



ACTION FOR
ENERGY EFFICIENCY
IN BALTIC CITIES

ACT NOW!




GUIDELINE

Financing of Energy Efficiency Projects

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About the *Act Now!* project

The *Act Now!* project approaches energy efficiency in the existing building stock of small and medium sized municipalities around the Baltic Sea. The project's scope is to help municipal staff involved in building energy efficiency measures by improving their knowledge about energy losses, competences for preparing investments, and skills to stimulate private investments in energy efficiency.

The *Act Now!* project wants to support Baltic municipalities to succeed from Strategic Energy Action Plans (SEAPs) to achieve an actual reduction of CO_2 emissions. Energy efficiency is the key and the building stock is the treasure to be unearthed for a contribution to reach this goal. The *Act Now!* project aims to foster a new approach across decision makers focused on housing and public buildings.

Act Now! was initiated and coordinated by "Klimastadtbüro"- the climate city office of Bremerhaven, Germany. It was launched in February 2018 and continued with 17 partners in the Baltic Sea area to improve the energy efficiency.

actnow-baltic.eu

The report can be downloaded at actnow-baltic.eu/learning.

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AIV	Alternative Investment Vehicle
BGK	Bank Gospodarstwa Krajowego
CBA	Cost-Benefit Analysis
CEA	Cost-Effectiveness Analysis
CF	Cash Flow
CO_2	Carbon dioxide
DJSI	Dow Jones Sustainability Index
EID	Energy Improvement District
EPC	Energy Performance Contracting
ESCo	Energy Service Company
ESG	Environmental, Social and Governance [criteria]
ETS	Emission Trading System
EU	European Union
EVPA	European Venture Philanthropy Association
G20	Group of Twenty
GRI	Global Reporting Initiative
IRR	Internal Rate of Return
JESSICA	Joint European Support for Sustainable Investment in City Areas
LDSG	LeihDeinerStadtGeld
LEEG	Local Energy Efficiency Group
MuniFin	Municipality Finance Plc
NDC	Nationally Determined Contribution
NPV	Net Present Value
PCP	Public-Community Partnership
PPP	Public-Private Partnership
PRI	Principles for Responsible Investment
REIT	Real Estate Investment Trust
SDG	Sustainable Development Goal
SEAP	Sustainable Energy Action Plan
SECAP	Sustainable Energy and Climate Action Plan
SRI	Socially Responsible Investing
UDF	Urban Development Fund
UNEP FI	United Nations Environment Programme Finance Initiative

1 | Aim and structure of this guideline

Many people mention a lack of finance as a major challenge for energy efficiency projects, which are urgently needed to mitigate climate change. At the same time, there are many support programmes. The financial sector more and more integrates environmental considerations into its lending practices. Many investors look for meaningful projects that they can invest in. The regulators currently push these developments under the keyword **Sustainable Finance**.[1]

The idea behind this guideline is not to write just another document that generally outlines how energy efficiency projects can be financed. Instead, you will find a commented list of suitable documents and tools as well as contact details at the end of this guideline (Chapter 4). Rather, we would like to inspire you to focus on the development of your energy efficiency projects – there are plenty of different financing options and certainly one for your project also, as long as it is well structured. This guideline will not "guide" you through the process of investment planning and financing. Energy efficiency projects and national or local contexts are just too different to do so in any meaningful way; any guidelines trying to will certainly miss the necessary details and stay too abstract. Rather, we would advise you to include financial experts into your Local Energy Efficiency Group (LEEG). We highlight some aspects that we think you need to know and equip you with some basic vocabulary to navigate in the world of investment planning and finance. While it certainly makes sense to take financiers on board early in the process, you first have to clarify the technical details and make your decisions on which project to take on (see '*Act Now!* Guideline on Identification of Most Effective Energy Efficiency Measures', online learning platform actnow-baltic.eu/learning). Financing comes only at the very end of the project development cycle.

> *Many municipalities tend to focus on public support programmes and use applicability to such programmes as a filter for project pipelines. This document shall inspire municipalities to think beyond well-known public funding programmes and not to wait for support schemes, but to act now!*

We will describe different aspects related to financing in general and energy efficiency financing specifically at three different levels: basics, extensions and in-depth illustrations. Basics are some general explanations: What do you need to know to understanding and navigate in the field of financing. Extensions dig a bit deeper into some aspects. However, the idea is not to give you too detailed descriptions, but rather to drop some central terms and very briefly explain them. You will find more on these issues in the annotated literature (Chapter 4) or by using those terms in an internet search engine (e.g. Bing, Ecosia, Google, Yahoo!). In addition, we give some In-depth explanations using selected cases in boxes. You will find more on the *Act Now!* website in the Web-based Training Tool and in our Feasibility Studies, in which we analyse concrete energy efficiency projects in all nine *Act Now!* municipalities. Moreover, you can navigate through the online glossary for terms marked by bold green letters in this guideline.

[1] We highlight terms that we explain in the glossary with green and bold letters. You will find the glossary on the internet.

The rest of the guideline is structured as follows (Table 1): First, we present some basic considerations on how to present your case, generally from the perspective of municipal energy managers to other stakeholders. In Chapter 3, we give an overview of different forms of financing. Chapter 4 contains a list of selected websites and guidelines that we found useful. Please feel free to contact us in case you disagree or have other recommendations!

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Table 1: Navigating through the world of finance and investment - structure of the guidelines.

Section	Type	Content
1		Introduction
2		Basic considerations: ■ Who/with whom (actors)? Why (motivations, goals)? → 2.1-2.3 ■ How to present and appraise your project? → 2.4
2.1	Basics	Actors and their motivations
2.2	Basics Extensions	Basics on policy goals and programmes Extensions on Sustainable Development Goals (SDGs) → Table 2, Figure 2
2.3	In-depth	Sustainability in the financial sector
2.4	Basics	Appraisal methods
3		Types of financing: ■ Basic models (→ 3.1) and their building blocks (→ 3.2-3.4) ■ More sophisticated types of financing → 3.5-3.8
3.1	Basics	Explanation of basic variants – usually you combine different sources of funding with three simple models and one group of more complex structures
3.2	Extensions	Digging a bit deeper into some general financing techniques to get a better understanding how finance works → you may skip this or read it later
3.3	Basics & extensions	Overview of the four forms of financing: 1) equity, 2) debt, 3) mezzanine [= mix of equity and debt], 4) subsidies Detailed in subsequent sub-sections, with example of debt from private investors through green bonds (→ Box 4, for in-depth discussion see Case Study Report on actnow-baltic.eu/learning/municipalities)
3.4	In-depth	Taking up motivations of private investors (from 2.1) and going in-depth into the so-called impact ecosystem (EPVA), with example in Box 4 In-depth discussion of 2 types: community energy and crowdfunding
3.5	Basics to in-depth	Basic overview of fund models (→ 3.5.1) Extension: different types of funds (→ 3.5.2) In-depth: description of stages of development (→ 3.5.3) & example from Latvia in Box 5
3.6	Basics to in-depth	Basic overview of Energy Performance Contracting (EPC) (→ 3.6.1) Extension: description of variants (→ 3.6.2) In-depth: brief discussion of performance guarantee (→ 3.6.3)
3.7	Basics	Brief description and assessment of carbon finance
3.8	Basics	Real estate finance and further models → keywords to look up
4		Overview of where to find more on financing energy efficiency projects ■ Annotated literature list ■ Contacts
4.1	References	Annotated list and further references
4.2	References	Selected contact details for *Act Now!* countries

2 | Basic considerations on how to present your project

Project proponents have to consider several things when they present their project to other stakeholders that are needed to successfully implement the idea: They have to convince others, and therefore need to know whom to convince and what motivates these people (2.1). In this context, it could be useful to link to existing policy programmes (2.2) and developments in the financial sector (2.3). Moreover, some knowledge of appraisal methods (2.4) can be useful, first, to know how to present the project to financiers and, second, to compare calculations made by other people.

2.1. | Relevant actors and their motivations

A central question that people implicitly ask themselves when engaging with all kinds of projects is: "What's in it for me?" You can ask yourself this question on behalf of different stakeholders that you would like to include in your project. Thus, you have to understand the main motivations that other may have to participate and give money etc.

If you want to include and convince other people of your idea, you have to ask yourself on behalf of them "What's in it for me?"

Who are these actors? We depicted them in Figure 1:

- Municipalities, which own and/or use and manage their buildings, but usually are also permit authorities for building measures. We can distinguish politics, administration and municipal companies.
- Users of public and private buildings.
- Private building owners.
- Public funders, who give grants or other financial support to municipalities and private building owners.
- Banks and other financial institutions that finance the energy efficiency measures.

We will explore the motivations of public actors (2.2) and financial institutions (2.3) more in-depth in the next two sections. The cooperation with the private sector, including private build-ing owners, is detailed in the *Act Now!* Guideline on Public-Private Partnerships (online learning platform actnow-baltic.eu/learning). Hence, just a few words on the users here: Depending on their background, some users may be environmentally conscious or early technology adopters, who may even drive energy efficiency initiatives in your locality. Nevertheless, it is well known from scientific work that behavioural changes are hard to achieve. Giving economic incentives to users, i.e. share budget savings with them, can be a solution to overcome this challenge. An instructive example is the 3/4plus programme in the Federal State of Bremen, Germany (Box 1).

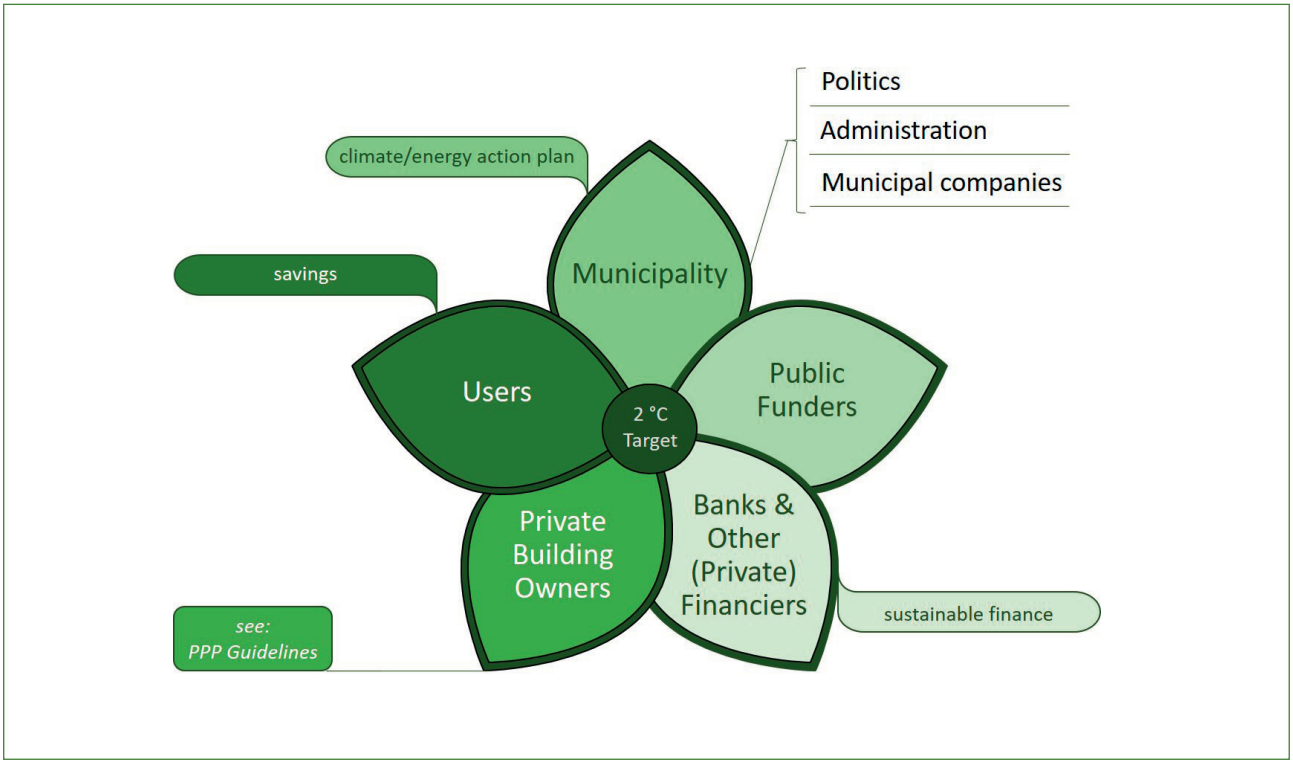

Figure 1: Actors and motivations.

