EPATEE

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# Evaluating energy efficiency policies: new online resources to share knowledge and experience

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IEECP

30 May 2018

Webinar in partnership with Leonardo ENERGY within the IEPPEC Energy Evaluation Academy

**Next webinar** will be on **Wed. 20 June** (about energy poverty):
http://go.leonardo-energy.org/180620IEPPEC08_Join.html
And don't miss **IEPPEC 2018** in **Vienna** (**25-27 June**): www.ieppec.org

# The EPATEE project

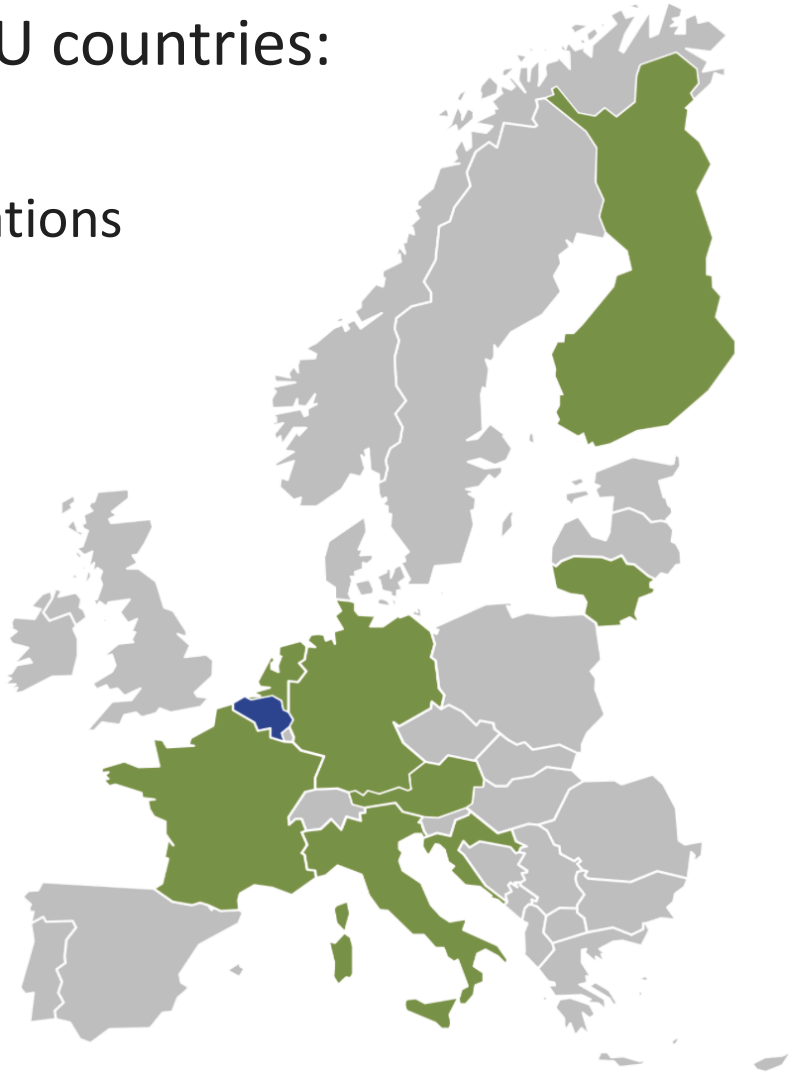
OBJECTIVE: creating favourable conditions for improving the number, quality/performance and effective use of ex-post impact evaluations of energy efficiency policies.

