

Everything you always wanted to know about evaluation but were afraid to ask: a new toolbox to answer your needs

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Keywords

evaluation, online tool, energy efficiency policy

Abstract

Evaluating the impacts of energy efficiency policies can be complex and tricky. There is a lot of experience available, which can make it difficult when one looks for answers to specific questions.

The EPATEE project (<https://epatee.eu>) developed a toolbox to support stakeholders to find the right resources that fit their needs. The toolbox helps defining their evaluation approach with an interactive user interface that provides users with practical guidance tailored to 30 combinations of sector, policy instrument and method for evaluating energy savings. The toolbox is primarily focused on ex-post impact evaluation.

The specific guidance for energy savings calculations takes into account the diversity of situations (e.g. evaluation objectives, level of expertise, data availability) and covers methodological (e.g. defining the baseline, factors to take into account) as well as practical (e.g. data collection, quality, resources needed) aspects. Other guidance was developed or gathered about cross-cutting issues, such as evaluating net energy savings or comparing estimated and measured energy savings.

In addition, links to or storage of existing resources have been arranged to provide an easy access to guidance about general principles and approaches of evaluation other than impact evaluation (e.g. process evaluation, cost-benefit analysis, market transformation). Likewise, this deals with evaluation of impacts other than energy savings. Feedback from stakeholders also showed the importance to include guidance about how to integrate evaluation into the policy cycle.

This short paper describes briefly the background and how the toolbox was developed. It is illustrated with examples of evaluations that can be done with the toolbox. The display will make it possible for participants to test and comment on the toolbox. This is meant for all types of users, from beginners to evaluation experts.

Introduction and background

It is becoming increasingly clear that energy efficiency can bring many significant economic and environmental benefits. Yet it is also clear that huge energy efficiency potential remains untapped. While energy efficiency is improving, its impact on global energy use is being overwhelmed by increasing economic activity across all sectors. In 2017, global energy demand and emissions increased noticeably, breaking from recent trends. Energy efficiency is bringing benefits, but it could be doing much more (IEA, 2018).

Realizing this increased energy savings requires the introduction of good new energy efficiency policies as well as strengthening and enforcing the existing policies. This raises the question: what characterizes good and effective energy efficiency policies and their implementation? Systematic ex post evaluation of energy efficiency policies can reveal factors determining not only what works and what does not but also explains why (M.Harmelink et al 2008). The EPATEE project aim is indeed to contribute to improve energy efficiency policies, by providing tools and knowledge for their evaluation.

The toolbox as developed in the EPATEE project provides users with an interactive approach and a guidance tool to assist them in finding the most appropriate (ex-post) evaluation

Online tool for putting evaluation of energy savings into practice

This website provides practical tools and guides to facilitate the uptake of good evaluation practices according to various needs. The tools are meant to help step by step both evaluators and users of evaluation results in specifying the evaluation methods and effects, through:

- Providing a smart online toolbox with tools for integrating evaluation practice in the policy cycle.
- Clarification of how tools can be best applied by means of guidelines

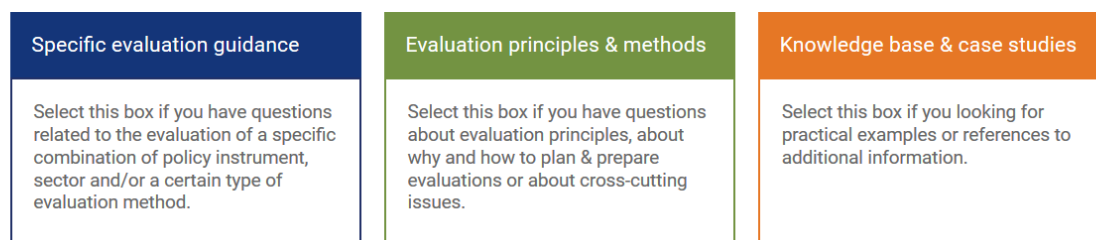


Figure 1. Homepage of the EPATEE toolbox (<https://www.epatee-toolbox.eu/>).

method for. This paper presents the toolbox: its objectives and scope, structure and how it has been developed. Then examples illustrate how it can be used.

Development of the toolbox to facilitate ex-post evaluation

TOOLBOX OBJECTIVES AND SCOPE

The toolbox¹ as developed in the EPATEE project aims to integrate the vast knowledge base and hands-on experience on the subject of evaluation in providing practical tools and guides to facilitate the uptake of good evaluation practices according to various needs. The toolbox will be publicly available from March 2019.

The tools are meant to help step by step both evaluators and users of evaluation results in specifying or analysing the evaluation methods and effects, through:

- Providing a smart online toolbox with tools for integrating evaluation practice in the policy cycle.
- Clarification of how tools can be best applied by means of guidelines.

