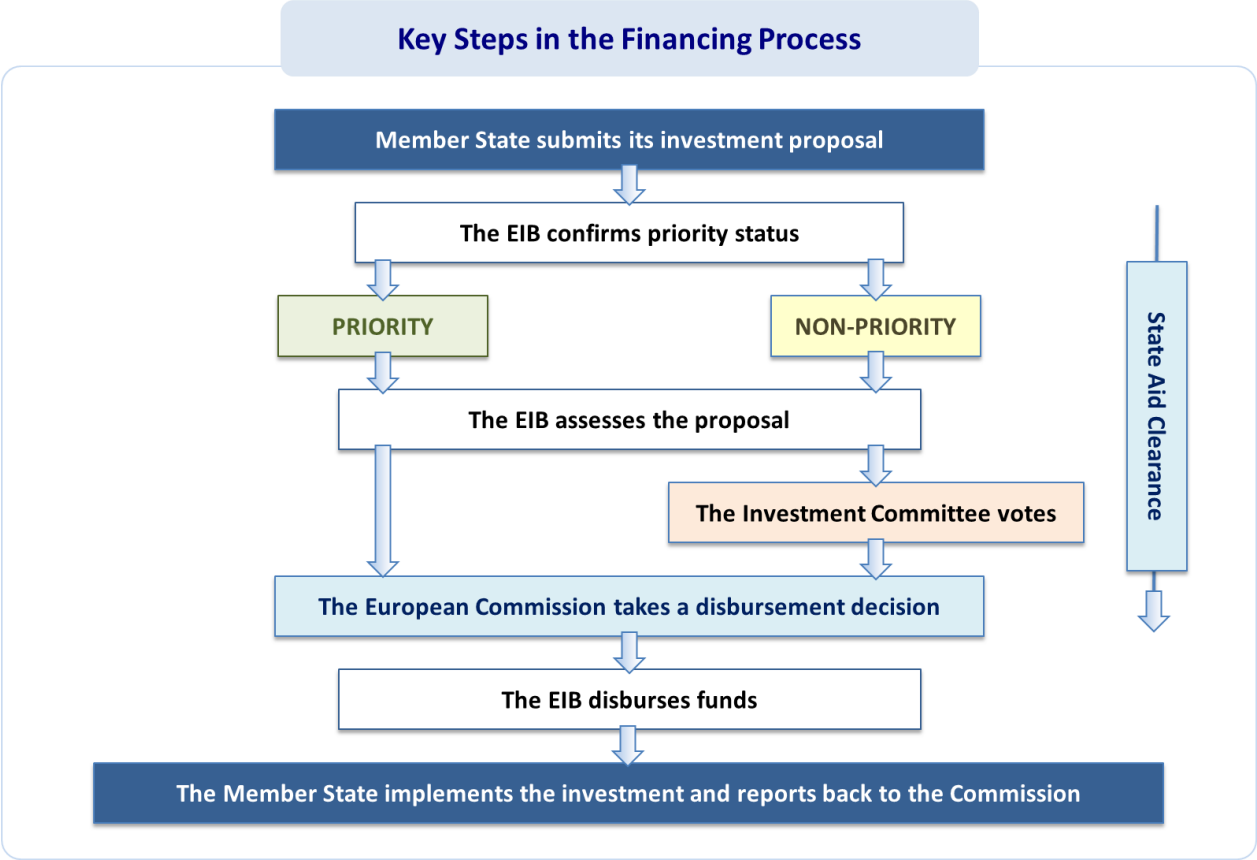

Figure 11 – Key steps in the financing process of the Modernisation Fund

b) Relevant considerations

In each participating country, the MF is available to a variety of **beneficiaries**, typically including:

- **Public authorities**: Local, regional, and national governments aiming to modernise energy infrastructure and achieve energy efficiency targets.
- **Energy Service Companies** (ESCOs): Companies that implement energy efficiency and renewable energy projects, including initiatives related to district heating and sustainable energy networks.
- **Energy companies**: Entities involved in energy generation, distribution, and transmission, undertaking projects to modernise energy systems, transition to renewable sources, or improve operational efficiency.

- **Industrial and private sector entities**: Industries seeking to enhance energy efficiency or reduce carbon emissions to comply with environmental regulations and support climate neutrality goals.
- **Non-profit organisations and cooperatives**: Associations, foundations, and cooperatives focused on renewable energy, energy efficiency, and energy justice, often supporting vulnerable or low-income communities.
- **Financial institutions**: Banks and other financial entities that channel resources toward energy modernisation projects, frequently acting as intermediaries for green or climate financing programmes.
- **Communities and households**: In some cases, particularly through energy justice programmes, low-income households and local communities may access funds indirectly through initiatives to modernise heating systems or alleviate energy poverty.

At this stage, one might question how representatives of a prospective project can apply to the MF within their country. Typically, **Member States issue calls for proposals to invite project applications**; however, for projects deemed of national strategic importance, it is also common for Managing Authorities to design and submit their own project proposals:

- In **Lithuania**[70], €124 million has been invested to date. The Ministry of Finance of the Republic of Lithuania (*Lietuvos Respublikos finansų ministerija*) acts as the Managing Authority, transferring resources to the relevant ministry. The Environmental Project Management Agency (*Aplinkos projektų valdymo agentūra – APVA*), is responsible for publishing calls for proposals, evaluating projects, and processing payment claims. Applicants can find all calls at this **link**.
- In **Poland**[71], the Managing Authority is the Ministry of Climate and Environment (*Ministerstwo Klimatu i Środowiska*), which delegates the responsibility as the National Operator to the National Fund for Environmental Protection and Water Management (*Narodowemu Funduszowi Ochrony Środowiska i Gospodarki Wodnej - NFOŚiGW*). To date, the disbursed amount totals €1,210.48 million, and applicants can find the calls for proposals **here**.
- In **Slovakia**[72], the Ministry of Environment of the Slovak Republic (*Ministerstvo životného prostredia SR*) acts as the Managing Authority, in collaboration with the Ministry of Economy[73] (*Ministerstvo hospodárstva Slovenskej republiky*) through the MF Commission. To date, €579.5 million has been disbursed. The latest information and open calls can be found on their dedicated **website**.

[70] https://modernisationfund.eu/wp-content/uploads/2023/06/LT-MF-Annual-Report-2022.pdf

[71] https://modernisationfund.eu/wp-content/uploads/2023/06/PL-MF-Annual-Report-2022.pdf

[72] https://modernisationfund.eu/wp-content/uploads/2023/06/SK-MF-Annual-Report-2022.pdf

[73] https://www.economy.gov.sk/?csrt=6589471167558092127

c) Recommendations for Low2HighDH-supported projects

- The Modernisation Fund is used for **direct investments**, and potential beneficiaries must apply through the online portals provided by the authorities in their respective countries.
- District heating site projects applying to the MF should focus on **proven and renewable technologies**, using reliable, well-tested solutions to enhance both efficiency and eligibility for funding. As the MF prioritises modernisation, **projects should mainly target renovations** over new construction or expansion, with a clear emphasis on renewable energy sources, given the general **exclusion of fossil fuels**.
- To maximise success, district heating site projects should align with MF **priority areas**, such as energy efficiency, social inclusion, and energy poverty alleviation. Projects that address these needs, particularly in rural or low-income communities, support the MF's goals for a just transition in **carbon-dependent regions** and for energy equity.
- Project managers should **monitor national calls closely**, as these determine the grant amount available for funding, which varies depending on each call's specifics. **Tailoring proposals** to meet these requirements, while aligning with MF objectives and each Member State's priorities, will improve their chances of securing funding and fully benefiting from the programme.

Table 4 – Recommendations for Low2HighDH-supported projects on Modernisation Fund

5.1.4 Recovery and Resilience Facility - Grants

a) General description

The Recovery and Resilience Facility[74] (RRF) is a core pillar of NextGenerationEU, the EU's strategy for recovery and resilience following the COVID-19 crisis.

Officially launched on 19 February 2021, the RRF will provide targeted support to the **27 EU Member States** for reforms and investments made from the start of the pandemic in February 2020 through until **31 December 2026**. Its dual purpose is to bolster economic recovery and accelerate the green and digital transitions across the EU, aligning with priorities such as the **European Green Deal** and the **REPowerEU Plan**[75], developed in response to energy challenges resulting from Russia's invasion of Ukraine.

The RRF operates with a **total budget** of €650 billion, divided between €359 billion in **grants** and €291 billion in **loans**. Financing is capped at a previously agreed maximum amount for each Member State.

[74] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en

[75] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en

To access funds, EU governments submitted comprehensive national recovery and resilience plans, detailing reforms and investments to be achieved by the end of 2026, with specific milestones and targets. Each plan was required to allocate a minimum of **37% of its budget to green transition initiatives** and 20% to digital transformation measures. These plans provide flexibility, as Member States can revise and resubmit them to adapt to evolving national and EU priorities.

RRF funds can be used for all types of projects that contribute to one of the following **pillars**:

- **Green transition**[76]: Supports climate action and environmental sustainability. Member States have proposed investments in areas such as sustainable mobility, energy efficiency, renewable energy, climate change adaptation, the circular economy, and biodiversity. **District heating projects are eligible,** as energy efficiency, renewable energy, and network modernisation are considered.
- **Digital transformation**.
- **Smart, sustainable, and inclusive growth**.
- **Social and territorial cohesion**[77]: Focuses on promoting social and territorial cohesion, helping Member States recover from the pandemic's social impacts, combat poverty, and address unemployment. The reforms and investments supported by the RRF should contribute to improving social and territorial infrastructure and services, including social protection and welfare systems, the inclusion of disadvantaged groups, support employment and skills development, and lead to the creation of high-quality and stable jobs. **District heating projects** that address these aspects are also considered under this pillar.
- **Health, economic, social, and institutional resilience**.
- **Policies for the next generation**.

The RRF is a **performance-based facility**, meaning that funds are only disbursed once Member States achieve the pre-agreed milestones and targets outlined in their recovery and resilience plans. The European Commission manages the RRF directly, raising funds through EU bonds issued on capital markets, which are then distributed to Member States to **fund projects in the form of grants and loans**. This approach ensures accountability, as payments are contingent upon measurable progress toward completing reforms and investments.

Each Member State's national plan outlines **specific targets and milestones**, aligned with EU objectives, that must be met to trigger funding disbursements. The **RRF regulation**[78] **stipulates the conditions for Member States to receive funds,** the application process, and permissible uses of the funds, all of which have been explained in this section.

To ensure transparency, the Commission provides an online **Map of Projects**, offering insight into a variety of RRF-funded reforms and investments across the EU. This map serves as a valuable resource for project inspiration and is regularly updated as implementation progresses.

[76] https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/green.html

[77] https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/social.html

[78] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02021R0241-20230301

b) Lithuania

To manage and disburse the allocated budget, Lithuania has created the **Next Generation Lithuania programme**[79] (*Naujos kartos Lietuva*), which includes additional reforms and investments aimed at **reducing reliance on fossil fuels**.

Lithuania has been assigned **€2.289 billion in grants** through the programme, of which only €886.02 million had been utilised as of November 2024[80]. This indicates that projects seeking funding still have opportunities to apply until the programme's end in December 2026.

Of this budget, **37.4% is dedicated to the Green Transition pillar**, while **28.75% is allocated to Social and Territorial Cohesion**. In total, 48 measures have been established in Lithuania, encompassing both investments and reforms, with all milestones and targets to be completed by August 2026[81]:

- **Green transformation**: Planned reforms and investments focus on **promoting renewable energy production** (such as solar and wind energy and alternative fuel production), developing sustainable transportation, and implementing energy efficiency measures (renovation of apartment buildings and innovations in the construction sector), with a total allocation of €676.631 million.
- **REPowerEU framework**: Additional initiatives address green transition challenges, **particularly reducing greenhouse gas emissions**, enhancing energy efficiency in buildings and transportation, and fostering additional electricity generation capacity from renewable energy sources, with €747.56 million allocated for these objectives.

The Next Generation Lithuania programme is **administered by the same authorities and bodies that oversee the EU Funds Investment Programme** (see Section 6.1.1.b – *Cohesion Policy Funds – Lithuania*). **Calls for proposals** are launched periodically on the programme's dedicated **website**, with selection criteria, grant amounts, and other terms subject to periodic updates. It is advisable for prospective projects to monitor these calls regularly to identify those aligning with their characteristics and interests.

Eligible applicants include public authorities (local and regional governments), non-governmental organisations (NGOs), educational and research institutions, private companies (especially SMEs), as well as associations and cooperatives representing shared interests in key sectors.

[79] https://2021.esinvesticijos.lt/apie-programas/2021-2026-m-planas-naujos-kartos-lietuva/apie-plana-naujos-kartos-lietuva

[80] https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html?lang=en

[81] https://esinvesticijos.lt/apie-programas/2021-2026-m-planas-naujos-kartos-lietuva/plano-komponentai-1

c) Poland

To channel RRF funding, Poland has established the **National Recovery and Resilience Plan**[82] (*Krajowy Plan Odbudowy i Zwiększania Odporności*), encompassing 56 investment streams and 55 reforms. The reforms focus on removing obstacles to **sustainable growth**, while the investments aim to **decarbonise** the Polish economy, accelerate the digital transition, and strengthen economic and social resilience.

Poland has been allocated **€25.277 billion in grants**, of which only €3.25 billion has been disbursed to date[83], leaving substantial funding available for new projects through to the end of the programme.

Of the available budget, **46.6% is dedicated to the Green Transition pillar**, with goals to increase the share of renewable energy in Poland's energy mix. Poland's approach to the Green Transition focuses on strengthening the energy sector, promoting eco-friendly heating in buildings, supporting renewable energy sources, and advancing nature-friendly technologies. Key priorities within this pillar include[84]:

- Clean air initiatives and the rapid replacement of old coal stoves with eco-friendly alternatives.
- Purchase of photovoltaic panels and solar collectors.
- Development of Polish offshore wind farms in the Baltic Sea.
- Smart energy grid projects, hydrogen technologies, and green city initiatives.

20.54% of the budget is allocated to the Social and Territorial Cohesion pillar. This funding ensures territorial cohesion by striving to provide all regions with equal development opportunities and equal access to services, regardless of their specific challenges. For instance, EU funds will support areas facing natural or demographic difficulties, such as low-density and mountainous regions, as well as less-developed areas[85].

Under the **REPowerEU reforms**, Poland is committed to strengthening energy security through[86]:

- Facilitating the development of renewable energy sources and removing barriers to renewable expansion.
- Supporting the creation of local energy communities.
- Accelerating the integration of renewable sources into distribution networks.
- Promoting sustainable transportation, green skills, and increased energy efficiency.

The National Recovery and Resilience Plan is **managed by the same authorities and institutions that administer the European Funds for Infrastructure, Climate, and Environment programme** (see Section 6.1.1.c – *Cohesion Policy Funds – Poland*), and **eligible applicants** include entrepreneurs, public institutions, private companies, NGOs and research institutions.

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[82] https://www.kpo.gov.pl/strony/o-kpo/o-kpo/informacje/

[83] https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html?lang=en

[84] https://www.kpo.gov.pl/strony/o-kpo/o-kpo/zielona-energia-i-zmniejszenie-energochlonnosci/

[85] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/polands-recovery-and-resilience-plan_en#economic-and-social-resilience

[86] https://www.kpo.gov.pl/strony/o-kpo/o-kpo/repowereu/

Calls for proposals are launched periodically on the programme's dedicated **website**, with selection criteria, grant amounts, and other terms subject to regular updates. Prospective projects are encouraged to monitor these calls closely to identify opportunities that align with their specific characteristics and goals.

d) Slovakia

To administer and distribute its budget, Slovakia has launched the **National Recovery Plan**[87] (*Plán Obnovy*), structured around 64 investment streams and 70 reforms[88]. This plan prioritises accelerating the shift towards a **sustainable, low-carbon**, and resilient economy, advancing the digital transformation for both businesses and society, and enhancing social resilience by improving educational and healthcare systems.

Slovakia has been awarded **€6.408 billion in grants**, of which €3.47 billion has been disbursed so far, leaving ample funds available for new projects. Of this budget, **41.18% is devoted to the Green Transition pillar, while 25.24% is allocated to Social and Territorial Cohesion**[89].

The **Green Transition pillar** focuses on Slovakia's goals in climate and environmental policy, which target renewable energy, energy efficiency, sustainable mobility, and climate adaptation. Key areas of investment under this pillar include[90]:

- **Renewable energy sources and energy infrastructure**: Slovakia aims to construct new renewable energy capacities and modernise existing infrastructure.
- Building renovations.
- Sustainable transport.
- **Industry decarbonisation**: Slovakia has set a goal to reduce greenhouse gas emissions from industry by at least 2.6 million tonnes of CO_2 equivalent annually. This will involve integrating circular economy principles, modernising high-energy-consuming facilities, and implementing advanced clean production technologies and zero-emission energy sources.
- Adaptation to climate change.

Through **REPowerEU**, Slovakia also seeks to **reduce dependence on fossil fuel imports**, particularly from Russia, by accelerating renewable energy integration. This will be achieved through investments in energy infrastructure, streamlined permitting processes, enhanced building energy efficiency, promotion of zero-emission transportation, and development of green skills to support broader renewable energy adoption.

[87] https://www.planobnovy.sk/

[88] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/slovakias-recovery-and-resilience-plan_en

[89] https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html?lang=en

[90] https://www.planobnovy.sk/kompletny-plan-obnovy/zelena-ekonomika/

The National Recovery Plan is directed by the **Ministry of Finance of the Slovak Republic**[91] (*Ministerstvo financií Slovenskej republiky*) **and the Government Office of the Slovak Republic**[92] (*Úrad vlády Slovenskej republiky*), supported by additional **regional coordination centres**[93] throughout the country.

Funding is available to **municipalities, private companies, citizens, academia, research institutions, and non-profit organisations**.

Calls for applications are issued periodically on a specific **website** created for this purpose, with requirements, grant amounts, and other details updated regularly. Prospective applicants should monitor these calls closely to identify opportunities that match their specific project needs and objectives.

e) Recommendations for Low2HighDH-supported projects

- The RRF is used for **direct investments**, and potential beneficiaries must apply through the online portals provided by the authorities in their respective countries.
- The RRF is generally suitable for a **range of district heating site projects**, from renovations and expansions to the creation of new infrastructure.
- Applicants for district heating projects will increase their chances of success by prioritising the **elimination of fossil fuels and incorporating renewable energy sources**.
- Projects addressing energy transition on a broad scale, such as those focused on modernisation, clean energy infrastructure, or digitalisation, may find the RRF to be **a comprehensive option**. Unlike other funds, the RRF does not require advanced technological innovation.
- Despite the RRF's inclusion of district heating under the Green Transition pillar, Lithuania, Poland, and Slovakia have allocated a significant portion of RRF resources to **residential energy efficiency, particularly in building retrofits**. As there are fewer calls specifically for district heating projects, each available call may attract a high number of applicants, potentially reducing the likelihood of securing funding.
- However, in all three countries, a **significant portion of funds remains unreleased**, with more than half of the budget still available in a programme set to conclude in two years from the drafting of this document. It is therefore anticipated that the authorities in each country will try to accelerate and increase new calls to fully utilise the assigned budget.

Table 5 – Recommendations for Low2HighDH-supported projects on RRF grants

[91] https://www.mfsr.sk/sk

[92] https://www.vlada.gov.sk/

[93] https://www.planobnovy.sk/realizacia/samospravy/

5.2 NATIONAL, REGIONAL AND MUNICIPAL GRANTS & SUBSIDIES

With the launch of the Modernisation Fund and the Recovery and Resilience Facility in 2021, alongside the continued availability of the LIFE Programme and Cohesion Policy Funds, Lithuania, Poland, and Slovakia have intensified efforts to effectively manage and allocate these EU resources. As noted in the previous section, Cohesion Policy Funds are co-financed by EU and national budgets.

Before 2021, each of these three countries had established fully state-funded programmes or calls that benefited district heating projects. However, **at present, no major programmes with 100% national funding are available for district heating, except for a unique co-financing mechanism**, funded exclusively by national resources, for projects already supported by a **LIFE subprogramme**.

As the completion dates of these EU programmes approach—Cohesion Policy Funds (2027), LIFE Programme (2027), Modernisation Fund (2030), and RRF (2026)—and given the limited availability of fully national or regional programmes for district heating, this section includes:

- An **outline of the LIFE Programme co-financing mechanism**.
- A summary of **previous national programmes and/or national entities issuing calls relevant to district heating projects**, to inform readers and provide context should these initiatives be reactivated or new ones arise.

Additionally, it is known that some **municipalities** within these countries offer various types of funding support for district heating site renovations. Although this mapping does not explore municipal sources in depth, as Low2HighDH-supported projects progress with their investment plans, targeted research and assistance will be conducted within relevant municipalities to determine whether additional local funding opportunities can be secured.

5.2.1 LIFE Programme co-financing mechanism

Complementary to the LIFE Programme, **some EU countries co-finance projects** that have already been selected and funded by the programme.

In this regard, the **essential requirement** for a district heating site project to qualify for this additional funding, generally in the form of grants or loans, is prior selection by one of the LIFE subprogrammes detailed in Section 6.1.2 – *LIFE Programme*.

The remaining requirements will depend on each call, as well as the application process, funding amount, and other selection criteria, which are published periodically when the proposal period opens:

- In **Lithuania**, the Ministry of Environment (*Aplinkos ministerija*) provides co-financing for projects selected under the LIFE programme. Users can access through this **link**.
- In **Poland**, the National Fund for Environmental Protection and Water Management (NFOŚiGW) is the authority providing this co-financing. Users can access the calls on this **website**.
- In **Slovakia**, it is managed through the Slovak LIFE Programme 2021-2027, with the Ministry of Environment of the Slovak Republic (*Ministerstvo životného prostredia SR*) serving as the national authority for the programme. Users can access it through this **link**.

5.2.2 Lithuania

The **Environmental Projects Management Agency** (*Aplinkos projektų valdymo agentūra – APVA*), operating under the **Ministry of Environment** (*Aplinkos ministerija*), also oversees and manages state-funded initiatives in different areas. These initiatives aim to reduce energy consumption and emissions, and while they are aligned with European Union policies, they are **fully funded by national resources**.

In this regard, Lithuania has developed the **Climate Change Programme**[94] (*Klimato kaitos programa*), from which **district heating site renovation projects could benefit in the past**. This programme continues to support other types of initiatives aimed at mitigating the effects of climate change by reducing greenhouse gas emissions and promoting adaptation to climate-induced changes.

Funding for the Climate Change Programme comes from:

- **Assigned amount units**.
- **Auctioned allowances**.
- **Voluntary contributions**.
- **Economic fines collection**.

The funds allocated for the Climate Change Programme create several opportunities. These funds are strategically directed to the following **key areas**[95]:

- **Energy consumption and efficiency projects**.
- **Promotion of renewable energy sources and eco-friendly technologies**.
- Developmental cooperation projects in developing countries.
- Public information, education, scientific research, and consultancy.
- Reforestation and climate change measures.
- Administration of programme funds and greenhouse gas registry.
- Other measures for effective climate change policy management.

The allocation of Climate Change Programme funds follows a **structured process**:

1. The Ministry of the Environment prepares an annual estimate of the programme's funds, outlining the approved investment areas and their corresponding funding allocations;
2. This estimate serves as the basis for the annual budget plan, which details the distribution of funds across specific financing instruments and sets other essential financing conditions;
3. Once the estimate and plan are approved, the APVA takes over. The agency is responsible for issuing calls for project proposals from individuals and legal entities, overseeing the submission process, and

[94] https://klimatokaita.lt/klimato-kaita/klimato-kaitos-programa/

[95] https://apva.lrv.lt/lt/veiklos-sritys-319/projektu-vystymas-1760/klimato-kaitos-specialioji-programa/

evaluating and monitoring projects during implementation, culminating in the disbursement of payments to the recipients.

As of the writing of this report, **there are no calls specifically related to district heating renovation projects**, although most of the energy-related programmes are focused on the renovation of various types of buildings where heating systems are centralised rather than district-based.

Low2HighDH-supported projects are nonetheless encouraged to periodically check the available calls on the **APVA website**, as such projects have been funded in the past under this programme[96] and may be eligible for future funding opportunities.

5.2.3 Poland

In Poland, there were two national programmes from which district heating site renovation projects benefited:

- The Urban Heating programme (*Ciepłownictwo Powiatowe*).
- The Polish Geothermal Plus programme (*Polska Geotermia Plus*).

Urban Heating Programme (2019-2021):

The Urban Heating Programme[97], implemented by the **National Fund for Environmental Protection and Water Management** (*Narodowemu Funduszowi Ochrony Środowiska i Gospodarki Wodnej - NFOŚiGW*), aimed to modernise and decarbonise district heating systems in smaller cities. Its objectives included enhancing energy efficiency and significantly reducing greenhouse gas emissions in line with Poland's climate commitments.

The programme launched two calls, one in 2019 and another in 2021[98], with a total budget of **PLN 500 million**, which, at 2019 exchange rates, equates to approximately **€116 million**. Funding was allocated to support projects focused on **infrastructure upgrades**, **transitioning to cleaner energy sources**, and implementing **advanced heating technologies** to reduce environmental impact.

Through this funding initiative, the NFOŚiGW enabled smaller municipalities to access critical resources for upgrading district heating systems, contributing to Poland's broader environmental and energy transition strategies.

[96] https://www.e-tar.lt/portal/lt/legalAct/12a85d00eb5611eaa12ad7c04a383ca0/asr#fromHistory

[97] https://www.gov.pl/web/nfosigw/nabor-ii-wnioskow-2020-2022

[98] https://www.res-dhc.com/en/2021/01/26/new-support-scheme-for-decarbonising-district-heating-in-poland/

Polish Geothermal Plus (2019-2025)[99]:

Also managed by the **NFOŚiGW**, this programme had a budget of **PLN 600 million** (approximately **€139 million** at 2019 exchange rates) and aimed to consolidate support for geothermal energy by facilitating investments in **exploration, drilling, and the construction of geothermal heating plants**. Half of the budget was allocated to grants, while the other half was provided as loans.

The programme is set to run from 2019 to 2025; however, commitments (understood as contract signings) **concluded by 2023**, with fund disbursements continuing until 2025.

This initiative was exclusively targeted at entrepreneurs, and the **funded projects were categorised** into mandatory and optional investments:

- **Mandatory investments** included the construction of new, expansion or modernisation of existing heating plants, combined heat and power (CHP) plants, or geothermal power plants based on a geothermal source. It also included modernising or expanding existing energy generation sources to incorporate a heating plant/CHP/geothermal power plant, based on geothermal resources, or constructing or reconstructing a geothermal well, excluding the first research well.
- **Optional investments** receiving support included the modernisation of heating networks, energy efficiency improvements, renewable energy installations, and drilling the first research well.

5.2.4 Slovakia

In Slovakia, different national and regional programmes/entities funded exclusively by national resources have previously provided grants to district heating site renovation projects:

- Slovak Environmental Fund (*Slovenský environmentálny fond*).
- Energy Efficiency Programme in Bratislava (*Podpora zvyšovania energetickej účinnosti distribúcie tepla v Bratislavskom kraji*)

Slovak Environmental Fund:

The Slovak Environmental Fund[100] is an independent legal entity based in Bratislava, managed by the **Ministry of Environment of the Slovak Republic** (*Ministerstvo životného prostredia SR*). It has been one of the main funding instruments for district heating projects in the country, providing financial assistance to a variety of environmental projects, notably the **modernisation of district heating systems in small and medium-sized municipalities**.

The fund is focused on improving energy efficiency and reducing greenhouse gas emissions, thereby contributing to Slovakia's environmental commitments. Through this funding, district heating projects have been able to upgrade their infrastructure by adopting cleaner, more efficient technologies.

