

GUIDE BUNDLING



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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BUNDLING

Taking care of many measures simultaneously in energy investments is difficult, but bundling can make it easier. It enables one to combine many small measures into one package, which can increase the profitability of an investment and make it look more attractive to potential investors. One of various ways of approaching bundling is combining Total Concept Method (TCM) and Total Tool, which can help illustrate the economic profitability of individual measures. Being cost-effective and helping understand energy investments, bundling can also be used as a standard in energy audits, and it can help find an optimal funding source and receive financial aid.

Let's understand the problem

Energy efficiency measures often consist of many small investments. They can be so technical that decision makers can have problems understanding them. An energy audit may result in a long list of possible measures in many fields. The risk of "cherry picking" (choosing individually most profitable solutions) is high, and many building managers have confirmed experiencing it when facing decision makers. Picking low-hanging fruits often results in sub-optimal solutions, since it is cheaper to use several measures at the same time in a building. Furthermore, measures are often interlinked, one measure depending on another – and vice versa.

Creating a set of several energy efficiency measures is one solution. Another one is grouping less profitable measures into a larger package and not justifying them individually. Such an "energy efficiency package" would prevent the risk of cherry picking, since decision makers do not have to learn all the details about these measures. Not only is such an approach easier to communicate, but also it can give a better overview, thereby helping focus the discussion on a strategy rather than on details. Such an energy efficiency package can be presented along with other investment needs.

Thus, building managers need methods for bundling investments, but also training to learn how to use them. Some bundling tools were developed by previous projects, and then adopted and implemented in EFFECT-4buildings.

Basically three different kind of bundling types can be identified:

1. Bundling energy efficiency measures in one building/project
2. Bundling several energy efficiency measures of the same type in several building/locations, to reach a critical size of investment, e.g., street lighting or HVAC
3. Bundling multiple energy efficiency measures of different types in several buildings/locations

Solution

Bundling is a way to merge many small investments into a large investment package. Thus, instead of choosing a single energy efficiency solution, bundling makes it possible to make large-scale investments or deep renovations, thus creating possibilities for larger scale renovations and retrofitting. This makes bundling a perfect option for, when considering different ways how to accelerate and encourage the implementation of energy efficiency measures.

Bundling can be carried out with the Total Concept Method (TCM), which aims to improve energy performance in buildings in terms of assuring the maximum profitable energy savings. TCM and feasibility calculations are based on increasing the implementation of energy efficiency investments. TCM helps building owners understand the financial benefits and opportunities of energy retrofitting, making it possible to go much further with energy improvements.

Implementing all measures separately increases design and construction work and other overhead costs, compared to a bundled investment package. By forming an action package, both single cost-efficient measures ("low hanging fruits") and more costly ones are considered. The most economically profitable measures will assist less profitable ones, making the complete action package fulfil profitability frames.

Bundling as a tool is based on deep understanding of Total Concept Method and Total Tool. TCM has been proven a handy and workable in several implementation cases in diverse public buildings and other premises. It facilitates local building managers to provide a realistic feasibility assessment on how to implement an extended energy efficiency measures package and how to convince decision makers to make the final implementation decision. For these purposes a comprehensive and convenient training material presentation of TCM and Total Tool has been gathered to increase the awareness of main target group and other stakeholders.

The work process of the total concept is divided into three steps:

- Step 1: Creating the action package
- Step 2: Carrying out the measures
- Step 3: Following up

TCM provides an action plan comprising a package of energy efficiency improvement measures that as a whole fulfils the property owner's profitability requirements. The profitability assessment in TCM is based on the internal rate of return (IRR) method, which assesses each investment by the actual profit it creates, expressed as an internal rate of return.

These IRR values vary between single measures, which in practice means that the most economical and the most profitable measures, as shown in figure 1, will assist the funding and implementation of less profitable measures. Operating this way, the complete action package will fulfil the profitability frames set by the building owner.

Basic principles of TCM and Total Tool should be clearly explained—preferably, using data visualization—to the decision makers and all other essential stakeholders involved in the energy efficiency implementing process.

In some cases, however, charts like Figure 2 can be particularly useful. For example, this chart can be used to clarify the profitability and IRR values of each single measure included in the package, thereby helping the target group to analyze and understand the material and all the calculations provided by Total Tool.

