

GUIDE

ENERGY

PERFORMANCE

CONTRACTING



EFFECT4buildings

Investments in energy efficiency are not currently happening at the rate needed, hindered by barriers such as high upfront costs, lack of access to finance, high perceived risk, lack of trust in new technologies, competing investment priorities, lack of knowledge, awareness and personal resources, and split incentives. Many of these barriers can be overcome, at least significant part, with well-designed financial tools and instruments.

The Interreg Baltic Sea Region Program 2014-2020 project EFFECT4buildings is providing building owners and managers with a set of financial tools and instruments to support the implementation of more energy efficiency measures, developed, and improved in real cases.

The main target group is building managers in charge of public or privately owned building portfolio.

The nine tools are:

- Convincing Decision makers
- Financial calculations
- Bundling
- Funding
- Energy Performance Contracting
- Multi Service Contracting
- Green Lease Contracting
- Prosumerism

EFFECT4buildings was implemented from 2017 to 2020 with the support from the Interreg Baltic Sea Region Programme 2014-2020. There were seven partner countries – Denmark, Estonia, Finland, Latvia, Norway, Poland, Sweden.

The project was also a part of the implementation of the EU Strategy for the Baltic Sea Region (EUSBSR), being a flagship project under policy area Energy and the horizontal action Sustainable development. Flagship projects demonstrate the progress of the EUSBSR and serve as pilot examples for desired change.

The full toolbox can be found on project webpage: www.effect4buildings.se

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ENERGY PERFORMANCE CONTRACTING

Energy Performance Contracting (EPC) is a well-tested and successful tool that has been helping building owners reach their energy and climate targets more quickly than with traditional implementation of energy saving measures. Still there is potential for more use of EPC to reach unrealised saving potential in public sector. To promote the use of EPC, this guide introduces an improved implementation model based on the present market situation and experiences in Denmark, Sweden, Finland, Norway, Poland, Estonia, Latvia and Lithuania. The main novelty aspect being contract-based partnership during the analysis phase of EPC projects.

This guide includes a description of adapted tender documents proposing new selection criteria better suited to the goals of public building owners, as well as contract templates, an EPC presentation and a step-by-step guideline for starting up an EPC project – all gathered in a tangible EPC toolbox.

Let's understand the problem

EPC is a model for implementation of Energy Efficiency (EE) measures with guaranteed results in public and private buildings. In EPC projects, energy savings are used to cover investment costs. Both technical and financial risks are hence outsourced to an Energy Service Company (ESCO), also called the EPC supplier. EPC is used to implement a high number of EE measures within a short time period. Its improved implementation will help reach climate and energy targets at a faster rate and speed compared to the use of inhouse public resources.

Implementation in four phases:

Phase 0: Start-up and tender phase

Phase 1: Energy analyses and project development phase

Phase 2: Implementation and construction phase

Phase 3: Energy-saving and guarantee phase

The last one distinguishes EPC projects from other typical turnkey projects, as EPC includes guaranteed savings for an agreed number of years after all the energy efficiency measures have been implemented.