[99] https://www.gov.pl/web/nfosigw/nowy-program-nfosigw-dla-przedsiebiorcow-polska-geotermia-plus-z-budzetem-600-mln-zl

[100] https://envirofond.sk/

Although there are currently no calls specifically directed at these types of projects, it is advisable to periodically review its **grants section** to determine if new support becomes available.

Energy Efficiency Programme in Bratislava (2018-2019):

The Energy Efficiency Programme in Bratislava, managed by the **Ministry of Economy of the Slovak Republic** (*Ministerstvo hospodárstva Slovenskej republiky*) in collaboration with the **Slovak Innovation and Energy Agency** (*Slovenská inovačná a energetická agentúra - SIEA*), has been another key source of support for modernising district heating infrastructure in the region.

Its main objective was to **reduce energy demand in heat distribution** through the construction, reconstruction, and modernisation of heat distribution networks in centralised heating systems.

The programme was implemented in **two phases**:

1. **First phase**[101]: Announced on 3rd October 2018, with an allocation of €600,000. This phase closed on 31st October 2018.
2. **Second phase**[102]: Announced on 24th January 2019, with an allocation of €900,000. This phase closed on 25th February 2019.

The support was provided as **"de minimis**[103]**" grants**, with a maximum limit of €200,000 per beneficiary within a three-fiscal-year period. Eligible beneficiaries were companies licensed for heat production and distribution, as per Act No. 657/2004[104] on Thermal Energy.

Despite this programme being completed, it is recommended to regularly visit the **SIEA website** dedicated to the launch and information on new calls.

[101] https://www.siea.sk/podporne-programy/podpora-zvysovania-energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-ii-kolo/podpora-zvysovania-energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-i-kolo/

[102] https://www.siea.sk/podporne-programy/podpora-zvysovania-energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-ii-kolo/

[103] "De minimis grants" are small amounts of aid provided either by the European Commission or individual member states to businesses, typically up to €200,000 per business over three fiscal years for most sectors. These grants are exempt from strict regulatory requirements under EU state aid rules because they are designed to have minimal impact on competition and thus do not require additional approval from the European Commission, as they are unlikely to distort the market.

[104] https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2004/657/20221201

5.2.5 Recommendations for Low2HighDH-supported projects

- It is strongly recommended that projects selected by one of the EU LIFE subprogrammes and already receiving co-funding from them also **check and apply for national co-funding programmes for LIFE projects**.
- Although at the time of writing, there are no additional relevant programmes for district heating site renovation projects at the national level in Lithuania, Poland and Slovakia offering grants/subsidies fully funded by budgets, it is advisable for project representatives to regularly **check the programmes or national agencies mentioned in this section**. This will help them to keep abreast of any new or reactivated programmes, as these have been highly relevant to past beneficiaries.

Table 6 – Recommendations for Low2HighDH-supported projects on national, regional and municipal grants & subsidies

5.3 DONATIONS AND COMMUNITY FINANCING

5.3.1 General description – Classic donations

Donations can be a valuable, but often under-utilised, source of funding for the renovation of district heating sites. Typically, donations come in the form of **voluntary contributions** from individuals, philanthropic organisations, charitable foundations and occasionally corporations interested in supporting environmentally beneficial projects. Donations for DH projects can **come from both domestic and international sources**, particularly from organisations focused on sustainability, climate change mitigation and energy efficiency. While donations alone may **not cover the full financial requirements** of large-scale district heating renovations, they can complement other funding sources by covering specific project components or offsetting operating costs.

Donations for district heating site renovations are **less common** than other forms of funding, such as grants or public subsidies, mainly due to the significant costs involved. The renovation of a district heating site, which can include infrastructure upgrades, boiler replacement and conversion to renewable energy sources, typically requires significant capital, which exceeds what most donors can provide. However, donations can be particularly **useful for smaller improvements or specific aspects of larger projects**, such as implementing energy-efficient technologies, raising community awareness or conducting environmental impact assessments. In some cases, donations can also **help projects meet co-funding requirements when applying for other non-redeemable and redeemable funding sources**.

In **Lithuania, Poland, and Slovakia**, donations for district heating projects are not widely popular yet, but there is room for growth. The trend of environmental philanthropy is gradually increasing in these countries, particularly through partnerships with international organisations. For example, the **Social Impact Alliance for Central and Eastern Europe**[105] has been actively working to strengthen the impact ecosystem in the region, including Lithuania, Poland, and Slovakia, by equipping key actors and decision-makers with tools to facilitate more informed and impactful giving. Additionally, the **European Climate Foundation** has engaged in various projects across Europe[106], including these countries, to promote climate action and environmental sustainability. These developments suggest a gradual increase in environmental philanthropy, which could potentially extend to support for district heating projects in the future.

Donations also share **similarities with crowdfunding and community financing**, both of which provide alternative pathways to engage public support for district heating projects:

- **Crowdfunding, specifically donation-based crowdfunding**, allows project organisers to reach a broad audience and gather funds without needing to provide anything in return to contributors.
- **Community financing**, on the other hand, involves deeper engagement with the local community and often includes a sense of ownership or vested interest in the project's success.

The main difference between crowdfunding and community financing lies in the approach, the level of community involvement, and the long-term goals of each model, as detailed in the next sections.

[105] https://ceeimpact.org/our-initiatives/philanthropy-and-csr-in-cee/

[106] https://europeanclimate.org/priority/european-and-national-just-transitions/

5.3.2 Donation-based crowdfunding

Crowdfunding is a method of raising funds for a project or venture by collecting **small contributions from a large number of individuals**, typically facilitated through an **online platform**. It allows individuals or organisations to harness the collective power of a crowd to fund ideas, products or initiatives, bypassing traditional funding channels. In crowdfunding, contributions are typically small in value and come from a broad base of supporters who may or may not be part of the local community, creating a global reach for project funding.

This collective form of funding is particularly popular for **specific, short-term projects or causes**. Crowdfunding campaigns are often launched as one-off initiatives with clear goals, timelines and funding targets. It's a particularly effective way of raising funds quickly for projects that might otherwise struggle to secure backing from traditional investors or lenders. Crowdfunding also provides a platform for sharing the project's mission and values with a wide audience, who in turn feel they are supporting a meaningful or innovative cause.

Donation-based crowdfunding is one of the simplest forms, where donors expect **no financial return or reward**. Instead, they are motivated by a sense of goodwill, a belief in the project's cause, or a desire to support a particular initiative. This form of crowdfunding is often used for projects with social, environmental or community goals, where the impact is often perceived as the reward itself.

Crowdfunding campaigns for **district heating renovation projects** in countries such as Lithuania, Poland and Slovakia, while still relatively **uncommon**, could be a powerful tool for attracting widespread support from environmentally conscious individuals and organisations. The collective funds raised may not cover the entire renovation, but they can provide additional funding for specific project elements or pilot initiatives that demonstrate the benefits of energy-efficient heating systems.

Having considered donation-based crowdfunding as a viable funding method for district heating renovations, it's important to understand the **steps required to successfully launch such a campaign**. Creating a successful crowdfunding campaign involves careful planning and preparation to effectively communicate the project’s impact and attract potential donors. Below is a brief overview of the **process for presenting a district heating project on a crowdfunding platform**:

1. **Define project goals**: Clearly outline the objectives, funding target, and specific impact of the district heating project (e.g., environmental benefits, and energy efficiency).
2. **Choose the right platform**: Select a crowdfunding platform that aligns with the project’s focus, ideally one with a strong base for sustainability or energy projects.
3. **Prepare campaign materials**: Develop visuals, videos, and descriptions to showcase the project’s goals, impact, and benefits to potential backers.
4. **Set funding options**: Decide on a donation structure, defining suggested contribution levels and incentives if applicable.
5. **Launch the campaign**: Publish the project on the platform, making sure to optimise timing and outreach efforts.
6. **Promote actively**: Share the campaign through social media, newsletters, and relevant networks to attract supporters.

7. **Engage with donors**: Provide updates and interact with backers throughout the campaign to maintain interest and encourage additional support.
8. **Complete funding**: Upon reaching the target or ending the campaign, proceed with funding transfers and acknowledge donors.

Some of the most relevant **donation-based crowdfunding platforms in Europe**, focused on sustainability, energy, and climate change projects, include:

- **Chuffed**: Focused on social, environmental, and sustainability projects, Chuffed is well-known in Europe for supporting climate change initiatives and clean energy projects. It is donation-based and charges zero fees, attracting many non-profits and community projects.
- **GoFundMe**: Although global, GoFundMe is popular in Europe for environmental, sustainability, and social causes. Many campaigns related to climate change and renewable energy find support due to its accessibility and reach.
- **Goteo**: Based in Spain and active across Europe, Goteo supports social, cultural, and environmental impact projects. Known for donation-based crowdfunding, it funds ecological, sustainability, and social innovation initiatives.
- **Oneplanetcrowd**: Based in the Netherlands, Oneplanetcrowd specialises in sustainability, innovation, and energy transition projects. It supports donation-based campaigns aimed at reducing environmental impact and promoting clean energy.

In **Lithuania, Poland, and Slovakia**, there are crowdfunding platforms that, although not exclusively focused on sustainability, energy, or climate change projects, have supported initiatives in these areas. Therefore, campaign effectiveness depends on project presentation and engaging a community interested in environmental and energy topics:

Lithuania:

- **Contribee**: This Lithuanian platform allows creators and organisations to receive ongoing financial support from their followers. Although its focus is broad, it has been used to fund environmental and sustainability projects.

Poland:

- **PolakPotrafi.pl**: One of the largest crowdfunding platforms in Poland. While it covers a variety of projects, it has hosted campaigns related to sustainability and the environment.
- **Wspieram.to**: Another Polish platform that has facilitated funding for projects across various categories, including ecological and sustainable energy initiatives.

Slovakia:

- **StartLab.sk**: A Slovak platform that supports creative and community projects. Although not specialised in sustainability, it has backed environmental and social projects.

5.3.3 Community financing

Community financing involves financial mechanisms where a **community collectively pools resources** to fund projects that **directly benefit its members**, often structured as cooperatives or local partnerships. This financing model suits district heating renovations, where residents, businesses, and municipalities fund improvements that bring long-term benefits, like energy efficiency, lower costs, and environmental gains.

In Lithuania, Poland, and Slovakia, community financing for district heating projects could be a promising approach. Community financing could **help overcome financial barriers** by allowing residents, businesses, and even municipalities to invest in district heating upgrades, knowing that their contributions support essential infrastructure with direct, long-lasting benefits for their community.

Some **common structures** in community financing include:

- **Community investment models**: In these models, residents and businesses can invest in district heating projects with the expectation of receiving a return, financial or in-kind, on their contribution. For example, participants might benefit from reduced heating costs or lower tariffs for their homes or businesses. This form of financing also gives citizens a sense of ownership and accountability over the project, encouraging them to support the initiative's success actively.
- **Cooperatives**: Cooperatives allow community members to collectively own and manage district heating projects. Each member contributes financially and, in return, shares in the decision-making and benefits. This approach not only helps raise funds but also fosters community engagement, as members have a direct say in the project's management. Cooperatives can also access grants or public subsidies that might be unavailable to individual investors. Nonetheless, given the ownership of DH networks in these three countries, typically held by public administration, public companies, and, to a lesser extent, private companies, **this form of community financing would be ruled out**.

Both structures could also take the form of providing funding through loans; even so, this option, due to its complexity for DH site renovation projects, is also ruled out.

In addition to providing funding, community financing also strengthens community ties and resilience. By engaging residents in projects that address their immediate needs, community financing aligns economic and social interests, contributing to the overall welfare and sustainability of the community.

When pursuing **a community investment model** for district heating site renovation projects, the following **general steps** can guide the process to ensure compliance with local regulations and maximise community involvement and benefits:

1. **Assess legal and regulatory requirements**: Review local and national regulations, focusing on ownership structures and public or private investment restrictions.
2. **Define project goals and community benefits**: Clarify project objectives and community advantages, such as cost savings and environmental improvements.
3. **Develop an investment structure**: Determine expected returns (financial or in-kind) and minimum investment requirements for participants.

4. **Secure local partnerships**: Partner with local governments, businesses, and organisations to gain support and resources.
5. **Establish a financial and operational plan**: Outline funding needs and create an operational plan for maintenance, administration, and returns distribution.
6. **Engage and inform the community**: Organise informational sessions and promote the project to raise awareness and attract investors.
7. **Launch and manage the investment campaign**: Open the campaign, maintaining transparency and regular updates for investors.

While still emerging in these three countries, community financing could be a powerful tool for district heating projects, offering both financial support and long-term community involvement. This model stands in contrast to crowdfunding by prioritising local investment and ongoing engagement.

5.3.4 Recommendations for Low2HighDH-supported projects

- Traditional donations, donation-based crowdfunding and community funding should **not be considered as the primary source of funding** for DH projects, except in rare and specific cases; however, they can provide valuable support to initiate renovations and fund **specific project elements**.
- For **traditional donations, a high level of engagement** between project leaders and various philanthropic organisations or individuals is recommended.
- For these types of projects, ensuring the success of a **donation-based crowdfunding** campaign and attracting participants with financial resources depends heavily on **emphasising the social aspect of district heating renovation**. People outside the community where the project is being implemented are unlikely to be attracted if only the environmental aspects are highlighted.
- A **community investment model** can be a very attractive alternative; however, as an essential first step, the owners or managers of the district heating network must carry out a thorough analysis of the **legal implications** involved and, consequently, the feasibility of the model.

Table 7 – Recommendations for Low2HighDH-supported projects on donations and community financing

6. Redeemable funding sources

In many cases, the renovation, expansion, or creation of district heating sites requires more than just the owners' economic resources or the non-redeemable funding sources outlined in the previous chapter. These sources alone are often insufficient to fully fund such projects.

For this reason, district heating sites frequently need to access alternative financing sources for direct investments in elements that constitute CAPEX (Capital Expenditure), which are classified in this document as redeemable funding sources.

Redeemable funding sources imply that, in one way or another, these sites must repay the amount received. Repayment may take various forms: in some cases, through debt repayment with associated interest costs, and in others, through periodic returns to investors who contributed capital to the project.

This chapter is structured into three main sections:

- **Debt:** Financing models where the DH site assumes a repayment obligation, typically with interest, under terms negotiated with the lender.
- **Equity:** Funding sources that involve investment in exchange for ownership stakes, requiring returns based on the site's profitability rather than fixed repayments.
- **Adaptable:** A flexible funding category we refer to in Low2HighDH as "Adaptable." These funding sources may take the form of debt, equity, or even a hybrid of both, depending on the project's scope, the provider's requirements, and other defining factors.

This structure provides a comprehensive overview of the redeemable funding sources available to DH sites, facilitating a tailored approach to funding that aligns with the financial and operational needs of each project.

6.1 DEBT

Debt represents a fundamental funding source for infrastructure projects, including the renovation of district heating sites. As one of the redeemable funding sources discussed in this chapter, debt allows project stakeholders to access necessary funds through a structured repayment plan, often spread over extended periods. Broadly speaking, debt financing involves borrowing **funds that are repayable** over time, typically with interest, providing capital **without diluting ownership**.

For district heating renovation projects, debt is particularly useful for leveraging capital to cover substantial upfront costs, which is essential for acquiring new DH technologies in Lithuania, Poland, and Slovakia.

This section focuses on selected debt funding **sources identified as the most suitable** for district heating site renovations in these countries. These include:

- **European funds and programmes** that offer loan facilities, such as the Public Sector Loan Facility and the Recovery and Resilience Facility.
- **Concessional debt**, usually loans.
- **Non-concessional debt**, encompassing loans, capital market debt, crowdlending, financial leasing, and instalment purchases.

Only these specific types of debt are addressed in this section. Additional financial instruments involving loan structures, originating from instruments or programmes that could also be considered equity, are covered in Section 7.3 – *Adaptable: Debt and/or Equity*.

6.1.1 European funds and programmes - Debt

This section explores key European programmes identified as particularly suitable for funding district heating site renovations in Lithuania, Poland, and Slovakia through **debt instruments**, specifically by accessing loans. These include:

- **Public Sector Loan Facility** (2021–2027).
- **Recovery and Resilience Facility** (2021–2026).

The **timing of each programme's funding period** is essential, as it affects deadlines and the planning of project proposals within Low2HighDH, ensuring alignment with available resources and submission requirements.

It is also worth noting that the Recovery and Resilience Facility is designed to provide grants in addition to loans; further details on this aspect are discussed in Section *6.1.4 – European funds and programmes – Grants – Recovery and Resilience Facility (RRF) - Grants*.

a) Public Sector Loan Facility

The Public Sector Loan Facility[107] (PSLF) is **the third pillar of the Just Transition Mechanism (JTM)**, aimed at supporting regions most affected by the European Union's climate transition goals. It complements the other two pillars of the JTM, the Just Transition Fund and the dedicated Just Transition scheme under InvestEU, by providing **targeted financial support** to address social, environmental, and economic challenges in territories identified within approved **Territorial Just Transition Plans**.

The PSLF provides financing for **public entities**, including territorial authorities and public-sector companies, focusing on **projects that lack sufficient revenue streams** to cover investment costs. This is particularly relevant for infrastructure projects, such as district heating site renovations, that are essential for meeting EU climate targets but may not be financially viable without support. The PSLF offers preferential lending conditions, **combining grants and loans** to enhance project feasibility.

Projects related to a **wide range of sustainable investments** may be funded, such as:

- Investments in renewable energy and green and sustainable mobility, including the promotion of green hydrogen.
- **Efficient district heating networks**.
- Public research and digitalisation.
- Environmental infrastructure for smart waste and water management.
- Sustainable energy, energy efficiency and integration measures, including renovations and conversions of buildings.
- Urban renewal and regeneration.
- Transition to a circular economy.
- Land and ecosystem restoration and decontamination.
- Biodiversity.
- Up-skilling, re-skilling and training.
- Social infrastructure, including care facilities and social housing.

Key aspects of the PSLF comprise:

- **Blended financing structure**: The PSLF combines up to €1.5 billion in grants from the EU budget with loans of up to €10 billion from the European Investment Bank[108], targeting a mobilisation of approximately €18.5 billion in public investments.

  By providing both grants and loans, this structure reduces the financial burden on beneficiaries and enhances the appeal of investments in climate transition projects.

[107] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en

[108] https://advisory.eib.org/about/service/working-towards-a-just-transition.htm

- **Advisory support**: The facility includes advisory services under the **InvestEU Advisory Hub**, offering technical assistance for applicants and guidance on project structuring.

  Detailed information on this advisory support can be found in Section 9.2.4 – *Technical assistance facilities – InvestEU Advisory Hub*.

The PSLF is particularly impactful in regions where economic and social challenges are most acute due to the transition to a low-carbon economy. The **regions eligible**[109] under the Territorial Just Transition Plans in the three countries targeted by Low2HighDH are:

- **Lithuania**: Regions such as Kaunas, Telšiai, and Šiauliai.
- **Poland**: Areas including Eastern Wielkopolska, Łódź, Silesia, and Wałbrzych.
- **Slovakia**: Regions such as Trenčín, Banská Bystrica, and Košice.

The PSLF operates over the period **2021 to 2027**, with two **calls for proposals**[110] currently open until 2025. Public sector entities can apply through the European Climate, Infrastructure and Environment Executive Agency (CINEA) **website**, where they can find eligibility criteria, deadlines, and submission requirements are provided. CINEA also offers resources such as **informational sessions**[111] and support materials to guide applicants through the process.

b) Recovery and Resilient Facility - Loans

The Recovery and Resilience Facility (RRF) is comprehensively detailed in Section *6.1.4 – Recovery and Resilience Facility (RRF) – Grants*, covering its role as a core pillar of NextGenerationEU to support the recovery and resilience strategy following the COVID-19 crisis for the period **2021 to 2026**.

To avoid redundancy, this section does not revisit all aspects of the RRF, such as its pillars, suitable project types, regulatory framework, eligible applicants, and the managing authorities and programmes available in **Lithuania and Poland**. Readers are encouraged to consult Section 6.1.4, as these details apply equally to district heating projects seeking subsidies or loans through this facility.

It is important to note that **in Slovakia, no loan funding is available** under the RRF; thus, DH projects in this country can only access grants.

Additionally, it is necessary to mention that the **websites and portals** provided by the managing authorities in both Lithuania and Poland for accessing RRF loans are the same as those used for RRF grants. As with grants, no pre-determined loan amounts are specified, as calls for applications may vary over time, introducing specific criteria for each.

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[109] https://ec.europa.eu/regional_policy/funding/just-transition-fund/just-transition-platform_en

[110] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/calls-for-proposals?status=31094501,31094502&frameworkProgramme=44773066&order=DESC&pageNumber=1&pageSize=50&sortBy=startDate&isExactMatch=true

[111] https://cinea.ec.europa.eu/news-events/events/how-you-can-make-use-public-sector-loan-facility-under-just-transition-mechanism-2022-09-21_en

This section will, therefore, offer specific information relevant to DH renovation projects on the EU budget allocated for loans under the RRF, which amounts to **€291 billion** out of a total €650 billion.

Until 31 December 2023, the European Commission allowed Member States to request loans for the implementation of their recovery and resilience plans. To secure a loan, Member States were required to submit detailed plans outlining reforms and investments aligned with EU priorities, such as the green transition and digital transformation, including a justification for additional financial need. These plans were evaluated based on alignment with RRF priorities, cost-effectiveness, and coherence. Loan disbursement was contingent on meeting these criteria and fulfilling specific milestones and targets. Funds are intended to support investments and reforms that deliver lasting economic and societal impact.

- In **Lithuania**, €1,552 million has been allocated for loans under the RRF, with €470.29 million disbursed as of November 2024.
- In **Poland**, a budget of €34,541 million has been allocated for the same period, with €8.14 billion disbursed.

These figures highlight that a substantial portion of the loan budget remains available for distribution in both countries, presenting ongoing opportunities for eligible projects to secure funding.

c) Recommendations for Low2HighDH-supported projects

- Both the PSLF and the RRF are well-suited facilities for **direct investments** in DH site renovation projects that expect to generate **sufficient cash flows** to repay their loans.
- The **PSLF is less demanding** in terms of requiring projects with substantial revenue, as it is accompanied by grants, and selected projects benefit from technical assistance provided by the InvestEU Advisory Hub.
- However, the **PSLF is limited to specific regions** within Lithuania, Poland, and Slovakia, so DH sites must verify that they meet this geographic eligibility criterion.
- On the other hand, **RRF loans**, although generally not accompanied by grants or technical assistance within the same calls, have the advantage of being **available across all regions of Lithuania and Poland**, with more than half of their budgets still available for disbursement in these countries. Conversely, **Slovakia is not eligible** to benefit from these loans.

Table 8 – Recommendations for Low2HighDH-supported projects on PSLF and RRF loans

6.1.2 Concessional debt

This section explores concessional debt as a key financing mechanism, covering its criteria, applicable international and national financial institutions, and relevant funding processes for district heating renovation projects.

a) General description

Concessional debt refers to financing provided on terms substantially more generous than market conditions, typically characterised by **lower interest rates, extended repayment periods**, or a combination of both. This form of debt is **primarily extended through loans**, aiming to support projects that may not attract standard commercial financing due to their **risk profile or developmental nature**.

To qualify as concessional, a loan generally meets the following **criteria**:

- **Interest rate**: Below the prevailing market rates for similar loans.
- **Grace period**: An initial phase during which repayments are not required.
- **Maturity period**: Longer repayment durations compared to standard loans.
- **Grant element**: A measure of the financial benefit to the borrower, often calculated as the difference between the loan's nominal value and the present value of its repayments, expressed as a percentage of the loan amount.

Within the framework of loans classified as concessional debt, the following are identified as the most relevant for the renovation of district heating sites:

- **Soft loans**: Loans characterised by conditions more favourable than those available in the market. They typically feature below-market interest rates, extended repayment terms, and often include grace periods. Soft loans are commonly employed to finance development projects in sectors such as infrastructure and energy, with funding usually provided by international organisations or governments.
- **Zero-interest loans**: A financial instrument in which the borrower is only obligated to repay the principal amount, as no interest accrues. These loans are widely used in development financing to alleviate the financial burden on borrowers while enabling the implementation of initiatives like energy efficiency upgrades and sustainable energy projects.
- **Deferred payment loans**: These loans offer flexibility by allowing borrowers to delay repayment obligations until specific conditions or milestones are achieved, such as the completion of modernisation works or the generation of sufficient revenue from upgraded systems. They are particularly relevant for ventures with extended gestation periods, such as large-scale infrastructure overhauls.
- **Contingent loans**: A type of loan where repayment is conditional on the success of the project or the borrower’s financial circumstances. For example, repayment obligations may be reduced or waived if the renovation project does not achieve expected energy savings or if external factors, such as regulatory changes, significantly impact the borrower’s capacity to pay.

- **Variable grace period loans**: Loans designed to provide adaptable grace periods before repayment begins, tailored to the project's timeline or the borrower's cash flow requirements. These are particularly suitable for district heating renovations where benefits, such as operational savings, may take time to materialise.
- **Buy-down loans**: Commercial loans that are made more affordable through subsidies from donors or development organisations. These subsidies, often referred to as "buy-downs," reduce the borrower's financial burden by covering a portion of the interest or principal, effectively transforming a commercial loan into a concessional one. Such loans are frequently used to facilitate modernisation projects with significant energy and environmental benefits.

These favourable terms are designed to alleviate the financial burden on borrowers, facilitating investments in projects with significant **social, environmental, or economic benefits**.

To **apply for concessional loans**, DH project developers in general should:

1. **Identify suitable funding sources**: Research and identify financial institutions and programs that offer concessional financing aligned with the project's objectives.
2. **Prepare a comprehensive project proposal**: Develop a detailed proposal outlining the project's scope, objectives, financial projections, and alignment with the funding institution's priorities.
3. **Engage with the funding institution**: Initiate contact with the institution to discuss the project and understand specific application requirements and evaluation criteria.
4. **Submit the application**: Provide all required documentation and information as per the institution's guidelines.
5. **Participate in the evaluation process**: Be prepared to engage in discussions and provide additional information during the institution's assessment of the application.
6. **Finalize financing agreements**: Upon approval, negotiate and finalize the terms of the concessional loan agreement.