The toolbox is primarily focused on the impact evaluation of energy savings from energy efficiency policies, covering all sectors and the main types of policy instruments. Therefore, the detailed guidance has been developed for specific combinations of:

- a given sector (e.g. industry, residential buildings, agriculture, transport),
- a given type of policy measure (e.g. financial incentives, energy efficiency obligation schemes, voluntary agreements, standards and labels), and
- a given type of method for the calculation of energy savings (e.g. direct measurement, billing analysis, deemed savings, engineering based models).

These specific guidance tools deal with both methodological aspects (e.g. baseline options, energy savings metrics) and practical issues (e.g. data requirements and possible sources, expertise needed for the given method, time considerations). They also provide the users with references about available examples of similar evaluations and other related literature.

Beyond the primary focus on energy savings, the toolbox also provides guidance about the evaluation of other impacts or criteria (e.g. cost effectiveness, GHG emission reduction, other benefits commonly assessed). This guidance is meant to highlight the interest in considering broader scope of evaluation, and to provide users with basic advice about these other impacts or criteria, and with further resources where they can find more details.

Likewise, the toolbox also includes a part about general principles of evaluation, introducing key evaluation concepts and evaluation approaches other than impact evaluation (e.g. process evaluation, market transformation). Users interested in these topics are then guided to other resources for more details.

STRUCTURE AND CONTENT OF THE TOOLBOX


Figure 1 shows the toolbox home page, providing an overview of its structure. The toolbox structure was defined using expert feedback inside the EPATEE project, as well as surveys among evaluation experts. The EPATEE team drafted several documents as background material for the toolbox.

At the homepage, the user can select three options:

- **Specific evaluation guidance:** detailed guidance per combination of sector, policy instrument and calculation method.
 - This option is meant for users having already a clear idea of the evaluation they want to prepare or analyse, with specific questions.
- **Evaluation principles & methods:** general introduction and guidance about key evaluation concepts, terminology, and impacts or approaches not covered in the detailed guidance. This part also includes detailed guidance about cross-cutting evaluation issues.
 - This option is meant for users with no or little previous background about evaluation, or advanced users with general questions (i.e. not specific to the combinations included in the previous part).

1. <https://epatee.eu/online-tool-guidance-and-support-put-evaluation-energy-savings-programs-practice>

Please make your selection by ticking the boxes you are interested in to get guidance documents specific to your selection. You can choose multiple options.



Or use the [Wizard](#)

Select a type of policy	Select a sector	Select a type of method
<input type="checkbox"/> Legislative/Normative <input type="checkbox"/> Legislative/Informative <input type="checkbox"/> Financial support <input type="checkbox"/> Fiscal/Tariffs <input type="checkbox"/> Information/education <input type="checkbox"/> Cooperative <input type="checkbox"/> Market based instruments <input type="checkbox"/> Voluntary agreement <input type="checkbox"/> Cross-cutting	<input type="checkbox"/> Service buildings <input type="checkbox"/> Households <input type="checkbox"/> Industry <input type="checkbox"/> Agriculture <input type="checkbox"/> Horticulture <input type="checkbox"/> Transport <input type="checkbox"/> SME (small and medium enterprises) <input type="checkbox"/> Service buildings <input type="checkbox"/> Schools <input type="checkbox"/> Appliances <input type="checkbox"/> Cross-sector	<input type="checkbox"/> Measuring <input type="checkbox"/> Billing analysis <input type="checkbox"/> Deemed savings <input type="checkbox"/> Mixed approach <input type="checkbox"/> Engineering estimate <input type="checkbox"/> Stock Modelling <input type="checkbox"/> Indicator/diffusion <input type="checkbox"/> Indicator/energy consumption <input type="checkbox"/> Econometric Method <input type="checkbox"/> Other

Figure 2. Specific guidance interface.

- **Knowledge base & case studies:** resources developed by the EPATEE project (for more details, see Broc et al., 2018).
 - This option is meant for users looking for references or practical examples of evaluations.

The **specific guidance** box invites a user to make a selection of type of policy, sector and method. Figure 2 shows this interface and the types included for each criterium.

The typologies of sector, policy instruments and methods are the ones from the MURE database (<http://www.measures-odyssee-mure.eu/>), to ensure consistency between the tools developed for European stakeholders within the Horizon 2020 programme.

Alternatively to this interface users can select these options through a wizard menu that will ask them questions to guide them in their selection of tools.

Depending on his/her choices (made either through the interface or the wizard), the user will then get a list of one or several tools (see more details about their content in the next section “Example”).

In case a user selects the guidance on evaluation principles and methods, he/she can access to three sections (General principles, Process of evaluation, Cross-cutting issues), each including several references and links.