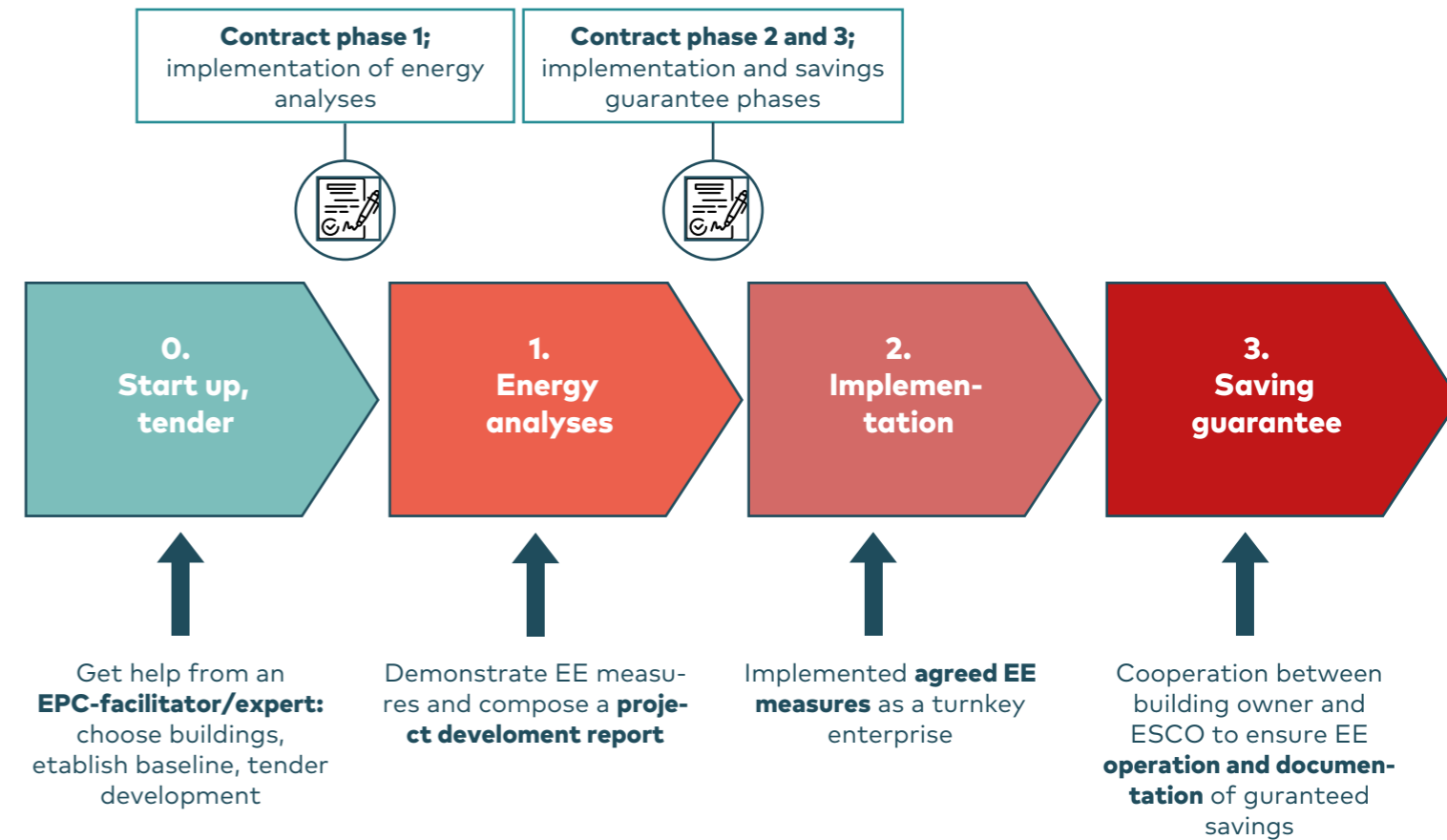


FIGURE 2. THE PHASES OF AN EPC PROJECT

Over the last 10-15 years, then EPC model have been tested in many EU and Nordic countries. The concept has been implemented in many public buildings in the emerging Polish EPC market, but is still little known in Estonia, Latvia and Lithuania.

Several studies, e.g. the EPC market report by the Nordic Council of Ministers concludes that EPC is beneficial for the building owners, but there is still a large saving potential and possibilities for further development. The most common barriers for growth are the complexity of the concept, "heavy" procurement process, lack of knowledge, lack of good practice examples and documented results, lack of trust and active facilitators.

To reach goals on climate and energy, the use of EPC in the building sector needs to increase since the model is designed to reach these targets at a higher rate and speed than many other energy efficiency tools and instruments.

Solution

EFFECT4buildings developed the improved EPC implementation model based on experiences from EPC projects and market reports listed in the references. Although the partner countries implemented the model in somewhat different ways (like in terms of financial structure and contractual basis), the implementations are to a large extent comparable.