Throughout this document, several European Union facilities and programmes have been explored, including the Public Sector Loan Facility, Recovery and Resilience Facility, European Energy Efficiency Fund, and InvestEU. Their below-market rates, favourable terms, and blended finance structures make them potentially classifiable as concessional. In addition to these EU programmes, this section also presents further institutions to which DH site renovation projects may turn in search of concessional loans.

b) International financial institutions relevant to concessional debt access

District heating projects in Lithuania, Poland, and Slovakia can access concessional debt financing through the following prominent European institutions:

- European Investment Bank (EIB): As one of the leading financial institutions supporting EU policy objectives, the EIB is a cornerstone in the funding landscape for projects aligned with the European Green Deal and the EU climate-neutral 2050 long-term strategy[112]. Given its importance, this document dedicates a specific section to the EIB, Section 7.3.1.b – *Adaptable: Debt and/or Equity – EIB Group*, highlighting its role in financing projects that drive climate action, energy efficiency, and sustainability across Europe. The EIB's financing options often include concessional terms, making it a highly relevant resource for district heating renovations seeking favourable loan conditions.
- European Bank for Reconstruction and Development (EBRD): The EBRD focuses on promoting sustainable, market-oriented economies across Central and Eastern Europe, the Baltic States, and other regions. For district heating projects, the EBRD offers concessional financing under its **Green Economy Transition (GET) approach**, which supports investments that reduce greenhouse gas emissions, improve energy efficiency, and advance renewable energy solutions. The EBRD collaborates closely with both **public and private sectors** to catalyse financing for energy-efficient infrastructure, especially in countries like **Poland and Slovakia**, where transitioning to sustainable energy is a national priority. The EBRD's financing solutions are designed to lower energy costs, reduce emissions, and improve environmental outcomes, aligning well with the objectives of district heating site renovations.
- Nordic Investment Bank (NIB): The NIB primarily supports productivity and environmental projects in Nordic and Baltic countries, with a specific focus on sustainability. **While Lithuania is the only eligible country for NIB** financing among the three in question, its concessional financing terms can significantly benefit Lithuanian district heating projects aiming to enhance energy efficiency. The NIB's lending targets projects that foster sustainable growth and have a positive environmental impact, including energy efficiency upgrades, renewable energy adoption, and climate change mitigation. Projects financed by NIB are evaluated for their long-term contribution to environmental resilience and economic productivity, making it a key partner for Lithuanian district heating initiatives committed to sustainable practices.
- Council of Europe Development Bank (CEB): The CEB is dedicated to advancing social cohesion across Europe, focusing on promoting well-being, reducing disparities, and preventing marginalisation. The CEB's financing scope covers sectors such as health and social care, education and vocational training, **infrastructure development**, cultural heritage preservation, affordable housing, **urban and regional development**, disaster response, environmental conservation, as well as financing for micro, small, and medium-sized enterprises. Although not exclusively focused on sustainability, the CEB includes sectors like urban, rural, and regional development and environmental protection, making district heating site renovation projects in less developed regions, particularly those with a strong social development focus, eligible for its support.

[112] https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en#:~:text=Striving%20to%20become%20the%20world's%20first%20climate%2Dneutral%20continent%20by%202050.&text=The%20EU%20aims%20to%20be,to%20the%20European%20Climate%20Law%20

Additionally, the CEB has established partnerships, for instance, concerning the Cohesion Policy Funds to provide technical guidance to Member States on setting up repayable investment mechanisms (see Section 7.3.1.a – *Cohesion Policy Sectoral Financial Instruments*), and the establishment of guarantee mechanisms under InvestEU.

Finally, it is worth noting that all these banks are **implementing partners of the InvestEU Fund**, underscoring their key role in the programme's implementation (See Section 7.3.1.d – *Adaptable: Debt and/or equity – European funds and programmes – InvestEU*).

c) National financial institutions relevant to concessional debt access

In addition to the previous European financial institutions, national development banks in Lithuania, Poland, and Slovakia offer concessional financing options that can significantly support district heating renovation projects.

Lithuania:

Investicijos į Lietuvos ekonomiką (ILTE): Formerly known as INVEGA, ILTE is a state-owned financial institution committed to fostering sustainable economic growth in Lithuania. ILTE provides a range of financial instruments, including loans, guarantees, and venture capital, designed to support business development and energy efficiency projects. For district heating renovation projects, ILTE offers concessional financing options that align with Lithuania's **energy efficiency and climate goals**, facilitating modernisation efforts that improve energy performance and reduce emissions.

Poland:

Bank Gospodarstwa Krajowego (BGK): BGK is Poland's national development bank, focusing on financing infrastructure projects, including those in the energy sector. BGK offers concessional loans and guarantees for energy efficiency and renewable energy initiatives. For district heating site renovation projects, BGK provides financing options that support the modernisation of heating systems, aiming to improve **energy efficiency and reduce emissions**. Their programs are aligned with Poland's energy policy objectives and the EU's climate goals. BGK Bank is an **implementing partner of the InvestEU Fund** (See Section 7.3.1.d).

Slovakia:

Slovak Investment Holding (SIH): SIH is a public financial institution in Slovakia. Established as a joint-stock company, it is 100% owned by the Slovak Guarantee and Development Bank (*Slovenská záručná a rozvojová banka*). SIH manages financial instruments to support strategic investments, including energy efficiency projects. For district heating site renovation projects, SIH offers concessional financing aimed at modernising heating infrastructure to enhance energy efficiency and sustainability. Their programs are designed to **attract private investment into public infrastructure projects**, thereby facilitating the transition to more efficient and environmentally friendly heating systems.

d) Recommendations for Low2HighDH-supported projects

- Concessional loans are among the most advantageous options for DH projects seeking to finance **direct investments**.
- When exploring concessional debt options, DH site managers should carefully assess all project characteristics. It is essential to review the European programmes discussed in this document (such as the Public Sector Loan Facility, Recovery and Resilience Facility, European Energy Efficiency Fund, and InvestEU) as well as the relevant institutions outlined in this section or other potential funding sources or entities. Applications should be submitted to those that **best align with the project's needs to increase the likelihood of success**.
- **Project proposals** should be highly detailed, **emphasising qualities beyond potential cash flows** that make them eligible for concessional financing. While commercial banks often focus primarily on debt repayment capacity, concessional loan providers may take a broader view, considering additional factors such as **energy efficiency, renewable energy usage, emissions reduction, social impact, and job creation**. However, this does not imply that the institutions listed in this section have a greater appetite for risk than commercial banks; rather, they place substantial value on the project's environmental and social contributions.

Table 9 – Recommendations for Low2HighDH-supported projects on concessional debt

6.1.3 Non-concessional debt

Non-concessional debt refers to financing provided under **market-based terms**, lacking the favourable conditions typical of concessional loans, such as reduced interest rates or extended repayment periods.

This type of debt is offered by **commercial financial institutions, capital markets, and private investors, as well as private companies** that provide financing through mechanisms like financial leasing or instalment purchases. Non-concessional debt requires full repayment under standard market conditions, including an appropriate return on investment, and is typically aimed at projects capable of generating **predictable cash flows**.

In the context of district heating renovation projects, non-concessional debt instruments can supply essential funding for initiatives that may not meet concessional loan criteria but can repay loans at market rates.

This chapter explores a range of non-concessional debt options, including **commercial loans, capital market debt, crowdlending, financial leasing, and instalment purchases**. Each of these instruments offers distinct advantages and financing structures, allowing project managers to select options that best align with their project's cash flow, risk profile, and financial requirements.

a) Commercial loans

Commercial loans are loans provided by **commercial banks or other private financial institutions** to businesses, organisations, or individuals for specific purposes, such as business expansion, equipment purchases, or project development. These loans are subject to market conditions and are granted based on the borrower's **repayment capacity and risk profile**.

- **Key characteristics** of commercial loans include:
- **Market-based interest rates**: Interest rates are determined by market conditions and the borrower's risk profile. Higher-risk borrowers are charged higher interest rates.
- **Specific terms and conditions**: Terms of commercial loans vary depending on the loan purpose and the borrower's repayment ability. Repayment terms tend to be shorter and less flexible than concessional debt options.
- **Strict approval criteria**: Institutions offering commercial loans thoroughly evaluate the borrower's ability to repay by analysing cash flow, income, and credit history.
- **No grant element**: Commercial loans do not offer favourable terms or subsidies; they aim to generate a return on investment through interest and fees.

For district heating projects, selecting the right **loan structure** can be key to maintaining cash flow stability while managing repayment obligations. Certain structures may be more appropriate:

- **French amortisation** (standard repayment schedule): In this structure, loan repayments are made in regular instalments (principal and interest) over the loan term. This predictable structure can be beneficial for district heating projects with stable cash flows, as it spreads out repayments evenly.
- **Bullet loan (American amortisation)**: In a bullet loan, only interest is paid periodically, with the principal repaid in a lump sum at the end of the loan term. This structure can benefit projects needing a longer period to reach full operational cash flow, though it carries higher risk due to the large principal payment at maturity.
- **Mixed structure**: A combination of both, where interest is paid periodically, and part of the principal is repaid in instalments, with a final bullet payment at the end. This approach balances manageable cash flow with eventual lump sum repayment, often suited to projects with staggered cash inflows.

Additionally, some loans may offer a **grace period** at the beginning of the loan term, where no repayments are due. This feature can be particularly valuable for district heating projects, as it allows the infrastructure to become operational and start generating revenue before loan repayments begin.

The **application process** for commercial loans generally involves the following steps:

1. **Initial assessment**: DH project managers should evaluate their financing needs, projected cash flow, and the loan type that best aligns with project timelines.
2. **Preparation of a loan proposal**: This includes detailed documentation on the project scope, financial projections, and cash flow estimates, demonstrating the project's repayment capacity.
3. **Submission and lender review**: The proposal is submitted to the lender, who will assess the borrower's creditworthiness, project viability, and risk profile.

4. **Negotiation of terms**: If approved, the borrower and lender discuss loan terms, including interest rates, repayment schedule, and any grace period.
5. **Finalisation and agreement**: Once terms are agreed upon, the loan agreement is finalised, and funds are disbursed according to the contract.

The following highlights a **selection of notable commercial banks** in the three countries that have shown a strong commitment to sustainability and could be relevant for district heating renovation projects. While they are not the only financial institutions in these countries, they are considered especially pertinent for this purpose:

Lithuania:

SEB Bankas: SEB Bankas is one of Lithuania's leading financial institutions and part of the Swedish SEB Group. The bank has implemented sustainability policies that include financing renewable energy and energy efficiency projects. For district heating projects, SEB Bankas offers financial solutions that can facilitate energy infrastructure modernisation, contributing to emissions reductions and resource efficiency.

Swedbank Lithuania: Swedbank is another key player in Lithuania's banking sector with a strong focus on sustainability. The bank has developed green financial products and actively funds projects promoting energy efficiency and clean energy. For district heating initiatives, Swedbank can provide financing to support the transition to more sustainable and efficient heating systems.

Slovakia:

Tatra banka: Part of Raiffeisen Bank International, Tatra banka has shown a growing commitment to sustainability. It offers financial products designed to support eco-friendly projects, including those related to energy efficiency. For district heating projects, Tatra banka can be a financing partner that facilitates investments in clean technologies and infrastructure improvements.

Slovenská sporiteľňa: As Slovakia's largest bank and a member of the Erste Group, Slovenská sporiteľňa has integrated sustainability into its corporate strategy. The bank finances projects that promote energy efficiency and environmental sustainability. For district heating projects, it offers financing options to modernise systems and reduce environmental impact.

Poland:

Bank Pekao: Bank Pekao, one of Poland's largest banks, has adopted sustainability policies that include financing renewable energy and energy efficiency projects. For district heating projects, Pekao offers financial products that support the transition to more sustainable and efficient systems.

mBank: Known for its innovative approach and commitment to sustainability, mBank finances projects that promote energy efficiency and clean energy. For district heating initiatives, mBank can provide financial solutions to modernise infrastructure and adopt sustainable technologies.

b) Capital market debt

Capital market debt provides an effective means of financing for **large-scale projects**, especially for **public-sector-led** district heating renovations. This type of financing primarily involves issuing **bonds**.

A bond is a **debt instrument** where the issuer (such as a government or corporation) borrows funds from investors with a commitment to repay the principal along with interest at a specified maturity date.

Given the complexity and cost of bond issuance, capital market debt is typically more accessible for large-scale projects led by **regional or large municipal governments**. Promoters of DH projects must evaluate **local regulatory frameworks** to confirm eligibility and ensure compliance with legislative requirements.

Impact bonds:

Impact bonds are a type of capital market debt specifically designed to achieve positive **social and/or environmental outcomes**. Unlike conventional bonds, which focus on financial returns, impact bonds align financing with objectives like energy efficiency, emissions reduction, and social impact. For DH renovations, impact bonds can be particularly valuable as they attract investors interested in sustainable projects.

Impact bonds can be further **classified by their financial structure and purpose**, enabling project sponsors to select the most appropriate bond type for their project's revenue streams and impact goals.

Types of impact bonds by financial structure:

Impact bonds are structured according to how cash flows and assets align with a project, allowing project sponsors to choose repayment methods suited to the project's revenue streams:

- **Standard use of proceeds bond**: Funds are allocated to a specified purpose with repayment terms that are not directly tied to project performance, making this structure suitable for DH projects with guaranteed public funding.
- **Revenue bond**: Backed by specific revenue streams generated by the project (e.g., energy savings from a DH project), this structure ensures that repayment depends on the project's performance, making it attractive when revenues are predictable.
- **Project bond**: Issued for an individual infrastructure project, with the project itself as collateral. This bond type allows investors to have direct exposure to the DH project's performance, linking repayments to the revenues it generates.
- **Securitized bond**: Structured around a pool of projects, where revenues from these projects serve as collateral. For DH renovations, multiple projects could be securitized to secure bond repayments, diversifying risk for investors.

These categories help structure how impact bonds secure repayment, aligning the financial framework with the project's capacity to generate revenue or impact.

Types of impact bonds by purpose:

In addition to structural classifications, impact bonds can also be distinguished by their intended purpose or impact:

- **Green bonds**: Issued exclusively to fund projects with clear environmental benefits, such as energy efficiency, renewable energy, and emissions reduction. Given the environmental goals of DH renovation projects, primarily focused on lowering carbon emissions and improving energy efficiency, **green bonds are particularly suited to this sector**. DH projects seeking green bonds should demonstrate their capacity to achieve substantial environmental benefits, clearly defined objectives, and alignment with established environmental standards (e.g., the EU Taxonomy).
- **Social impact bonds**: Targeted at projects with positive social outcomes, including benefits for vulnerable communities or improvements in living conditions. While less directly applicable to DH projects, social impact bonds could be an option if the project includes a strong social component.
- **Sustainability bonds**: Combining both green and social objectives, sustainability bonds are ideal for DH projects that integrate environmental and social goals. For example, DH renovations in underserved regions may qualify for sustainability bonds if they also create jobs, target disadvantaged populations, or enhance public health.

Process of issuing impact bonds

The bond issuance process for district heating renovation projects should generally involve the following key phases[113]:

1. **Preparation and planning**: The issuing body, typically a regional or municipal government, must prepare a detailed proposal outlining the project's scope, objectives, and expected impact. This includes a thorough review of regulatory frameworks to confirm eligibility.
2. **Structuring the bond**: The issuer determines the financial structure of the bond (e.g., revenue, project, or securitized) and aligns it with the project's cash flow. If issuing a green bond, the issuer must establish compliance with environmental standards and frameworks.
3. **Marketing and placement**: The bond is marketed to investors who seek environmental, social, or sustainability-focused assets. Issuers are encouraged to provide detailed information on the bond's environmental and/or social objectives to **attract ESG-focused investors**.
4. **Issuance and allocation of proceeds**: Upon issuance, funds are allocated to a designated account or sub-account to ensure that proceeds are directed toward the intended project components. For green bonds, transparency and tracking of the use of proceeds are critical, following principles like the Green Bond Principles[114].
5. **Reporting and repayment**: Issuers must regularly report on the use of funds, project progress, and achieved impacts to investors. Repayment structures vary by bond type, with repayment typically

[113] https://economy-finance.ec.europa.eu/publications/boosting-investment-social-infrastructure-europe_en

[114] https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/

derived from project revenues or other designated revenue streams. Green bonds, in particular, require annual reporting on environmental impacts until full allocation.

c) Crowdlending

Crowdlending, also known as **peer-to-peer (P2P) lending**, is a form of crowdfunding where individuals lend money to projects or businesses in exchange for interest payments, rather than ownership or equity. Unlike donation-based crowdfunding, crowdlending offers lenders a financial return based on an agreed interest rate and repayment schedule.

This method allows multiple investors to pool small amounts of capital to fund a project, diversifying risk across a large group of lenders. **Online platforms** facilitate these transactions, enabling borrowers to present their projects, set lending terms, and attract investors interested in supporting initiatives while earning returns.

For district heating renovation projects, crowdlending offers an **innovative financing avenue**. Although still not common in this sector, it presents an opportunity to engage a community of investors who seek both environmental benefits and financial returns. By highlighting the environmental benefits and potential cost savings of energy-efficient heating systems, project organizers can attract individuals and organisations interested in sustainable infrastructure.

Crowdlending is particularly suitable for **small-scale and medium-scale projects with a clear repayment capacity** that do not require large-scale, long-term financing. For district heating projects, it can be an effective way to cover **specific renovation costs or improvements**, especially in areas where other funding sources may not be available or suitable. However, project organizers should note that the application of crowdlending for district heating remains largely experimental and unproven in many markets.

Several European crowdlending platforms specialize in sustainability or have supported energy-efficient and environmental projects, making them potentially suitable for district heating initiatives. However, the use of crowdlending for district heating projects in Lithuania, Poland, and Slovakia remains relatively experimental, as the sector has traditionally relied on other forms of funding. Below are some platforms that may offer promising options for project organizers willing to explore this innovative approach:

European platforms:

- **Lendahand**: This Dutch platform connects investors with projects in emerging markets focused on sustainability and positive social impact. Although it primarily operates internationally, it has supported renewable energy initiatives in Europe. Lendahand is open to projects from various countries.
- **Bettervest**: A German platform focused on financing energy-efficient and renewable energy projects. Bettervest attracts investors interested in energy and climate projects, making it a suitable choice for district heating renovations. Bettervest has experience with projects in various countries, including some in Eastern Europe, but project acceptance is evaluated on a case-by-case basis.

Lithuanian platforms:

- **Finbee**: A leading crowdlending platform in Lithuania, Finbee offers loans to small businesses and projects. While not exclusively focused on sustainability, it provides opportunities for projects with clear financial returns, which could include energy efficiency or district heating initiatives. Finbee primarily serves the Lithuanian market, making it a viable option for local projects.

Polish platforms:

- **Mintos**: Although based in Latvia, Mintos has a strong presence in Poland and supports crowdlending across various sectors. It allows investors to fund loans, including energy projects, and provides flexible financing options. Mintos operates across multiple countries, including Poland, but project acceptance depends on compliance with local regulations.

Slovak platforms:

- **Žltý Melón**: Slovakia's first peer-to-peer lending platform, Žltý Melón provides financing options to businesses and projects, including those with a sustainability focus. It allows district heating projects to access funding from Slovak investors. Žltý Melón primarily serves the Slovak market, making it suitable for local projects.

It's important to note that while these platforms offer potential avenues for financing, the acceptance of projects from Lithuania, Poland, and Slovakia depends on each platform's specific criteria and **regulatory compliance**. Project organizers should conduct thorough due diligence and engage directly with platform representatives to assess eligibility and suitability for their specific district heating renovation projects.

Crowdlending process for district heating renovations:

The crowdlending process involves several key steps to ensure a successful funding campaign. For district heating projects, project managers should be prepared to clearly communicate the project's financial and environmental benefits to attract investors.

1. **Define project goals and financing needs**: Outline the district heating project's objectives, specific funding requirements, and anticipated environmental impact to present a compelling case to potential lenders.
2. **Choose an appropriate platform**: Select a crowdlending platform aligned with the project's focus. For district heating renovations, a platform with an emphasis on sustainability or energy efficiency is ideal.
3. **Develop financial projections and repayment plans**: Prepare detailed financial forecasts that demonstrate the project's repayment capacity. This includes outlining revenue sources (e.g., energy savings) and the expected timeline for repayment.
4. **Prepare marketing materials**: Create visuals, descriptions, and videos that communicate the project's impact, financial stability, and potential for positive environmental outcomes to attract lenders.
5. **Set loan terms and interest rate**: Determine the loan's interest rate and repayment schedule. Transparent terms that offer a reasonable return are essential to attract lenders.

6. **Launch and promote the campaign**: Publish the project on the selected platform and actively promote it through social media, newsletters, and relevant networks to attract a broad base of potential lenders.
7. **Engage with lenders**: Communicate with lenders during the campaign and after funding is complete, providing updates on project progress and impacts.
8. **Repayment and reporting**: Follow the agreed repayment schedule, ensuring timely payments and providing periodic updates to lenders about the project's progress and impact.

d) Financial leasing

Financial leasing is a type of **financing arrangement** where a lessee (the user) **gains access to equipment or machinery** provided by a lessor (the owner) in exchange for periodic payments over a specified term. At the end of the lease term, the lessee typically has the option to purchase the equipment for a residual value, continue the lease, or return the asset to the lessor. Financial leasing is considered a debt instrument because the lessee assumes long-term financial obligations, which are recorded on their balance sheet as liabilities.

In financial leasing, the lessor retains ownership of the leased equipment until the end of the contract, offering the lessee access to technology and equipment **without the need for upfront capital** investment. This structure allows businesses to allocate resources more efficiently while benefiting from the use of essential assets.

District heating renovation projects can greatly benefit from financial leasing, especially when it comes to acquiring advanced technologies such as heat pumps, mechanical vapour recompressors, heat transformers, and modern boilers. These technologies are essential for enhancing energy efficiency, reducing emissions, and improving the overall performance of heating systems. Financial leasing is particularly suitable for acquiring **small/medium-scale technologies** that are not excessively large or cost-intensive, as leasing arrangements are typically not designed for large or highly specialised installations.

Through financial leasing, DH project managers can modernise their systems without requiring substantial upfront capital investment. The periodic lease payments can often be aligned with the operational cost savings generated by the new technologies, such as reduced energy consumption or maintenance costs.

Financial leasing services for district heating technologies are generally **provided by**:

- **Specialised leasing companies**: Firms that focus on leasing industrial or commercial equipment, including energy-related technologies.
- **Equipment manufacturers**: Many technology providers, such as producers of heat pumps or boilers, offer leasing options to enable customers to acquire their products without a significant initial outlay.
- **Commercial banks and financial institutions**: Large banks often have leasing divisions that provide financing for equipment and technologies across various industries, including energy and infrastructure. These entities often collaborate with manufacturers or suppliers to create tailored leasing solutions that cater to the specific needs of DH projects.

When considering financial leasing as a funding option for district heating renovations, project managers should evaluate several **essential factors**:

- **Technology suitability**: Financial leasing is most appropriate for acquiring specific, mid-scale technologies that provide measurable energy or operational efficiencies. Project managers should assess whether the required equipment is eligible for leasing and whether the leasing terms align with the project's operational needs.

- **Cost comparison**: Compare the total cost of leasing versus purchasing equipment outright or pursuing other funding sources, such as loans, equity or grants. **Leasing may incur higher long-term costs due to interest and fees**, but it provides the advantage of preserving capital for other project needs.
- **Cash flow management**: Financial leasing allows for predictable periodic payments, which can be budgeted alongside anticipated operational cost savings from the leased equipment. This is particularly beneficial for projects with constrained upfront budgets but steady revenue streams.
- **Ownership and flexibility**: Consider whether eventual ownership of the equipment is necessary. Leasing offers flexibility, but if long-term ownership is a priority, alternative funding methods might be more appropriate.
- **Alignment with project goals**: Ensure that the leased technology aligns with the project's broader goals, such as improving energy efficiency, reducing carbon emissions, and complying with environmental regulations.

Project managers might choose financial leasing over other funding sources under the following circumstances:

- **Limited capital availability**: When the project lacks sufficient upfront capital to purchase critical technologies outright.
- **Short to medium-term requirements**: When the project requires equipment for a defined period, without the need for long-term ownership.
- **Predictable cost savings**: When the cost savings from using the leased technology can cover the lease payments, making the arrangement financially viable.
- **Flexibility**: When the project requires access to the latest technology without committing to full ownership, allowing for upgrades at the end of the lease term.

Since the availability of leasing options may vary by country and region and is not always detailed in public information, it is advisable to **contact such companies and entities** directly to explore the available financing options.

e) Instalment purchases

Instalment purchases, also known as **hire purchase agreements**, are a financing arrangement where the **buyer acquires an asset** by making fixed periodic payments over a specified period. Possession of the asset transfers to the buyer at the start of the agreement, while **ownership typically transfers only after all payments**, including interest or additional charges, are completed. This distinguishes instalment purchases from financial leasing, where the lessor retains ownership throughout the lease term and may or may not transfer ownership to the lessee at the end, depending on the agreement.

This financing model allows organisations to access necessary equipment or infrastructure without requiring a substantial upfront payment, spreading the cost over time and **aligning payments with cash flow or revenue generation**. Instalment purchases are considered a form of debt because the buyer is contractually obligated to make regular payments.

For **district heating renovation projects**, instalment purchases can be an effective funding option, particularly when acquiring **mid-sized equipment or technologies** essential for modernisation efforts. Examples include components such as:

- Heat exchangers.
- Boilers or modular boiler systems.
- Heat pumps and related equipment.
- Control systems for energy efficiency.

This model is especially suitable for **standalone or modular project components** that can be phased into existing systems. By spreading payments, instalment purchases reduce the immediate financial burden while ensuring timely access to critical technologies.

Vendors and manufacturers that commonly offer instalment purchase agreements include:

- **Equipment manufacturers**: Many producers of DH-related technologies provide instalment options as part of their sales strategies, enabling customers to acquire products without significant upfront costs.
- **Specialised suppliers**: Distributors or resellers of energy and heating technologies may provide instalment plans to attract buyers and promote the adoption of their equipment.

For DH renovation projects, project managers should **focus on vendors with proven experience** in energy-efficient technologies and a willingness to offer flexible payment terms.

When opting for instalment purchases, DH project managers should **evaluate the following factors**:

- **Asset suitability**: Best for acquiring standalone equipment that fits project goals and integrates seamlessly with existing DH infrastructure.
- **Cost analysis**: Compare the total cost (including interest and fees) with other financing options and ensure the payment schedule aligns with cash flow and budget.
- **Ownership and risks**: Confirm that long-term ownership aligns with operational needs and assess risks like penalties for missed payments or potential equipment obsolescence.

- **Vendor reputation**: Work with reputable vendors experienced in DH equipment and instalment agreements.
- **Regulatory and contractual compliance**: Ensure the agreement complies with local laws and includes clear terms for warranties, maintenance, and ownership transfer.

Instalment purchases are **particularly advantageous** in the following situations:

- **Limited capital availability**: When the project lacks upfront funding for equipment purchase but has the capacity for predictable periodic payments.
- **Medium-term requirements**: When the equipment is expected to be in use for a significant period and aligns with the project's long-term objectives.
- **Simpler transactions**: When the project needs to avoid the complexity of leasing agreements or debt instruments like bonds or loans.
- **Clear ownership benefits**: When ownership of the asset at the end of the payment term is essential for operational continuity.

f) Key differences between financial leasing, instalment purchases, and operational renting

The key difference between instalment purchases, financial leasing, and operational renting lies in **ownership, flexibility, and balance sheet treatment**:

- **Instalment purchases** involve acquiring an asset through fixed periodic payments, with ownership transferring to the buyer after completing all payments. This is ideal for projects seeking **long-term ownership** and integration of equipment, and **the transaction is recorded on the balance sheet** as both an acquired asset and a corresponding liability.
- **Financial leasing**, typically structured for **medium- to long-term use**, allows the lessee to utilise the equipment during the lease term while the lessor retains ownership; the lessee may **have the option to purchase the asset** at the end of the contract. Under accounting standards like IFRS 16[115], financial leases are recognised on the balance sheet as right-of-use assets and lease liabilities.
- **Operational renting**, however, is typically a **short to medium-term** agreement where the lessee pays for the right to use the equipment **without assuming ownership**. While it is highly flexible and often includes maintenance services, operational renting **is generally treated as an operating expense rather than a balance sheet item**, except under IFRS 16, where longer-term or higher-value leases may also require recognition on the balance sheet.

  Considering it as an **operating expense for projects supported by Low2HighDH**, operational renting has been included as a management solution in Section 8.8 – *Management Solutions – Operational Renting*.