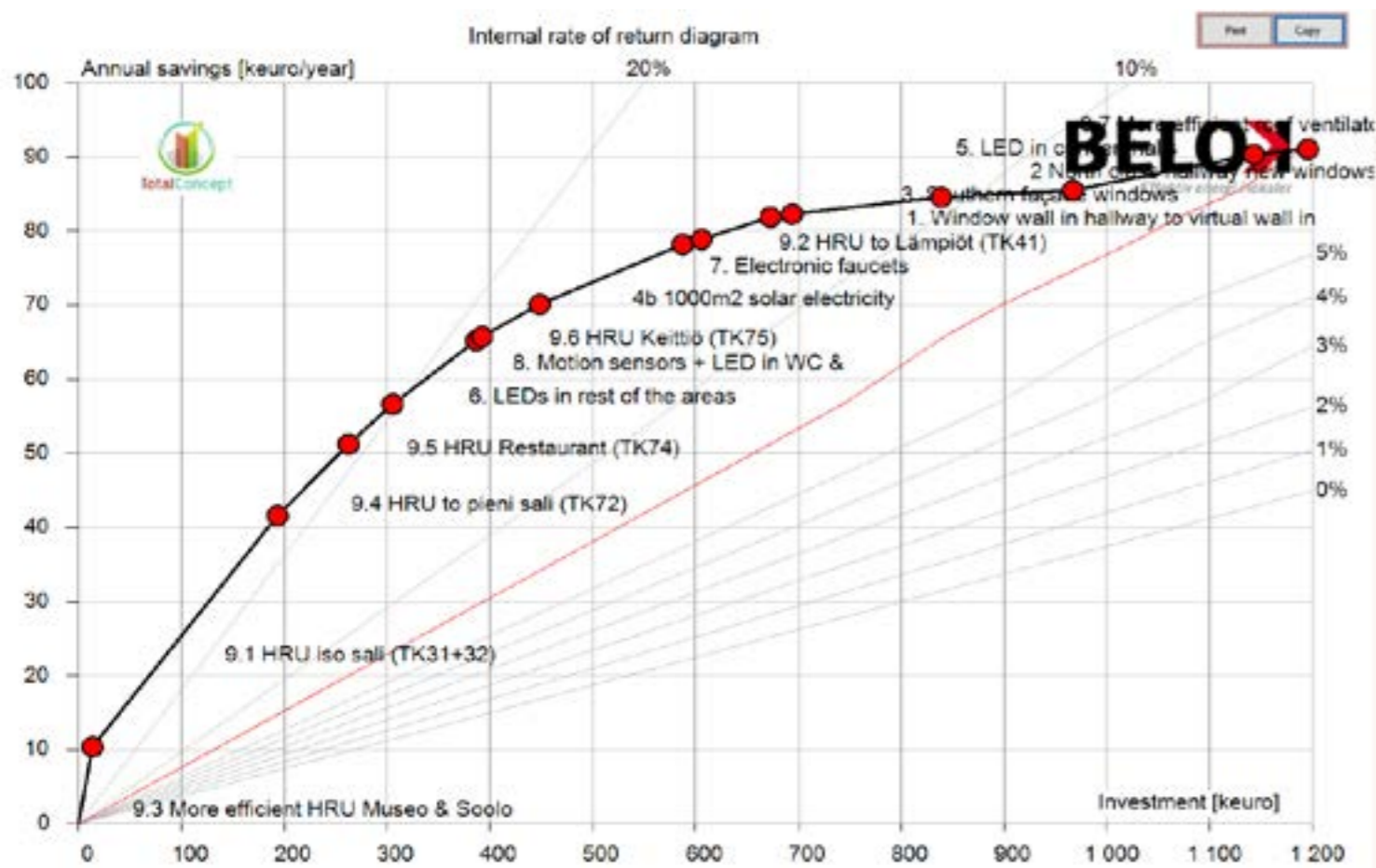


FIGURE 1. ALL BUNDLED MEASURES COMBINED IN ONE CHART

E.	N.	Name	Economic calculation period [year]	Investment [keuro]	Internal rate of return [%]	Heat energy saving [MWh/year]	Heat energy cost saving [keuro/year]	Electricity saving [MWh/year]	Electricity cost saving [keuro/year]	District cooling energy saving [MWh/year]	District cooling cost saving [keuro/year]	Other cost savings [keuro/year]	Total cost saving [keuro/year]	Profit [€]	Sum of internal rate [%]	LCC [keuro]
1	9.3	More efficient HRU Museo & Soolo	20	13.6	79.14	169	10.14	3	0.27	0	0	0	10.41	8.11	79.16	-160.21
2	9.1	HRU Iso sali (TK31+32)	20	180	19.12	520	31.2	0	0	0	0	0	31.2	1.84	23.62	-340.34
3	9.4	HRU to pieni sali (TK72)	20	69	15.33	161	9.66	0	0	0	0	0	9.66	1.48	21.52	-92.04
4	9.5	HRU Restaurant (TK74)	20	43	13.60	90	5.4	0	0	0	0	0	5.4	1.33	20.45	-47.00
5	6.	LEDs in rest of the areas	15	81.3	8.98	-142	-8.52	174	15.66	48	1.44	0	8.58	0.96	18.44	-103.15
6	8.	Motion sensors + LED in WC &	15	5.6	8.10	-7.1	-0.42	10.5	0.94	1.3	0.03	0	0.55	0.91	18.32	-6.55
7	9.6	HRU Keittiö (TK75)	20	56	7.14	72	4.32	0	0	0	0	0	4.32	0.82	17.05	-15.91
8	4b	1000m2 solar electricity	25	139	5.73	0	0	90	8.1	0	0	0	8.1	0.68	14.43	-49.96
9	7.	Electronic faucets	25	18.4	2.04	4.9	0.29	0	0	0	0	0	0.68	0.43	14.07	-0.12
10	9.2	HRU to Lämpiöt (TK41)	20	67	1.56	50	3	0	0	0	0	0	3	0.47	13.08	17.25
11	1.	Window wall in hallway to virtual wall in	30	21.2	-0.26	7.3	0.43	0	0	0	0	0	0.43	0.26	12.67	13.89
12	3.	Southern facade windows	30	145	-1.75	37.7	2.26	0	0	0	0	0	2.26	0.19	10.46	107.27
13	2	North class hallway near windows	30	128	-5.37	15.4	0.92	0	0	0	0	0	0.92	0.09	8.81	112.58
14	5.	LED in concert halls	15	176	-6.89	-91	-5.46	105	9.45	28	0.84	0	4.83	0.25	7.37	6.34
15	9.7	More efficient roof ventilation	20	52.5	-7.47	0	0	8	0.72	0	0	0	0.72	0.15	6.94	40.71

FIGURE 2. IRR-VALUES OF EACH MEASURES PRESENTED SEPARATELY

Results from testing and recommendations

Main challenge is that bundling, TCM and Total Tool are currently not yet so widely used by the target group. To change that, inspiring education is needed, including visual presentations and valuable examples of successful implementation of using the method and tool itself.

The project has proven that the bundling method can be used not only by building managers, but also as a standard for the presentation of proposed measures in energy audits. The project shows an example of how this can be done.