The obvious and most common successes include savings in energy use, reductions in CO₂ emissions (on average, 18-50% reduction in public buildings), the modernisations of technical building standards and the allocation of funds based on saved energy to other public areas. EPC projects reduce maintenance budgets and secure investments, and the guarantee is particularly important for actors with limited budgets.

Many EPC projects have had common challenges. There is no designated legal framework for EPC in the partner countries, expectations from the project can hence differ a great deal from country to country. The start-up of new EPC projects is hindered by a lack of knowledge, the complexities of the model and its procurement, a lack of trust in the model as well as a lack of facilitators. Other challenges come from too little emphasis being put in the start-up phase (0) on creating ownership and hence on anchoring the project in the organisation, and from insufficient cooperation in Phases 1 between the building owner and the ESCO. From the ESCO's perspective, defective and incorrect baseline data, including errors in energy data and operating conditions, pose a high risk. Many of these challenges are less common in Denmark.

The solution offers an improved way of implementing the EPC model, which ensures successful implementations of future EPC projects, thanks to the following improvements:

- allocating enough time by the building owner to developing and following up the EPC project;
- improving cooperation agreement and/or partnership contract between the building owner and the EPC supplier, which is particularly important during the analysis phase;
- equalising differences in knowledge between customer and supplier, by bringing in one or more relevant experts, e.g., a skilled EPC facilitator;
- considering options to lower transaction costs;
- improving the calculated guarantees of tenderers;
- improving templates for tender and contract documents; and
- conducting risk assessment analysis.

The improved EPC implementation model

Most suggested improvements focus on the first two phases of the EPC process, the start-up and tender

phase (0) and the energy analyses and project development phase (1). This is because these two phases are critical for the choices and decisions that form the basis for failure or success in the implementation (2) and guarantee (3) phases.

Phase 0 – start-up and tender phase

As part of an "EPC toolbox" found under Annexes a short step-by-step guideline for building owners on how to start an EPC project and a presentation that will help introduce EPC in own organisation has been developed. The toolbox also includes templates for tender documents and associated annexes for the announcement of an EPC tender. Based on our findings, new elements have been included in order to ensure a fair balance between the customer and the EPC supplier.

Summing up it is emphasized that building owners need to gain deep knowledge about the building stock, and to identify goals for the project during Phase 0. The building owner must devote resources to the project, and it is important that there be a sense of ownership to it, from both the administrative and political perspectives. This having been accomplished, the search of the right EPC supplier can begin. At this stage, it is recommended that the building owner ask for assistance from an EPC facilitator, a person with expertise in EPC processes and interaction.

A recommended procurement process starts with a pre-qualification of 3-5 EPC suppliers/ESCOs where implementation skills and relevant experience are among the qualification requirements. The qualified suppliers then compete by delivering a proposal containing energy efficiency analysis of 1-3 representative sample buildings as part of the proposal work. Analyses are prepared using the same energy audit template, where measures, investments and savings are summed up. The total net present value of these measures and the cost of Phase 3 constitute two of several award criteria. Other suggested award criteria besides price are; technical quality of equipment and installations, mark-up percentage, description of project understanding and the cooperation process. The EPC suppliers answers to these criteria will constitute the basis for later full scale analyses and description of measures. Award criteria must be weighed according to the customer's goals and expectations from the project.

If the building owners' overall goals are to fill maintenance gaps and to include deep renovation measures, price should not be assigned the highest weight.

Phase 1 – The analysis phase based on partnership agreement

In the new implementation model, Phase 1 is based on contract-based cooperation in a partnership agreement. In Phase 1, the measures to be implemented

in Phase 2 are based on the "open book" principle, where measures are found in cooperation on both choices of function and economy. In the partnership contract, both parties' services and deliveries are contractually agreed upon, a process meant to create understanding and trust between the parties. Phase 1 results in a unified pre-project plan, including a project development report that summarizes all the agreed measures. Once the pre-project is completed and approved by the customer, the supplier is paid an agreed fee for Phase 1.