[115] https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/

g) Recommendations for Low2HighDH-supported projects

- **Non-concessional debt** is a versatile option for district heating renovation projects, particularly those capable of generating **predictable cash flows**. Most instruments in this category are suited for **direct investments**, enabling project managers to finance specific assets or initiatives. The choice of instrument should align with the project's financial capacity, scale, and long-term objectives.
- **Commercial loans** provide a **straightforward solution** for direct investments, particularly when access to predictable cash flows and repayment capacity is well-established. Choosing the right repayment structure, such as standard instalments or bullet payments, can ensure alignment with the project's financial timeline. Exploring multiple banks is recommended to secure competitive terms.
- **Capital market debt**, through impact bonds, is particularly effective **for large-scale, public-sector-led project**s. Green bonds are the most relevant for DH renovations focused on environmental benefits, while sustainability bonds work well for projects combining social and environmental goals. These options require compliance with established standards and robust reporting mechanisms.
- **Crowdlending** offers an innovative yet relatively **untested funding method** for district heating projects. It is most suitable for medium-scale projects seeking complementary funding. The ability to communicate the project's environmental and financial benefits effectively is key to attracting environmentally conscious investors.
- **Financial leasing** is ideal for accessing and utilising mid-scale equipment when **upfront capital is limited**. It allows projects to deploy essential technologies while spreading payments over time. Leasing terms should align with the operational savings generated by the leased technology to ensure financial sustainability.
- **Instalment purchases** are a flexible option for acquiring standalone or modular assets, particularly when **long-term ownership is a priority**. Spreading costs over time reduces the initial financial burden while ensuring timely integration of critical technologies into the DH system. Careful evaluation of vendors and financial terms is essential to maximise benefits.

Table 10 – Recommendations for Low2HighDH-supported projects on non-concessional debt

6.2 EQUITY

Equity financing involves raising capital by **"selling" ownership stakes** in a project or business to investors. Unlike debt financing, where borrowed funds must be repaid with interest, equity financing allows investors to **become partial owners in exchange for their financial contribution, sharing both the risks and potential rewards of the project**.

For district heating site renovations, equity can offer a flexible and strategic funding option, especially for projects where **long-term growth** and community impact are key objectives.

Equity financing is particularly relevant for DH projects in Lithuania, Poland, and Slovakia, as it enables project owners to attract investors interested not only in financial returns but also in supporting infrastructure that provides lasting environmental and economic benefits to the community. By aligning the interests of investors with the project's success, equity financing can help address the considerable upfront costs associated with district heating upgrades while fostering accountability and active stakeholder engagement.

This section details the types of equity options considered relevant for district heating site renovations in the three countries, including:

- **Equity crowdfunding**.
- **Traditional equity**.

Moreover, details are also provided **on tax incentives in Europe for individual investors** in these types of projects.

Readers should note that this section includes only these two types of equity. Additional European programmes and funds that may involve equity, as well as other relevant investment funds, are presented in Section 7.3 – *Adaptable: Debt or Equity*. The reason is that they could also take the form of debt and not only equity.

It is also important to mention that other types of investors, such as venture capitalists and angel investors, and other forms of equity, like preferred and convertible equity, may be suitable for different types of businesses and projects. However, they have been excluded here due to their limited relevance to district heating projects in Lithuania, Poland, and Slovakia.

6.2.1 Equity crowdfunding

Equity crowdfunding is a form of financing where individuals invest in a project or business in exchange for **shares or partial ownership**. Unlike donation-based crowdfunding, where contributors expect no financial return, equity crowdfunding allows investors to participate in the project's future financial success. Investors contribute capital with the understanding that, as part-owners, they will receive a **share of profits or returns** based on the project's performance.

For district heating site renovations, equity crowdfunding presents an opportunity to attract investors interested in both the financial potential and environmental impact of these projects. By offering ownership stakes, project organisers can appeal to individuals and organisations focused on sustainable

infrastructure, clean energy, and community development, especially as energy-efficient heating solutions become increasingly relevant.

This type of crowdfunding requires **significant planning and legal structuring to ensure compliance with regulations**. Projects pursuing equity crowdfunding must meet **transparency and investor protection standards in their respective countries**, and project leaders should be prepared to share decision-making authority and profits with investors.

Equity crowdfunding can be particularly appealing for **small-scale and medium-scale district heating projects**, as it allows organisers to secure funding without taking on debt. This model also aligns investors' interests with the project's long-term success, fostering accountability and active involvement.

In **Europe, several equity crowdfunding platforms** cater to projects with environmental and social impact, which may benefit district heating projects. However, it is essential to confirm each platform's regulatory requirements and availability in specific countries:

- **Republic Europe**: Based in the UK and open to projects across Europe, allows investors to gain equity in various ventures, including energy and environmental projects. Its focus on sustainable and impactful investments aligns well with district heating initiatives.
- **Crowdcube**: Another UK-based platform, Crowdcube supports equity crowdfunding for various projects, including those with an environmental focus. Known for transparency and investor protection, it is popular among European investors seeking equity opportunities. Although Crowdcube is known for facilitating investments in startups, it also provides opportunities to invest in more established companies seeking funding for specific projects or expansion.
- **Oneplanetcrowd**: While Oneplanetcrowd also offers donation-based crowdfunding, it has an equity option for high-impact social or environmental projects. Based in the Netherlands, it serves investors across Europe, allowing them to invest in sustainable energy projects, including district heating.

Currently, **in Lithuania, Poland, and Slovakia, there are no platforms specifically for equity crowdfunding** that offer ownership stakes for district heating projects. However, project organisers in these countries can leverage European platforms that accept investments from international backers while ensuring compliance with local and EU regulations.

To establish a successful equity crowdfunding campaign for district heating projects, a structured approach is essential. **Key steps** include:

1. **Define project objectives and investor benefits**: Clearly communicate the financial and environmental goals, as well as the specific benefits for investors, such as profit-sharing or dividends.
2. **Choose the right platform**: Select an equity crowdfunding platform that aligns with the project's scope and goals, ensuring it has the necessary reach and reputation to attract investors.
3. **Prepare detailed financial projections**: Equity crowdfunding requires transparency; create detailed projections that outline anticipated returns, break-even points, and growth potential.
4. **Ensure regulatory compliance**: Equity crowdfunding is highly regulated, so project organisers must follow local and EU guidelines regarding investor protection, information disclosure, and equity issuance.

5. **Develop strong marketing materials**: Produce compelling visuals, videos, and descriptions that showcase the project's impact and potential returns to attract investors.
6. **Engage with investors regularly**: Keep investors informed throughout the campaign and after funding is complete to build trust and foster a long-term relationship.

6.2.2 Traditional equity

Traditional equity financing involves raising capital by offering **ownership stakes** in a project or business to investors. For district heating site renovations, this approach enables project owners to **attract both private and public investors**, such as corporations, energy companies, institutional investors, individuals, regional or municipal governments, and other public entities, who provide capital in exchange for partial ownership and a share of future profits. This form of financing may prove particularly relevant in countries such as Lithuania, Poland, and Slovakia. Although the majority of district heating networks in these countries are publicly owned and managed, equity financing remains accessible.

Bringing investors into district heating renovation projects not only **supplies critical capital but also introduces valuable expertise** that can drive innovation and improve operational efficiency. By acquiring equity stakes, these investors assume both the risks and potential rewards associated with the project's success.

When district heating sites or networks are **publicly owned**, involving private investors through equity financing creates a type of **Public-Private Partnership (PPP)**. The public sector collaborates with private partners in this model to leverage resources, expertise, and efficiencies. PPPs can facilitate DH infrastructure upgrades, improve service quality, and achieve environmental objectives. However, PPPs require careful structuring to balance public interests with private sector incentives and to establish clear governance and profit-sharing agreements.

To effectively launch equity financing in DH projects, there are **key steps** to follow that can help structure the process and attract the right investors:

1. **Legal structuring**: Establish a legal entity capable of issuing equity, such as a corporation or joint venture, ensuring compliance with national and EU regulations governing securities and investments.
2. **Project presentation**: Develop a comprehensive business plan detailing the project scope, financial projections, environmental benefits, and risk assessments. Highlight potential returns and impact to attract investors.
3. **Investor outreach**: Identify and approach investors aligned with the project's objectives, including infrastructure funds, energy companies, or impact investors interested in sustainable energy projects.
4. **Regulatory compliance**: Adhere to all legal requirements, including securities laws, environmental regulations, and public procurement rules, especially when public entities are involved.
5. **Stakeholder engagement**: Maintain transparent communication with all stakeholders, including local communities, to build trust and support for the project.

When pursuing equity financing, it is important to consider the implications of **public versus private ownership**:

- **Public ownership**: Publicly owned projects must navigate additional regulatory frameworks, such as public procurement laws and state aid rules. Involving private equity requires clear agreements defining roles, responsibilities, and profit-sharing mechanisms to protect public interests.
- **Private ownership**: Privately owned projects have greater flexibility in structuring equity deals but must still comply with relevant regulations. They can more readily attract private investors by offering competitive returns and streamlined decision-making processes.

Impact Investments:

Traditional equity investments in district heating site renovation projects often **qualify as impact investments**, as they aim to generate measurable social and environmental benefits alongside financial returns. Investors are increasingly interested in projects that contribute to sustainability goals, such as reducing greenhouse gas emissions and improving energy efficiency. Aligning DH projects with **Environmental, Social, and Governance (ESG) factors[116] and adhering to EU Taxonomy standards[117]** can make these investments more appealing to impact-focused investors.

Integrating ESG criteria involves assessing and managing the project's environmental, social, and governance impacts. This includes sustainable practices, social responsibility, and transparent governance structures. The EU Taxonomy provides a framework to identify sustainable economic activities, helping investors evaluate the alignment of projects with social and environmental objectives. Complying with these standards enhances access to financing and attracts investors committed to sustainability.

6.2.3 Tax-incentives for individual investors

In various European states, such as the United Kingdom, France, and Germany, there are tax incentives for individual investors who invest in **small and medium-sized enterprises (SMEs)**. However, in the case of projects involving the renovation of district heating sites in Lithuania, Poland, or Slovakia, incentives applicable to individual **French investors would be the sole relevant ones**, as France is the only country among these cited whose incentives may apply to investments made in other countries.

The **French case is outlined below with two objectives**:

- For projects considering launching an **equity crowdfunding campaign**, this fact can serve as an attraction to draw individual investors from France.
- In general, for any type of DH project seeking funding through equity from individual investors, it is recommended to **periodically review the legislation** of their own country and other EU member states, in case new regulations are enacted after this document's drafting, potentially serving as a call for investment.

[116] https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/esg-rating-activities_en

[117] https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en

In France, individual investors who contribute capital to SMEs can benefit from the **Réduction d'Impôt Madelin (IR-PME)**[118], a tax incentive designed to encourage investment in the European business fabric. The IR-PME allows **taxpayers to deduct a percentage of the amounts invested in the capital of eligible SMEs** from their income tax.

This percentage varies depending on the type of company and the investment period:

- **Standard SMEs**: Deduction of 18% to 25% of the invested amount.
- **Young innovative enterprises**: Deduction of 30% of the invested amount.
- **Young breakthrough innovative enterprises**: Deduction of 50% of the invested amount.

To be eligible for these deductions, specific requirements apply both to the company and to the investor. The company must be an **unlisted SME** with fewer than 250 employees and an annual turnover below €50 million, or a total balance sheet not exceeding €43 million. Additionally, the company must be **headquartered in an EU Member State**, Norway, Iceland, or Liechtenstein, and engage in commercial, industrial, craft, agricultural, or liberal activities, explicitly excluding sectors such as wealth management, financial services, and real estate.

For the investor to qualify, they must be an **individual taxpayer domiciled in France** and commit to holding the acquired shares for a minimum of five years. The maximum annual investment eligible for deduction is €50,000 for single, widowed, or divorced taxpayers, and €100,000 for married or civil-union couples filing jointly. This deduction is also subject to the overall limit on tax benefits, capped at €10,000 per year.

This explanation should not be confused with what is detailed in Section 9.1 – *Government incentives*, which outlines the tax incentives available to entities in Lithuania, Poland, and Slovakia for executing energy renovation projects for DH networks.

[118] https://www.economie.gouv.fr/particuliers/reduction-impot-revenu-investissements-entreprise-pme-madelin

6.2.4 Recommendations for Low2HighDH-supported projects

- For DH site renovation projects considering **equity crowdfunding**, it's essential to develop a **communication strategy** that highlights both the environmental and economic benefits to attract impact-oriented investors. Additionally, selecting **crowdfunding platforms with a strong track record** in infrastructure or sustainability projects is key, along with ensuring compliance with both local and EU regulations to build trust and facilitate investment.
- For **traditional equity financing** in projects involving **public ownership**, establishing clear and balanced partnerships with private investors through **PPP agreements** helps protect public interests.
- For **equity financing in projects of any ownership type**, identifying investors aligned with **ESG goals** is crucial to attract capital committed to long-term impact and to bring additional expertise in operational and technological efficiencies.

Table 11 – Recommendations for Low2HighDH-supported projects on equity crowdfunding and traditional equity

6.3 ADAPTABLE: DEBT AND/OR EQUITY

Certain funding sources do not strictly fall into the categories of debt or equity but instead offer flexibility that can adapt to the specific needs of a project. In the context of district heating renovations, these adaptable sources are particularly valuable as they provide financing structures tailored to the unique requirements, risks, and opportunities of each initiative.

Adaptable funding can take the form of **debt, equity, or a hybrid of both**, depending on the conditions set by the provider and the project's characteristics. This flexibility allows project managers to align their funding mechanisms with their operational timelines, revenue projections, and long-term goals.

This section considers funding sources and instruments selected for their suitability in financing district heating renovation projects. These include:

- **European funds and programmes**: This category encompasses resources such as Cohesion Policy Sectoral financial instruments, the EIB Group, the European Energy Efficiency Fund, and InvestEU.
- **Investment funds**: This section specifically focuses on **privately managed funds**, which differ from the European and national public funds already covered in this document. These private investment funds provide a market-driven approach to financing district heating projects, often targeting higher returns and offering additional flexibility to complement public funding sources.
- **Mezzanine finance**: A hybrid financing instrument that bridges the gap between debt and equity, offering subordinated debt with potential equity conversion features. Mezzanine finance is particularly useful for projects that require substantial capital but want to limit ownership dilution.

6.3.1 European funds and programmes

This section focuses on key European funds and programmes, as well as the European Investment Bank (EIB), all of which have been identified as particularly suitable for financing district heating site renovations in Lithuania, Poland, and Slovakia through **loans and/or equity instruments**. These include:

- **Cohesion Policy Sectoral Financial Instruments** (2021–2027).
- **EIB Group**.
- **European Energy Efficiency Fund** (EEEF).
- **InvestEU** (2021–2027).

It is worth noting that the Cohesion Policy Sectoral Financial Instruments include both loans and equity options, while also being designed under the framework of Cohesion Policy Funds to provide grants and technical assistance[119].

[119] **Note for the reader**: More details on their grant-related features from Cohesion Policy Funds are available in Section 6.1.1. Details on technical assistance are available in Section 9.2.1.

a) Cohesion Policy Funds - Sectoral Financial Instruments

Cohesion Policy Funds provide Member States with a flexible framework for allocating resources, enabling the creation of diverse sectoral Financial Instruments (FIs) as **alternatives to traditional grants**. These instruments, such as **equity investments and senior loans**[120], are designed to support projects capable of generating financial returns or cost savings, which can be used to repay the initial investment. They can also be combined with grants to maximise impact.

The European Commission (EC) promotes FIs as a cost-effective and sustainable use of the Cohesion Policy Funds, particularly in areas such as building renovations and **energy-efficient infrastructure**. Cohesion Policy Sectoral FIs are highly valued for their **ability to leverage additional private capital**, enhance project sustainability, and improve the quality of supported initiatives. In the context of district heating renovation projects, these instruments can address financing gaps while **fostering the commercial viability of investments**.

The Cohesion Policy Funds in the form of grants are comprehensively detailed in Section 6.1.1 – *Cohesion Policy Funds* as mechanisms for implementing the EU's Cohesion Policy during the **2021-2027** programming period. However, these funds not only provide grants and subsidies through various programmes but also empower Member States to create the aforementioned FIs, such as loans and equity mechanisms.

To avoid redundancy, this section does not revisit the core aspects of the Cohesion Policy Funds, such as their funds, pillars, eligible project types, regulatory framework, and managing authorities[121]. Readers are encouraged to consult Section 6.1.1 for further details, as these considerations apply equally for district heating projects seeking loans or equity financing under their programmes.

It is worth noting that the **same platforms** used by managing authorities for grant calls under Cohesion Policy Funds also provide access to FIs. Moreover, no pre-determined loan amounts or equity structures are specified, as calls for applications vary over time and include specific criteria.

The creation of these FIs entails a series of **advantages and drawbacks**, such as:

Advantages:

- **Efficient use of public funds**: FIs enable the recycling of resources, attracting private investment and fostering financial sustainability.
- **Encouragement of long-term viability**: By requiring repayment, FIs incentivise sound project planning and enhance their commercial feasibility.
- **Enhanced project quality**: Stringent selection processes tied to repayment increase the likelihood of successful outcomes.

[120] Senior loans are a type of debt financing where the lender has priority over other creditors in the event of the borrower's default or liquidation. These loans are secured by collateral, such as project assets, and often come with lower interest rates compared to subordinated loans, reflecting their lower risk. They are typically used for large-scale infrastructure or energy projects due to their structured repayment terms and higher level of security for lenders. In this section, the term loans is used to refer specifically to these senior loans.

[121] https://ec.europa.eu/regional_policy/in-your-country/managing-authorities_en

- **Filling financing gaps**: FIs can offer comprehensive funding, reducing the time required to initiate projects.

Drawbacks:

- **Complex setup:** Establishing FIs can be resource-intensive for Member States, requiring time and expertise.
- **Regulatory hurdles:** Cohesion Policy regulations governing FIs often demand specialised legal and technical knowledge.
- **Higher costs:** Expected leverage from private investors may not always materialise, increasing financial risks.
- **Capacity limitations**: Public entities may lack the commercial expertise required to manage FIs effectively.
- **Burden of monitoring and reporting**: The administrative requirements for FIs can be resource-intensive and costly[122].

With the aim of addressing the challenges that the creation of FIs may entail, **the EC has actively supported the adoption of FIs** within Cohesion Policy Funds, encouraging their use for sustainable urban development projects. Partnerships with institutions like the **European Investment Bank (EIB) and the Council of Europe Development Bank (CEB)** provide technical guidance to Member States on establishing repayable investment mechanisms, including loans, equity, and guarantees. Furthermore, as a complement to this support, **fi-compass** has been established as a dedicated online resource for anyone interested in EU-shared management financial instruments; within this portal, specific data concerning the initiatives of each Member State can be found (further details can be found in Section 9.2.8.b).

Despite the EC's efforts, **grants remain the dominant funding source utilised by Member States, with the uptake of Cohesion Policy Funds for FIs still limited[123]**.

The following is an overview of the programmes in Lithuania, Poland and Slovakia relevant to DH site renovation projects, which, through their public information platforms, announce specific calls offering FIs under the Cohesion Policy Funds:

- **Lithuania**: The **Regional Development Programme** specifies that beneficiaries in its 10 regions can access various types of loans and support for attracting private capital investments.
- **Poland**: The **European Funds for Infrastructure, Climate, and Environment** programme highlights the creation of loans for specific calls. Similarly, the **European Funds for Regions** offer not only loans but also equity and quasi-equity mechanisms, such as mezzanine finance.
- **Slovakia**: The **Slovakia Programme** announces calls that combine grants, loans, and private investments, fostering financial flexibility.

[122] Inspired in part on Peter Schneidewing i all, Financial engineering instruments in Cohesion Policy. Direction General of Regional Policy 2013 and F.Wishlade, R.Michie, Financial Instruments in 2014-2020: Learning from 2007-13 and adapting to the new environment 2014.

[123] FiCompass, Stocktaking study on financial instruments by sector Progress to date, market needs and implications for financial instruments - https://www.fi-compass.eu/stocktaking-study-financial-instruments-sector

The calls under these programmes are time-limited, with many closing annually to make way for new opportunities. Stakeholders are strongly encouraged to revisit the respective websites regularly, as new calls may include FIs tailored to DH projects.

b) EIB Group

The European Investment Bank (EIB) has been referenced throughout this document as a key player in concessional debt (Section 7.1.2.b), a collaborating institution in the Modernisation Fund (Section 6.1.3), the provider of funding for the Public Sector Loan Facility (Section 7.1.1.a) and InvestEU (Section 7.3.1.d), as the entity managing the ELENA Facility (Section 9.2.2), and as a supporting entity for Member States in the establishment of Cohesion Policy Sectoral Financial Instruments (previous section). It also incorporates the European PPP Expertise Centre (EPEC) platform, as a part of its Advisory Services Department (Section 9.2.8.a).

Given its pivotal role in these programmes, **this section is dedicated to exploring the EIB's broader potential**. As a leading European financial institution, the EIB can provide **large-scale district heating site renovation projects** with direct access to loans, equity, and other financing instruments.

General description:

The **EIB Group, comprising the European Investment Bank[124] and the European Investment Fund**[125] (EIF), plays a pivotal role in EU financing. While the EIB focuses on long-term financing aligned with EU policies, particularly the Cohesion Policy, the EIF specialises in supporting SMEs with risk finance. As the EIF's principal shareholder, the EIB significantly influences its operations.

The **EIB Group leverages both its capital and substantial EU budgetary resources** to provide direct project financing and support for implementing EU funds. Its expertise in financing and advisory services positions the group as a critical partner for project promoters.

Projects aligned with EU policies are generally eligible for EIB funding, encompassing diverse aspects of district heating site renovations. In the energy transition domain, the EIB adheres to the **EU Taxonomy[126] Delegated Act's technical criteria**, supporting initiatives that contribute substantially to climate change mitigation. Eligible activities include:

- Renovation of existing buildings meeting the EU Taxonomy technical screening criteria.
- Installation, maintenance, and repair of energy efficiency equipment, renewable energy technologies, and energy performance monitoring systems in existing buildings.

[124] https://www.eib.org/en/index

[125] https://www.eif.org/index.htm

[126] The EU taxonomy is a cornerstone of the EU's sustainable finance framework and an important market transparency tool. It helps direct investments to the economic activities most needed for the transition, in line with the European Green Deal objectives. The taxonomy is a classification system that defines criteria for economic activities that are aligned with a net zero trajectory by 2050 and broader environmental goals other than climate.

- **District heating/cooling networks**, cogeneration systems, and energy storage in compliance with the taxonomy.
- Climate adaptation projects integrating measures to reduce material physical climate risks, aligned with the EU Taxonomy Delegated Act and the Multilateral Development Banks[127] methodology for tracking climate adaptation finance.

Therefore, urban regeneration and infrastructure projects may also secure EIB funding, often with terms aligned to the economic life of the project, which **can exceed 30 years**.

Strategic partnerships and collaborations:

The EIB actively engages in partnerships to maximise its impact. These collaborations include:

- **Blending loans with EU budgetary funds:** By integrating loans with EU funds, the EIB enhances its ability to finance a broader range of projects effectively.
- **Catalysing additional banking resources:** The EIB's involvement encourages other financial institutions to co-invest in projects, amplifying the overall impact.
- **Local-level collaborations:** Partnering with local financial intermediaries[128] allows the EIB to access local expertise, ensuring its products meet the specific needs of communities and businesses.

These strategic alliances enhance the EIB's operational effectiveness and extend its reach to support a diverse portfolio of projects.

Opportunities for district heating site renovations[129]:

District heating site renovations can benefit significantly from the EIB Group's diverse financial offerings, including loans, equity finance, guarantees, and advisory services. These instruments cater to a wide spectrum of project sizes and scopes.

Loan products:

The EIB typically finances up to 50% of a project's total cost, though this can increase to 75% for energy efficiency investments. Loan options include:

- **Individual loans for the public sector:** Starting at €25 million, these loans finance large investments or programmes.
- **Individual loans for private entities:** Usually starting at €25 million but sometimes available for smaller amounts.

[127] Multilateral development banks are working together to better track climate adaptation finance and to improve their financing approach. As part of that, they have developed new methodologies for determining the types of activities that can contribute to climate adaption.

[128] https://www.eib.org/en/products/loans/sme-mid-caps/intermediated-loans.htm

[129] https://www.eib.org/en/products/index.htm

- **Framework loans for the public sector:** Flexible loans designed to finance multiple smaller projects within a broader investment programme.
- **Intermediated loans:** Provided to financial institutions for on-lending to SMEs, mid-caps, or smaller energy efficiency and renewable energy projects.

Equity Finance:

The EIB invests directly or co-invests with funds to support economically viable projects aligned with its policy goals. In certain cases, quasi-equity financing is available for innovative projects.

For example, the EIB's €30 million equity investment in the Dorothea vehicle supports district heating networks in Dutch municipalities, including the Ede heating network[130].

Guarantees:

EIB guarantees reduce risk for lenders by covering potential losses, encouraging additional financing for SMEs, mid-caps, and other entities. These include subordinated financing, unfunded guarantees, and contingent credit lines that enhance the credit quality of senior debt.

Advisory services:

The EIB offers comprehensive advisory services across all project stages. The InvestEU Advisory Hub (See Section 9.2.4) serves as the primary contact point for EU-based advisory support.

How to apply:

To access EIB financing, beyond the scope of other European funds and programmes in which it participates, project promoters must:

1. Create an account and submit inquiries via the **EIB's contact portal**, which provides guidance on the application process and FAQs.
2. SMEs and mid-caps may contact local financial intermediaries listed on the EIB's **"Partners for Private and Public Sectors"** page for tailored financial solutions.

c) European Energy Efficiency Fund

The European Energy Efficiency Fund[131] (EEEF) is dedicated to advancing the climate objectives outlined by the European Union within the 2030 framework for climate and energy, and the climate-neutral goals of the European Green Deal. Its mission is to **promote a sustainable energy environment and strengthen climate action by supporting projects in European cities, regions and municipalities**.

The EU countries have agreed on the 2030 climate and energy framework, including EU-wide targets and policy objectives for the **period between 2020 and 2030**. The EEEF aims to enable the development of

[130] https://www.eib.org/en/press/all/2020-269-eu-support-for-dutch-district-heating-projects

[131] https://www.eeef.lu/home.html

resilient infrastructure and climate-related investments that enhance the sustainable energy market. It achieves this by **combining private and public capital**.

The Fund was established in July 2011 with an initial endowment of €265 million, supported by a technical assistance facility with a budget of €20 million and €1.3 million allocated for awareness-raising activities (see Section 9.2.8 – *Technical Assistance of the Energy Efficiency Fund*).

Investments in energy saving and energy efficiency encompass a wide **range of areas**, including:

- Public and private buildings incorporating renewable energy and energy efficiency solutions, including those leveraging Information and Communication Technologies (ICT).
- Highly energy-efficient **Combined Heat and Power (CHP), including micro-cogeneration, and district heating/cooling networks, with a focus on renewable energy sources**.
- Local infrastructure enhancements, such as efficient outdoor public lighting, electricity storage solutions, smart metering, and smart grids that maximise the use of ICT.
- Adoption of energy efficiency and renewable energy technologies with innovation and economic potential, using best available practices.

Investments in **renewable energy sources cover**:

- Distributed generation from local renewable sources for medium and low voltage (110kV and lower) distribution networks.
- Smart grids that enable greater integration of renewable sources.
- Energy storage solutions to balance supply and demand from intermittent renewable generation.
- Injection of locally produced biogas into the natural gas network.
- Microgeneration from renewable sources, promoting distributed energy production.

The primary beneficiaries of the EEEF are the **municipal, local and regional authorities** of the EU Member States. In addition, **public and private entities acting on behalf of these authorities**, such as utilities, public transport operators, social housing associations and energy service companies, can also benefit from the Fund. The projects must have a direct or indirect link to the municipality, either through direct involvement of the municipality (e.g. as a building owner or investor) or through long-term contracts between the municipality and a third party (e.g. a public transport concession or an Energy Performance Contract (EPC) for a public building).