CONCEPT: improving key stakeholders' evaluation practices can lead to a better understanding/knowledge of impacts and how policies work, and thereby to increasing effectiveness of policies

# EPATEE consortium

10 partners from 8 EU countries:

- ✓ 3 public agencies
- ✓ 2 professional associations
- ✓ 5 research institutes



*coordination*

**AEA**
Österreichische Energieagentur - Austrian Energy Agency

**ADEME**
Agence de l'environnement et de la maîtrise de l'énergie

**ATEE**
Association Technique Energie Environnement

**ECN**
Energy research Centre of the Netherlands

**EIHP**
Energy Institute Hrvoje Pozar

**FIRE**
Italian Federation for Energy Efficiency

**FRAUNHOFER**
ISI Fraunhofer Institut für System- und Innovationsforschung

**IEECP**
Institute for European Energy & Climate Policy

**LEI**
Lithuanian Energy Institute

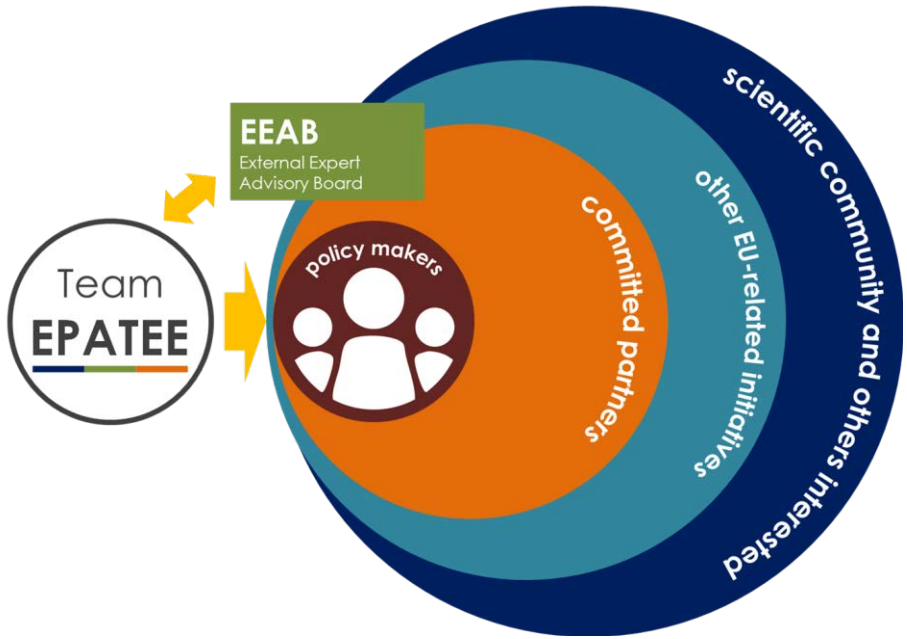
**MOTIVA OY**
Finland

See:

https://epatee.eu/

# Stakeholder involvement

EPATEE's coverage




- **Stakeholders' interviews and surveys**

  - Needs & Priorities
  - Current practices & barriers
  - Practical feedbacks & examples

- **European & national peer-learning workshops**
- **Webinars**

# EPATEE outputs

Building resources based on up-to-date knowledge and concrete experience feedback

Creating the conditions for an effective use of these resources

**Knowledge Base**
(user-oriented database of references)

**Guidance and support**

**Case studies**
(about ex-post evaluations)

**Online toolbox**
making resources easy to use

**Experience sharing**
targeted workshops, webinars, etc.

**Dissemination**
of results

**Knowledge Base**
(user-oriented database of references)

**Guidance and support**

# Part 1:
# EPATEE's Knowledge Base

# Knowledge Base - Outline

What is the Knowledge Base?

- Description
- Benefit

How to use it?