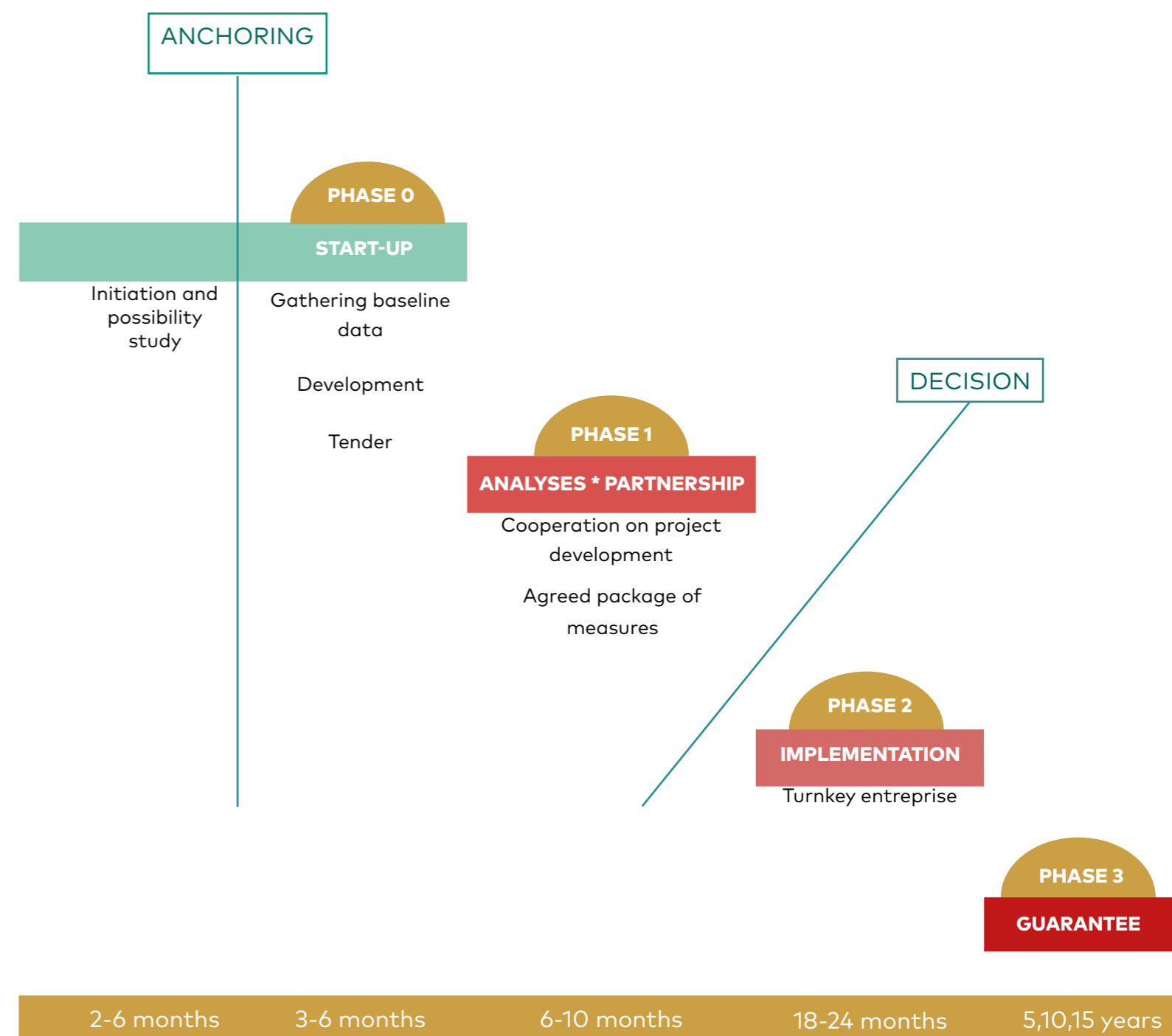


FIGURE 3. AN EPC PROJECT WITH A CONTRACTUAL PARTNERSHIP IN PHASE 1.