The EEEF actively contributes to energy efficiency and renewable energy efforts by providing dedicated **financing through direct funding and partnerships with financial institutions**. This is particularly beneficial to public sector investors, who often face budget constraints, and local authorities with limited experience of such investments. To qualify for support, projects must demonstrate the ability to achieve at least **30% primary energy savings or greenhouse gas emission reductions** compared to a baseline.

The EEEF provides direct investments to projects ranging from **€5 million to €25 million**. These investments may take the form of **debt, equity, or guarantees**, with debt instruments offering **maturities of up to 13 years**, and equity tailored to the various phases of a project.

In the case of **district heating renovations** in Lithuania, Poland and Slovakia, this investment range typically corresponds to **medium-sized projects**. These investments are well suited for upgrading existing networks, integrating renewable energy sources and improving energy efficiency in systems serving small to medium-sized urban areas or regional municipalities. For major upgrades, these projects may reach a large scale, depending on local market and infrastructure conditions.

Public authorities seeking financing for eligible projects should have clear climate change mitigation objectives in place, such as increasing energy efficiency or utilising energy from renewable sources, often through initiatives like the Covenant of Mayors[132]. Generally, **an EEEF investment is not feasible if the project receives subsidies from other EU programmes** (e.g., ESF+, ERDF, Cohesion Fund).

To determine **project eligibility** for EEEF financing, applicants should submit a request to the **Investment Management Team** via email to **info@eeef.eu**. The Investment Manager of EEEF will serve as the initial point of contact for project inquiries and submissions. The Investment Manager conducts initial project screening and, upon a positive outcome, proceeds with a detailed due diligence assessment. If project details are available (e.g., a project teaser, comprehensive project description/investment memo, financial model, technical and environmental information), sharing this information will be beneficial in the application process. Information about projects that have been financed through the EEEF can be found in the quarterly reports[133].

As of the drafting of this document, there are two active projects in Lithuania:

Figure 12 – Current investments of the EEEF[134]

[132] https://eu-mayors.ec.europa.eu/en/home

[133] https://www.eeef.lu/quarterly-reports.html

[134] https://www.eeef.lu/files/images/content/investments/current-investments-hellblau.svg

d) InvestEU

General description:

The InvestEU Programme is the European Union's flagship initiative to **stimulate investment and support EU policy goals between 2021 and 2027**. Backed by a €26.2 billion EU budget guarantee, it aims to mobilise over €372 billion in investments. The programme consolidates multiple funding streams into a single framework, designed to streamline and enhance access to financing for projects across the EU.

The programme is structured around **three key components**[135]:

- **InvestEU Fund**: Provides financial products like loans, equity, and guarantees to catalyse investments.
- **InvestEU Advisory Hub**: Offers technical support and capacity-building for project preparation and implementation (See Section 9.2.4 – *Technical assistance facilities – InvestEU Advisory Hub*).
- **InvestEU Portal**[136]: A digital matchmaking platform that connects project promoters with potential investors.

These components work together to provide comprehensive support for project developers and facilitate investments aligned with EU priorities. Additionally, it is important to highlight **the InvestEU Just Transition Scheme**, one of the three pillars of the Just Transition Mechanism, which provides a budgetary guarantee under the InvestEU Programme.

InvestEU Fund:

The InvestEU Fund is the core financing tool of the programme. It collaborates with **13 implementing partners**[137], including the EIB Group, which manages 75% of the Fund's budget, as well as other international financial institutions and national promotional banks like the Council of Europe Development Bank (CEB).

Of these 13 institutions, one is from Poland: the Bank Gospodarstwa Krajowego (BGK), which has been included in this document (see Section *7.1.2.c – National financial institutions relevant to concessional debt access*).

These partners administer the EU guarantee to provide financial products, including:

- **Loans**.
- **Equity investments**.
- **Guarantees**.

The Fund is structured around **policy windows**, each targeting specific investment areas and market gaps:

[135] https://investeu.europa.eu/index_en

[136] https://ec.europa.eu/investeuportal/desktop/es/index.html

[137] https://investeu.europa.eu/investeu-programme/investeu-fund_en#paragraph_170

- **Sustainable infrastructure window**: Focuses on projects such as renewable energy, energy efficiency upgrades, including district heating renovations, and smart energy systems. This window allocates €9.9 billion in guarantees, with at least 60% directed towards climate and environmental objectives.
- **Research, innovation, and digitisation policy window**: Supports advancements in research, digital technologies, and innovation.
- **SME policy window**: Targets small and medium-sized enterprises, including those with strong social impacts.
- **Social investment and skills policy window**: Promotes social infrastructure, such as social housing renovations and skill-building initiatives.

Eligible project promoters include:

- Private entities (large corporates, midcap companies, SMEs).
- Public sector entities.
- Mixed entities (Public-Private Partnerships).
- Non-profit organisations.

To **access financing**, it is necessary to distinguish between the type of project promoters and the country in which they are located

- Promoters for large-scale projects must **apply directly to Implementing Partners** for the financial products they need (Case of **Polish projects**).
- For **SMEs and smaller entities**, **local commercial or public banks act as intermediaries**, providing financial products supported by the InvestEU guarantee. An interactive map on the "**Access to EU Finance**" website helps locate these intermediaries (Case of **Lithuanian and Slovak projects**).

How the InvestEU Portal complements the Fund:

The InvestEU Portal is a digital platform designed to **enhance visibility for projects and attract potential investors**. While it does not provide direct financing, it acts as a matchmaking tool between project promoters and investors.

How it works:

1. **Project submission**: Promoters submit their projects to the Portal, which are screened for eligibility based on criteria set by the European Commission.
2. **Visibility for investors**: Once approved, projects are published on the Portal, providing access to a broad network of public and private investors.
3. **Investor contact**: Interested investors can directly connect with project promoters to explore financing opportunities.

This platform is particularly useful for projects seeking to complement their financing from the InvestEU Fund with private investment.

e) Recommendations for Low2HighDH-supported projects

- All programmes **combine direct financing with the aim of leveraging private investments**, maintaining a **strong focus on renewable energy and energy efficiency**.
- **Cohesion Policy Sectoral Financial Instruments prioritise reducing regional disparities, with project sizes depending on national calls**. Applications must be submitted through the online portals of the respective managing authorities and are open to both public and private entities.
- The **EIB Group supports larger projects**, while also allowing direct negotiations for financing. It participates in various EU programmes, making it accessible for public and private entities alike.
- The **EEEF is tailored for medium-sized projects** (€5 million to €25 million) and is **restricted to public authorities** or entities closely linked to public administrations. Generally, it **can't be combined with other EU funds and programmes**.
- **InvestEU** serves public and private entities and supports **projects of all sizes**, offering flexible financing directly through implementing partners or via local intermediaries.

Table 12 – Recommendations for Low2HighDH-supported projects on "adaptable" European funds and programmes

6.3.2 Private investment funds

Investment funds are **collective investment vehicles that pool capital from multiple investors** to allocate it across various financial instruments. They offer a diversified investment alternative, reducing risk by spreading investments across numerous assets, with the level of risk varying based on the specific fund chosen.

In the context of district heating site renovations, these funds may play a pivotal role by providing the necessary capital to modernise and enhance its technology and infrastructure. Depending on their structure and investment strategy, these funds can offer **debt and/or equity financing**, catering to the specific needs of each project.

Shareholders or unitholders, who may be individuals or legal entities, entrust professional managers with overseeing their investments in exchange for fees regulated by legal limits. Returns are distributed to investors proportionally, based on their ownership of the fund, and depend on the performance of the shares' or units' net asset value. While individual investors do not decide how the fund's assets are managed, the projects financed by the fund contribute back by repaying the capital with interest in the case of loans or generating returns in equity arrangements.

Throughout this document, various national and EU funds relevant to district heating renovations in Lithuania, Poland, and Slovakia have been explored. This section, however, focuses exclusively on **investment funds that operate without public or EU funding and are not managed by public authorities**.

These private investment funds typically target **medium to large-scale projects**, seeking opportunities that promise substantial and stable returns. They are accessible to a diverse range of project promoters, including **public authorities, private companies, and Public-Private Partnerships** (PPPs).

The application process generally involves the following steps:

1. **Project proposal preparation**: Develop a comprehensive business plan detailing the project's scope, financial projections, and expected outcomes.
2. **Fund identification**: Research and identify investment funds whose investment criteria align with the project's objectives and scale.
3. **Submission of proposal**: Submit the proposal to the selected funds, adhering to their specific application guidelines.
4. **Due diligence**: Engage in discussions with the fund's management team as they assess the project's viability, risks, and alignment with their investment strategy.
5. **Negotiation and agreement**: If the fund expresses interest, negotiate the terms of investment, culminating in a formal agreement.

While there are numerous types of investment funds, the following **categories** are particularly relevant for district heating site renovation projects in the aforementioned countries:

- **Debt** funds.
- **Equity** funds.
- **Impact** funds.
- **Infrastructure** funds.
- **Institutional investor-backed** funds.
- **Revolving** funds.

It is important to note that this classification is not rigid, **a single fund may fall into multiple categories** depending on its investment strategy and objectives.

In the following sections, each one is defined, accompanied by specific examples that may be relevant to these projects. Project promoters are encouraged to explore additional funds that may suit their specific characteristics.

a) Debt funds

Debt funds specialize in **providing financing through loans** or similar instruments, offering a structured approach to funding projects. These funds are particularly suitable for projects that generate **steady cash flows**, enabling timely repayment of interest and principal. They cater to both **public and private entities, focusing on medium to large-scale projects** that require substantial capital investment.

An example of a debt fund relevant to district heating renovations is the **Infranity European Infrastructure Debt Fund**. Managed by Infranity, this fund specializes in providing long-term debt financing for European

infrastructure projects, with a focus on sustainable energy and utilities. In May 2024, Infranity secured debt financing for district heating projects in the Nordic region[138], underscoring its active involvement in this sector.

Another relevant example is the **Solas Sustainable Energy Fund** (SSEF), an EU-focused fund supported by the European Investment Bank. SSEF provides debt financing to energy service companies (ESCOs) across the EU, targeting energy efficiency and renewable energy projects. Backed by the EIB, the fund mobilised private investment to renovate infrastructure using proven technologies like heat pumps and rooftop solar panels. By November 2022, SSEF had raised €220 million, with its investments projected to generate annual energy savings of approximately 600 GWh, contributing to the EU's climate goals.

b) Equity funds

Equity funds invest in private companies intending to enhance their value before a future sale or public offering. They often **take an active role in management** to drive operational improvements and strategic growth. These funds are suitable for district heating projects that require restructuring, modernisation, or expansion, and are accessible to **private companies and Public-Private Partnerships**.

The **KKR Global Infrastructure Investors IV**, managed by KKR & Co., is a prominent private equity fund that invests in infrastructure assets worldwide, including Europe. This fund focuses on sectors such as energy, transportation, and utilities, aiming to deliver sustainable, long-term value. KKR has extensive experience in managing infrastructure investments, providing both capital and strategic expertise to enhance asset performance. Their approach includes active asset management and a commitment to environmental, social, and governance (ESG) principles, aligning with the objectives of district heating site renovations.

c) Impact funds

Impact funds aim to **generate positive social or environmental** outcomes alongside financial returns. They invest in projects that contribute to sustainability goals, such as reducing carbon emissions or enhancing energy efficiency. These funds are accessible to a wide range of project promoters, including **public authorities, private companies, and non-profit organisations**, and typically target projects of varying sizes, from **small community initiatives to large-scale infrastructure developments**.

A pertinent example is the **Triodos Energy Transition Europe Fund**, managed by Triodos Investment Management. This fund invests in European companies driving the energy transition, such as those involved in wind farms, solar photovoltaic, battery storage, and solar thermal installations. The fund's investments contribute to increasing the share of clean energy in the total energy mix and reducing CO_2 emissions. The fund provides both equity and mezzanine financing, supporting projects from development through to operational stages.

[138] https://inspiratia.com/sector/district-heating

d) Infrastructure funds

Infrastructure funds focus on investments in **physical assets that provide essential services**, such as transportation, utilities, and energy systems. They seek stable, long-term returns by investing in projects with **predictable cash flows and significant barriers to entry**. These funds are suitable for **medium and large-scale district heating renovation projects and are open to both public and private entities**.

The **InfraRed Infrastructure Fund VI**, managed by InfraRed Capital Partners, is an example of such a fund. It focuses on infrastructure investments across Europe and other regions, including sectors such as energy services, electric utilities, and water utilities. This fund aims to deliver sustainable and long-term value by supporting projects that enhance essential services and infrastructure. InfraRed has a strong track record in energy infrastructure investments, including renewable energy and energy efficiency projects, making this fund a relevant option for district heating site renovations. The fund offers both equity and subordinated debt financing, catering to various project needs.

Another example is the **BaltCap Infrastructure Fund**, which focuses on infrastructure investments in the Baltic countries, including Poland. BInF has invested in projects related to renewable energy and energy efficiency, making it a potential candidate for financing district heating system renovations. The fund provides equity financing and actively participates in project development to ensure successful implementation.

e) Institutional investor-backed funds

These funds are **capitalised by institutional investors such as pension funds, insurance companies, and sovereign wealth funds**. They typically seek stable, long-term returns and invest in **large-scale projects** with **proven technologies and reliable cash flows**. **Public authorities, private companies, and Public-Private Partnerships (PPPs)** can access these funds for substantial district heating renovation projects.

The **Allianz European Infrastructure Fund**, managed by Allianz Global Investors, is an example. This fund invests in European infrastructure projects, including energy and heating systems, aiming to provide long-term, stable returns for its investors, and offering both equity and debt financing options. Allianz has a strong focus on sustainable investments, aligning with the goals of modernising district heating infrastructure.

Similarly, the **InfraVia European Fund IV** has shown interest in infrastructure projects in Central and Eastern Europe, including Slovakia. Its focus on infrastructure and energy positions it as a potential investor in district heating system renovation projects. The fund provides equity financing and supports projects through active asset management.

f) Revolving funds

Revolving funds **reinvest returns from previous investments into new projects**, creating a sustainable financing cycle. They cater to a range of project sizes, from **small and medium-sized initiatives**, such as local district heating upgrades, to larger-scale renovations when resources are pooled or combined with other financing sources. These funds can provide both **debt financing**, often as low-interest loans for energy-efficient technologies, and **equity financing**, where they take stakes in projects to support long-

term development. Accessible to **public authorities, private companies, and PPPs**, revolving funds are particularly suited for district heating projects that align with energy efficiency and renewable energy objectives. Their reinvestment mechanism ensures continuous funding availability, promotes scalability, and offers flexibility to address specific financial and technical needs.

The **Marguerite Fund II** invests in sustainable infrastructure across Europe, including energy and renewables. It reinvests returns into new projects, supporting a continuous pipeline of sustainable investments. The fund provides both equity and quasi-equity financing, focusing on projects that contribute to EU policy objectives, such as reducing greenhouse gas emissions and increasing energy efficiency. Unlike the previous funds, the EIB does participate in this one, but it is not managed by it.

g) Recommendations for Low2HighDH-supported projects

- Private investment funds, like public and European funding sources, provide an additional avenue for financing **direct investments** in district heating site renovation projects.
- Given the predominantly public ownership of district heating networks in Lithuania, Poland, and Slovakia, it is crucial to ensure that these entities are **legally eligible** to access such funding mechanisms. Ensuring compliance with relevant regulatory frameworks is an essential prerequisite before engaging with private investors.
- Careful consideration must also be given to selecting the most suitable type of fund. This choice should not only align with the legal nature of the project's entity but also reflect the **scale and specific characteristics** of the initiative.
- Unlike national or EU funding programmes, private investment funds can act as **alternative financing solutions for projects that might not fully meet the eligibility criteria of public funding schemes**. However, the key requirement for accessing private investment funds typically lies in the project's capacity to generate predictable and stable cash flows over time. This emphasis on financial performance does not negate the importance of sustainability. On the contrary, **ESG considerations remain pivotal**, as many private investors aim to align their portfolios with robust environmental, social, and governance standards.

Table 13 – Recommendations for Low2HighDH-supported projects on private investment funds

6.3.3 Mezzanine finance

a) General description

Mezzanine finance is a **hybrid funding mechanism that combines elements of debt and equity**, providing flexible financing solutions tailored to project-specific needs. Positioned between senior debt and equity in the capital structure, it typically involves subordinated loans or convertible instruments that offer higher returns to investors in exchange for increased risk. In case of default, it grants the lender the right to

convert debt into an equity interest in the company. This funding option is often used to bridge funding gaps or complement other sources of capital.

Within this document, mezzanine finance has been referenced concerning Cohesion Policy Funds, such as those within the Polish programme European Funds for Regions (see Section 6.1.1.c), and in the context of private investment funds, as explored in the previous section.

b) Characteristics, suitability and access

Projects aiming to secure mezzanine finance must meet several **key criteria**:

- Demonstrating **stable and predictable cash flows** capable of supporting higher financial costs.
- Offering a **clear and compelling risk-return profile**, often tied to growth potential or operational improvements.
- Possessing a **robust financing structure**, typically with senior debt already secured or easily attainable.
- Showcasing experienced management with **strong financial expertise** to handle the complexities of mezzanine financing.

Mezzanine finance is most suitable for **medium-to-large-scale projects** that require funding beyond traditional bank loans but are not large enough to attract full equity investment. For district heating renovations, this mechanism aligns well with substantial infrastructure upgrades or expansion projects.

While **primarily accessed by private entities**, mezzanine finance can also be utilised by Public-Private Partnerships and organisations managing hybrid funding schemes. Investment funds focused on infrastructure, energy efficiency, or **ESG-compliant projects** are particularly well-suited to incorporating mezzanine finance within their capital structures.

The **process** of securing mezzanine finance involves:

1. Preparing a **comprehensive business plan** detailing the project's financing structure, cash flow forecasts, and risk mitigation strategies.
2. **Identifying suitable mezzanine finance providers**, such as specialised investment funds or financial institutions.
3. Undergoing a rigorous **due diligence process**, including an in-depth review of financial and operational aspects.
4. **Negotiating terms**, such as interest rates, repayment schedules, and potential equity participation.
5. **Finalising agreements** and integrating mezzanine finance into the overall funding strategy.

c) Recommendations for Low2HighDH-supported projects

- Mezzanine finance is a complex funding mechanism, requiring significant financial expertise and a well-structured approach. It is generally **not recommended for smaller projects or those lacking robust financial systems**. While it can serve as an alternative for projects that do not meet eligibility criteria for national or European programmes, its application is often limited to large-scale initiatives or entities with advanced financial capabilities.
- Given its complexity and risk, mezzanine finance **may not always be the most straightforward solution for district heating site renovations**. However, for well-prepared projects with strong financial expertise and ambitious goals, it remains a potentially valuable funding source worth exploring.

Table 14 – Recommendations for Low2HighDH-supported projects on mezzanine finance

7. Management solutions

This chapter provides a detailed overview of the management solutions identified as the most appropriate for district heating renovation projects in Lithuania, Poland, and Slovakia, which could be adopted as part of their financing structure. These solutions allow projects to proceed with implementation **without the need for upfront investment** in technology, equipment, or physical infrastructure, thereby excluding such costs from the project's CAPEX[139]. The expenses associated with their adoption would be part of the project's OPEX.

The chapter begins by introducing the concept of **Energy Service Companies** (ESCOs) and examining their role as service providers in some of these management solutions, illustrating how they can facilitate implementation without requiring direct ownership or large capital investment by the project promoter.

It then outlines the key characteristics of each solution, the types of assets to which they apply, and the suitability of the entities that might adopt them. Each solution needs to be carefully assessed individually to determine its applicability, as they are often not combinable. However, in certain cases, integrating different management solutions into the same financing structure may be feasible.

The management solutions are:

- Build Operate Transfer.
- Build Own Operate Transfer.
- Energy Performance Contract.
- Heat pump subscription model.
- Operational renting.
- Transfer of Operating Rights.

Finally, the chapter concludes by outlining **other relevant types of contracts and/or agreements** that, although not considered management solutions for enabling the use of various physical assets without the need for ownership, are still relevant for project implementation and design. Should they be adopted, these agreements could impact their projects, particularly in terms of OPEX (Operational Expenditure). Examples include **Energy Supply Contracts, Power Purchase Agreements and Heat Purchase Agreements**.

As an important consideration, promoters should note that access to all these solutions requires a thorough understanding of the **regulations governing district heating sites**, particularly when they are owned or managed by public administrations or publicly owned companies.

[139] **Note for the reader**: “Management solutions" is the term used by the Low2HighDH project to refer to these types of alternative financial and operational models.

7.1 Introduction to Energy Services Companies

An Energy Service Company (ESCO) is a business that provides **complete energy solutions designed to reduce energy consumption and improve efficiency**. ESCOs distinguish themselves from traditional energy consultants or equipment suppliers by offering financing solutions or arranging financing for the installation, maintenance and operation of the related systems, with their remuneration directly tied to the energy savings achieved[140]. This model makes them especially valuable in large-scale infrastructure projects, including district heating site renovations.

These entities are **typically private companies**, although public bodies or utilities may also operate under the ESCO model, particularly in public sector energy efficiency projects. In district heating renovations, ESCOs provide technical expertise, energy and/or equipment supply, and financial solutions, helping to overcome the barrier of high upfront costs for project owners.

Characteristics of ESCOs:

- **Technical expertise**: ESCOs perform detailed energy audits, identify areas for improvement, and implement energy-efficient solutions, such as integrating renewable energy sources into the heating network.
- **Performance-based remuneration**: ESCOs are compensated based on the energy savings generated by the systems they install and manage, sharing the risk with their clients to ensure energy savings meet agreed targets.
- **Energy savings guarantee**: ESCOs often guarantee energy savings or the same level of service at a reduced cost, mitigating financial risk and making them a preferred choice for large-scale projects.
- **Financing solutions**: ESCOs can provide or arrange financing for energy efficiency projects, using models like Energy Performance Contracts (EPCs) or on-bill financing[141], which allow repayment through savings achieved over time.
- **Risk sharing**: By guaranteeing energy savings, ESCOs share the risk with the project owner, incentivising effective solutions.
- **Comprehensive service**: ESCOs deliver turnkey solutions, from energy audits and design to installation and long-term maintenance, ensuring efficient energy-saving measures are implemented and managed throughout the contract period.

ESCOs in management solutions for DH site renovation projects

ESCOs are central to, or could be involved in, **most of the management solutions** considered in this document. These solutions offer flexible, innovative alternatives to traditional funding methods such as loans or equity investments.

[140] https://e3p.jrc.ec.europa.eu/node/190#:~:text=An%20ESCO%20is%20a%20company,on%20a%20turn%2Dkey%20basis.

[141] **Note for the reader**: While on-bill financing is a recognised tool for financing smaller energy efficiency projects, it is not considered viable for district heating renovations in Lithuania, Poland, and Slovakia due to regulatory constraints and the collective and public nature of district heating systems.

The models where ESCOs may participate include:

- **Build Operate Transfer** (BOT): Although BOT models focus on construction and operation, ESCOs could be involved in managing energy performance, ensuring that the project meets the energy efficiency targets.
- **Energy Performance Contracts** (EPC): Under EPCs, ESCOs finance and implement energy-saving measures, guaranteeing that the savings will cover the investment costs. This model is widely used in district heating renovations, allowing the project owner to avoid upfront costs while benefiting from energy savings.
- **Heat pump subscription models**: In this model, ESCOs or other types of companies provide heat pump systems on a subscription basis, covering installation, maintenance, and operation costs while the customer pays a fixed monthly fee.
- **Operational renting**: ESCOs, alongside other types of companies, may lease energy-efficient equipment to district heating sites, enabling project owners to avoid upfront costs while benefiting from energy-saving solutions.
- **Transfer of operating rights**: While less common, ESCOs can participate in the transfer of operating rights agreements where their role focuses on energy performance optimisation. In such cases, ESCOs take over the operational responsibilities of the district heating system for a defined period, implementing efficiency measures and ensuring reliable service delivery. Their involvement is most relevant in scenarios where energy savings and system optimisation are integral to the agreement.

7.2 Build Operate Transfer

The Build Operate Transfer (BOT) model is a project delivery framework commonly used within **Public-Private Partnerships** (PPPs), wherein a private entity receives a concession from the public sector (or, on rare occasions, the private sector) to **finance, design, construct, own, and operate a facility** for a specific period. **Ownership is then transferred to the public sector or project stakeholders upon project completion or at the end of the concession**. While BOT models often underpin broader PPP frameworks, they are typically **applied to single elements rather than entire projects**.

Private entities recover their investments through **service payments or medium to long-term agreements** with the project operator. In district heating renovations, the BOT model is particularly valuable for implementing modern, efficient components that enhance system performance, reduce energy costs, and support sustainability goals. This approach provides a structured pathway for integrating new technologies or infrastructure without requiring direct public investment.

The BOT model follows a phased and targeted deployment, where the private entity assumes responsibility for specific project elements:

- During the **build phase**, the private entity manages the design, procurement, and construction of assets like renewable energy systems, smart controls, or heating infrastructure upgrades.
- In the **operating phase**, the private entity manages the operation and maintenance of these components, ensuring optimal performance throughout the concession period.
- Finally, in the **transfer phase**, ownership and operational responsibilities are returned to the public sector or project stakeholders, with all obligations outlined in the agreement fulfilled.

This model also ensures effective **risk allocation** by transferring financial, technical, and operational risks to the private entity during the concession period. Public authorities benefit from this expertise while reducing their exposure to uncertainties.

BOT is rarely applied to entire district heating networks. Instead, it **targets individual assets**, such as:

- Renewable heat sources, including **heat pumps, biomass systems, or solar thermal technologies**.
- **Smart energy systems**, such as internet-connected control systems, predictive analytics, or real-time monitoring tools.
- **Storage solutions**, integrating thermal storage units to enhance energy efficiency and load balancing.
- **Key infrastructure upgrades**, like modernisation of pipelines, substations, and distribution networks.

This targeted approach ensures that critical components are efficiently upgraded or implemented, without overextending financial or operational resources. The BOT model is **ideal for medium to large-scale district heating site renovations** requiring significant infrastructure or technological upgrades. Its targeted nature ensures discrete, high-value assets are prioritised rather than entire networks.

Medium to long-term concession periods (15–30 years) allow private entities to recover their investments while ensuring long-term operational stability. For smaller or short-term projects, alternatives such as Energy Performance Contracts (EPCs) or direct investments may be more practical.

Energy Service Companies (ESCOs) also can play a valuable role in BOT projects. Their involvement may help align energy efficiency performance with contractual objectives. ESCOs optimise the operational phase by tying remuneration to achieved energy savings, ensuring the project meets both energy and cost targets.

7.3 Build Own Operate Transfer

The Build Own Operate Transfer (BOOT) model is a project delivery framework in which a private entity or consortium is granted the mandate to **finance, design, construct, own, and operate a large-scale infrastructure asset**. Unlike the BOT model, **ownership of the asset remains with the private entity for a longer period**, **ensuring full operational control throughout its lifecycle**. At the end of the period, ownership and operation of the infrastructure are transferred to the public sector or government, typically at no cost or for a nominal fee.

While the BOOT model is often classified as a type of **Public-Private Partnership** (PPP), it differs significantly from traditional PPP frameworks. Classical PPP models typically involve private entities building and operating infrastructure that remains government-owned. In contrast, the BOOT model grants the **private sector full ownership and operational independence**, enabling better alignment with long-term strategic goals.