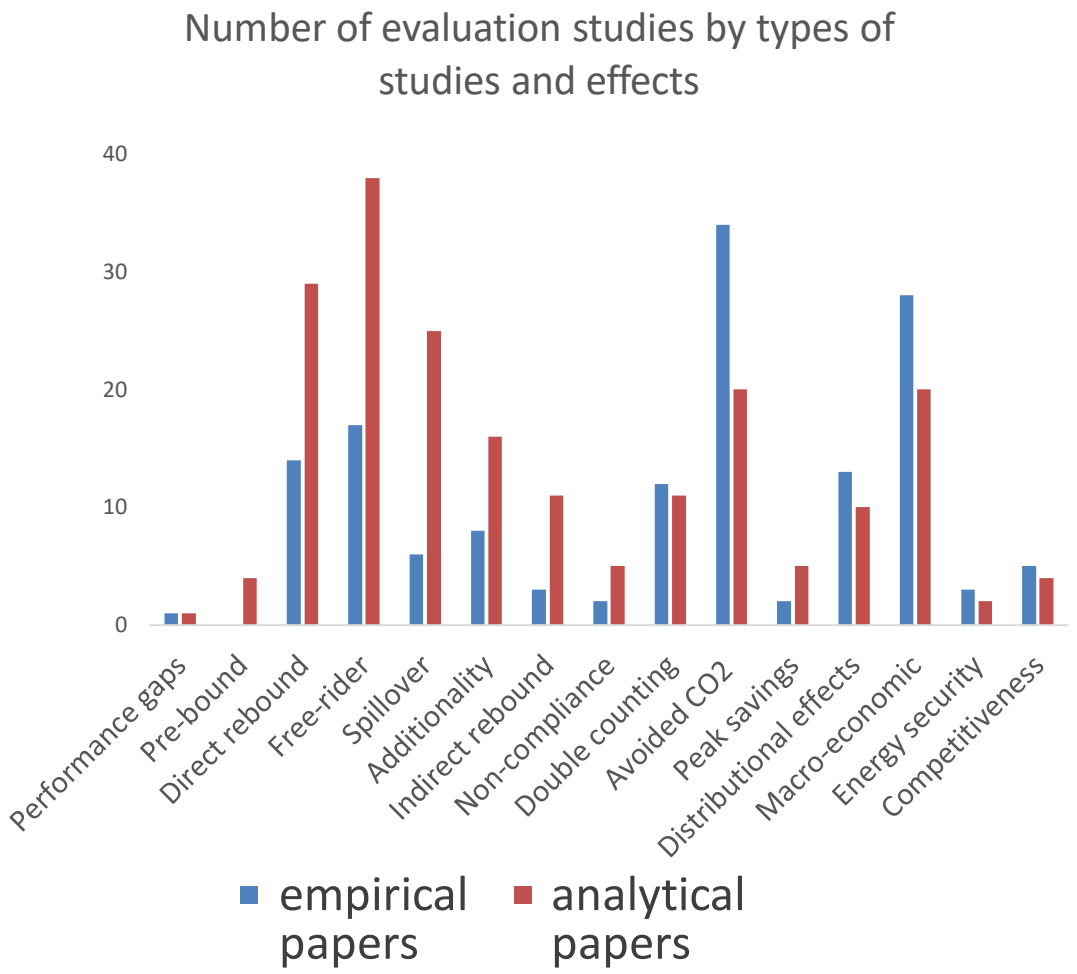
- Search
- Results

# What is the Knowledge Base

- Collection of evaluation studies:
  - evaluation reports
  - evaluation papers
  - evaluation guidelines
  - meta evaluations
  - methodological paper
- Goal:
  - facilitate access to evaluation studies
  - provide concrete materials and information
  - online access through EPATEE website
- Features:
  - bibliographic information
  - scope of the study
    - sector, country,
    - type of policy, study
  - methodological aspects:
    - data collection
    - calculation methods
    - adjustment factors
    - energy savings & additional benefits
- Search:
  - search by category
  - advanced search