Box 1: Share savings with users – the 3/4plus programme for schools in Bremen and Bremerhaven

In 1994, the Bremen Senator for Education, Science, Arts and Sports established a successful programme in schools in Bremen and Bremerhaven that combines savings with technical assistance and educative elements:

- All participating schools that reduce their electricity, heating or water con-sumption get a share of the savings, which they have at their own disposal.
- The local energy agency assists in low-budget investments with technical ad-vice.
- Teachers are given material for their classes, e.g. for a climate action day.

Source: Bremer Energie-Konsens GmbH. Energieeffizienz in Schulen. [online, accessed 02.07.2020]. Available: https://www.energiekonsens.de/energieeffizienz-schule-bremen.html. See also https://34plus.de/ (in German only).

2.2. | Link to global, national and local goals and targets

Municipalities – politics, administration and municipal companies – and public funders all generally follow public missions, even though they have their own operational logics. If you approach politicians, for instance, you have to keep legislative periods in mind and see if your project helps with any goal or target that currently is high on the political agenda. This could be "climate emergency" if there is a strong movement in your locality. It could also be budget savings in times of crisis recovery – or part of a green deal programme for your municipality. Generally, you may link your project to one of the following global, national or local goals and targets:

- **Paris Agreement**
  The long-term goal agreed upon by the global community is to keep the increase in global average temperatures to well below 2 °C above pre-industrial levels. To achieve this goal, all countries that have ratified the agreement have to set up national programmes. There are according programmes on the level of the European Union (EU), on the level of all EU member states and Russia, but also on the level of some sub-national entities. Even if the global target has not been broken down to the local level in your country, this may happen in the future. Or there could be ambitious and engaged politicians and administrators who push this forward in your context.
- **Sustainable Energy Action Plan (SEAP), Sustainable Energy and Climate Plan (SECAP**) or a similar local strategy
  SEAPs and SECAPs are examples of local plans that should be directed at achieving globally agreed targets such as in the Paris Agreement.
- **Sustainable Development Goals (SDGs)**
  See Table 2 for an overview of which SDGs you may refer to with your energy efficiency project.
- **Local Agenda 21**
  In 1992, the global community agreed on a voluntary action plan for sustainable development. Many cities worldwide, especially in Europe, have created initiatives to adapt this plan to their locality, including local working groups for sustainable energy. Some local initiatives may need a revival, though.

Table 2: Energy efficiency related Sustainable Development Goals (SDGs).

SDG	Target/s	Link to energy efficiency
SDG 1	1.1, 1.2, 1.4	Energy poverty is a serious issue in many countries. Energy efficiency measures can help to reduce expenses for electricity or heating.
SDG 7	7.3	Direct energy efficiency target: "By 2030, double the global rate of improvement in energy efficiency"
SDG 8	8.3, 8.5	Energy efficiency enables enhanced productivity and inclusive economic growth. Depending on the type of project and its implementation energy efficiency measures can help to create jobs.
SDG 9	9.4	Efficient energy technologies emit less carbon dioxide (CO_2) and help to make infrastructure and industries more sustainable.
SDG 11	11.1	Energy efficiency measures can address affordable housing.
SDG 12	12.2	Energy efficiency measures can help to reduce resources.
SDG 13		Energy efficiency means reduced need for electricity and heating and reduced CO_2 emissions.

Figure 2: The 17 Sustainable Development Goals (SDGs; source: United Nations).

No matter which of these (or other) strategies, plans, goals or targets you relate to, you certainly have to calculate projected effects with respect to according targets, such as greenhouse gas emission reductions, annual savings for users or jobs created.

2.3 | Sustainability in the financial sector

There are three obvious points of contact between finance departments and those responsible for energy management: First, energy efficiency projects have the potential – at least in a long run – to reduce running costs for electricity and heating/cooling. Second, more energy efficient buildings generally have – all other conditions equal – a higher value. In some of the *Act Now!* countries such as Sweden, municipalities use a double entry bookkeeping system and have appraised their properties. In this case, the projects may increase the assets side of the municipality's balance sheet. Third, any project has to be financed. For this to happen, energy managers have to set up a financing plan for the project that is appraised by the finance department.

Box 2: It's all about incentives!

Different stakeholders are involved in energy efficiency projects. Not all are enthusiastic about energy efficiency. Here are some suggestions how to incentivise their contribution:

Get your municipality on track: subsidy programmes & obligations
Have a look at sub-national, national and supranational (EU) funding programmes! Tapping these funds is a great opportunity to move your local politicians and administration.

You may also use climate protection obligations – where they exist – or available actions plans and link them with your energy efficiency project.

Get money from funders: climate protection obligations → track your emission savings
In discussions with national and international funders, you can easily refer to discussions about climate finance and current sustainable finance regulatory discussions (see below). Within your municipality, you might use climate protection obligations as an argument. Without breaking down the Paris targets from national to local level, we will not reach the "well-below 2 °C" goal. As the climate protection negotiations show, we need local action and good examples, e.g. the C40 cities and the signatories of the Covenant of Mayors. For this, you need to track your emission savings (carbon accounting).

Get your users in: share savings with users
Some users may be environmentally conscious and engage in energy efficiency measures on their own. Most likely, you will get them on board, if you share the savings with them.

Sensitise your banks: green mortgage, climate risks
Financial institutions, including banks, are becoming more and more sensitive with regard to climate change and sustainability issues. Green products and climate change or sustainability-related risks are just two examples. Engage with your local, regional or national financial in-stitutions and ask them about their sustainability strategy!

Private sector: incentivise or enforce participation
You may incentivise participation by the private sector through grants, guarantees or tech-nical assistance for energy efficiency activities, e.g. via a "municipal climate protection fund" (Section 3.8).

In some jurisdictions, it is possible to enforce participation in redevelopment activities, e.g. through "improvement districts" or similar regulations. These can be part of a sticks-and-carrots strategy: In the face of the imminent danger of enforcement, even stolid private ac-tors may move and take action.

In addition to these, sustainability is getting more and more attention in the finance sector (Figure 3), e.g. through sustainability reporting, requirements by rating agencies and divestment, sustainable finance regulation on the EU level and by member states, and through the imple-mentation of green financing products (e.g. green bonds, green loans, green & social deben-tures). Energy efficiency projects may be part of a portfolio financed through such instruments.

2.4 | Process and appraisal methods

To present your project to different actors and to assess calculations made by others, some basic knowledge of different appraisal methods may be useful. Since the *Act Now!* Guideline on Identification of most effective Energy Efficiency Measures describes the decision-making process in more detail, we will restrict ourselves to some major points that are relevant for financing. Caution: Some

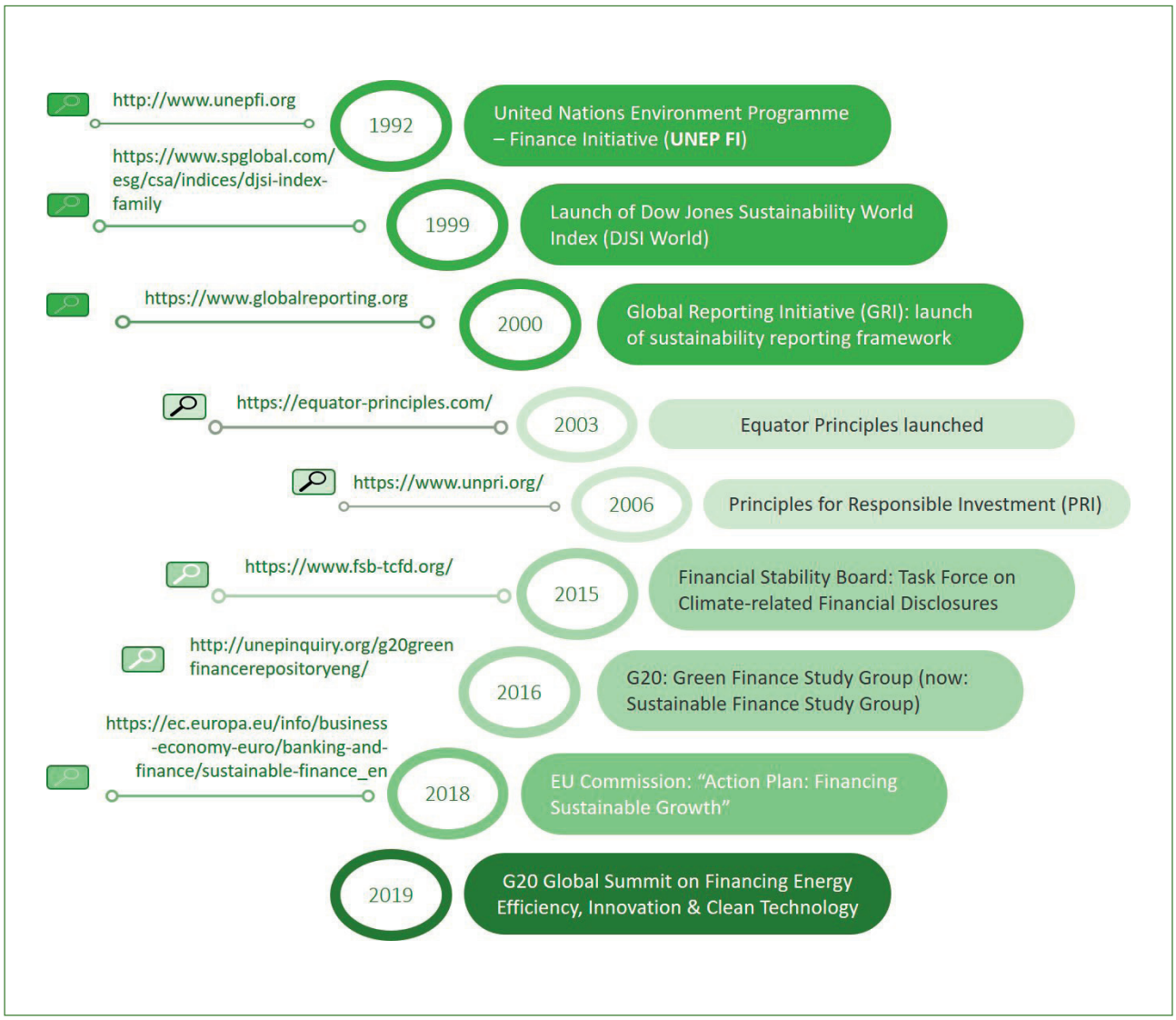

Figure 3: Sustainable finance timeline – selected initiatives, organisations and events.