Key characteristics of the BOOT model also include:

- **Long-term contracts**: These projects span decades to ensure the recovery of investment and operational costs.
- **Operational independence**: The private entity has full control over the asset's management and operations, enabling tailored strategies to maximise efficiency and innovation.
- **Revenue generation**: Profits are derived from user fees, tariffs, or long-term service agreements.
- **Risk management**: The private sector assumes significant financial, operational, and market risks, which are often mitigated by government incentives or contractual guarantees.

The BOOT model is particularly well-suited for **large-scale and durable assets in district heating renovations**. Examples of such assets include:

- **Energy generation facilities**: Large-scale heat-only boilers or combined heat and power plants.
- **Thermal distribution networks**: High-capacity pipelines for extensive district heating systems.
- **Energy storage systems**: Centralised thermal storage units that enhance operational efficiency.
- **Advanced control platforms**: Integrated systems for optimising district heating operations at scale.

This model is particularly advantageous for public authorities and district heating site operators, as it enables them to **develop critical infrastructure without the need to provide upfront capital**. By leveraging private sector expertise and financing, these entities can focus on strategic oversight, ensuring the delivery of critical services to communities while transferring the execution, operational risks, and long-term management to specialised private entities. This approach not only reduces financial burdens but also fosters efficiency and innovation in infrastructure development.

Energy Service Companies (ESCOs) are generally unsuitable for BOOT projects. ESCOs typically engage in smaller-scale solutions, performance-based contracts, or projects with shorter contractual periods and smaller financial commitments. The BOOT model, by contrast, requires significant capital investment, long-term operational focus, and ownership of large-scale assets, all of which exceed the scope of traditional ESCO activities.

7.4 Energy Performance Contract

Energy Performance Contracting (EPC) is a financing arrangement designed to implement energy efficiency or renewable energy projects with **minimal upfront capital investment from the client**. In an EPC, an Energy Service Company (ESCO) enters into a **contract with its client to design, implement, and guarantee the performance of specific energy-saving measures**.

This performance guarantee ties the **ESCO's remuneration to the achieved energy savings or energy production levels**, ensuring alignment with project goals. Essentially, the ESCO would not receive its payment unless the project delivers energy savings as expected. Financing is typically arranged through external institutions, with savings from reduced energy costs or increased efficiency used to repay the investment.

When public entities engage in EPCs, these arrangements often qualify as **Public-Private Partnerships** (PPPs), making them a strategic choice for enhancing energy efficiency while leveraging private sector expertise.

Key features of EPC include:

- **Risk transfer**: The ESCO assumes performance and design risks, guaranteeing energy savings or cost reductions.
- **Financing flexibility**: Offers a cost-effective way to finance energy upgrades by leveraging future savings.
- EPC arrangements can follow **two main contract models**[142]:
    - **Guaranteed savings**: The ESCO guarantees a predetermined level of energy savings, assuring that the project will deliver measurable results. The client is responsible for securing financing, typically through banks or financial institutions, and assumes repayment risk. If savings fall short, the ESCO covers the gap between the guaranteed savings and actual performance, shielding the client from underperformance. This model is ideal for clients with strong creditworthiness in markets with well-established banking systems.
    - **Shared savings**: In this arrangement, savings are split between the ESCO and the client based on a pre-agreed percentage. The ESCO often arranges or provides the financing, taking on both performance and credit risks. This option reduces financial burdens for the client but places greater financial responsibility on the ESCO, which must manage the technical and financial aspects of the project. Shared savings contracts are preferred in markets where clients are reluctant to assume financial risks but may pose challenges for smaller ESCOs due to their higher debt obligations.

EPCs are particularly **well-suited for medium to large-scale district heating renovations**, providing customised solutions that deliver measurable energy savings. By transferring performance risks to the ESCO, this model enables both public and private entities to modernise their systems without requiring significant technical expertise or upfront capital. For **organisations with limited budgets but strong creditworthiness**, EPCs present an effective way to fund upgrades through future energy savings.

[142] https://e3p.jrc.ec.europa.eu/articles/energy-performance-contracting

Key applications include:

- **Upgrading boiler systems** to improve efficiency and reduce emissions.
- Incorporating **renewable energy sources** such as biomass or solar thermal.
- Enhancing **distribution networks** to minimise energy losses.
- Deploying **smart control systems** for real-time optimisation of operations.

Beyond specific energy-saving upgrades, it's important to understand how EPC differs from broader infrastructure models like Build Operate Transfer (BOT). The key distinctions between **EPC and BOT lie in ownership and scope**. In an **EPC, the client retains ownership** of the asset throughout the project, whereas in a BOT arrangement, ownership is temporarily transferred to the private entity for the duration of the contract. EPCs target energy-specific upgrades, while BOT models encompass larger infrastructure development and operational management projects. This focus on energy-specific upgrades makes EPCs a streamlined option for targeted efficiency improvements, unlike BOT, which typically involves broader operational responsibilities.

7.5 HEAT PUMP SUBSCRIPTION MODEL

The Heat pump subscription model is an innovative financing and service framework designed to overcome the significant upfront costs and operational complexities associated with adopting heat pumps, **whether undertaken individually by end users for their homes or by project promoters engaging a third party** to install and maintain the technology in a district heating network.

This model represents a shift from traditional ownership to a **service-oriented approach**, enabling final users and project promoters to access **heat pump technology** through manageable, predictable payments rather than large initial investments.

The model is particularly applicable for residential and small-to-medium commercial buildings, as well as **small to large-scale installations within district heating systems, whether publicly or privately owned**. In the case of publicly owned district heating sites, these agreements often qualify as **Public-Private Partnerships** (PPPs), leveraging private sector expertise and investment to enhance public infrastructure. Additionally, the model is ideal for projects in regions transitioning to renewable heating solutions, where upfront costs and technical barriers present significant challenges.

This model stands out due to several **key features** that make it a versatile and efficient solution for energy projects:

- **Financial accessibility**: Project promoters or individual final users eliminate the need for substantial upfront capital and pay predictable subscription fees, often aligned with energy savings. These fees typically cover installation, maintenance, and repair, ensuring manageable operational expenses.
- **Comprehensive service offering**: Service providers handle the entire lifecycle of the heat pump, from design and installation to maintenance and end-of-life management. Real-time performance monitoring through advanced digital tools maximises energy savings and system efficiency.
- **Risk mitigation**: The provider assumes all technical and performance risks, allowing individual customers and project promoters to adopt heat pump technology with confidence and minimal uncertainty.
- **Scalability and incentives**: Flexible pricing structures make the model adaptable to diverse residential, commercial, and industrial needs. Providers can leverage financial tools such as asset-backed securities or special-purpose vehicles to scale efficiently. Additionally, service agreements often integrate available subsidies, reducing costs and optimising financial incentives for customers.

The heat pump subscription model and Energy Performance Contracting (EPC) both aim to reduce energy costs and improve efficiency, but they differ significantly in scope and focus. The subscription model is dedicated exclusively to heat pump solutions, with the **provider retaining ownership of the equipment** and delivering a turnkey service that includes installation, operation, and maintenance. Additionally, this model is suitable not only for district heating site renovations but also for individuals in single dwellings or multi-family buildings. In contrast, EPCs cover a much broader range of energy efficiency measures and renewable energy solutions. EPCs are performance-driven, with the ESCO's remuneration tied to achieving specific energy savings targets. While the subscription model is ideal for project promoters and final users seeking simple and targeted heating solutions, EPCs provide a more comprehensive and adaptable framework for large-scale energy efficiency projects.

7.6 OPERATIONAL RENTING

Operational renting refers to a financial solution whereby a project or organisation rents equipment or technology for a specified period **without taking ownership of the assets**. The lessor retains ownership, and the lessee pays a periodic rental fee for its use. This approach is widely adopted to access high-performing technology **without requiring significant upfront investment or long-term financial commitments**.

It is particularly suited to district heating renovation projects, where flexibility, risk mitigation, and access to advanced technology are crucial. Unlike **financial leasing** (see Section 7.1.3.d), operational renting does **not include a purchase option** at the end of the rental period, and the rented assets are not recorded on the lessee's balance sheet.

Operational renting is typically more applicable to **smaller or mid-sized components** rather than large-scale infrastructure, due to the higher complexity and cost associated with the long-term rental of significant assets like centralised boilers.

This model is available to **both public and private entities**, offering an accessible and flexible solution for district heating renovation projects. Public authorities may find it advantageous for maintaining operational budgets, while private entities can leverage it to scale operations without increasing liabilities or committing to ownership.

Operational renting can be applied to a **variety of components and technologies** within DH projects, including but not limited to:

- **Pumps and heat exchangers**: Often smaller, replaceable components that require high reliability.
- **Monitoring and control systems**: Essential for operational efficiency and performance optimisation.
- **Renewable energy integrations**: Systems like biomass boilers or solar thermal collectors can also be rented through this model to reduce initial costs.
- **Secondary distribution networks**: Specific pipework and associated equipment may also be rented under short-term agreements.

The term of operational renting can vary:

- **Short-term**: For temporary equipment needs or pilot testing of new technologies.
- **Medium-term**: Common for projects with clear, time-bound requirements, such as during phased upgrades.
- **Long-term**: Less common but feasible for durable equipment with predictable performance.

A variety of companies provide operational renting solutions. **Equipment manufacturers** often include rental options for DH components within their service portfolios, while **technology integrators** offer it to facilitate the adoption of advanced systems. **ESCOs**, though less frequently involved in this model, may also bundle operational renting with services such as maintenance and upgrades. This diversity ensures access to flexible solutions for both public and private entities.

Beyond technology provision, operational renting agreements **frequently include value-added services** to enhance project outcomes. Maintenance and repair services ensure the rented equipment remains

functional and efficient throughout the rental period. Technical support is often available, addressing troubleshooting and operational challenges. Agreements may also include periodic upgrades to newer technologies or replacements for outdated components, ensuring continued efficiency and performance. Furthermore, training is commonly provided to project staff, equipping them with the skills to operate and maintain the rented equipment effectively. These supplementary services make operational renting an attractive option for DH projects seeking flexibility and reliability.

Operational renting stands out from other models due to its flexibility and focus on temporary access to proven technologies without ownership transfer. Unlike **Build Operate Transfer** models, which require the construction and operation of assets by a private entity before ownership is transferred to the client, operational renting focuses solely on renting existing equipment and avoids the complexities of construction or ownership. Similarly, while **heat pump subscription** models are tailored to specific technologies and often include bundled services like energy supply and performance guarantees, operational renting applies more broadly to a diverse range of components and systems. Finally, **Energy Performance Contracts** link financial payments to energy savings achieved through customised solutions, whereas operational renting prioritises flexibility, providing technology and services without tying returns to specific performance outcomes. This adaptability makes it an ideal choice for a wide variety of district heating renovation needs.

7.7 Transfer of Operating Rights

The transfer of operating rights (TOR) is a contractual arrangement in which an external entity assumes responsibility for the operation and management of infrastructure or technology for a specified period, **without transferring ownership of the assets**. This model is often employed to enhance operational efficiency, leverage specialised expertise, and improve service delivery without requiring the owner to invest directly in operational upgrades or technological modernisation.

This solution is particularly relevant **for district heating systems**, where operational complexity and the need for high performance make external management an attractive option. It can be applied to both infrastructure (e.g., distribution networks, centralised boilers, or thermal storage systems) and technology (e.g., monitoring systems, renewable integrations), depending on the operational requirements.

Entities that may consider the transfer of operating rights include:

- **Public entities**: Local governments and municipalities may use this model to manage DH networks efficiently while retaining ownership of the infrastructure. In such cases, the arrangement may involve a **Public-Private Partnership** (PPP), where the private entity operates the DH site under a clear contractual framework.
- **Private companies**: Industrial operators or utility providers may transfer operational responsibilities to external experts to focus on core business areas or improve system performance.
- **Consortia or partnerships**: Multi-stakeholder entities managing district heating systems may transfer operating rights to ensure professional management and streamlined operations.

TOR is typically used for **large-scale infrastructure** rather than standalone technologies, as it **encompasses the overall management of complex systems**. It provides an opportunity for infrastructure owners to outsource daily operations, maintenance, and optimisation tasks to specialists, ensuring reliable and efficient service delivery.

The model's flexibility makes it suitable for various scenarios, including:

- Long-term optimisation of existing assets.
- Transition periods before full system upgrades or ownership transfers.
- Strategic partnerships to **incorporate innovative management practices or technologies**. This model not only enhances efficiency and expertise but **can also involve the renovation or modernisation of infrastructure, technology, or equipment without requiring upfront capital from the owner**.

The contractual arrangement differs from **Build Operate Transfer** (EPC), **Energy Performance Contract** (EPC), and **heat pump subscription** models in its scope and focus. Unlike BOT, which involves constructing, operating, and transferring ownership of an asset, the transfer of operating rights focuses on managing and operating existing infrastructure without transferring ownership. Compared to EPCs, where the ESCO implements energy-saving measures and guarantees specific efficiency improvements while the client retains full operational control, the transfer of operating rights delegates broader operational responsibilities to the external operator, often without a direct focus on energy savings. In contrast to the heat pump subscription model, which is tailored for specific systems like heat pumps and involves the provider retaining ownership of the equipment, the transfer of operating rights applies to larger-scale

systems like district heating networks, encompassing the full operation and maintenance of the infrastructure rather than a single technology.

7.8 OTHER RELEVANT CONTRACTS: ENERGY SUPPLY MECHANISMS

While management solutions have been the focus of this chapter, enabling the adoption of new technologies or infrastructure in the renovation of DH sites in Lithuania, Poland, and Slovakia without significant upfront investments, understanding **energy supply mechanisms** is equally important. In these countries, regulated energy prices and tariffs play a key role in shaping the structure and application of such agreements.

- An **Energy Supply Contract** (ESC) is an agreement where a company provides energy to an end user, covering both generation and supply costs. Typically, these contracts specify a fixed price or follow an agreed pricing formula, ensuring cost stability for the consumer and predictable revenue for the supplier. ESCs are particularly suited to district heating systems, where reliable energy supply and transparent pricing are essential.

  In regulated energy markets like Lithuania, Poland, and Slovakia, ESCs align closely with national pricing frameworks, helping to shield consumers from price volatility. They also facilitate the integration of upgraded infrastructure by providing dependable energy supply terms, reinforcing public confidence in district heating services.

- A **Power Purchase Agreement** (PPA) is a long-term contract between an energy producer, often focused on renewable sources like wind or solar, and a buyer (e.g. district heating operator). PPAs secure electricity supply at a fixed or predetermined price, offering financial stability to both parties. For energy producers, PPAs provide guaranteed revenue streams that support renewable energy investments, while buyers benefit from predictable energy costs and alignment with sustainability goals.

  In the context of district heating systems in Lithuania, Poland, and Slovakia, PPAs support the integration of renewable energy, helping to meet regulatory requirements and enhance the environmental profile of these systems.

- A **Heat Purchase Agreement** (HPA) is a contract between a heat producer and a district heating operator, specifying the terms for the purchase of heat, including volume, quality standards, and pricing mechanisms. These agreements are **typically used as a complement to the operator's existing heat generation systems**, allowing district heating sites to diversify their energy sources and optimise costs.

  HPAs are particularly valuable during periods of peak demand or when integrating alternative heat sources, such as industrial waste heat, renewable-based heating (e.g., heat pumps or solar thermal), or cogeneration plants operated by third parties. This flexibility allows them to enhance the environmental profile of their networks and improve operational efficiency, especially in regulated energy markets.

ESCs, PPAs and HPAs serve distinct purposes in energy management. An **ESC** focuses on delivering energy directly to end users, encompassing both generation and supply costs, making it ideal for operational integration within systems like district heating networks. In contrast, a **PPA** primarily acts as a financial mechanism, enabling renewable energy producers to secure long-term agreements with buyers, such as industrial consumers or grid operators, to guarantee revenue and support large-scale renewable energy projects. While ESCs are customer-facing and designed for the day-to-day operation and energy supply to final consumers, PPAs are geared toward financing and facilitating investments in renewable energy

infrastructure, often without direct involvement in operational delivery to end users. Similarly, an **HPA** focuses on the procurement of heat, typically as a complement to a district heating operator's own generation systems. HPAs enable the integration of renewable and alternative heat sources, such as industrial waste heat or heat pumps, into district heating networks, supporting operational flexibility and sustainability objectives. Although less common, some operators choose to rely entirely on HPAs to supply their heat network. In this situation, the HPA would no longer be regarded merely as an energy supply mechanism but could be considered a "management solution", avoiding the need for investment in new technologies.

In the Low2HighDH targeted countries, where energy pricing is tightly regulated, these mechanisms are shaped by national policies:

- **Lithuania**: The regulatory framework prioritises energy efficiency and renewable integration. PPAs are pivotal for renewable developers, ESCs guarantee stable pricing and reliable energy delivery, and HPAs enable the inclusion of diverse heat sources like industrial waste heat and renewable heating solutions.
- **Poland**: As the energy market transitions and the focus on renewables grows, PPAs are increasingly adopted for industrial-scale electricity procurement. ESCs ensure cost stability for urban district heating systems, while HPAs are becoming essential for integrating alternative heat sources.
- **Slovakia**: Strong public oversight and regulated pricing structures make ESCs a reliable solution for district heating. PPAs facilitate the expansion of renewable energy projects, and HPAs enhance network flexibility by incorporating renewable heat sources.

8. Other relevant considerations for district heating projects

While not classified as funding sources or management solutions, the range of **government incentives and technical assistance facilities** available to support district heating renovations plays a pivotal role in shaping their financial and investment strategies.

This chapter examines the most relevant incentives and facilities for these projects in Lithuania, Poland, and Slovakia, providing a comprehensive overview of their applicability and impact.

8.1 GOVERNMENT INCENTIVES

8.1.1 General description

Government incentives for district heating renovation projects are **financial and regulatory mechanisms introduced by public authorities** to stimulate investments that drive modernisation, energy efficiency, and sustainability in district heating systems. These incentives play a key role in reducing regional disparities, and supporting projects with significant social impact, such as job creation, economic revitalisation, and community benefits, while contributing to broader objectives like reducing CO2 emissions, integrating renewable energy sources, and enhancing the resilience of energy systems.

While a broad spectrum of mechanisms, such as grants, subsidies, and concessional debt, could be classified as government incentives, **this section focuses exclusively on those that do not constitute funding sources**. Grants and subsidies have already been covered in Chapter 6 – *Non-redeemable funding sources*, and concessional debt is discussed in detail in Section *7.1.2 – Redeemable Funding Sources: Concessional Debt*.

Projects involving district heating site renovations must assess whether these types of government incentives are available in their respective countries or regions, which may consider:

- **Tax reliefs and credits**: Fiscal measures such as tax reductions, exemptions, or credits, designed to improve the financial viability of investments in energy-efficient and renewable energy technologies. Generally, this will apply to both public and private companies.
- **Feed-in tariffs or premiums**: Guaranteed payments for heat or electricity generated from renewable sources, ensuring predictable returns and incentivising clean energy adoption.
- **Carbon offset mechanisms**: Systems that incentivise projects to reduce greenhouse gas emissions by offering tradable carbon credits or direct compensation. District heating operators that implement cleaner technologies to reduce emissions are eligible to generate carbon credits, which can be sold to create additional revenue streams while advancing emission reduction objectives.
- **Regulatory incentives**: Measures such as streamlined permitting processes, policy exemptions, or favourable zoning regulations that reduce non-financial barriers to implementation.

By mitigating financial, regulatory, and market risks, these incentives foster the adoption of advanced technologies such as renewable energy integration, waste heat recovery systems, and digital monitoring solutions. Additionally, they align district heating renovation projects with societal goals, ensuring not only environmental but also economic and social benefits for the communities they serve.

This section explores the most relevant incentives identified in Lithuania, Poland, and Slovakia for district heating sites undertaking investments in their renovation and modernisation.

It is advisable to consult with local authorities and experts in energy legislation to obtain updated and detailed information on these and more incentives, as policies may change over time. The examples provided in the following sections for each country, especially regarding tax reliefs and tax credits, should be reviewed by public companies, considering their specific nature and other fiscal criteria, which may slightly differ from the general legislation.

8.1.2 Lithuania

When undertaking a project to modernise a district heating system in Lithuania, focusing on the integration of new technologies, pipeline repairs, emission reductions, and the adoption of renewable energies, various governmental incentives are available. Below is a detailed overview of the most relevant incentives, excluding grants, subsidies, and soft loans, and categorised as specified:

1. **Tax reliefs and credits[143]:**

- **Triple deduction for R&D expenses**: Companies can deduct up to 300% of expenses incurred in R&D activities from their taxable base, provided these expenses are directly related to recognised R&D activities and supported by detailed documentation.
- **Accelerated depreciation for R&D assets**: Fixed assets used in R&D activities can be depreciated over two years instead of the standard 3 to 8 years, allowing companies to recover their investments in R&D more quickly.
- **Tax incentive for commercialising R&D**: Since 2018, companies investing in R&D can benefit from a reduced 5% corporate income tax rate on profits derived from the exploitation or transfer of assets resulting from R&D activities.
- **Incentive for technological renewal**: Companies investing in technological upgrades can reduce their taxable base by up to 100% of the investment amount in fixed assets intended for the production of new products or services, implementation of new production or service processes, significant changes in existing processes, or the introduction of patented international technologies.

2. **Feed-in tariffs or premiums:**

- **Feed-in tariffs for renewable energies[144]**: Lithuania offers support mechanisms for renewable energies, including feed-in tariffs that guarantee payments for energy generated from recognised renewable sources, ensuring predictable returns and encouraging clean energy adoption, provided the project complies with Lithuanian standards and technical regulations.

3. **Carbon offset mechanisms:**

- **Participation in the EU Emissions Trading System (EU ETS)[145]**: Projects that reduce greenhouse gas emissions can generate tradable carbon credits in the European market, offering additional revenue and incentivising emission reductions, provided they demonstrate verifiable emission reductions and comply with EU ETS regulations through proper registration.

[143] https://finmin.lrv.lt/en/competence-areas/taxation/main-taxes/corporate-income-tax/

[144] https://www.iea.org/policies/5391-law-on-energy-from-renewable-sources

[145] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

4. **Regulatory incentives:**

- **Streamlined permitting processes**[146]: Lithuania has introduced measures to streamline permitting processes for renewable energy projects, reducing administrative barriers and accelerating the implementation of sustainable initiatives, provided the required documentation is submitted in accordance with current regulations and the project complies with environmental and safety standards.
- **Favourable regulations for cogeneration**[147]: The Lithuanian government supports the cogeneration of heat and electricity by implementing regulations that facilitate its integration into district heating systems, enhancing energy efficiency and reducing emissions, provided the project employs recognised cogeneration technologies and complies with applicable technical and environmental regulations.

8.1.3 Poland

In Poland, the modernisation of district heating systems is supported by various governmental incentives. Below is an overview of pertinent incentives, excluding grants, subsidies, and soft loans, categorised as follows:

1. **Tax reliefs and credits**[148]**:**

- **Corporate income tax exemptions for large-scale investments**: Poland provides corporate income tax exemptions for enterprises making significant investments in key sectors, including energy infrastructure such as district heating. These exemptions can last up to 15 years, depending on the scale and location of the investment. To qualify, companies must meet specific criteria, such as minimum investment thresholds that vary by region, for example, €10 million in some areas or higher in others. Additionally, projects must create a required number of new jobs, with the exact figure determined by the project's location and size, and maintain both the investment and employment levels for at least five years.
- **R&D tax relief**: Companies investing in R&D activities to improve district heating systems can benefit from tax deductions, enabling them to deduct up to 200% of eligible R&D expenses from their taxable income. To qualify, expenses must be directly linked to recognised R&D activities, and proper documentation and accounting of these expenditures are required.

2. **Feed-in tariffs or premiums:**

- **Auction-based support system for renewable energy**[149]: Poland has implemented an auction-based mechanism to support renewable energy projects, including those generating heat or electricity from renewable sources, where successful bidders participate in competitive government-announced auctions and, upon meeting technical and environmental standards, are awarded contracts guaranteeing a fixed price for the energy produced over a set period, ensuring predictable returns.

[146] https://enmin.lrv.lt/uploads/enmin/documents/files/National_energy_independence_strategy_2018%281%29.pdf

[147] https://www.iea.org/articles/lithuania-electricity-security-policy

[148] https://www.podatki.gov.pl/

[149] https://www.ure.gov.pl/pl/oze/aukcje-oze

3. **Carbon offset mechanisms:**

- **Participation in the EU ETS**: Projects that achieve verifiable reductions in greenhouse gas emissions can participate in the EU ETS, allowing them to sell emission allowances and generate additional revenue, provided they register with the EU ETS, comply with its monitoring, reporting, and verification requirements, and demonstrate actual emission reductions using approved methodologies.

4. **Regulatory incentives[150]:**

- **Simplified permitting procedures for renewable energy projects:** The government has introduced streamlined permitting procedures for renewable energy installations, designed to alleviate administrative barriers and accelerate project execution. These simplified processes require compliance with national and EU environmental regulations, as well as the timely submission of the necessary project documentation.

- **Supportive regulations for cogeneration**: Poland also supports the adoption of high-efficiency cogeneration systems through favourable regulatory frameworks. These policies facilitate the integration of cogeneration technologies into district heating networks, provided they meet established efficiency standards and technical requirements, ultimately improving system energy performance and reducing emissions.

8.1.4 Slovakia

In Slovakia, the push towards modernising district heating systems is supported by a set of tailored incentives designed to encourage investment in advanced technologies, improve efficiency, and foster the integration of renewable energy sources. These measures aim not only to enhance the performance of district heating networks but also to reduce emissions, contribute to energy security, and align with national and EU climate targets. Below is an outline of Slovakia's most relevant mechanisms, excluding grants, subsidies, and concessional loans:

1. **Tax reliefs and credits[151]:**

- **Enhanced tax deduction for Industry 4.0 investments (super deduction)**: Companies can benefit from an additional 15% to 55% tax deduction on the depreciation or amortisation of capital investments related to Industry 4.0 technologies. This incentive applies to investments made between 2022 and 2025, targeting firms with a positive taxable base.

- **R&D tax deduction (super deduction for R&D expenses)**: Taxpayers can deduct an additional 100% of R&D costs from their taxable base, equating to a return of €0.21 for every euro invested. Additionally, companies can deduct 100% of any increase in R&D expenditure compared to the average of the previous two years. Unused deductions can be carried forward for up to five years.

- **Intangible asset-related incentives (Patent box)**: Provides a partial tax exemption on income derived from intangible assets developed by the taxpayer. This incentive applies during the fiscal depreciation

[150] https://www.ure.gov.pl

[151] https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/services/tax/documents/en-gl-r-and-d-03-oct-2024.pdf

periods of these assets. Prior approval is not required, but detailed accounting documentation must be maintained for audit purposes.

2. **Feed-in tariffs or premiums:**

- **Guaranteed feed-in tariffs for renewable heat and power**[152]: Slovakia provides long-term price guarantees for energy produced from renewable sources through feed-in tariffs. This mechanism ensures predictable revenue streams for operators, making it particularly attractive for district heating projects incorporating biomass boilers or geothermal energy. To qualify, projects must adhere to stringent Slovak and EU standards for renewable energy systems.

3. **Carbon offset mechanisms:**

- **Participation in the EU ETS**: Projects that successfully reduce greenhouse gas emissions through modernisation or renewable energy integration can monetise these achievements by participating in the EU ETS. Registered participants are eligible to trade emission allowances, generating additional revenue streams. Compliance with reporting, monitoring, and verification protocols is mandatory to benefit from this scheme, making it an important tool for projects with significant environmental impacts.

4. **Regulatory incentives**[153]**:**

- **Accelerated permitting for sustainable energy projects**: Slovakia has introduced legislative changes to simplify and speed up the permitting process for renewable and energy-efficient projects, including district heating site renovations. These streamlined procedures reduce administrative burdens, allowing faster deployment of technologies while maintaining compliance with safety and environmental requirements.