A partnership contract includes

A partnership contract includes

- objectives and attitudes for the analysis phase;
- the organization of the project;
- the work, the process, and the delivery and performance; and
- rights to use the project's materials and documentation.

The final result of Phase 1 is a project development plan with measures agreed by the parties. These measures will be implemented as a turnkey enterprise in Phases 2 (implementation) and 3 (guarantee). (A Norwegian official standard for EPC projects, NS6430, exists and might be useful also for other countries – especially for Phases 2 and 3 of EPC projects.)

Experience from testing and recommendations

EPC with a contract-based partnership in Phase 1 is not necessarily the best implementation method for all municipalities and building owners. Sometimes, traditional EPC will be a better alternative, especially if one uses the improved templates and takes into account recent marked experience.

A contract-based partnership might require more time allocated for meetings during Phase 1 than does traditional EPC, but also more expertise, in terms of contract development, energy efficiency, and technical issues. Phase 1 of a partnership project requires the customer to do the very same work as that which is done during Phase 0 of a successful traditional EPC project, so both implementations actually takes a similar amount of time. Adapted for contract-based partnerships, however, the new templates would have to be modified to be used in traditional EPC.

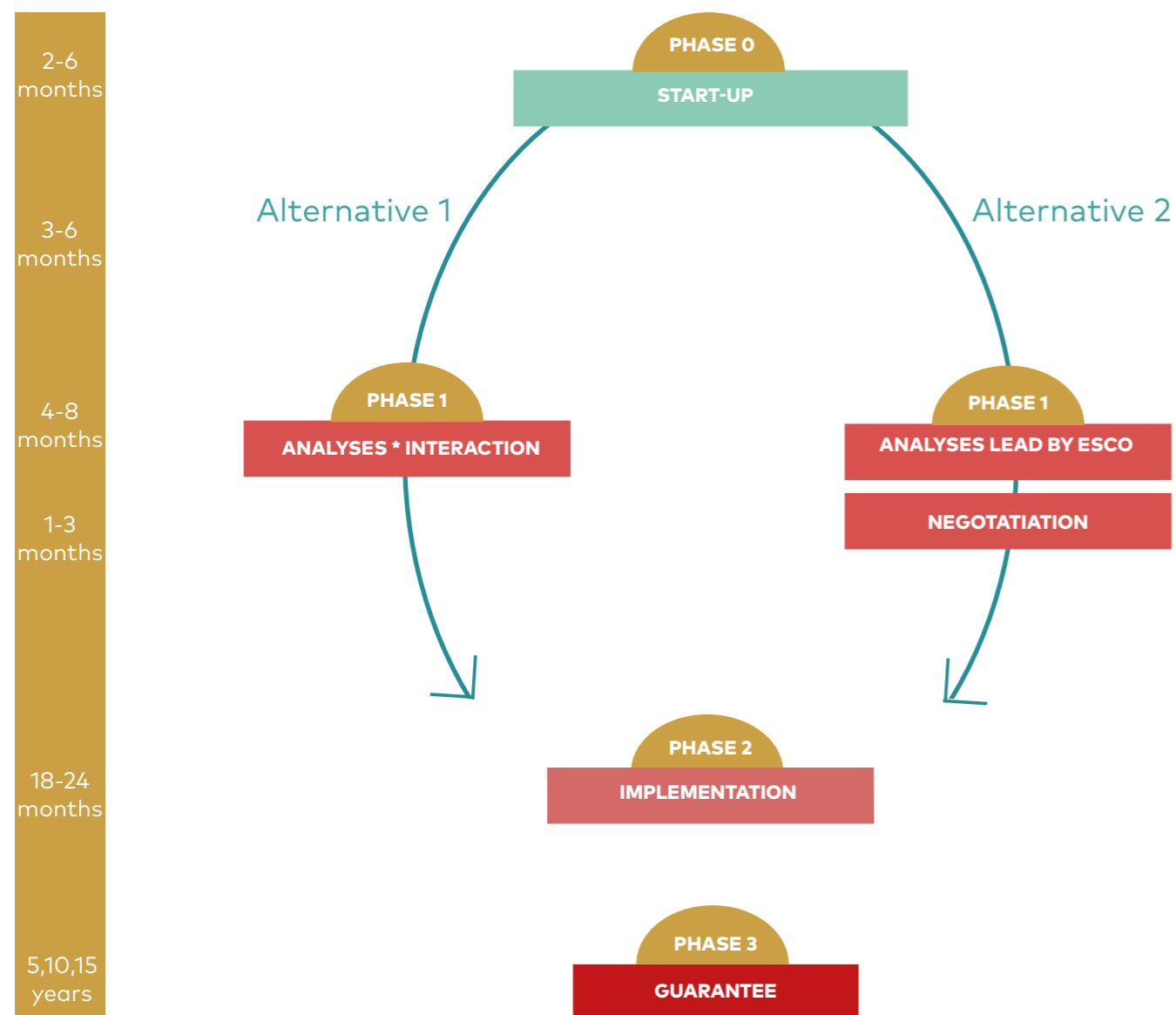


FIGURE 4. TWO IMPLEMENTATION MODELS FOR EPC

Figure 3 shows two possible paths of an implementation model: Alternative 1 includes a partnership in Phase 1 (the new implementation model), and Alternative 2 shows the more traditional implementation model for Phase 1. The latter divides Phase 1 into two steps.

The project results in (i) the description of a revised implementation model; and (ii) revised templates, gathered in a tangible EPC toolbox (see Annexes), which can be used by public building owners from the beginning (a start-up phase) of an EPC project to its implementation. The goal is that the newly developed templates will be used by all EPC-customers/building owners, regardless of the choice of partnership in phase 1.

Although elaborated, the documents are templates and examples. Hence, they must be adapted to each project to reflect the customer's goals and expectations. They should also be adapted to national laws and regulations and verified by national legal counsel / lawyer in each country.