The section “**General principles**” provides basic elements specially meant for users new to evaluation issues but also for all users with questions about evaluation in general, or with questions that go beyond the scope of the specific guidance developed within EPATEE:

- A **general introduction** reminds what evaluation is, what it can be used for, and emphasises the two key concepts of policy theory and evaluation criteria. A short list of references finally helps users looking for more details, guiding them for example to the European Commission’s Better Regulation Toolbox² or to the UK Magenta Book (HM Treasury, 2011).
- A **glossary** gathers the definitions and typologies used in the toolbox, so that users can check easily the terminology.

- An introduction to the **evaluation of impacts other than energy savings** gives an overview of what these impacts can be, and describes key resources where users can find more examples or support, such as the IEA webpage on this topic³, the COMBI project⁴, the Multiple Benefits facility of the ODYSSEE-MURE project⁵, and the guidebook published by the US EPA (2018).
- An introduction to **evaluation approaches complementary to impact evaluation** briefly explains what means theory-based evaluation, process evaluation, economic evaluation (or cost-benefit analysis) and market transformation evaluation, and what they can be used for. For each, users can also find a selection of references where they can find detailed guidance or examples.

The section “**Process of evaluation**” deals with the management of evaluation:

- The first heading discusses **why doing evaluation** and the added value of evaluation. Surveys of stakeholders (e.g. Bini et al. 2017 and 2018) showed the importance of convincing top management about the interest of doing evaluations. This is indeed critical so that sufficient resources are dedicated to evaluation. This heading thus presents real-life examples of what added value evaluation can bring to policy stakeholders.
- The second heading provides guidance about **how to plan and prepare an evaluation**. To avoid reinventing the wheel, this resource starts with general evaluation guide (e.g. the BetterEvaluation initiative⁶ or DECC, 2011). Examples taken from the EPATEE case studies are used to illustrate and complement these recommendations with hands-on tips.
- The third heading focuses on guidance for the **integration of evaluation into the policy cycle**. This issue is critical to optimise evaluation efforts (e.g. facilitating data collection,

2. https://ec.europa.eu/info/better-regulation-toolbox_en

3. <https://www.iea.org/topics/energyefficiency/#benefits>

4. <https://combi-project.eu/tool/>

5. <http://www.odyssee-mure.eu/data-tools/multiple-benefits-energy-efficiency.html>

6. <https://www.betterevaluation.org/>

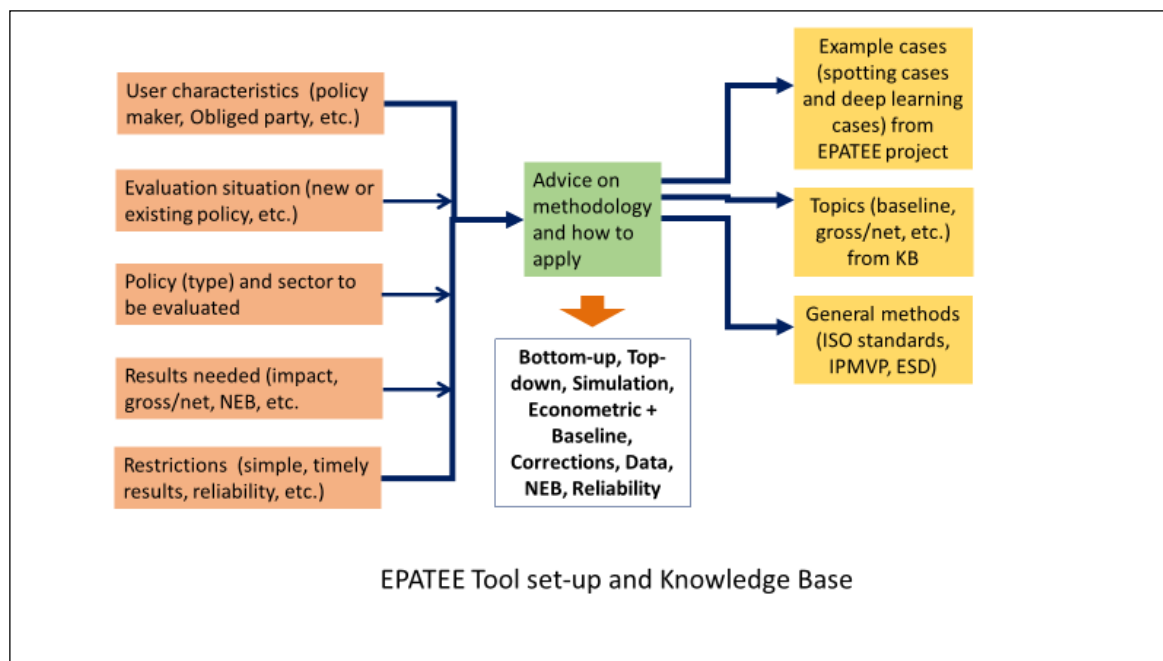


Figure 3. Set-up of online toolbox

ensuring evaluation objectives are prioritized according to stakeholders' needs) and to get the best out of them, particularly in terms of use of the evaluation findings. Users can find here a brief reminder about the concept of policy cycle (based on e.g. Young and Quinn 2002), and guidance to ensure this integration in two ways: when and how policy developments can provide inputs to evaluation, and when and how evaluation can provide inputs to policy making.