Source: Own compilation based mainly on UNEP FI. From 1992 to 2019: The Evolution of Sustainable Finance. [online]. [Accessed 02.07.2020]. Available: https://www.unepfi.org/news/25th-anniversary/timeline/. For an overview of further organisations and initi-atives, see also Climate Action in Financial Institutions Initiative. Connecting the dots between climate finance initiatives. [online]. [Accessed 02.07.2020]. Available: https://www.mainstreamingclimate.org/connecting-the-dots/.

"finance speak" is unavoidable! That is why we put Box 6 with many technical details and more maths formula to the Annex.

Budgetary processes differ in the nine countries examined in the *Act Now!* project. So do the methods used to plan any investment project in the municipalities. However, there is a common set of methods how to appraise an investment (Figure 4). We can make two major distinctions with regard to these appraisal techniques:

1. **Capital budgeting vs. economic appraisal:** If you only look at direct financial implications, you are in the world of capital budgeting or investment appraisal. This is essentially the same as all businesses do worldwide. Considering wider implications for the society leads to the world of economic appraisal methods such as Cost-benefit analysis (CBA).
2. **Static vs. dynamic:** Textbook authors usually divide capital budgeting methods into two groups – static, i.e. using data of a single period, and dynamic, i.e. using data on different periods.

There is a bulk of literature on financial analysis – economic appraisal methods and even more so on capital budgeting. We will not repeat the pros and cons of different techniques here. Instead, some "take-aways", reminders and references:

- Your politicians will most likely be interested in the size of the **investment upfront**. Political priorities tend to take precedence over a sophisticated financial analysis of the project. The German Federal Court of Auditors, for instance, investigated state investments in Germany, finding out that in many cases a proper appraisal is missing.[2]
- There are typically two different types of economic calculations for projects: cost calculations (that's what engineers often do) and cash-flow models. Depending on whom you are talking to and which method you have used, this can create some confusion and misunderstandings. People from the finance sector tend to use **cash-flow models**. When talking to these, don't use your cost calculation, but prepare an overview of inflows and outflows, their timing and (un)certainty.
- **Net present value (NPV)** calculation is the textbook authors' favourite capital budgeting technique (Figure 11 in the Annex). Detailed information about the Net present value (NPV) and NPV calculations are presented in Box 6 in the Annex. In the fund industry, you'll also find Internal Rate of Return (IRR) calculations.

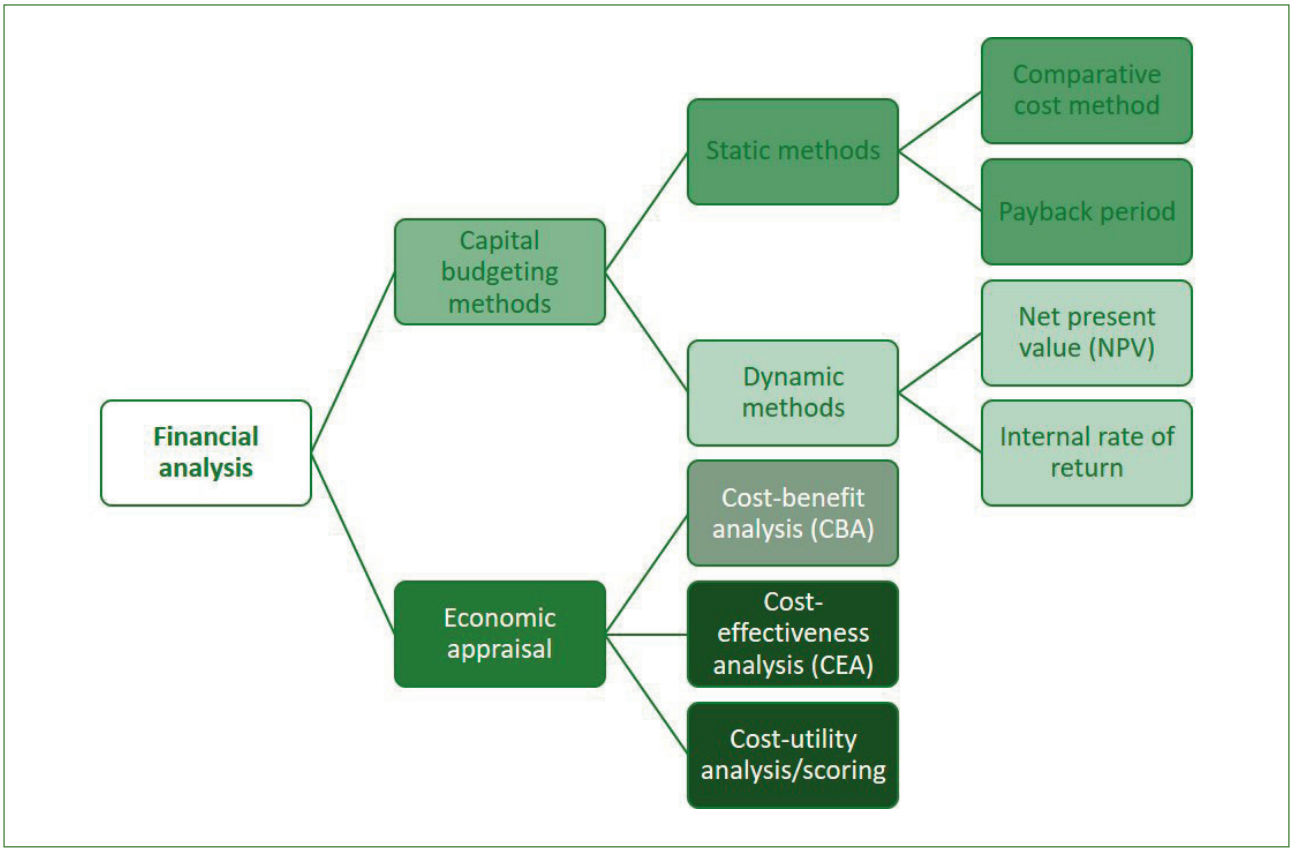

Figure 4: Overview of general techniques for financial analysis.

[2] For an overview of the challenges and problems in the German context, see e.g. Mühlenkamp, H. Wirtschaftlichkeit im öffentlichen Sektor: Wirtschaftlichkeitsvergleiche und Wirtschaftlichkeitsuntersuchungen. Berlin: De Gruyter Oldenbourg, 2014.

- Appraisers often assume that all cash flows are well-known. That's, of course, not realistic. Integrating risks or uncertainties into the calculations isn't easy, though. The theoretically most convincing solution is to calculate so-called certainty equivalents and discount them with the risk-free interest rate (compare Box 6 in the Annex). Safety margins are generally not a good idea. In any way: Be transparent about your method of calculation!
- As you can see from the NPV formula and the discussion in Box 6, there are three **critical parameters**: the discount rate, the time structure of cash flows and the way in which risks are incorporated. These are issues to look at in any financial analysis.
- The **time horizon** is as important: You have to calculate all inflows and outflows or costs and benefits over the whole life cycle of the project, not only for a short term like the legislative period. Moreover, consider the full set of alternatives, from doing nothing over small investments with rapid returns to larger investments like deep retrofit: The latter will only pay back under longer planning horizons.
- Energy efficiency measures don't have financial implications only, but also societal impacts (as outlined in Chapter 2.2). **Cost-benefit analysis** monetarises all these positive impacts and potential social costs. You need to use different interest rates then – the social discount rates. If you aren't able to monetarise benefits and costs, you may resort to Cost-effectiveness analysis (CEA) or a scoring method.
- Regardless of which appraisal technique you choose, you should **make your assumptions explicit** – including the set of alternatives that you compare. Think about the decision between in-house service and contracting out, for instance: How are the in-house capacities? What does this mean for size of outflows or costs and timing of the implementation? What are the risks associated with relying on a service company? How would you evaluate this in monetary terms? How much is the performance guarantee worth for you?

3 | An overview of types of financing

After providing some background to relevant stakeholders, their motivations and appraisal techniques to communicate and assess economic gains from the project, we present different types of financing in this chapter. In the first four sections 3.1 to 3.4, we will lay the ground and explain some finance basics, present some extensions, dive deeper into the motivations of private investors and illustrate two ways how to include local citizens into your projects: community energy and crowdfunding. The following sections 3.5 to 3.8 give an overview of more sophisticated financing structures, i.e. (investment) funds, Energy Performance Contracting (EPC), carbon finance and a list of other financing models.

3.1 | Basic variants

We would like to make a distinction between four basic variants of how to finance your energy efficiency project:

1. 100 percent grant-based finance – adhere to programme requirements, that's it!
2. Own equity/budget in case your municipality has enough money and expertise – just go ahead!
3. A combination of own equity and bank debt – talk to your bank!
4. Anything (more or less) "fancy" or sophisticated – see next sections!

For Variants 1 to 3:

If you can fund your projects (a) via grants or (b) with own equity from your municipality's budget, probably with additional bank loans, there is not much to talk about:

- In case (a), you have to adhere to programme conditions, of course. You will find some ideas of where to look for funding in Chapter 4.
- In case (b), you have to take care of legal restrictions and your bank's requirements. As the legal situation differs in all countries, we refer to more country-specific guidelines and websites. If you want to finance at least parts of the investments through bank loans, you should early in the process talk to your banks.

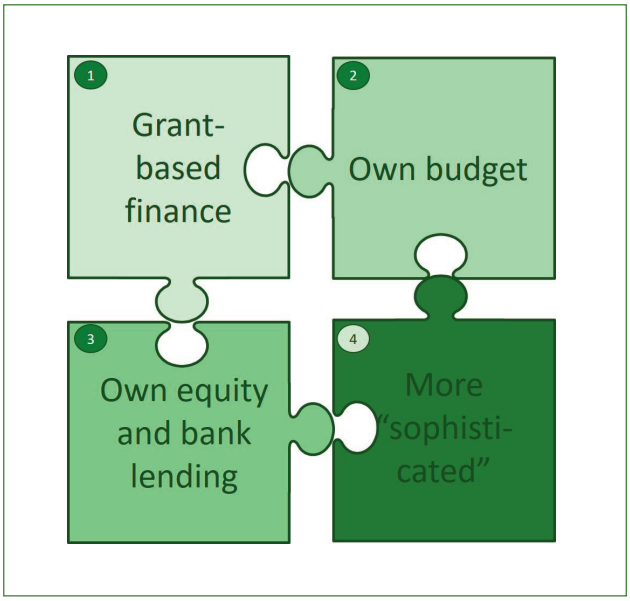

Figure 5: Basic variants of financing energy efficiency projects in municipalities.

The only thing you have to take in mind in these cases is how to present your project in a way that it meets with the expectations of donors, banks and/or your own finance department (see above).

For Variant 4:
There are several potential reasons why Variants 1 to 3 may not work in your context: For example, you do not have enough money to fund your projects. Or your bank is not willing to lend it to you or there are other restrictions that do not allow for the use of bank loans. You are not able to access grant programmes or they just do not exist in your context.

However, there may still be possibilities to get your project implemented. In these cases, you can have a look at the set of possible forms of financing that are outlined in this chapter, including some alternative forms to Variants 1 to 3.

3.2 | General financing techniques

The following brief explanations describe the basic elements of structured finance and financial engineering in an abstract way. This might be helpful to better understand what finance is all about. However, you could also skip them.

Financial engineering is a sub-discipline of finance using mathematical and programming tools. **Structured finance** is part of financial innovations developed since the 1970s, combining different elements for individual cases such that requirements by all parties involved are met.