Another best practice in using the bundling method is to make a Public Private Partnership agreement when approving state aid grants for investments in SMEs. Aid can, according to EU regulations, be granted to investments in increased competitiveness and for energy efficiency measures.

As a pre-condition for such aid, an energy audit can be set. It should provide a list with all possible energy efficiency measures, from simple and least costly to costlier and less profitable ones. Then the decision needs to be made on who is responsible for what, ending in an agreement, for example, that the applicants handle simpler measures at their own expense while the costlier measures can be granted aid. In this manner the goal to carry out all measures can be achieved, instead of "cherry-picking".

The project proved that the method is so successful that it should be tested on a larger scale within the EU.

Combination with other tools

Bundling is a good tool which helps to find funding and makes a project more attractive to the decision makers or investors. On the other hand, it provides energy efficiency measures for smaller projects which are less attractive. Bundling can be mainly used together with EPC, MSC, Green leasing and Prosumerism tools to get higher savings and to look more attractive to the decision makers and politicians.



Conclusions

Bundling offers a holistic and comprehensive way of combining small measures into one package. Its basic idea is to make a planned investment more profitable and more interesting from an economical point of view, especially for potential investors. It can also be used as a standard in energy audits, but also it can facilitate finding an optimal funding source and receiving state aid. Bundling can also be used for agreements with companies receiving state aid. Total Concept Method and TotalTool offers an interesting solution for implementing energy efficiency investments in buildings.

TCM gives an easy and valuable method to illustrate the economic profitability of individual measures. As a whole, TCM is a brilliant way to implement a successful energy efficiency project. Bundling methods can also be used as a standard for energy audits and for agreements with companies receiving state aid.



TOOLS

1. Guideline for Bundling
2. Bundling training material (PP)
3. Excelsheet for bundling in an energy audit (Swedish)

FIND ALL TOOLS HERE

www.effect4buildings.se/toolbox/bundling



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