- **Support for high-efficiency cogeneration**: The Slovak government actively promotes cogeneration systems as a pillar of energy efficiency for district heating. Regulations have been adapted to facilitate their adoption, provided projects meet efficiency thresholds and technical specifications. This support makes it easier to integrate systems that generate both heat and electricity, maximising resource use and reducing emissions.

[152] https://www.urso.gov.sk/18945-sk/cenove-rozhodnutia-2017-2025/

[153]https://www.iea.org/policies?qs=Slovak&country%5B0%5D=Slovak%20Republic&type%5B0%5D=Regulations&type%5B2%5D=Framework%20legislation

8.2 TECHNICAL ASSISTANCE FACILITIES

Technical assistance facilities are **mechanisms designed to provide advisory, capacity building, and project development** support to public or private entities. These facilities aim to enhance the preparation, implementation, and management of projects in various sectors, **ensuring technical, financial, and operational feasibility**.

These facilities **do not include funding for direct investments in technologies, equipment, or physical infrastructure**. Instead, they focus on creating the framework, documentation, and expertise required to enable successful project execution or to attract financing from other sources.

This section explores the technical assistance facilities developed through various **European funds and programmes**, which can benefit renovation projects for district heating sites in Lithuania, Poland, and Slovakia.

It is worth noting that some regional and municipal governments in these countries have launched **technical assistance programmes independently of European funding**. While these programmes are not covered in this document, project promoters are encouraged to regularly check the websites of these public authorities for opportunities to complement EU-funded activities with similar initiatives.

8.2.1 Cohesion Policy Funds

The deployment of the Cohesion Policy Funds **(2021–2027)** in Europe has not only facilitated the creation of programmes offering grants and subsidies (see Section 6.1.1) and financial instruments such as debt and equity (see Section 7.3.1.a) at national and regional levels, but has also allocated part of the budget to establishing technical assistance facilities for projects under these funds.

To streamline this document and avoid redundancy, readers interested in these facilities are encouraged to consult Section 6.1.1 for detailed insights into the various funds, the types of programmes developed in their respective countries, eligible project categories, the regulatory framework, and the managing authorities overseeing their implementation.

Accordingly, this section focuses exclusively on the technical assistance facilities available in Lithuania, Poland, and Slovakia. Together, these examples illustrate how the Cohesion Policy Funds play a pivotal role in supporting the development of district heating site renovations. While the approaches and mechanisms differ across the three countries, the initiatives share common goals: strengthening administrative capacities, enhancing project implementation, and fostering sustainable development across the region.

a) Lithuania

EU Funds Investment Programme:

Although not strictly classified as technical assistance facilities, Lithuania has developed what it calls **Progress Tools** (*Pažangos priemonės*) at the national level in connection with the EU Funds Investment Programme. These tools allow **regional or municipal governments, once selected as beneficiaries, to design different activities that can benefit district heating renovation projects** within their jurisdictions.

These Progress Tools are implemented through **dedicated calls aimed at**:

- **Stimulating economic growth** in regions, functional areas, municipalities, and cities by leveraging their available resources.
- Establishing **modern human resource management systems** for public administration institutions.
- Enhancing the **availability of public services**, improving job accessibility, and optimising resource efficiency.
- Increasing **public participation in addressing local challenges**.
- Strengthening **public awareness, information dissemination, and self-protection capabilities**.
- Supporting **other areas**, such as the renewal of public services, building renovation, and infrastructure upgrades.

In general, **these calls do not finance direct investments** in technologies, equipment, or physical infrastructure. However, among the activities relevant to district heating site renovations, the following are eligible:

- **Capacity building**: Training and upskilling personnel to improve management capabilities and attract investments.
- **Strategic planning**: Developing plans and strategies to promote economic development and attract investors.
- **Promotion and marketing**: Initiatives to position the city as an attractive destination for investment.

The calls are issued periodically and evolve over time, meaning there are no fixed funding amounts. They can be accessed via this **link**.

Additionally, most of these calls are aimed at **public administration entities**. Therefore, public administrations and public project promoters for district heating are encouraged to review calls specific to their sector and region. It is important to evaluate whether their regional or municipal government can take advantage of these opportunities by including district heating renovation projects in the eligible activities outlined in the proposals submitted.

The Regional Development Programme:

At the regional level, the 10 individual Regional Development Plans for Lithuania's official regions generally do not include specific calls for technical assistance facilities.

As the Progress Tools outlined in the previous subsection are specifically tailored for cities, municipalities, and regions, it is advisable to refer to the aforementioned website to explore these facilities.

b) Poland

Technical Assistance for European Funds[154] (*Pomoc Techniczna dla Funduszy Europejskich*):

At the national level, Poland has established the Technical Assistance for European Funds programme, supported by a budget of €550 million.

The primary objective of this programme is to ensure an **efficient system for implementing Cohesion Policy during the 2021–2027 period**, focusing on strategic, operational, and reflective dimensions. This is achieved through:

- Strengthening administrative capacity.
- Modernising human resource management systems.
- Enhancing the potential of beneficiaries.

The programme's **key interventions** include:

1. Disseminating modern methods of **human resource management** within the administration responsible for executing funds under the 2021–2027 financial framework.
2. Establishing and maintaining appropriate **working conditions** for officials managing funds to ensure compliance with EU regulations.
3. Enhancing the **administrative capacity of institutions** responsible for fund implementation.
4. Supporting **coordination and management activities** at the Partnership Agreement level.
5. Enhancing **beneficiary capacity** through training and expert activities.
6. Supporting the implementation of **territorial development instruments**.
7. Developing and maintaining a **national IT system** to streamline the application and settlement of projects financed by the funds.
8. Promoting the **visibility of the funds** in Poland through information, promotional, and awareness-raising activities.

The programme regularly launches **calls for applications** for initiatives that include these interventions. The application schedule is updated quarterly, with deadlines on 31 March, 30 June, 30 September, and 31 December.

Eligible applicants, grouped by priority, include:

- **Priority 1**: European Projects Centre, Environmental Projects Coordination Centre, General Directorate for Environmental Protection, Central Statistical Office, Ministry of State Assets, Ministry of Digital Affairs, Ministry of Finance, Ministry of Funds and Regional Policy, Ministry of Infrastructure, Ministry of Climate and Environment, Ministry of Development and Technology, Ministry of Health, Polish

[154] https://www.pomoctechniczna.gov.pl/

Waters (State Water Holding), Office of Competition and Consumer Protection, Railway Transport Office, Public Procurement Office.

- **Priority 2**: European Projects Centre, Environmental Projects Coordination Centre, Ministry of Digital Affairs, Ministry of Funds and Regional Policy, Public Procurement Office.
- **Priority 3**: Ministry of Funds and Regional Policy.

While **district heating project promoters and their respective municipal or regional governments are not eligible to apply for these calls**, the projects developed under this programme may hold significant relevance for them. It is therefore advisable to periodically review the programme's project implementation **webpage** or the official websites of the executing entities to identify capacity-building activities that may be of interest.

European Funds for Regions:

The development of the Cohesion Policy Funds through the 16 regional programmes, one for each of the country's voivodeships, includes the establishment of **technical assistance facilities designed to directly benefit project promoters of district heating site renovations and their public authorities**.

Each of the **16 dedicated webpages** on European Funds for Regions (see Section 6.1.1.c) provides eligible applicants with access to programmes and calls offering various types of assistance and technical support.

It is worth noting that each programme and call is unique, with characteristics that vary across voivodeships. Nonetheless, all voivodeships generally offer:

- **Technical assistance under the European Regional Development Fund (ERDF)**.
- Technical support through the European Social Fund Plus (ESF+).
- **Technical support from the Just Transition Fund (JTF)**.

As a final note, district heating site renovation projects are excluded from the ESF+, and this limitation should be considered when exploring different alternatives of support.

c) Slovakia

As previously explained, the deployment of the Cohesion Policy Funds in Slovakia has been implemented through a single programme for the entire country, known as the **Slovakia Programme**.

From the total budget of €12.8 billion, **€410 million has been allocated to the development of technical assistance programmes**, which can directly benefit district heating site renovation projects.

Calls for applications:

To ensure the efficient allocation of funds and maximise the impact of the Slovakia Programme, specific calls for applications are regularly launched. These calls are tailored to address the programme's priorities and provide targeted support for project promoters, including those involved in district heating site renovations.

Similar to calls for grants or subsidies, the **ITMS2021+ system** also includes those aimed at securing technical assistance facilities:

- **Each call is unique** and tailored to address specific priorities under the Slovakia Programme.
- Calls are **updated regularly** and evolve over time to adapt to the programme's dynamic nature.
- Project promoters are advised to:
    1. Regularly **review the platform** to stay informed about new opportunities.
    2. Analyse the details of each call to identify those that align with their specific objectives.
    3. Prepare comprehensive applications to maximise their chances of success.

Regional support network:

The network of **8 Regional Centres**, acting as **information hubs**, provides extensive support to project promoters at various stages of their projects:

- **Comprehensive assistance**:
    1. Support during the preparation of project applications.
    2. Guidance on project implementation to ensure compliance with programme requirements.
- **Free guidance on European funding**:
    1. Advice on eligibility criteria for Cohesion Policy Funds.
    2. Assistance in navigating the application process.
- **Educational and advisory services**:
    1. Regularly scheduled educational activities aimed at enhancing project management skills.
    2. Advisory services addressing challenges specific to the Slovakia Programme.

8.2.2 ELENA Facility

General description:

The European Local ENergy Assistance (ELENA) Facility[155], established in 2009 and managed by the European Investment Bank (EIB) in collaboration with the European Commission, provides technical assistance grants to accelerate investments in energy efficiency, renewable energy, and sustainable urban transport. While **not a direct financing mechanism**, ELENA addresses critical barriers such as limited technical expertise, fragmented projects, and restricted access to financing, enabling large-scale energy and transport investments.

As of 2023, ELENA has awarded over €296 million in grants, mobilising an estimated €9.5 billion in sustainable investments. The facility operates with a **leverage factor requirement**, ensuring that for every euro granted, at least 20 euros are invested in energy efficiency projects.

ELENA's technical assistance grants support sustainable investment programmes across **three key areas**:

1. **Energy efficiency**: Technical assistance for preparing investments in energy efficiency and building-integrated renewable energy. Eligible projects include:
   - Energy efficiency in residential and non-residential buildings.
   - Building-integrated renewable energy solutions (e.g., solar panels).
   - Public lighting.
   - **District heating systems (including combined heat and power plants and biomass boilers)**.
   - Energy savings in production facilities.
2. **Residential sector**: Technical assistance grants exclusively for energy efficiency renovations and the integration of renewable energy in residential buildings. These projects target:
   - Single-family and multi-family buildings, both privately and publicly owned.
   - Social and affordable housing.
3. **Sustainable transport**: Technical assistance for innovative transport and mobility projects that reduce emissions and save energy. Eligible projects include:
   - Alternative fuels for urban mobility (e.g., converting fleets to electric or hydrogen).
   - Large-scale investments in energy-efficient transport systems, such as tram lines.

Opportunities for district heating renovations:

ELENA provides significant opportunities for entities involved in district heating renovations, addressing challenges such as outdated infrastructure, high upfront costs, and the integration of renewable energy sources.

[155] https://www.eib.org/en/products/advisory-services/elena/index

Entities eligible to apply include:

- **Public sector**:
  - EU Member States and their government organisations.
  - Regional, local, and municipal authorities.
  - Public corporations and energy agencies.
  - Financial institutions.
- **Private sector**:
  - Private entities developing eligible investments, such as associations, mixed public/private, banks, etc.
  - Other private associations (social housing associations or homeowner associations).

Key opportunities for district heating renovations include technical assistance for projects aimed at:

- **Modernisation of district heating systems**:
  - Replacing outdated infrastructure with high-efficiency, low-temperature systems.
  - Integrating renewable energy sources such as biomass, geothermal, or solar thermal.
- **Energy efficiency improvements**:
  - Upgrading networks to reduce energy losses and improve operational efficiency.
  - Implementing advanced metering and smart grid technologies.
- **Decarbonisation initiatives**:
  - Transitioning to waste heat recovery and carbon-neutral energy solutions.
- **Feasibility studies for system expansion**:
  - Developing new district heating systems in underserved areas.

ELENA grants **cover critical activities such as**:

- Feasibility and technical studies.
- Energy audits and assessments.
- Business planning and financial advisory.
- Tendering preparation and project management.

How to apply:

The application process for ELENA ensures comprehensive guidance for applicants at every stage. Applications are accepted on a **first-come, first-served basis** throughout the year. Steps to apply:

1. **Initial verification**:
   - Submit a pre-application form to **elena@eib.org** to confirm eligibility.
   - The EIB reviews the project's compliance with ELENA's criteria and provides initial feedback.
2. **Detailed application submission**:
   - Prepare the full application, including investment plans, financial projections, and required documentation, with assistance from the ELENA team.
   - For district heating projects, specific forms tailored to energy efficiency must be used[156].
   - Include a signed declaration from the applicant.
3. **Evaluation and approval**:
   - The EIB evaluates the application, and the European Commission grants final approval.
   - Upon approval, a grant agreement is signed, and the project can proceed.

8.2.3 InvestEU Advisory Hub

The InvestEU Advisory[157] is one of the three key components of the **InvestEU Programme**, designed to stimulate investment and support EU policy objectives between 2021 and 2027.

The programme is comprehensively detailed in Section *7.3.1.d – Adaptable: Debt and/or equity – European funds and programmes – InvestEU* of this document. To avoid redundancy, this **section focuses solely on the InvestEU Advisory Hub component**.

The InvestEU Advisory Hub serves as the **central entry point for project promoters and intermediaries** seeking tailored advisory support and technical assistance. It aligns with the four InvestEU policy windows and includes a cross-sectoral component for horizontal advisory services.

Project promoters involved in **district heating site renovations** in Lithuania, Poland, and Slovakia can also benefit from the InvestEU Advisory Hub. Eligible applicants range from **public authorities and private companies to other organisations**, regardless of whether they have previously received European programme funding. This inclusive approach ensures broad accessibility and impact.

Replacing 13 existing advisory services, the InvestEU Advisory Hub acts as a **unified platform**, simplifying access to expertise and resources. It improves upon previous schemes, providing better-tailored support

[156] https://www.eib.org/attachments/documents/elena-energy-application-form-en.doc

[157] https://investeu.europa.eu/investeu-programme/investeu-advisory-hub_en

for local and regional governments, especially in cohesion countries, and helping to build robust project pipelines.

The Hub provides a wide array of **services**[158], ensuring that project ideas can be effectively transformed into tangible and impactful initiatives:

Project support and development:

- Assistance with identifying, preparing, and structuring investment projects.
- Guidance on planning and implementing projects to ensure financial sustainability.
- Support for establishing investment platforms and blending facilities.

Capacity building:

- Training and resources for project promoters and intermediaries to enhance project planning, development, and execution.
- Support for environmental and social impact assessments, ensuring alignment with sustainability goals.
- Assistance with procurement processes and compliance with State aid regulations.

Market development:

- Activities to stimulate market growth and development.
- Communication and awareness initiatives to promote investment opportunities.

Support can be accessed via its **central entry point** on this website, where project promoters can connect with the most suitable resources and advisors.

The InvestEU Advisory Hub is committed to bridging gaps in technical expertise, enabling the successful realisation of investment ideas while fostering economic growth and cohesion across Europe.

It is also worth reminding the reader that the InvestEU Advisory Hub is responsible for the advisory support provided to projects that have received a loan through the Public Sector Loan Facility as well, an initiative extensively explained in Section *7.1.1.a – Redeemable funding sources – Debt – European funds and programmes – Public Sector Loan Facility*.

[158] https://eu-mayors.ec.europa.eu/en/resources/funding_guide

8.2.4 Just Transition Platform

General description:

The Just Transition Platform[159] (JTP), established in 2020, serves as the European Union's central resource hub for supporting regions and stakeholders most affected by the **transition to a sustainable, climate-neutral economy**. By facilitating access to funding, knowledge, and technical assistance, the JTP ensures a fair and equitable transition that leaves no person or region behind.

The JTP is a comprehensive tool for accessing the Just Transition Mechanism (JTM), which comprises three key components:

- **Just Transition Fund** (JTF) (See Section 6.1.1).
- **InvestEU Just Transition Scheme** (See Section 7.3.1.d).
- **Public Sector Loan Facility** (PSLF) (See Section 7.1.1.a).

These mechanisms collectively aim to support regions heavily reliant on fossil fuels or carbon-intensive industries, enabling them to transition towards sustainable economic models.

Eligible regions, as outlined in their respective **Territorial Just Transition Plans** under the JTM, include:

- Lithuania: Kaunas, Telšiai, and Šiauliai.
- Poland: Eastern Wielkopolska, Łódź, Silesia, and Wałbrzych.
- Slovakia: Trenčín, Banská Bystrica, and Košice.

These regions represent areas most affected by the transition, where tailored support is essential to achieving climate-neutral economic models. The platform is accessible to a broad range of stakeholders, including **public authorities, private companies, regional agencies, and other organisations**. Project promoters involved in district heating site renovations can benefit from its resources, regardless of whether they have previously received EU funding.

Key features and services of the JTP:

To support its mission, the JTP provides a comprehensive range of tools and services designed to address the diverse needs of stakeholders:

1. **Expert database and exchanges – JTPeers:**

   A service connecting regions with Just Transition Fund (JTF) territories and experts, fostering knowledge-sharing and collaboration tailored to the implementation of Territorial Just Transition Plans.

2. **Technical assistance – JTP Groundwork:**

   Capacity-building support tailored to regional needs, including:

   - Project identification and development.

[159] https://ec.europa.eu/regional_policy/funding/just-transition-fund/just-transition-platform_en

- Capacity building for local administrations and stakeholders.
- Governance mechanisms for transparent and inclusive TJTP implementation.
- Stakeholder engagement and mobilisation.
- Awareness campaigns and communication strategies.
- Cross-border cooperation and project development.

3. **Knowledge hub:**

   A centralised repository offering tangible resources such as case studies, toolkits, and catalogues of best practices. The Knowledge Hub equips stakeholders with practical, credible insights to design effective transition pathways.

4. **Funding information and opportunities:**

   Clear guidance on accessing funding under the JTM, including eligibility and application processes for the Just Transition Fund, InvestEU, and the Public Sector Loan Facility.

5. **Working groups:**

   Active since 2021, these groups unite stakeholders across Europe to address challenges and share solutions for the transition to climate neutrality. Facilitated by the JTP Secretariat, these groups foster collaboration but are not official Commission expert groups.

6. **Events and conferences:**

Regular gatherings, both physical and virtual, promote the exchange of best practices and foster networking among stakeholders.

Streamlined access:

The JTP offers a single access point for information, funding, and technical expertise through its dedicated **helpdesk** and online resources. By promoting inclusivity and transparency, it equips stakeholders, including those involved in **district heating site renovations** in Lithuania, Poland, and Slovakia, with tailored support to address their specific needs.

Through its comprehensive resources, the JTP empowers organisations across sectors to drive impactful projects, fostering a just transition that promotes economic growth and social equity throughout the EU.

This centralised approach not only streamlines access to resources but also strengthens the capacity of regions to navigate complex transition processes. By building local expertise and fostering cross-border collaboration, the JTP ensures no region is left behind in the journey towards a sustainable, climate-neutral future.

8.2.5 LIFE – Project Development Assistance & Technical Assistance projects

As a complement to the information provided in Section 6.1.2 on the grants offered by the LIFE Programme under its Climate Mitigation and Adaptation and Clean Energy Transition subprogrammes, this section focuses on **two specific types of calls for proposals tailored to support technical assistance and capacity-building activities**[160]:

- Project Development Assistance calls.
- Technical Assistance calls.

Together, Technical Assistance (TA) and Project Development Assistance (PDA) calls address complementary phases of project development within the LIFE Programme. While TA projects focus on preparation, capacity building, and replication of results, PDA projects facilitate the implementation of large-scale, investment-ready solutions that materialise the EU's sustainability goals.

These calls are published annually on the **European Commission's Funding & Tenders portal**, outlining the eligible applicants, targeted activities, and co-funding requirements. The information provided here reflects the scope and priorities of these **calls up to 2024**, recognising that future updates may alter their framework.

a) Project Development Assistance projects

PDA projects[161] are specific to the **LIFE Clean Energy Transition and LIFE Climate Mitigation and Adaptation subprogrammes**. They support the development of investment-ready projects in areas such as **district heating site renovations**, energy-efficient buildings, and renewable energy systems.

PDA calls focus on:

- **Investment pipelines**: Preparing scalable, bankable projects that attract public and private funding.
- **Financial innovation**: Introducing mechanisms like Energy Performance Contracting (EPC), blended financing, innovative payment schemes, and community-based funding schemes.
- **Overcoming barriers**: Addressing market, legal, and administrative challenges to project financing.
- **High ambition levels**: Fostering deep renovations, nearly zero-energy buildings (nZEBs) or zero-emission building (ZEB) standards, and decarbonisation of **district heating networks**.

Eligibility and funding:

- Applicants include public authorities, public/private infrastructure operators and bodies, energy agencies, energy service companies (ESCOs), and large property owners.

[160] **Note for the reader**: Direct investments in infrastructure, technological modernisation, and other physical assets are not eligible for funding under these types of calls.

[161] https://cinea.ec.europa.eu/document/download/d16b5023-fbe7-40b3-8643-aa4d358abdb0_en?filename=9.4%20PDA_ZAPFEL.pdf

- Typical project sizes range from €1 million to €1.5 million, with a leverage ratio of 1:15, ensuring significant private investment mobilisation.

Strategic relevance:

Building on the preparatory and capacity-building focus of TA projects, PDA projects enable the structuring and implementation of ambitious sustainable energy initiatives. By delivering replicable solutions, they accelerate energy transition efforts and contribute to achieving the LIFE Programme's long-term goals.

b) Technical Assistance projects

TA projects[162] are available across multiple LIFE subprogrammes, including:

- **LIFE Climate Mitigation and Adaptation**.
- LIFE Nature and Biodiversity.
- LIFE Circular Economy and Quality of Life.

TA projects address the preparation, replication, and scaling of results from past projects, as well as capacity building for Member States with lower participation in the LIFE Programme.

They may include the following **subcategories and objectives**:

1. **Preparation for SNAPs and SIPs** (TA-PP):

   Supports applicants in preparing Strategic Nature Action Plans (SNAPs) or Strategic Integrated Projects (SIPs) for wider implementation at national or regional levels.

2. **Replication and upscaling of results** (TA-R):

   Facilitates replication or upscaling of results from previous LIFE or EU-funded projects, particularly by preparing access to financial instruments such as InvestEU or blending grants with repayable resources.

3. **Capacity building for low-participation member states** (TA-CAP):

   Focuses on increasing the quality of proposals submitted by underrepresented Member States.

Eligible activities include:

- Training programmes and targeted campaigns.
- Monitoring and evaluating impacts of implemented actions.
- Communication and dissemination actions.
- Actions for project management and quality control.

[162] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/life/wp-call/2021-2024/wp_life-2021-2024_en.pdf

Funding and beneficiaries:

- Co-funding rates vary depending on the subcategory: 60% for TA-R and TA-PP, and up to 95% for TA-CAP.
- Public organisations, private entities, and civil society groups are eligible.

Strategic relevance:

TA projects play a critical role in overcoming barriers such as limited administrative capacity, lack of awareness, and perceived financial risks. They also help establish pipelines for green investments aligned with the LIFE Programme's objectives.

8.2.6 Single Market Programme

General description:

With a budget of €4.2 billion for the **2021–2027 period**, the Single Market Programme[163] (SMP) is dedicated to strengthening the EU's internal market and facilitating Europe's recovery from the Covid-19 pandemic. The programme prioritises **activities that enhance the effective functioning and governance of the internal market** while supporting sustainability, competitiveness, and resilience.

The SMP provides funding to a **variety of entities**, including civil society organisations, small and medium-sized enterprises (SMEs), local, regional, and national authorities, and educational institutions. Eligibility extends beyond EU Member States to include Iceland, Norway, and Liechtenstein.

Key areas of focus under the SMP include:

- Food safety: Ensuring a safe and sustainable food chain.
- **Consumer protection**: Providing high consumer protection, product safety, and a stronger voice for consumers.
- **Support to small and medium-sized businesses (SMEs)**: Strengthening the competitiveness and sustainability of SMEs.
- **A more effective single market**: Enhancing the internal market's functionality through improved market surveillance, problem-solving support for citizens and businesses, and an enhanced competition policy.
- High-quality European statistics: Producing and disseminating high-quality European statistics.
- **Effective European standards**: Developing effective European standards and international financial and non-financial reporting and auditing standards.

The programme also supports **capacity-building initiatives**, joint actions between Member States, and the establishment of harmonised regulatory frameworks, fostering collaboration and innovation across sectors.

[163] https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/single-market-programme_en

Opportunities for district heating site renovations:

While the **SMP does not provide direct funding for infrastructure or technology upgrades**, such as district heating site renovations, it offers significant opportunities for entities to build capacity, foster innovation, and enhance their impact within the single market.

District heating initiatives may benefit indirectly through the following avenues:

1. **Support to SMEs:**
   - SMEs involved in district heating technologies can leverage the SMP to enhance their competitiveness, innovate, and improve market access.
   - Entities delivering sustainable heating solutions can strengthen their business models with the programme's support.
2. **Consumer protection and standards:**
   - Projects focusing on consumer-oriented district heating solutions, such as affordable or transparent billing systems, could align with the SMP's emphasis on consumer protection.
   - District heating initiatives aiming to set or harmonise standards for technology or operational efficiency can benefit from the SMP's support for standard development.
3. **Capacity building and problem-solving:**
   - The SMP supports knowledge-sharing activities and capacity-building efforts, which could benefit entities involved in district heating, particularly for compliance with EU policies or standards.
   - Initiatives that require problem-solving support, such as overcoming regulatory or market barriers, may find assistance through SMP mechanisms.
4. **Sustainability and innovation:**
   - Although not a direct funding source for sustainable energy infrastructure, the SMP indirectly promotes greener business practices and innovation, which align with many district heating objectives.

Through these opportunities, entities such as SMEs, public authorities, and civil society organisations can access resources to enhance their projects' alignment with the EU's broader goals of sustainability and resilience within the single market.

Accessing SMP Funding:

Funding opportunities under the SMP support pillar are managed by the European Innovation Council and SMEs Executive Agency (EISMEA) and the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). Eligible entities can respond to calls for proposals and tenders published on the **European Commission's Funding & Tenders portal**.

The **application process** includes the following steps:

1. Identifying funding opportunities: Review calls for proposals to ensure alignment with the project's objectives.
2. Preparing the proposal: Craft a clear and robust proposal that meets the requirements outlined in the call.
3. Submitting the proposal: Applications undergo admissibility and eligibility checks.
4. Evaluation: Proposals are assessed by an independent committee based on their compliance with the call's objectives.

8.2.7 Technical Assistance Facility of the Energy Efficiency Fund

General description:

The Technical Assistance (TA) Facility of the European Energy Efficiency Fund[164] (EEEF) provides comprehensive support to **public entities** across Europe in the **development of bankable sustainable energy investment programmes**. Inspired by the European Commission's TA Facility model, the EEEF's TA Facility focuses on energy efficiency, small-scale renewable energy, and public urban transport sectors. It serves as a **bridge between strategic energy plans and their practical implementation**, offering targeted consultancy and support to facilitate the preparation and execution of ambitious energy projects.