Despite of the peculiarities of energy efficiency financing by municipalities, the techniques used are always the same. You will find similar basic modules or types of financing that come into play.

A financial instrument can be decomposed into different rights and obligations: interest, repayment, currency, term or maturity and other rights. Structured finance means **unbundling** (or stripping) these rights and obligations and **rebundling** (or replicating) them so that the resulting structure meets the risk-return profile (or more generally: the preferences) of all parties.

Some general techniques used are:

1. **Bundling or pooling:**
   In many cases, you need to achieve a certain size to be able to implement your projects. Therefore, it can be useful to bundle different projects into a portfolio and/or pool money from several sources, not only a single actor.
2. **Tranching and risk allocation:**
   You can divide your project or portfolio into several tranches (at least if it is large enough so that this makes sense). You implicitly do that already when you combine equity from your municipality with a bank loan. Each party involved in financing has certain requirements and preferences – just ask your finance department or your bank! Generally, you can allocate risks to different parties and adapt the terms so that they meet the requirements set by your financiers.
3. **Term transformation:**
   Financial institutions usually borrow money short (deposits) and lend it long (e.g. loans). For this business to work there must be a differential between interest rates. Otherwise, you would not find any partner willing to do this term transformation from short to long.

Financiers usually evaluate financing options – their investments – according to three goals: (1) yield (or return), (2) security (often formulated the other way around: how risky investments are) and (3) liquidity (how fast can I get rid of it if need be). These three goals form the magic triangle of investment – called magic because it is impossible to achieve all three at once.

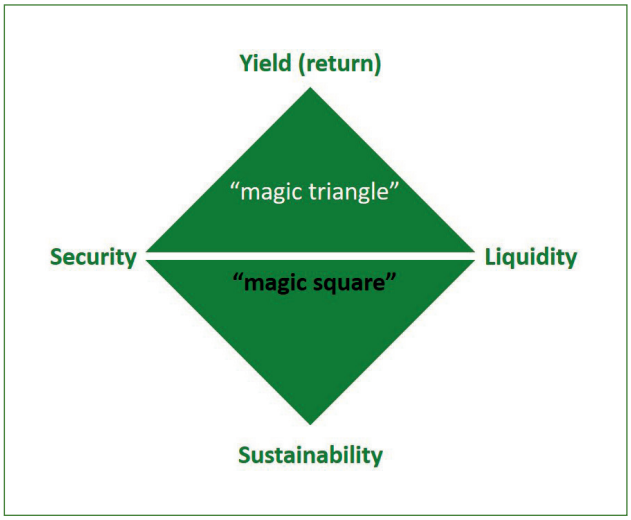

Figure 6: Magic triangle and magic square of investment.

Some add sustainability to this triangle to make it a magic square (compare Figure 6).

Never forget when evaluating potential financing and organisational solutions:

The higher the risk, the more costly! Or the other way around: The higher the profits, the more risky!

Private investors need to earn money, but may have either more experience and/or a higher risk appetite. In both cases, it makes sense to consider forms of cooperation with private partners.

3.3 | Forms of financing

3.3.1 | Overview

Basically, two types of financing instruments exist: **equity** and **debt**. The former comes with the legal position of an owner, decision-making and voting rights, participation in profit and loss, principally permanent maturity, limited or full liability and later payment upon liquidation. The latter comes with the legal position of an obligation, control rights limited to information, no participation in profits or losses, temporary maturity, no liability and payment first upon liquidation. Thus, equity is riskier. Therefore, return expectations of equity investors tend to be higher than those of debt lenders. If you combine characteristics of equity and debt, you get **mezzanine capital**. Examples are subordinated and convertible debt.

In addition to equity, debt and mezzanine capital, there are various forms of subsidies: **grants, concessional funding** and **guarantees**. Moreover, the state – sometimes also philanthropies – may provide technical assistance and the legislator can assure that projects are viable through supportive legal structures.

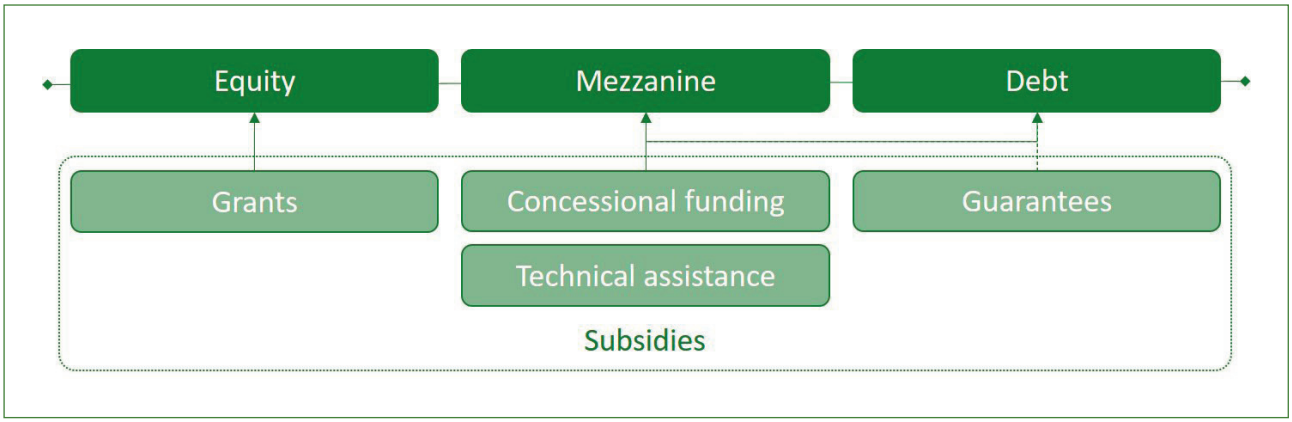

Figure 7: Basic forms of financing and types of subsidies (own compilation).

Not all forms of financing are available to municipalities in all countries to the same degree. Availability depends, among others, on

- The type of financial system of a country – generally divided into bank-based (e.g. Germany) and market-based (e.g. Sweden) systems; and
- The state of financial markets ("developed" such as Denmark or "emerging" like in Russia).

3.3.2 | Equity – municipal finance and private equity

Usually, energy efficiency projects by a municipality are at least partly financed through some equity from the municipal budget. Procedures vary between the countries of the Baltic Sea Region (actnow-baltic.eu/learning/municipalities). The municipality has to adhere to communal budget laws. Depending on local authorities systems, there may be a more or less strict supervision. In Germany, for instance, Energy Performance Contracting (EPC) is considered a credit-like transaction. Therefore, EPC projects have to be authorised by the respective supervisory body at federal state level.

Equity from private source may come in different forms, e.g.

- As money from the (private) owners of buildings;
- As investments by local inhabitants, e.g. through crowdfunding and/or community energy companies;
- As external equity from investors through either private placement or the use of organised capital markets – e.g. by investment funds, so-called **YieldCos** (joint stock companies) for renewable energies or **Real-Estate Investment Trusts** (REITs).

3.3.3 | Debt from banks

Besides equity, energy efficiency projects are usually financed utilising loans from banks. There are two basic types of bank loans:

1. Corporate finance, i.e. a loan secured by assets of the creditor;
2. Project finance, i.e. a loan that is based on the calculated cash flows and project assets only.

Often, banks offer preferential terms for municipalities based on an assessment of risks. Even if the creditor is a private entity, you can get access to loans at municipal rates through a technique called **forfaiting**. In this case, the private partner, who has a contract with a public entity (e.g. building owner), sells receivables from this contract to a bank.

The bank itself gets the money from deposits (own credit lines), development banks (at preferential terms), other banks or the central bank, from customers through saving certificates or financial markets through bonds. The bank's rating by rating agencies determines the terms at which a bank refinances its loans.

With regard to the type of banks active in the respective country, we can distinguish three different groups in the

Baltic Sea Region (for more on this see actnow-baltic.eu/learning/municipalities):

1. Nordic countries with **local government funding agencies**: KommuneKredit in Denmark, Kommuninvest i Sverige in Sweden and Municipality Finance (MuniFin) in Finland;
2. Germany and Poland with strong national **public banks**: KfW in Germany and Bank Gospodarstwa Krajowego (BGK) in Poland;
3. Baltic countries and Kaliningrad Oblast with high dependence on external sources or state funds.

3.3.4 | Debt from private investors

If you do not find a bank willing to lend money at terms that you appreciate or if you prefer other counterparties, you may collect debt from investors other than banks through **bonds**. These are securities regulated by special laws. Usually, you need a larger volume of investment (minimum of around € 10 million). Otherwise, costs for these transactions such as those for advisors and prospectuses are too high. There are various forms of bonds and also special types for collecting debt from private investors, e.g. the German "Schuldscheindarlehen" (a mix of syndicated loan and corporate bond).

If the underlying project that you finance through a bond helps to protect the environment, your bond gets a colour: **green bonds**. They are part of the sustainable finance sector that is currently pushed by EU legislation, but has started to develop even before (Box 3).

3.3.5 | Mezzanine capital

Depending on the state of capital markets in a country and capital market regulations, various forms of mezzanine capital exist. Mezzanine is the medium storey in architecture; mezzanine capital are types of financing that combine elements of both equity and debt. As a result, the risk-return profile of mezzanine capital usually lies somewhere in-between that of equity and debt. Thus, mezzanine capital is less expensive than equity, but usually costs more than debt.

You can collect mezzanine capital from private persons or companies, usually via **private placements** (i.e. directly negotiated with the parties, not through an organised market like the stock exchange) or from public entities, e.g. (regional) development banks. Examples include **subordinated loans, convertible subordinated loans, profit-participation certificates and redeemable preferred stock**. You will find more on these forms of financing in some of the documents listed in Chapter 4.

3.3.6 | Subsidies

Typical subsidy schemes include **grants, concessional loans** (or other financing instruments), i.e. loans at preferential terms compared with those accessible through capital markets, and **public guarantees**, which help to or enable municipalities and private persons or companies to access other commercial types of financing. Terms that make up the concessionality or grant element of the loan include the (lower) **interest rate**, the (longer) **maturity**

Box 3: Green loans and bonds through local government funding agencies – The case of Kommuninvest (Sweden)

As single municipalities and their projects are often too small, even after bundling several projects, they have to join forces if they want to access certain markets and use instruments like bonds. In addi-tion, for issuing bonds in general and more so specific types like green bonds, you need to have very specialised expertise. In several countries including the Nordic countries, municipalities have formed cooperative financial institutions called local government funding agencies to solve these problems. Kommuninvest i Sverige consists of a cooperative society composed by municipal members and a fi-nancial service provider fully owned by this cooperative society.

Through Kommuninvest and its green bonds programme, Swedish municipalities can access interna-tional markets and large investors in different countries. Investors appreciate fixed interest rates (fixed income) and high **triple-A** rating that signals low risks. The latter is achieved, among others, through joint liability by municipalities for debts. Kommuninvest lends on money collected from national and international investors to municipalities as green loans.

Sources: Kommuninvest. Green Bonds. [online]. [Accessed 24.07.2020]. Available: https://kommuninvest.se/en/funding-and-funding-need-3/greenbonds/.
For more see actnow-baltic.eu/learning/municipalities

and, in some cases, a (longer) **grace period**. In the EU, all participants in the financing scheme have to pay attention to state-aid regulations in this context.

Many projects need technical assistance for increasing the chance that they will ever be implemented: Often private entities do not know how to manage energy efficiency projects. Municipalities, especially if small, may also need funds for any kind of technical assistance like prior technical feasibility studies or counselling through the process of implementation.