The principles of EPC with guaranteed energy performance can also be used in maintenance contracts. To this end, the project developed templates for Energy Performance Maintaining Contracts.

Combination with other tools

Energy performance contracting (EPC) is one of the most used and tested instrument in implementation of energy efficiency. The EPC tool works together with financial calculations and energy monitoring, which is one of the technological solutions presented in the EFFECT4building project. Financial calculations, Bundling, Convincing decision makers, and Funding are used as a part of EPC. Green Leasing Contracts and Prosumerism can also be part of an EPC contract. Technological monitoring systems are necessary to measure the savings made, showing that EPC are largely integrated with other tools an instruments.



Conclusions

The EPC model is a well-tested and successful tool that has been helping public building owners and local and regional authorities reach their energy and climate targets more quickly than with traditional implementation of energy saving measures.

Reaching our energy and climate targets in a rapid and efficient manner should be an overriding public goal in today's climate situation. Yet recent findings show that many public building owners are reluctant to implement EPC despite large documented saving potential and prior successes with the EPC model.

Increasing the use of EPC requires efforts to introduce it among building owners, deepen their knowledge about EPC and hence raise their interest and trust in the model. It calls for an emphasis on disseminating relevant information about the savings potential of existing building stock, knowledge of the different implementation models and their pros and cons, along with the new tools and instruments now available. To that end, this EPC guide and the new EPC toolbox has been developed.



TOOLS

1. Guideline for EPC customers - how to start an EPC project
2. EPC Training material
3. Tender for procurement of EPC supplier. Template.
4. EPC tender analyses. Template
5. Baseline data. Template.
6. Checklist for qualification and award criteria. Template
7. Partnership contract for Phase 1, Analyses. Template
8. Project development report and energy analyses. Template
9. Attachment to contract terms for Phase 3, Guarantee. Template

FIND ALL TOOLS HERE

www.effect4buildings.se/toolbox/energy-performance-contracting/

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