# What is the Knowledge Base

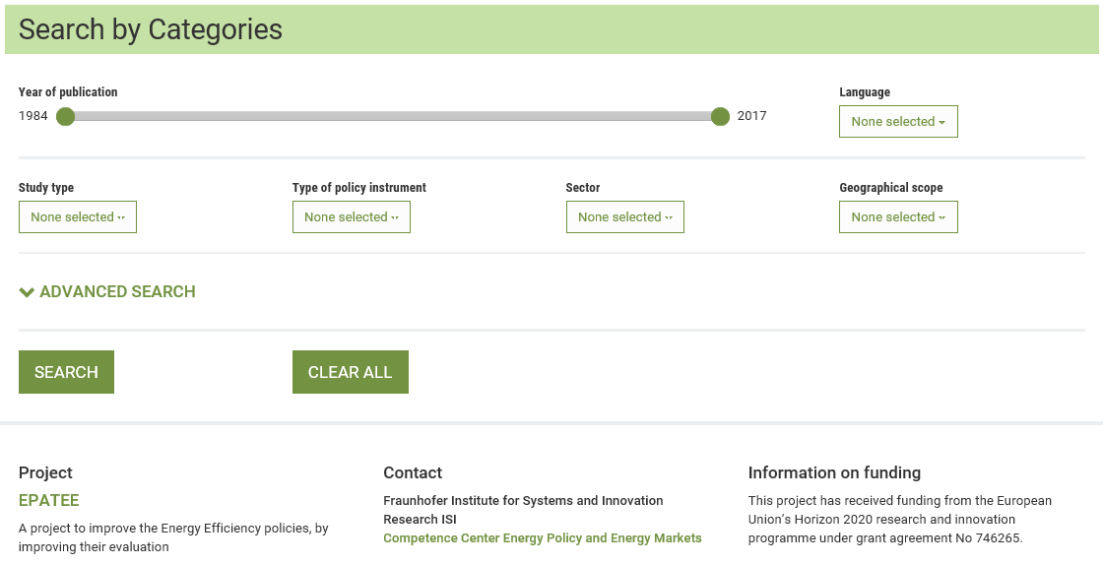
- content:
  - about 170 studies
  - bias towards residential sector
  - mostly expost evaluations
  - empirical papers: evaluation reports and papers
  - analytical papers



# How to use the Knowledge Base?

- Go to EPATEE website
- Go to RESULTS
- Click on „Knowledge Base“ → Knowledg Base search site opens

https://epatee.eu/main-results




- Select search by categories
- Select by indicated criteria
- Click on „SEARCH“

EPATEE

# Search by Categories

**Year of publication**

1984 — 2017

**Language**

None selected

**Study type**

None selected

- Evaluation report
- Evaluation paper
- Methodological paper
- Meta-evaluation
- Guidelines

**Type of policy instrument**

None selected

**Sector**

None selected

**Geographical scope**

None selected

ADVANCED SEARCH

None selected

**Objective of evaluation**

None selected

**Data Collection**

None selected

**Calculation method**

None selected

**Baseline / counterfactual**

None selected

**Savings data presentation**

None selected

**Normalisation factors**

None selected

**Effect adjustments**

None selected

**Cost data**

None selected

**Uncertainty analysis**

None selected

**Other impacts**

None selected

**Case Study available**

None selected

SEARCH

CLEAR ALL

# Your search returned 3 results

REFINE SEARCH

NEW SEARCH

**Year of publication**

1984 — 2017

**Language**

None selected

**Study type**

All selected (5)

**Type of policy instrument**

financial

**Sector**

Buildings

**Geographical scope**

None selected

ADVANCED SEARCH

**Evaluation type**

Ex-post

**Objective of evaluation**

None selected

**Data Collection**

Both

**Calculation method**

Method 10

**Baseline / counterfactual**

None selected

**Savings data presentation**

Net

**Normalisation factors**

None selected

**Effect adjustments**

Free-Rider effect

**Cost data**

None selected

**Uncertainty analysis**

None selected

**Other impacts**

None selected

**Case Study available**

None selected

## Your search returned 3 results

REFINE SEARCH  NEW SEARCH

**France**

English
2017

**Impacts and cost-effectiveness of major energy efficiency policies for existing buildings: what do we exactly know and what can we learn?**

**Broc, Jean-Sébastien et al.**
Study type: meta-evaluation
Geographical scope: EU
MORE INFORMATION  SHOW DOCUMENT

**UK**

English
2016

**Energy efficiency evaluation: the evidence for real energy savings from energy efficiency programmes in the households sector**

**Wade, Joanne and Eyre, Nick (UKERC)**
Study type: meta-evaluation
Geographical scope: unspecified
MORE INFORMATION  SHOW DOCUMENT

**Denmark**

Danish
2008

**En vej til flere og billigere energibesparelser - Evaluering af samtlige danske energispareaktiviteter (Evaluation of all the Danish activities for energy savings)**