Legal structures may also support project implementation. They are usually not considered forms of financing in the proper economic sense. However, instruments such as Energy Improvement Districts (EIDs) provide a framework for collecting money, enforcing and facilitating the implementation of urban development, including energy efficiency measures.[3]

3.4 | Private investors and their motivation

3.4.1 | Private investor motivations and the Impact Ecosystem

In the following, we will briefly extend the discussion of motivations from Chapter 2 especially for private sector financiers. Besides municipalities, public funding agencies, (regional or national) development banks, national or European funds you will find three different types of such private financiers: financial sector companies (e.g. energy service companies), private companies (e.g. housing companies) and private households. We will give some examples of how private households can engage financially in energy efficiency projects in the next sub-section.

Private funders can have different motives and use different structures – from grant-making to conventional profit-oriented investing. The European Venture Philanthropy Association (EVPA) calls this continuum The Impact Ecosystem (Figure 8). You will find several special terms used in this world of Sustainable Finance in the figure: social investment, impact investing, venture philanthropy, Environment, Social and Governance (ESG), Sustainable and Responsible Investing (SRI). Sønderborg Fællesfond (Box 4) is an example of a social enterprise established by private persons – or of "investing for impact" in the EVPA terminology.

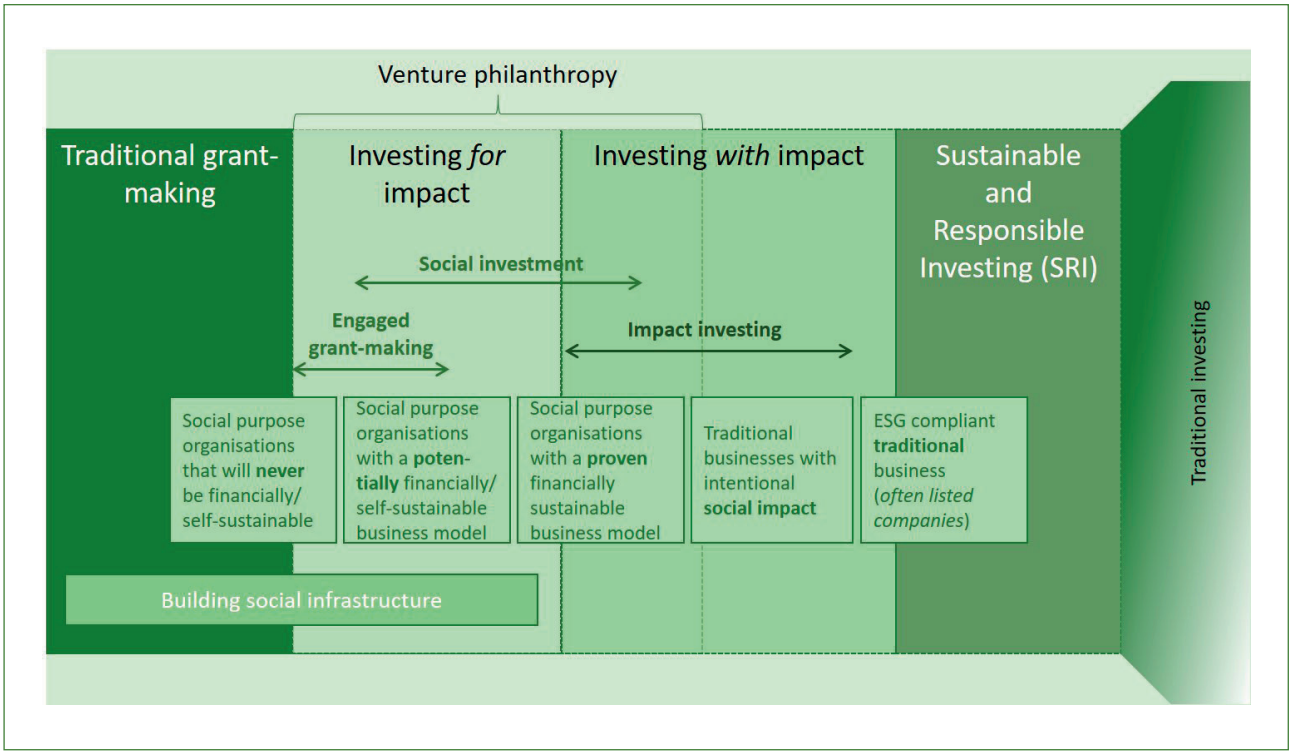

Figure 8: The Impact Ecosystem [EVPA].

Source: European Venture Philanthropy Association (EVPA). What is Venture Philanthropy? [online]. [Accessed 10.07.2020]. Available: https://evpa.eu.com/about-us/what-is-venture-philanthropy.

[3] HafenCity University Hamburg. Area21 – Promoting cooperative processes for integrated energy planning at district level. [online]. [Accessed 10.07.2020]. Available: https://area21-project.eu/.

Box 4: Sønderborg Fællesfond (Denmark)

Danish financial institutions as elsewhere tend to focus on stronger real estate markets. In addition, financial market regulations complicate loans to older clients. As a result, energy efficiency projects in rural areas around Sønderborg can sometimes be hard to finance through usual mortgages. The idea behind Sønderborg Fællesfond is to collect money from socially engaged local investors and use these funds to buy, renovate and sell houses in these rural areas. Thus, Sønderborg Fællesfond resorts to the old cooperative mortgage bank tradition. Former city council member Anders K. Brandt has initiated the fund.

Sources: Kooperationen. Sønderborg Fællesfond [online]. [Accessed: 24.07.2020]. Available: https://kooperationen.dk/projekter/soenderborg-faellesfond/

For more see actnow-baltic.eu/learning/municipalities

3.4.2 | Private households as investors – community energy and crowdfunding

Private households can help finance energy efficiency projects in various ways. For this guideline we picked out two different forms for the discussion: **community energy** and **crowdfunding**.

Citizens from the local community can join forces and collect money for investments in local projects. These communities can use different legal structures, including the/a cooperative legal form. Often, these cooperatives invest in electricity generating projects. Some own and/or operate local distribution grids. They may also co-invest in energy efficiency projects or take over the role of a contractor (Chapter 3.6). Usually, these community energy groups build on existing networks. They bring in not only money, but also local knowledge to explore and further develop projects in the community.

Another way to collect money from citizens – be it local residents or people with other connections to the locality – is via online platforms: **crowdfunding**. Through these platforms, a municipality or other local players can present local projects and seek investments, which can take different forms[4]:

- Investment-based crowdfunding:
  - Equity-based crowdfunding (crowdinvesting),
  - Debt-based crowdfunding (crowdlending),
  - Using specific forms of mezzanine or debt: fixed-income crowdfunding (**debentures** and mini-**bonds**),
- Donation-based crowdfunding:
  - Donations, especially for services to the community (civic crowdfunding),
  - Reward-based crowdfunding.

Crowdfunding platforms (can) fulfil three different functions: matchmaking, funding and (further) development of ideas (crowdsourcing). The idea is to allow for smaller investments by many people in contrast to existing investment funds (large amounts) and **business angels** or **venture capital**. Some platforms coordinate exchange between initiators of projects and funders. In Baltic and Nordic states, several platforms exist that collect money for real estate projects such as Tessin (Sweden), Estate-Guru (Estonia) or BulkEstate (Latvia). In addition, there are some examples of **civic crowdfunding** that provide a service to the community (Table 3).

Table 3: Examples of civic crowdfunding platforms in the context of urban development.

Name	Country Code	Year	Organisation	Form of Crowdfunding	Specifications
ioby	US	2009	NPO 501(c)3	Donation	Matchmaking and coaching services; fiscal sponsorship, donations matched by sponsors
LeihDeiner StadtGeld (LDSG)	DE	2013	For-profit	Lending	Projects proposed by local authorities, funding of voluntary municipal tasks via crowd; platform operated by CrowdDesk GmbH
Place2help	DE	2015	Social Business	Donation	Regional platforms, facilitates dialogue, including offline exchange; co-financing through regional grant fund (sponsoring)
Spacehive	UK	2011	Social Bus	Donation	Verification by partner organisation Locality; “hives” as thematic groups to facilitate exchange
Stadtmacher	DE	2015	For-profit	Donation	Projects proposed by citizens, local platforms; started as research projectstarted as research project

[4] Sedlitzky, R., Franz, Y. ‚What if we all chip in?‘ Civic crowdfunding as alternative financing for urban development projects. Built Environment 2019:45:26-44.

There are some examples of local platforms such as PaderCrowd in the German city of Paderborn, established by the local business promotion corporation. However, crowdfunding seems to play a more prominent role in larger cities and more affluent regions, especially investment-based crowdfunding.

3.5 | Pooling – Fund models

3.5.1 | Basic structure

Pooling means that money from different parties is collected and invested and/or that different projects are bundled into one entity. In both cases, we speak of funds. For the sake of clarity, you may differentiate between the pooling of financiers and the pooling of projects. Pooling financiers makes sense whenever money by one party does not suffice to implement the project. The downside: You have to manage and coordinate different parties. Challenges may arise especially when motivations of these investors differ. Pooling of projects makes the overall investment volume larger. This can help to meet minimum lot sizes for specific investors, especially to justify administrative costs.

In principle, you can use all types of financing and structuring elements explained before. Funds can operate on different levels (boxes in Figure 9): project, fund and fund-of-fund level.

3.5.2 | Types of funds

There are different ways to classify funds, among others: (a) along the form of financing, (b) the type of investors and (c) the overall organisational structure.

According to the form of financing used by the fund to finance the project, you can differentiate equity funds, mezzanine funds, debt funds (e.g. revolving loan funds) and guarantee funds. Often, investment funds collect money from investors in the form of equity, but other forms of financing are also possible.

You can collect money from different types of investors (Chapter 3.4.1). A fund can be fully private, fully public or a mix of both. If public and private partners invest together in a fund, this type of Public-Private Partnership (PPP) may be called **structured fund** (for an example see LABEEF, Box 5). The private partner can be any commercial for-profit, non-profit or community partner. In another type of PPP, called "parallel fund" or **Alternative Investment Vehicle** (AIV), private partners create a separate entity that co-invests in the projects at same terms as the public partner (called "pari passu") or with asymmetric profit and/or loss sharing. Thus, revenues can flow first to the less risk-loving, second to the next risk averse, and then to investor who are willing to take higher risks. This way to structure cash flows is called **waterfall principle**.