The section "Cross-cutting issues" includes topical case studies entering in the details of key evaluation challenges frequently faced when evaluating energy efficiency policies. So far three topical case studies have been developed (evaluating net energy savings, linking monitoring and evaluation, and comparing energy savings based on estimates and energy savings based on measured or metered data). These topical case studies combine a summary from the literature about how to tackle these issues and practical examples from available evaluations. Some of those case studies have also been presented in webinars (<https://epatee.eu/events-webinars>)

GUIDING PRINCIPLES FOR THE DESIGN OF THE TOOLBOX

The design of the toolbox was guided by the following principles:

- Finding a suitable and practicable Combination of Policy instrument, Sector and Method for calculating energy savings 'PSMC')⁷;
- Analysing which sets of PSMC's are supported by references of the Knowledge Base⁷;
- Providing a concise guidance document on the selected combinations (PSMC's);

- Make links to Knowledge Base references and general principles;
- Implementing these principles in an online tool.

Figure 3 provides a sketch of the toolbox design.

During the course of the EPATEE project, surveys have been prepared to assemble user-feedback to further finetune the toolbox. Note: KB=Knowledge Base, ESD=Energy Services Directive 2006/32/EC, IPMVP=International Performance Measurement and Verification Protocol

Example

EXAMPLE OF A PSMC⁸

In this example, a particular PSMC is described for a user that is based on a combination of a subsidy based voluntary agreement in the industrial sector and with an engineering estimate as method. In this case, the online tool, after selecting the appropriate boxes in the user interface by the user, provides the guidance document for this PSMC. The guidance document provides access to the following sections that describe the PSMC in more detail:

Evaluation goals and limitations

1. **Scope of the guide:** Policy measure; Combinations with other policy measures; Sector of application; Evaluation method; Complementary methods; Additional or alternative methods
2. **Application for calculation of savings:** Matching with ex-ante evaluation; Calculation baseline; Calculating Gross and Net savings; Defining policy baselines

7. <http://www.epatee-lib.eu>

8. Combination of Policy instrument, Sector and Method for calculating energy savings.

3. **Process of evaluation: Evaluation goals and ambition;** Time frame; Reporting expectations; Spatial boundary; Data requirements; Format of savings results; Alternatives for the guide
4. **Additional evaluation results:** CO₂-emission reduction; Cost-effectiveness; Other Co-benefits
5. **Concrete examples**
6. **Further reading**

The policy measure of a government subsidy for voluntary agreements related to energy efficiency in the industrial sector is typically taken up by a government ministry, for example the Ministry of Economic affairs. Rather than confronting the sector with, for example, a normative standard or an obligation, this measure is based on formulating, with the relevant stakeholders in the industry sector, common goals of energy savings in a certain time period ahead, typically 3–5 year. The voluntary measure is often accompanied by a government subsidy as incentive to achieve the energy savings targets. In most cases, the Ministry acts as a process facilitator or hires an external firm to act as a process facilitator and moderator. One of the reasons of this voluntary approach is the drivers' character of the industry sector. The use of the engineering method in this guide is based on the fact that most companies with production sites and installations, will have a dedicated process information system that is also needed to monitor the safe and efficient operation of plants and facilities. Hence, this method is suitable and equipped for assessing energy savings, as the relevant data on energy consumption are part of this process information system.

In preparing the PSMC's, a quality process is in place, where each PSMC is reviewed by at least two EPATEE partners. This opens the possibility for the user to enter directly the section of interest. Alternatively, the user can open the corresponding pdf document with the complete text of the guidance document.

Conclusions

Ex-post evaluation of energy savings is an important technique to open up the vast (untapped) potential of energy efficiency in different sectors. The combination of energy savings with sector, policy instrument and method produce a large number of combinations for evaluation. A well based choice of these combinations is important from the point of view of transparency, cost effectiveness and data availability.

An online tool to provide guidance in the choice of combinations is a valuable asset to the users and stakeholders of evaluation methods. Potential users of the toolbox will be made aware of the toolbox, by, among others, webinars and workshops. It will also encouraged for use in education institutions.

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Acknowledgements

The EPATEE project has received funding from the European Union's Horizon 2020 Research and innovation programme under grant agreement No 746265. The views expressed in this paper are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

The partners in the EPATEE project (<https://epatee.eu>) are gratefully acknowledged for their valuable contributions.