This facility is part of the EEEF (as detailed in Section 7.3.1.c), but it does not have to be granted exclusively to projects that have previously benefited from equity or debt financing from the fund

The TA Facility is designed to aid public authorities, such as **regions, city councils, universities, public hospitals, and other public institutions in the EU**, in realising their sustainable energy projects. Key areas of focus include:

- **Energy efficiency**: Supporting renovations and upgrades to improve energy performance in public infrastructure, such as buildings and street lighting.
- **Renewable energy**: Enabling the development of small-scale renewable projects, including **biomass district heating**.
- **Public urban transport**: Promoting initiatives for energy-efficient and sustainable transport systems.

The Facility aims to align local and national energy strategies with EU climate goals, contributing to carbon neutrality by 2050 and ensuring projects achieve at least a 30% reduction in primary energy consumption and/or CO_2 emissions.

[164] https://www.eeef.lu/eeef-ta-facility.html

The TA Facility provides various technical and advisory services tailored to the specific needs of beneficiaries, including:

- **Preparation of technical studies**: Feasibility studies, investment-grade energy audits, and validation of project concepts.
- **Economic viability assessment**: Financial calculations to underpin economic proposals for Energy Service Company (ESCO) tenders.
- **Tender preparation**: Structuring tender documents aligned with PPP/ESCO models, including technical and financial components.
- **Legal and advisory support**: External legal analysis and assistance during project evaluation phases.

These services not only help beneficiaries meet energy performance goals but also enhance project replicability across the EU.

Since its inception, the TA Facility has supported projects across Spain, Italy, Lithuania, and Latvia, leveraging contributions from the EEEF and the European Local Energy Assistance (ELENA) under the Horizon 2020 Programme. In October 2023, a new ELENA agreement allocated up to €1.9m to extend support through 2026, strengthening the Facility's capacity to assist public beneficiaries in developing innovative and sustainable energy projects.

Key features and application process:

Key features:

- Funding scope: **Projects must exceed €5m** in investment volume, ensuring a **leverage factor of over 20**.
- Open call: Applications are reviewed on a **first-come, first-served basis**, subject to fund availability and sectoral alignment.
- **No deadline**: Submissions remain open continuously, encouraging proactive participation.
- Implementation timeline: Beneficiaries must complete TA work within **two years**, including the tendering process for project implementation.

Applications are evaluated based on several **criteria**, including:

- The clarity and potential impact of the investment programme.
- The outlined requirements for TA and proposed implementation timeline.
- The commitment of the public authority to project execution.
- The overall quality and methodology of the proposal

How to apply:

Applicants should submit a detailed proposal via email to **technical_assistance@eeef.eu**, including:

- Project description, size, and impact potential.

- Required TA activities and estimated costs.
- A realistic implementation timeline.

Proposals are evaluated within 20 days, and successful applicants are notified in writing. Upon approval, a standard TA contract formalising obligations is signed within 15 days, allowing work to commence promptly.

8.2.8 Other relevant EU support platforms

There are other European-level platforms that can support district heating site renovation projects. While they cannot be considered as technical assistance facilities, they can still be particularly relevant:

- European PPP Expertise Centre.
- fi-compass.
- Smart Cities Marketplace.

a) European PPP Expertise Centre

The **European PPP Expertise Centre** (EPEC), a part of the Advisory Services Department of the European Investment Bank (EIB), provides specialised support to the **public sector** across Europe for the **development and implementation of effective Public-Private Partnerships (PPPs)**. EPEC works closely with its 42 member organisations, which include national and regional PPP units, public entities responsible for PPPs, and the European Commission.

EPEC delivers its expertise through three main pillars:

- **Sharing good practice**: Addressing practical challenges in implementing PPPs, providing market intelligence, and developing comprehensive guidance and tools.
- **Assisting policy development**: Supporting the creation of robust PPP legal and regulatory frameworks, institutional arrangements, and processes for preparing, approving, and managing PPPs.
- **Supporting project preparation**: Offering high-level strategic advice and early-stage involvement tailored to the needs of specific projects.

b) fi-compass

Fi-compass is an **advisory platform** established by the European Commission in partnership with the European Investment Bank (EIB). It provides support for the effective **design, implementation, and management of financial instruments under EU shared management funds**. These funds include the **European Regional Development Fund (ERDF) and Cohesion Fund (CF)** (refer to sections 6.1.1 and 7.3.1.a) for more information, European Social Fund Plus (ESF+), European Agricultural Fund for Rural Development (EAFRD), European Maritime, Fisheries and Aquaculture Fund (EMFAF), and the Asylum,

Migration and Integration Fund (AMIF). Their primary aim is to foster economic growth, social cohesion, and sustainability across EU Member States.

Fi-compass offers:

- **Advisory services**: Practical guidance for managing authorities and stakeholders on financial instruments, including legislative advice and strategies for effective implementation.
- **Learning tools**: A comprehensive library featuring resources such as publications, videos, podcasts, and case studies, covering the entire lifecycle of financial instruments.
- **Events and networking opportunities**: Training sessions, seminars, and thematic events designed to facilitate dialogue, share experiences, and enhance stakeholder capacities.
- **Knowledge building**: Step-by-step tools and guidance to maximise the impact of financial instruments, including strategies for combining them with grants for increased leverage and sustainability.

As a central hub for knowledge and collaboration, Fi-compass empowers stakeholders to implement EU financial instruments effectively, supporting the achievement of strategic objectives and policy goals

Although this platform is primarily tailored to Member States in the design of Cohesion Policy Sectoral Financial Instruments, project promoters of **district heating site renovations** can find relevant information and documentation to better understand them and gain insight into their implications.

c) Smart Cities Marketplace

The Smart Cities Marketplace is a European Commission initiative designed to **foster collaboration among cities, industries, SMEs, investors, researchers, and other stakeholders**. Its primary goal is to accelerate the transition towards sustainable and **smart urban areas**, improving citizens' quality of life, enhancing urban competitiveness, and advancing European energy and climate objectives. The platform covers a wide range of urban sectors, including transport, the built environment, energy infrastructures, digital assets, and urban governance.

The Marketplace offers a **range of services** to support the development and implementation of smart city solutions:

- **Inspiration and knowledge exchange**: Providing access to a wealth of information on successful smart city projects and best practices across Europe.
- **Matchmaking services**: Facilitating connections between project promoters and potential investors to foster the development of bankable smart city projects.
- **Community building**: Creating a network of experts and stakeholders to share insights, collaborate on projects, and drive innovation in urban development.

District heating renovation projects can greatly benefit from the Smart Cities Marketplace by leveraging its matchmaking services to connect with potential investors and partners, accessing case studies and resources to adopt innovative energy solutions, and engaging with its community to exchange knowledge and scale successful practices. This support can help modernise heating systems, enhance energy efficiency, and contribute to sustainable urban energy goals.

9. Conclusions

The renovation and modernisation of district heating systems in Lithuania, Poland, and Slovakia presents a multifaceted challenge shaped by diverse factors, including technical conditions, local energy needs, legal frameworks, and financial landscapes. Each project operates within a distinct set of circumstances, making a **one-size-fits-all solution impractical**. Instead, a tailored and strategic approach is essential, grounded in a thorough understanding of the **unique characteristics and requirements of each initiative**.

The primary recommendation for project promoters is to adopt a phased and methodical approach, **commencing with a rigorous pre-feasibility study**. This critical first step establishes a solid **foundation for securing funding** by addressing the following core aspects:

- **Technical feasibility**: A detailed evaluation of the existing DH infrastructure, identifying inefficiencies and opportunities for integrating modern technologies or renewable energy sources.
- **Legal and regulatory frameworks**: An in-depth review of the legislative and policy environment at the local, national, and European levels. This includes compliance with EU directives such as the Energy Efficiency Directive and Renewable Energy Directive, as well as local heat pricing regulations and permitting requirements.
- **Financial context**: A comprehensive assessment of available funding mechanisms, ranging from grants and concessional loans to private equity and hybrid financial instruments. This should be complemented by an analysis of alternative management models to optimise cost distribution and risk sharing.
- **Strategic alignment**: Clear articulation of the project's overarching goals, such as decarbonisation, enhanced energy efficiency, or improved affordability for end-users. This ensures alignment with regional energy strategies and broader policy objectives.

Once this foundational analysis is complete, project promoters can explore the comprehensive range of funding and operational tools available within this portfolio. These options should be approached with a focus on strategic integration, avoiding fragmented or overly complex designs. While combining multiple funding sources and management solutions may offer advantages, it also introduces administrative challenges and inefficiencies. **A focused, streamlined approach tailored to the specific needs of the project is often more effective**.

In addition, the importance of **technical assistance facilities** cannot be overstated. These programmes play a crucial role in supporting feasibility studies, capacity-building efforts, and regulatory compliance. Their involvement not only strengthens project preparation but also enhances access to financing and ensures alignment with technical and operational standards.

The success of any DH renovation project depends on more than the selection of tools and mechanisms. It requires the **adaptability and foresight of the project team to respond effectively to evolving circumstances**. Flexibility in strategy, combined with meticulous planning and execution, is key to achieving the desired outcomes.

Ultimately, the Financial Tools Portfolio provides a robust framework that empowers project promoters to design bespoke solutions suited to their unique contexts. By adopting a structured, informed, and adaptable approach, project promoters can navigate the complexities of DH renovations successfully. This

process not only delivers specific project objectives but also contributes to the broader goals of energy efficiency, decarbonisation, and a sustainable energy transition within the European Union.

10. Appendix 1: References and related documents

	Reference or Related Document	Source or Link/Location
1	Definition of CAPEX	Insights from Low2HighDH partners
2	Note for the reader regarding the Innovation Fund and Horizon Europe	N/A
3	Definition of OPEX	Insights from Low2HighDH partners
4	Note for the reader regarding valuable context in Chapters 6, 7, and Section 9.2	N/A
5	Adaptation for DH site renovation projects inspired by the figure 'PPA Contract Structure with Project Finance'	Yescombe, E.R., Principles of Project Finance, Wiley, 2016
6	Project finance example in the Netherlands	https://solarthermalworld.org/news/37-mw-solar-district-heating-plant-in-the-netherlands-with-outstanding-features/?utm_source=chatgpt.com
7	Note for the reader regarding the use of own economic resources in recourse financing structures	N/A
8	Note for the reader regarding the financing structures examined in this document	N/A
9	Project funding lifecycle inspired by the *Guidelines on community Heating and Cooling*	REScoop, 2023: https://www.rescoop.eu/uploads/rescoop/downloads/Guidelines-on-CHC.pdf
10	To finish this column	https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund_en
11	Official website of the Innovation Fund	https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en
12	Official website of the EU Cohesion Policy	https://ec.europa.eu/regional_policy/policy/what/investment-policy_en
13	Official website of the fi-compass platform	https://www.fi-compass.eu/funds/erdf-cf
14	Official website of the Cohesion Fund	https://ec.europa.eu/regional_policy/funding/cohesion-fund_en
15	Official website of the European Regional Development Fund	https://ec.europa.eu/regional_policy/funding/erdf_en
16	Official website of the Just Transition Fund	https://ec.europa.eu/regional_policy/funding/just-transition-fund_en
17	Official website of the Just Transition Mechanism	https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en
18	Official website of the NextGenerationEU recovery plan	https://next-generation-eu.europa.eu/index_en

19	Official website of the ESF+	https://european-social-fund-plus.ec.europa.eu/en
20	Note for the reader regarding the Cohesion Policy Sectoral Financial Instruments	N/A
21	Official website of the Ministry of Finance of the Republic of Lithuania	https://finmin.lrv.lt/en/
22	Official website of the EU Funds Investment Programme (Lithuania)	https://2021.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/apie-2021-2027-m-es-fondu-investiciju-programa
23	Official website of the Regional Development Programme (Lithuania)	https://www.esinvesticijos.lt/igyvendinimas-1/regionu-pletros-planai
24	Official website describing the administrative level of the Cohesion Policy Funds in Lithuania	https://2021.esinvesticijos.lt/apie-programas/valdymo-ir-kontroles-sistema-1
25	Official website of the Environmental Projects Management Agency (APVA) in Lithuania	https://apva.lrv.lt/lt/apie-agentura-150/
26	Official website of the National Energy Regulatory Council of Lithuania	https://www.regula.lt/
27	Official website defining the regions of the EU Funds Investment Programme (Lithuania)	https://www.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/apie-2021-2027-m-es-fondu-investiciju-programa
28	Official website defining the main targeted areas of the Cohesion Policy Funds in Lithuania	https://finmin.lrv.lt/lt/es-ir-kitos-investicijos/es-investicijos/
29	Official website addressing a specific provision of the Cohesion Policy Funds in Lithuania	https://2021.esinvesticijos.lt/apie-programas/2021-2027-m-es-fondu-investiciju-programa/investiciju-programos-prioritetai-1
30	Official website defining the essential horizontal conditions of the EU Funds Investment Programme in Lithuania	https://www.esinvesticijos.lt/uploads/documents/files/NewFolder/horizontalios%20reikiamos%20salygos.docx
31	Official website addressing the National Regional Policy in Lithuania	https://vrm.lrv.lt/lt/veiklos-sritys/regionu-pletra/
32	Official website of the Regional Development Programme (Lithuania)	https://www.esinvesticijos.lt/igyvendinimas-1/regionu-pletros-planai
33	Official website of the Ministry of Development Funds and Regional Policy of Poland	https://www.gov.pl/web/fundusze-regiony
34	Official website of the European Funds for Infrastructure, Climate, and Environment (Poland)	https://www.feniks.gov.pl/
35	Official website of the European Funds for Regions (Poland)	https://www.funduszeeuropejskie.gov.pl/strony/o-funduszach/fundusze-2021-2027/fundusze-dla-regionow/

36	Official website addressing 110 types of projects that will be funded by the European Funds for Infrastructure, Climate, and Environment programme in Poland	https://www.gov.pl/web/fundusze-regiony/fundusze-europejskie-na-infrastrukture-klimat-srodowisko-2021-2027
37	Official website describing the priorities of the European Green Deal	https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
38	Official website addressing 85 projects funded by the European Funds for Infrastructure, Climate, and Environment programme in Poland	https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/poznaj-realizowane-projekty/lista-projektow/
39	Official website describing the managing authorities European Funds for Infrastructure, Climate, and Environment programme in Poland	https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/instytucje-w-programie/instytucje/
40	Official website of the National Fund for Environmental Protection and Water Management of Poland	https://www.gov.pl/web/nfosigw/
41	Official website describing the selection criteria for projects funded by the European Funds for Infrastructure, Climate, and Environment programme in Poland	https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/prawo-i-dokumenty/metodyka-i-kryteria-wyboru-projektow-dla-programu-fundusze-europejskie-na-infrastrukture-klimat-srodowisko-2021-2027/
42	Official website describing the Grant Agreement process for projects selected by the European Funds for Infrastructure, Climate, and Environment programme in Poland	https://www.feniks.gov.pl/strony/dowiedz-sie-wiecej-o-programie/zobacz-wzory-dokumentow/
43	Description of mezzanine financing by Investopedia	https://www.investopedia.com/terms/m/mezzaninefinancing.asp
44	Official website of the Slovakia Programme	https://eurofondy.gov.sk/program-slovensko/
45	Official website describing the Integrated Territorial Development approach in Slovakia	https://eurofondy.gov.sk/program-slovensko/integrovany-uzemny-rozvoj/
46	Official website of the Ministry of Investments, Regional Development, and Informatisation of Slovakia	https://mirri.gov.sk/
47	Official websites addressing the Slovak Partnership Agreement	https://www.partnerskadohoda.gov.sk/programove-obdobie-2021-2027/ https://www.eurofondy.gov.sk/wp-content/uploads/2022/07/220713_SK_Partnersk%C3%A1-dohoda-SR_21_27_do-SFC.pdf
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49	Official website of the Ministry of the Environment of the Slovak Republic	https://www.minzp.sk/fondy/

50	Official website of the Slovak Innovation and Energy Agency	https://www.siea.sk/
51	Official website of the Public Procurement Office of the Slovak Republic	https://www.uvo.gov.sk/
52	Official website describing the responsibilities of the Ministry of Finance of the Slovak Republic related to EU Funds	https://www.mfsr.sk/sk/financne-vztahy-eu/povstupove-fondy-eu/programove-obdobie-2021-2027/
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54	Official document describing the Regional Partnership Councils in the Slovak Republic	https://www.eurofondy.gov.sk/wp-content/uploads/2022/07/220713_SK_Partnersk%C3%A1-dohoda-SR_21_27_do-SFC.pdf
55	Official website addressing the total budget of the Slovakia Programme	https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4510
56	Note for the reader regarding the Cohesion Policy Funds in Slovakia	N/A
57	Official website of the Just Transition Fund in Slovakia	https://mirri.gov.sk/sekcie/program-slovensko-2021-2027/fond-spravodlivej-transformacie/faq-zoznam-najcastejsich-otazok/
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59	Official beneficiary manual of the Slovakia Programme	https://www.minzp.sk/files/prirucka-prijimatela-mzp-sr-so-psk-v.1.1-01.10.2024.pdf
60	Official website of the Life Programme	https://cinea.ec.europa.eu/programmes/life_en
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62	Official website outlining the LIFE Programme in European countries	https://cinea.ec.europa.eu/programmes/life/life-european-countries_en
63	Official website of the LIFE Climate change mitigation and adaptation sub-programme	https://cinea.ec.europa.eu/programmes/life/climate-change-mitigation-and-adaptation_en
64	Guidebook *'How to develop a Sustainable Energy and Climate Action Plan (SECAP)'*	https://publications.jrc.ec.europa.eu/repository/handle/JRC112986
65	Official website of the LIFE CET sub-programme	https://cinea.ec.europa.eu/programmes/life/clean-energy-transition_en
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74	Official website of the Recovery and Resilient Facility	https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en
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82	Official website of the National Recovery and Resilience Plan in Poland	https://www.kpo.gov.pl/strony/o-kpo/o-kpo/informacje/
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89	Official website addressing the country overview of the Recovery and Resilient Facility - Slovakia	https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html?lang=en
90	Official website outlining the key components of the National Recovery Plan in Slovakia	https://www.planobnovy.sk/kompletny-plan-obnovy/zelena-ekonomika/
91	Official website of the Ministry of Finance of the Slovak Republic	https://www.mfsr.sk/sk
92	Official website of the Government Office of the Slovak Republic	https://www.vlada.gov.sk/
93	Official website outlining the regional coordination centres of the Slovak Republic for the National Recovery Plan	https://www.planobnovy.sk/realizacia/samospravy/
94	Official website of the Climate Change Programme of Lithuania	https://klimatokaita.lt/klimato-kaita/klimato-kaitos-programa/
95	Official website outlining the key areas of the Climate Change Programme of Lithuania	https://apva.lrv.lt/lt/veiklos-sritys-319/projektu-vystymas-1760/klimato-kaitos-specialioji-programa/
96	Order on the allocation of financing for projects submitted under the financing instrument of the Climate Change Programme of Lithuania	https://www.e-tar.lt/portal/lt/legalAct/12a85d00eb5611eaa12ad7c04a383ca0/asr#fromHistory
97	Official website of the Urban Heating Programme of Poland	https://www.gov.pl/web/nfosigw/nabor-ii-wnioskow-2020-2022
98	Piece of news related to the Urban Heating Programme of Poland	https://www.res-dhc.com/en/2021/01/26/new-support-scheme-for-decarbonising-district-heating-in-poland/
99	Official website of the Polish Geothermal Plus programme	https://www.gov.pl/web/nfosigw/nowy-program-nfosigw-dla-przedsiebiorcow-polska-geotermia-plus-z-budzetem-600-mln-zl
100	Official website of the Slovak Environmental Fund	https://envirofond.sk/
101	Official website describing the first phase of the Energy Efficiency Programme in Bratislava	https://www.siea.sk/podporne-programy/podpora-zvysovania-energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-ii-kolo/podpora-zvysovania-

		energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-i-kolo/
102	Official website describing the second phase of the Energy Efficiency Programme in Bratislava	https://www.siea.sk/podporne-programy/podpora-zvysovania-energetickej-ucinnosti-distribucie-tepla-v-bratislavskom-kraji-ii-kolo/
103	Definition of "De minimis grants"	Insights from Low2HighDH partners
104	Act No. 657/2004 on Thermal Energy (Slovakia)	https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2004/657/20221201
105	Official website of the Social Impact Alliance for Central and Eastern Europe	https://ceeimpact.org/our-initiatives/philanthropy-and-csr-in-cee/
106	Official website of the European Climate Foundation	https://europeanclimate.org/priority/european-and-national-just-transitions/
107	Official website of the Just Transition Mechanism	https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en
108	Official website of the InvestEU Advisory Hub	https://advisory.eib.org/about/service/working-towards-a-just-transition.htm
109	Official website of the Just Transition Platform	https://ec.europa.eu/regional_policy/funding/just-transition-fund/just-transition-platform_en
110	Official website addressing two calls for proposals of the PSLF	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/calls-for-proposals?status=31094501,31094502&frameworkProgramme=44773066&order=DESC&pageNumber=1&pageSize=50&sortBy=startDate&isExactMatch=true
111	Official website addressing informational sessions of the PSLF	https://cinea.ec.europa.eu/news-events/events/how-you-can-make-use-public-sector-loan-facility-under-just-transition-mechanism-2022-09-21_en
112	Official website describing the European Green Deal and the EU climate-neutral 2050 long-term strategy	https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en#:~:text=Striving%20to%20become%20the%20world's%20first%20climate%2Dneutral%20continent%20by%202050.&text=The%20EU%20aims%20to%20be,to%20the%20European%20Climate%20Law%20
113	Discussion Paper 074. January 2018. Brussels. '*Boosting Investment in Social Infrastructure in Europe*'	https://economy-finance.ec.europa.eu/publications/boosting-investment-social-infrastructure-europe_en
114	ICMA website describing the principles of the Green Bond Principles	https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/
115	Official website describing the IFRS 16 Accounting Standards	https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/
116	EC website outlining ESG rating activities	https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/esg-rating-activities_en

117	Official website outlining the EU taxonomy for sustainable activities	https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en
118	Official website addressing the Réduction d'Impôt Madelin (France)	https://www.economie.gouv.fr/particuliers/reduction-impot-revenu-investissements-entreprise-pme-madelin
119	Note for the reader regarding the Cohesion Policy Funds	N/A
120	Definition of senior loans	Insights from Low2HighDH partners
121	Official website outlining the Managing Authorities of the Cohesion Policy Funds	https://ec.europa.eu/regional_policy/in-your-country/managing-authorities_en
122	Drawbacks of Cohesion Policy Sectoral Financial Instruments	Inspired in part by Peter Schneidewing i all, Financial engineering instruments in Cohesion Policy. Direction General of Regional Policy 2013 and F.Wishlade, R.Michie, Financial Instruments in 2014-2020: Learning from 2007-13 and adapting to the new environment 2014
123	FiCompass, Stocktaking study on financial instruments by sector Progress to date, market needs and implications for financial instruments	https://www.fi-compass.eu/stocktaking-study-financial-instruments-sector
124	Official website of the EIB	https://www.eib.org/en/index
125	Official website of the European Investment Fund	https://www.eif.org/index.htm
126	Explanation of the EU taxonomy	Insights from Low2HighDH partners
127	Reference to multilateral development banks	Insights from Low2HighDH partners
128	Official website outlining the EIB partners	https://www.eib.org/en/products/loans/sme-mid-caps/intermediated-loans.htm
129	Official website describing the EIB products	https://www.eib.org/en/products/index.htm
130	An example of EIB equity finance in the Netherlands featured in a piece of news	https://www.eib.org/en/press/all/2020-269-eu-support-for-dutch-district-heating-projects
131	Official website of the European Energy Efficiency Fund	https://www.eeef.lu/home.html
132	Official website of the Covenant of Mayors	https://eu-mayors.ec.europa.eu/en/home
133	Access to quarterly reports of projects financed through the European Energy Efficiency Fund	https://www.eeef.lu/quarterly-reports.html
134	Current investments of the European Energy Fund	https://www.eeef.lu/files/images/content/investments/current-investments-hellblau.svg
135	Official website of the InvestEU programme	https://investeu.europa.eu/index_en
136	Official website of the InvestEU Portal	https://ec.europa.eu/investeuportal/desktop/es/index.html
137	Official website outlining the 13 implementing partners of the InvestEU Fund	https://investeu.europa.eu/investeu-programme/investeu-fund_en#paragraph_170

138	An example of debt financing in the Nordic Region featured in a piece of news	https://inspiratia.com/sector/district-heating
139	Note for the reader regarding the term “Management solutions”	N/A
140	EC article on ESCOs	https://e3p.jrc.ec.europa.eu/node/190#:~:text=An%20ESCO%20is%20a%20company,on%20a%20turn%2Dkey%20basis
141	Note for the reader regarding on-bill financing	N/A
142	EC article on Energy Performance Contracting	https://e3p.jrc.ec.europa.eu/articles/energy-performance-contracting
143	Official website outlining corporate taxation in Lithuania	https://finmin.lrv.lt/en/competence-areas/taxation/main-taxes/corporate-income-tax/
144	Website outlining the Lithuanian Law on Energy from Renewable Sources	https://www.iea.org/policies/5391-law-on-energy-from-renewable-sources
145	Official website describing the EU emissions trading system	https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en
146	Official document describing the National Energy Independence Strategy in Lithuania	https://enmin.lrv.lt/uploads/enmin/documents/files/National_energy_independence_strategy_2018%281%29.pdf
147	IEA article on the Electricity Security Policy in Lithuania	https://www.iea.org/articles/lithuania-electricity-security-policy
148	Official website of the Ministry of Finance in Poland outlining taxes	https://www.podatki.gov.pl/
149	Official website of the auction-based support system for renewable energy in Poland	https://www.ure.gov.pl/pl/oze/aukcje-oze
150	Official website of the Energy Regulatory Office in Poland	https://www.ure.gov.pl
151	EY Worldwide Research and Development Incentives Reference Guide - 2024	https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/services/tax/documents/en-gl-r-and-d-03-oct-2024.pdf
152	Official website of the Lithuanian Regulatory Authority for the Network Industry	https://www.urso.gov.sk/18945-sk/cenove-rozhodnutia-2017-2025/
153	IEA Slovak Policies Database	https://www.iea.org/policies?qs=Slovak&country%5B0%5D=Slovak%20Republic&type%5B0%5D=Regulations&type%5B2%5D=Framework%20legislation
154	Official website of the Technical Assistance for European Funds in Poland	https://www.pomoctechniczna.gov.pl/
155	Official website of the ELENA Facility	https://www.eib.org/en/products/advisory-services/elena/index
156	ELENA’s application form	https://www.eib.org/attachments/documents/elena-energy-application-form-en.doc

157	Official website of the InvestEU Advisory Hub	https://investeu.europa.eu/investeu-programme/investeu-advisory-hub_en
158	Funding guide developed by the Covenant of Mayors	https://eu-mayors.ec.europa.eu/en/resources/funding_guide
159	Official website of the Just Transition Platform	https://ec.europa.eu/regional_policy/funding/just-transition-fund/just-transition-platform_en
160	Note for the reader regarding LIFE Project Development Assistance & Technical Assistance projects	N/A
161	EC presentation on Project Development Assistance (PDA)	https://cinea.ec.europa.eu/document/download/d16b5023-fbe7-40b3-8643-aa4d358abdb0_en?filename=9.4%20PDA_ZAPFEL.pdf
162	ANNEX to the Commission Implementing Decision on the adoption of the multiannual work programme for the years 2021-2024 for the LIFE programme	https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/life/wp-call/2021-2024/wp_life-2021-2024_en.pdf
163	Official website of the Single Market Programme	https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/single-market-programme_en
164	Official website of the Technical Assistance of the European Energy Efficiency Fund	https://www.eeef.lu/eeef-ta-facility.html