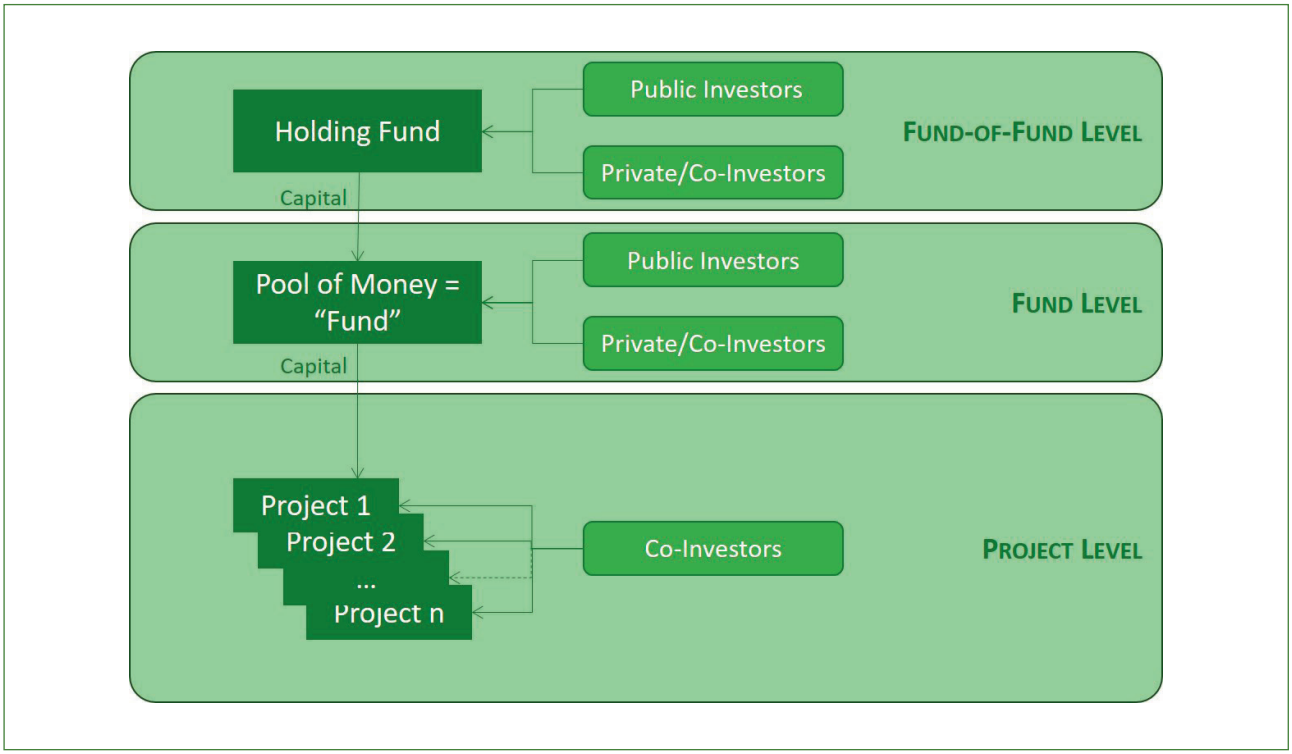

Figure 9: Organisational levels of fund models.

Usually, there is only one level of funds. But sometimes, funds invest in other funds, the former then being called **fund-of-funds** or "holding funds." Some of the Urban Development Funds (UDFs) under the JESSICA (Joint European Support for Sustainable Investment in City Areas) programme are prototypical examples.

Box 5: Latvian Baltic Energy Efficiency Facility (LABEEF)

The Latvian Baltic Energy Efficiency Facility (LABEEF) is a fund that pools money from founders, inter-national investors Funding for Future B.V. and a loan from the European Bank for Recovery and Devel-opment (EBRD). LABEEF purchases future receivables from Energy Service Companies (ESCos) that are able to use this money for further deep renovation projects. Receivables are generated through on-bill payments by tenants. ESCos can use further funding programmes on the project level.

Sources: EASME. Build Up – Practices: Latvian Baltic Energy Efficiency Facility. [online]. [Accessed 24.07.2020]. Available: https://www.buildup.eu/en/practices/publications/latvian-baltic-energy-efficiency-facility-labeef. RTU. Sustainable financing solutions for renovation of buildings! [online]. [Accessed 24.07.2020]. Available: https://sharex.lv/labeef-2/. For more see actnow-baltic.eu/learning/municipalities

Legal structures of funds vary not only by type of fund, but also from country to country. Typical considerations when deciding on legal structures are familiarity with these forms, tax issues and liability. Moreover, municipalities have to adhere to municipal laws for economic activities that they undertake. In this respect, funds do not differ from any other type of organisation.

3.5.3 | Stages of development

The development of an investment fund usually starts with the idea by one party and the initialisation (Figure 10). The second step is the decision on the management of the fund. The larger the fund and the more complex the structure, the higher are the demands on the management. Typically, specialised firms take over this task. Where (public national or regional) development banks or other financial service providers to municipalities exist, they are usually a candidate for this job. Small funds can also be managed by the municipal administration, maybe with the help or counselling of a specialised advisory.

The management usually develops the concept for the fund together with first investors or sponsors. This includes, as a final stage, the contract of association (or partnership agreement).

The fifth step can be the selection of the project or first projects, depending on the type of fund. We speak of **blind pools** in case no or only very few projects are known to investors. It is possible to include different types of investors at different stages of development. As risks are usually lower from an investor's perspective if the projects are all known, so are profit expectations by (private) investors. So, it may make sense to acquire and start to develop first projects before collecting money from investors and start operation of the fund. Typically, these kinds of urban development funds are closed-ended funds set up for a certain period of time: The fund management collects money for a certain time, then closes the fund and invests the money collected into projects. At the end, the managers dissolve the fund and divide the remaining money between investors. However, funds can also be open-ended, e.g. in the case of revolving funds.

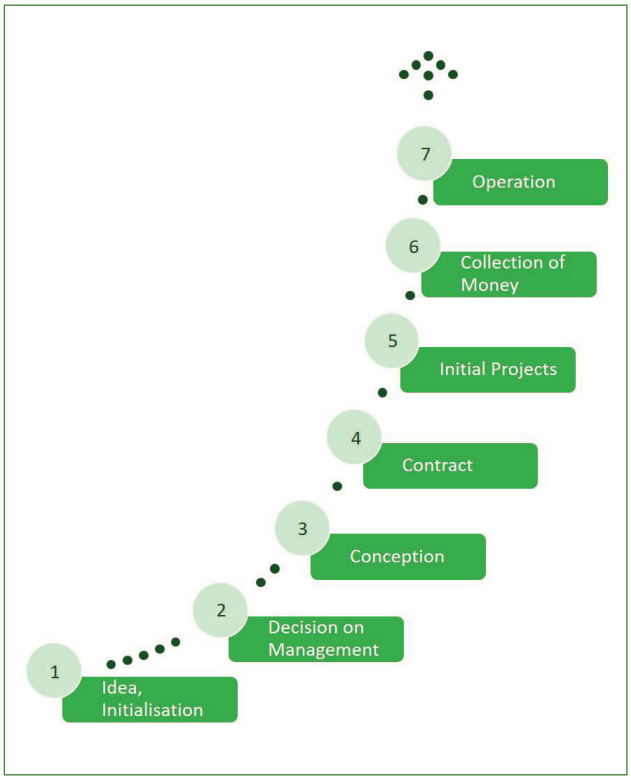

Figure 10: Stages of development of an investment fund.

3.6 | Energy Performance Contracting (EPC)

3.6.1 | Basic structure

Energy Performance Contracting (EPC), administered by Energy Service Companies (ESCos), is the financing technique for energy saving projects. It is well described in the literature and has been researched for quite some years, including challenges for municipalities to implement EPC. The general structure is as follows: The building owner is the contractee. She/he employs an ESCo as contractor. The contractor takes over the measures and often, but not necessarily, also the financing. She/he guarantees a certain performance level, i.e. specific savings (**performance guarantee**).

The state of ESCo markets significantly differs in the different countries. It may even vary within countries, as is the case in Germany: EPC seems to be more common in the southern part of the country compared to the north.

3.6.2 | Variants

There are several EPC variants including:

- An external private for-profit ESCo;
- **Intracting**, i.e. the contractor at the same time is also the contractee;
- "Citizen contracting" or **community contracting**, where the ESCo is a citizen energy company or community organisation.

In addition, the contractee may vary:

- The municipality directly;
- A public or private housing association;
- Private owners' associations or single private households.

Intracting means that the building owner creates an internal fund and transfers savings to this account. She/he can then use the money from this account and invest it in further energy efficiency projects or use it to pay for an energy manager.

Some suggest that community contracting makes much sense where local knowledge plays a major role and the community may be more risk-loving, have lower profit expectations and/or can anyhow reduce administrative costs, which enables her/him to implement even smaller projects.

3.6.3 | Performance guarantee and insurance

The performance guarantee, although obviously often not properly assessed in economic feasibility studies by municipalities, is a – if not *the* – central element in the EPC structure. But what if the contractor cannot pay in case the savings guarantee is not met? In some cases, an insurance is included that gives a performance guarantee for the case of a breach of contract or default.

3.7 | Carbon finance

Parties of the Paris Agreement have to develop and communicate concepts to reach country targets, their Nationally Determined Contributions (NDCs). To reach these targets, they can cooperate with other parties to the agreement. Among the instruments used to fulfil the goals are: carbon taxes, cap-and-trade systems (especially the EU Emission Trading System, ETS), emission budgets for non-ETS sectors under the so-called Effort Sharing Regulation and baseline-and-credit schemes (project-based mechanisms). Carbon markets built on these international commitments are called compliance markets. Some private persons, companies or governments voluntarily contribute to climate protection. For their efforts, they may generate voluntary offset credits that are traded on "voluntary markets." In principle, you can monetarise emission savings from energy efficiency projects through these different mechanisms.

So far, they play only a minor role, though, as revenues are often difficult to project before starting the project. Therefore, financiers are reluctant to build their calculations and financing on inflows from these mechanisms. Nevertheless, earning some more money through carbon finance, especially for a pool of several projects, can help to reach financial targets set by investors.

3.8 | Real estate finance and further models

There are other models and techniques used in real estate finance that partners may consider. We will expand on this related to the specific investment projects planned in different partner municipalities on actnow-baltic.eu/learning/municipalities and only very briefly touch it here.

Mortgage-based financing of energy efficiency measures is an example: Partly subsidised via public programmes, banks may offer preferential loan terms if certain standards are met. **Sale and lease back** is another structure known in the real estate sector: A party sales its assets to a third party that leases the property back to the former owner. In the case of energy efficiency projects, the third party can be an ESCo that implements certain retrofit measures.

Other models include grants by private entities, i.e. sponsoring or donations, small funds for climate protection measures or other types of PPP and Public-Community Partnership (PCP). A danger of PPPs, probably less so for PCPs, reported by project partners especially in Eastern European countries is the risk of being accused of corruption. Sometimes full transparency that is needed to mitigate this risk is not possible in early phases of negotiations with private investors or due to confidentiality clauses. Strict compliance rules may help, as do other trust building measures in the long-term.

Some municipalities administer public funds, potentially including donations, for small-scale climate protection measures by private households and companies. The administration could also be handled by another entity on behalf of the municipality. Different types of such **small funds for climate protection measures** exist, e.g. in Germany. They may hand out grants (grant fund), give guarantees (guarantee fund) or loans (revolving loan fund).

4 | An annotated list of useful documents and tools

More details on the various types of financing described above, further examples and additional ways how to finance energy efficiency projects can be found in the vast literature on this topic. We selected some English language sources (Chapter 4.1) and organisations that you may wish to contact for further questions and support in the nine *Act Now!* countries (Chapter 4.2).

4.1 | English language overviews, guidelines and collections of case studies

4.1.1 | Annotated List

- Citynvest: Innovative Financing Models, http://citynvest.eu/financing-models-matrix
  26 case studies characterised as public, public-private, private and citizen. The websites contain detailed case descriptions, downloadable as pdf file.
- Covenant of Mayors: Interactive Funding Guide – Financing opportunities for Sustainable Energy & Climate Action Plans, https://www.eumayors.eu/support/funding.html
  The interactive guide contains a list of different funding possibilities with short descriptions (countries, support to, support for, managing structure & coordination, descriptive text, funding info, beneficiary info, inspiring examples and useful links). A specific focus is put on European support programmes.
- Covenant of Mayors Office (2017): How to finance your local energy & climate actions? Get inspired by Covenant of Mayors cities & regions!, Brussels, http://www.eumayors.eu/index.php?option=com_attachments&task=download&id=110:TL_financement_web
  6-pages leaflet containing inspiring examples of various types of climate protection finance. The CoM Office briefly presents six cases, two each for EU funding, innovative schemes and support for citizen initiatives. See especially the revolving fund in Almada, Portugal, and the refurbishment of 42 municipal buildings in seven municipalities of the Rhodope Region, Bulgaria.
- ECORYS Nederland BV (2012), Local investments options in Energy Efficiency in the built environment. An overview of good practices, https://ec.europa.eu/energy/sites/ener/files/local_investments_energy_efficiency_built_environment_case_studies.pdf
  An overview with 24 different cases throughout Europe where energy efficiency investment projects have been carried out. It delivers project descriptions, financial characteristics and an analysis of every respective project.
- Energy Cities (2014) Financing schemes increasing energy efficiency and renewable energy use in public and private buildings, https://energy-cities.eu/wp-content/uploads/2019/01/infinite_solutions_comparative_analysis_web.pdf
  A comparison of different financing mechanism approaches carried out by nine local authorities. They deal especially with the option of revolving funds linked with intracting or soft loans.
- European Commission (2014): Technical Guidance. Financing the energy renovation of buildings with Cohesion Policy funding, https://ec.europa.eu/energy/sites/ener/files/documents/2014_guidance_energy_renovation_buildings.pdf
  This guidance delivers a roadmap to plan and deploy investments in renovating buildings with special regard to financing instruments and the Cohesion Policy funding.
- UNEP Finance Initiative (2017): EEFIG underwriting toolkit. Value and risk appraisal for energy efficiency financing, https://www.unepfi.org/wordpress/wp-content/uploads/2017/06/EEFIG_Underwriting_Toolkit_June_2017.pdf
  Although mainly addressed at financial institutions, this toolkit offers a comprehensive overview of financial instruments and cases to energy efficiency financing. Furthermore, it gives assistance to develop and execute an energy efficiency project.
- EUKI (2019): FINANCING ENERGY RENOVATION IN BUILDINGS. Guidance on financial schemes with a focus on Bulgaria and Romania, https://www.euki.de/wp-content/uploads/2020/03/EUKI-Financing-energy-renovation-in-buildings_Nov2019.pdf
  Includes both a step-by-step guide for designing a financing scheme and an overview of different financial instruments. Although a focus is on Bulgaria and Romania, the guide is applicable in many contexts.

4.1.2 | Further resources

On the project websites you will find links to more guidelines in other languages from countries represented in the *Act Now!* consortium.

There is a large number of research projects dealing with energy efficiency, some also focusing on financing. You find more on those funded through the EU framework programmes on the EASME project database at https://energy.easme-web.eu/#. You will find some of the projects and their outputs in our annotated list – but there are more to explore!

Act Now! is not the only INTERREG project focusing on energy efficiency. See, for example, the sister project EFFECT4buildings at http://www.effect4buildings.se/en/Pages/About.aspx. In the North-West Europe region, the project ACE-Retrofitting, for instance, has worked out "Financial Solutions for Condominium Retrofitting" (https://www.nweurope.eu/media/9615/dt411_financial_solutions.pdf).

4.2 | Contacts

Table 4 contains some addresses in *Act Now!* countries that you may wish to contact in case you have questions on financing your energy efficiency projects.

Table 4: Contact points in the Act Now! countries for financing energy efficiency projects.

Country	Contacts
Europe	**European Federation of Agencies and Regions for Energy and the Environment (Fedarene)** www.fedarene.org
Denmark	**Energy Agencies** Danish Energy Agency (DEA) https://ens.dk/en List of regional agencies: https://www.managenergy.net/managenergy-agencies?combine=&city=&country=dk **Public Banks** Nordic Investment Bank https://www.nib.int/ KommuneKredit https://www.kommunekredit.dk/ Den Grønne Fond http://gronfond.dk **Private banks (ESCOs)** SustainSolution http://sustainsolutions.dk
Estonia	**Regional Energy Agencies** Tallinna Energiaagentuur (Tallinn Energy Agency) https://www.tallinn.ee/est/energiaagentuur/ Tartu Regiooni Energiaagentuur (Tartu Regional Energy Agency) https://www.trea.ee/ **Energy Agencies** List: https://www.managenergy.net/managenergy-agencies?combine=&city=&country=ee **Public Banks** Nordic Investment Bank https://www.nib.int/ **Selected Association** Eesti Taastuvenergia Koda asutati http://www.taastuvenergeetika.ee/ **KredEx** https://www.kredex.ee/en **Keskkonnainvesteeringute Keskus (Environmental Investment Centre)** https://www.kik.ee/en/supported-activities

Country	Contacts
Finland	**Competence Centre for Sustainable and Innovative Public Procurement (KEINO)** https://www.hankintakeino.fi/fi **Energy Agencies** List of regional agencies: https://www.managenergy.net/managenergy-agencies?combine=&city=&country=fi Housing Finance and Development Centre of Finland (ARA) https://www.ara.fi/fi-FI Energy Aid https://www.businessfinland.fi/en/for-finnish-customers/services/funding/energy-aid/ **Public Banks** Nordic Investment Bank https://www.nib.int/ Kuntarahoitus https://www.kuntarahoitus.fi/ Motiva https://www.motiva.fi/ **Selected Association** Finnish Clean Energy Association https://www.lahienergia.org/
Germany	**Kompetenzzentrum Contracting** Deutsche Energie-Agentur GmbH (dena) https://www.kompetenzzentrum-contracting.de/ **Bundesverband der Energie- und Klimaschutzagenturen Deutschlands e. V. (eaD)** List of members: https://energieagenturen.de/der-ead/mitglieder/ e.g.: EnergieAgentur.NRW https://www.energieagentur.nrw/energieeffizienz Bremer Energie-Konsens GmbH https://energiekonsens.de/ Klimaschutz- und Energieagentur Niedersachsen GmbH (KEAN) https://www.klimaschutz-niedersachsen.de/themen/bauen-und-sanieren/index.php **Service- & Kompetenzzentrum: Kommunaler Klimaschutz (SK:KK)** Deutsches Institut für Urbanistik (difu) https://www.klimaschutz.de/service/das-beratungsangebot-des-skkk **Bundesverband Öffentlicher Banken Deutschlands (VÖB)** See regular members: https://www.voeb.de/wer-wir-sind/mitglieder/A-Z **Selected associations:** Arbeitsgemeinschaft für sparsame Energie- und Wasserverwendung (ASEW) https://www.asew.de/de/Energiethemen/Energieeffizienz/ Deutsche Unternehmensinitiative Energieeffizienz (deneff) https://www.deneff.org/ Verband für Wärmelieferung e.V. (VfW) https://www.energiecontracting.de/

Country	Contacts
Latvia	**Energy Agencies** List of regional agencies: https://www.managenergy.net/managenergy-agencies?combine=&city=&country=lv Ekubirojs http://ekubirojs.lv **Public Banks** Nordic Investment Bank https://www.nib.int/ Altum https://www.altum.lv/lv/
Lithuania	**Energy Agencies** Public Institution Lithuanian Energy Agency http://www.ena.lt/ Kauno Regionine Energetikos Agentura http://www.krea.lt/ Housing Energy Efficiency Agency http://www.betalt.lt/ The Environmental Projects Management Agency https://www.apva.lt/en/ Lithuanian Energy Institute (LEI) https://www.lei.lt/en/ **Public Banks** Nordic Investment Bank https://www.nib.int/ **Public Investment Development Agency (VIPA)** https://www.vipa.lt/en/home/
Poland	**Energy Agencies** Krajowa Agencja Poszanowania Energii (KAPE) www.kape.gov.pl Narodowa Agencja Poszanowania Energii (NAPE) https://nape.pl/ List of regional agencies: https://www.managenergy.net/managenergy-agencies?combine=&city=&country=pl National Fund for Environmental Protection and Water Management https://www.nfosigw.gov.pl/ **Public Banks** Bank Gospodarstwa Krajowego https://www.bgk.pl/ **Associations** Stowarzyszenie Poszanowanie Energii i Środowisk (SAPE) https://sape.org.pl/ **European Funds** https://www.funduszeeuropejskie.gov.pl/ **National Contact Point for Research Programmes of the EU** http://en.kpk.gov.pl/

Country	Contacts
Russia	**Energy Agencies** Russian Energy Agency (Российское энергетическое агентство) http://rosenergo.gov.ru/ **Center for Energy Efficiency (CENEf)** http://www.cenef.ru/ Investment advisory agency (Агентство инвестиционного консультирования) http://www.aginko.ru/ **Public banks** АО «МСП Банк» https://www.mspbank.ru/ ОАО «Сбербанк России» https://www.sberbank.ru/ **Associations** Russia Renewable Energy Development Association (RREDA) https://rreda.ru Fund for capital repairs of common property in apartment buildings in each Russian region (Фонд капитального ремонта общего имущества в многоквартирных домах в Калининградской области) http://fondgkh39.ru/
Sweden	**Energy Agencies** Swedish Energy Agency http://www.energimyndigheten.se/en/ National association of regional agencies (see also members' list) http://www.energikontorensverige.se/ **Sweden's Innovation Agency** Vinnova https://www.vinnova.se/ **Public Banks** Nordic Investment Bank https://www.nib.int/ KommunInvest https://kommuninvest.se/

4.3 | Glossaries of terms

You will find a glossary of terms on the *Act Now!* website actnow-baltic.eu/learning.

For more sustainable finance terms, see e.g. the glossary at the Swiss Sustainable Finance websites at https://www.sustainablefinance.ch/en/glossary-_content---1--3077.html and the EVPA websites at https://evpa.eu.com/glossary.

Annex

Box 6: The NPV formula and how to incorporate risk

Some technicalities, which underpin and hopefully help to understand what's written above:

Net present value (NPV) calculation is the textbook authors' favourite capital budgeting technique.

$$NPV = -O_0 + \frac{I_1}{(1+\mathrm{i})^1} + \frac{I_2}{(1+\mathrm{i})^2} + \cdots + \frac{I_T}{(1+\mathrm{i})^T} = -O_0 + \sum_{t=1}^{T} \frac{I_t}{(1+\mathrm{i})^t}$$

Outflow in time t = 0, i.e. upfront investment

Inflows (savings) in times t = 1 to t = T, discounted with interest rate i

Generalised for cases with interim investments O_t:

Time horizon: from t = 0 to t = T

Cash flow (CF) in time t
CF = Inflows (I) – Outflows (O)
Usually, CFs are uncertain!

$$NPV = \sum_{t=0}^{T} \frac{I_t - O_t}{(1+\mathrm{i})^t} = \sum_{t=0}^{T} \frac{CF_t}{(1+\mathrm{i})^t}$$

i: interest rate used to discount cash flows

Generally, the Net Present Value (NPV) is calculated by summing up Cash Flows (CF) of the respective periods t from t = 0 to t = T, discounted with the interest rate (i) of the respective period. Since net cash flows are calculated as inflows (I) minus outflows (O), we get:

1. $$NPV = \sum_{t=0}^{T} \frac{CF_t}{(1+i_t)^t} = \sum_{t=0}^{T} \frac{I_t - O_t}{(1+i_t)^t}$$

Let's assume, there would be something like a risk-free interest in the world, call it "i". In that case, you can simplify Formula 1 to:

2. $$NPV = \sum_{t=0}^{T} \frac{CF_t}{(1+\mathrm{i})^t} = \sum_{t=0}^{T} \frac{I_t - O_t}{(1+\mathrm{i})^t}$$

In reality, it's difficult not only to find the "right" discount rate, but also to identify the amount of cash flows. Savings over time from energy efficiency projects (inflows) are uncertain. They depend, among others, on weather conditions, user behaviour and other improvements in the buildings under consideration. Therefore, it's sometimes complicated to attribute more or less savings to different causes.

Continuation: The NPV formula and how to incorporate risks

Introducing risks makes things complicated. Some people just subtract safety margins from inflows I and add them to outflows O. They often haircut cash flows in an arbitrary manner, using conservative or lowball values. Others apply a "risky discount rate", i.e. add a risk premium to our interest rate i, either arbitrarily as a kind of safety margin for the discount rate or based on a more or less sophisticated theoretic model. Some appraisers do both, which makes things worse as this may lead to double counting of risks.

The theoretically "correct" answer to the risk problem is the following: Use the Certainty Equivalent (CE) of the cash flows and discount it with the risk-free interest rate! The Certainty Equivalent is the guaranteed amount that you would take instead of the bet. If you know how risk averse or risk loving you are, you can use your risk utility function to calculate certainty equivalent values of cash flows. Let $\widetilde{CF}_t$ be the risky cash flows in period t, $E(\widetilde{CF}_t)$ the expected value, $Var(\widetilde{CF}_t)$ the variance and r the absolute risk aversion. Then the net present value under risk is calculated as

$$NPV = \sum_{t=0}^{T} \frac{CE(\widetilde{CF}_t)}{(1+\mathrm{i}_t)^t} = \sum_{t=0}^{T} \frac{E(\widetilde{CF}_t) - 0{,}5 \cdot r \cdot Var(\widetilde{CF}_t)}{(1+\mathrm{i}_t)^t}$$

This "ideal" calculation method comes with high demand on expertise and levels of information on the side of the evaluator, though. Hence, it is not applied very often. However, it may give an idea what to consider when calculating deductions from inflows and risk premia for outflows rather than setting them arbitrarily.

Change inflows and outflows for benefits and costs in the above equations, and you get the formula for Cost-benefit analysis (CBA)!

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Further *Act Now!* Material:
'*Act Now!* Manual From SEAP to Investment'
'*Act Now!* Guideline Energy Efficiency Strategy for Municipal Buildings'
'*Act Now!* Guideline Identification of Most Effective Energy Efficiency Measures'
'*Act Now!* Guideline Public Private Partnership'

***Act Now!* project website:**
https://actnow-baltic.eu/

***Act Now!* online learning platform:**
The four guidelines helping you to set up and implement your energy efficiency strategy:
actnow-baltic.eu/learning
Further tools and helpful information (Questionnaire, SWOT analysis, Capacity Self-Assessment Tool etc.):
actnow-baltic.eu/learning/tools
Examples from the municipalities which improved their energy efficiency capacities in the *Act Now!* project (Municipality Reports, actual Capacity Building Schemes and Case Studies, Feasibil-ity Studies etc.):
actnow-baltic.eu/learning/municipalities


ACTION FOR
ENERGY EFFICIENCY
IN BALTIC CITIES
ACT NOW!

Glossary of financing terms

Alternative Investment Vehicle
Legal entity created to invest into "alternative investments," i.e. financial assets other than "traditional" → bonds, cash and stocks.[1], [2]

Asset-backed securities
An asset-backed security (ABS) is a security that is backed by credit claims such as building loans, auto loans or credit card receivables. An ABS arises when a bank sells such assets to a special-purpose vehicle, which finances its operations through the sale of those asset-backed securities.[3]

Blind Pool
An → investment fund in which the investors do not know what type of business activity or companies they are investing in.[4] Usually, the initiator describes the type of investments to be made, i.e. the investment criteria.

Bond
A bond is a form of → dept capital procurement through the issue of → securities with mostly fixed interest. The bond is issued for subscription at a specific time and usually has a fixed term. Issuers repay the nominal value of the bond at the end of the term. Usually, they make interest payments once a year.[5]

Business Angels
Subgroup of investors, who, in addition to financial contributions, also provide non-monetary support services for young companies. These services include providing contacts to potential business partners and financiers, assistance through extensive market knowledge, and in part, taking over functions in the company to provide infrastructure.[6]

Civic Crowdfunding
Financing of projects dedicated to a "civic" purpose, initiated by "civic" initiatives, supported by individuals and organizations with "civic" intentions, and (often) intermediated on online platforms which dedicate themselves to "civic" purposes and stakeholders.[7]

Community Contracting
Type of energy performance contracting where the contractor is a → community energy company.

Community Energy
Community Energy is energy which is derived from an energy project driven and carried through by a group of local people and which brings collective benefits to the local community. The project is usually characterized as open and participatory in the process and local and collective in the benefits.[8]

Concessional Funding
Funding at preferential or lenient terms such as no or below-market rates of interest, extended grace periods or longer amortization schedules. In case of → debt financing also called "soft loan".

Crowdfunding
Practice of getting a large number of people to each give small amounts of money in order to provide the finance for a project.[9]

Debentures
Securities evidencing creditors' rights, in particular the right to receive interest and the right to receive repayment of principal. → Bond or other type of → debt capital without collateral.[10]

Debt Capital
Capital provided by creditors in return for the promise to repay principal and interest on the debt on a regular schedule, independent of the earnings situation. Creditors do not participate in financial losses of the lender. At the same time, they typically do not have any decision-making rights on behalf of the lender.[11]

Energy Performance Contracting
In energy performance contracting, a specialized energy service company (contractor) implements long-term projects (usually 7-10 years) in close partnership with the building owner or operator in order to achieve sustainable energy savings. The contractor is responsible for the conception, planning, financing, implementation and proof of success of the energy saving measures. Refinancing of all investments and services takes place during the contract period, namely from guaranteed energy cost savings.[12]

Equity Capital
Funds which the owners have contributed into their company from outside and left to it for an unlimited period of time or which they have left to it by waiving profit distributions. Equity capital is shown on the liabilities side of the balance sheet.[13]

Financial Engineering
Describes customized financial services to adapt (divide and [re-]combine) elements of a financing instrument, so as to better meet the preferences of customers.[14]

Forfaiting
From the exporters' point of view: the generally non-recourse sale of individual medium- to long-term export receivables to forfaiting companies or to forfaiting credit institutions (forfaiters). The term "à forfait" means that the receivables are purchased by the forfaiters as a whole (in "lump sum"), i.e. with all risks.[15]

Fund-of-funds
Investment fund, whose assets are invested entirely or predominantly in units of other investment funds (target funds). The objective of fund-of-funds is to achieve a greater spread of risk through diversification across investment funds and portfolio managers.[16]

Grant
Private grants from a shareholder resulting from the corporate relationship are additional equity of the receiving company and, in the case of corporations, must be accounted for as capital reserves.[17]

Green Bond
Fixed-income security that is used to raise capital for activities to reduce or prevent environmental or climate damage. Green bonds are financial instruments that belong to the field of "green finance". They are often simple → bonds (with fixed interest rates and fully redeemable at maturity) or → asset-backed securities, distinguished from other → securities by the specific use of the funds for environmental issues. Some green bonds are corporate bonds issued by companies in the environmental sector, while others are directly assigned to environmental or climate projects or finance tranches of several projects.[18]

Guarantee
Guarantee involves a promise by one party to assume responsibility for the debt obligation of a borrower if that borrower defaults. Usually, a surety bond or surety is a promise by a surety or guarantor to pay one party (the obligee) a certain amount if a second party (the principal) fails to meet some obligation, such as fulfilling the terms of a contract.[19]

Intracting
Financing from itself, by means of the money saved by the energetic measures. Through initial start-up financing, a special budget is created. This money is used to finance initial measures that will lead to cost savings over time. The difference between the energy costs incurred before and after is credited to the special budget item. This can then be used to finance new measures and also to amortise the start-up financing over time. Instead of an external service provider, an organisational unit from within the administration assumes this role. Intracting takes place mainly in public sector households, especially in larger local authorities (municipalities), and in larger public corporations (churches).[20]

Investment Fund
An investment fund is a special fund managed by an investment company which is invested in assets such as shares, bonds or real estate. Hedge funds and private equity funds are examples of such alternative investment funds (AIFs). By purchasing such instruments, investors can become co-owners of a – typically broadly diversified – portfolio at relatively low cost. Portfolios are broadly diversified in order to mitigate the risk of loss associated with the investment.[21]

Local Government Funding Agency
Financial institution that serves as a vehicle for local government authorities such as municipalities, county councils and regions to access capital markets for the purpose of jointly procuring credit for public investment projects.[22]

Mezzanine Capital
Type of financing that combines characteristics of → equity capital and → debt capital. Senior to common shares but junior to secured debt or senior debt. Refers to subordinated debt or preferred equity and is usually more expensive for the issuer than issuing senior debt.[23]

Mortage-Based Financing
General term for any type of financing based on a “mortgage”, i.e. a legal mechanism put into place which allows the provider of the capital to take possession and sell the secured property – an action called "foreclosure" or "repossession" – to pay off the debt in the event the borrower fails to abide by its terms. Usually a mortgage loan.[24]

Performance Guarantee
In the case of → energy performance contracting, a contractually defined savings guarantee is agreed in relation to the previous annual energy costs (baseline). The contractor is obliged to meet this baseline. If the baseline is not met, the basic fee is reduced. If the baseline is exceeded, there is usually a bonus for the contracting customer and the contractor.[12]

Private Placement
Sale of shares or other type of financing directly to (a small group of) investors rather than on a stock market.[25]

Public Bank
Credit institutions organized under public law and credit institutions organized under private law (stock corporations, limited liability companies) whose capital is held directly or indirectly by the Federal Government, the federal states or other regional and local authorities and which perform special tasks arising from or in the public interest.[26]

Real-Estate Investment Trust (REIT)
Company that owns and typically operates income-producing real estate or related assets. Unlike other real estate companies, a REIT does not develop real estate properties to resell them.[27]

Sale and Lease Back
Sale of an existing asset to a (financial) institution that then leases it back to the user.[28]

Security
A security is a document evidencing a property right in such a way that the right under the document can be enforced against the debtor only if the right holder of the document presents it to the debtor.[29]

Small fund for climate protection measures
Public funds, potentially including donations, for small-scale climate protection measures by private households and companies. They may consist of → grants (grant fund), → guarantees (guarantee fund) or loans (revolving loan fund).[30]

Structured Finance
Collection term for financing instruments other than traditional loans, characterized by complex economic, legal, tax or contractual arrangements (→ financial engineering).[31]

Structured Fund
Investment fund that pools money from different sources using → structured finance techniques.

Sustainable Finance
Refers to the inclusion of environmental, social and corporate governance aspects in the decisions of financial actors.[32]

Venture Capital
Investment in a start-up business that is perceived to have excellent growth prospects, but does not have access to capital markets. Type of financing sought by early-stage companies seeking to grow rapidly.[33]

Waterfall Principle
Financial surpluses generated from a project are first used to maintain the project itself, followed by interest and principal payments to the senior lenders, followed by distributions to more junior and finally to equity investors.[34]

YieldCo
Companies that hold a portfolio of renewable energy assets, usually with a highly contracted and predictable cash flow, with very good credit at the offtakers side. They usually do not bare R&D-risks, but acquire assets.[35]

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