**EA Energianalyse et al.**
Study type: evaluation report
Geographical scope: Denmark
MORE INFORMATION  SHOW DOCUMENT

UK

English
2016

## Energy efficiency evaluation: the evidence for real energy savings from energy efficiency programmes in the households sector

**Wade, Joanne and Eyre, Nick (UKERC)**
Study type: meta-evaluation
Geographical scope: unspecified
MORE INFORMATION SHOW DOCUMENT

| | |
|---|---|
| Type of policy \| legislative / normative | several |
| Type of policy \| legislative / information | mandatory labelling |
| Type of policy \| financial | several |
| Type of policy \| information / education | several |
| Type of policy \| cooperative | several |
| Type of policy \| market-based instruments | EEO |
| Sector addressed by policy \| Buildings | ✔ |
| Sector addressed by policy \| Household (other than buildings) | ✔ |
| Evaluation type \| Ex-ante | ✔ |
| Evaluation type \| Ex-post | ✔ |
| Evaluation type \| Bottom-up | ✔ |
| Evaluation type \| Top-down | ✔ |
| Objective of evaluation | combined |
| Data Collection | both |
| Calculation method | method 10 |
| Baseline / counterfactual | multiple |
| Savings data presentation \| Gross | ✔ |
| Savings data presentation \| Net | ✔ |
| Normalisation factors \| Pre-bound effects | ✔ |
| Normalisation factors \| Direct rebound effect | ✔ |
| Normalisation factors \| Other | ✔ |
| Effect adjustments \| Free Rider effect | ✔ |
| Effect adjustments \| Spill over/multiplier effect | ✔ |
| Effect adjustments \| Indirect rebound effect | ✔ |
| Uncertainty analysis | ✔ |
| Other impacts \| Avoided CO2 emissions | ✔ |

# Part 2: EPATEE's Case Studies

# Objectives of EPATEE case studies

- Making information easily **accessible** & providing data as **transparent** as possible
- Analysing **concrete examples** about
  - **why** evaluation is used
  - **how** it is performed

**NO** INTENTION TO BE EXHAUSTIVE OR REPRESENTATIVE

Objective = covering a **diversity** of situations to produce **materials for experience sharing**

# Content of the case studies

| | | |
|---|---|---|
| Short description of the measure | Data on energy savings | Insights about other aspects monitored or evaluated |
| Key data about means and outputs | Details about the evaluation method(s) | Focus on key evaluation issue(s) or practice(s) |

**+ interview(s) with the evaluation customer and/or evaluator**

→ direct experience feedback

+ references

15 cases already available at: https://epatee.eu/case-studies

(more coming soon)

# Overview of EPATEE case studies

**US**
> New England Capacity Market
> Weatherization Assistance Program

**Netherlands (Amsterdam)**
> Subsidy scheme for housing corporations
> Multi-year agreements in the industry

**Nordic Countries**
> Nordsyn (market surveillance)

**Finland**
> EE agreements in Industries
> Energy audits in municipalities

**Lithuania**
> Renovation programme for apartment blocks

**UK**
> Supplier Obligation
> Warm Front

**Denmark**
> EEO scheme

**Ireland**
> Better Energy Homes

**Germany**
> Energy Efficiency Fund
> Energy Efficiency Networks Initiative

**Belgium (Wallonia)**
> Primes Energie

**Austria**
> Environmental Support Programme for companies
> City EE Programmes of Vienna

**France**
> "Future Investments" programme
> Voluntary agreement for freight companies

**Croatia**
> Energy renovation programme for public sector buildings
> Individual heat metering in multifamily buildings

**Italy**
> White Certificates scheme
> Tax credit scheme

# Key message (1)

## Evaluation is not a burden, but an opportunity

*"One may have fear to do an ex-post impact evaluation, because it may show smaller results than based on the engineering estimates. However this increases the robustness of the results and therefore the confidence funders can have in them"* (quote from the Irish case)

| Examples of outputs/outcomes from the evaluation | Cases |
|---|---|
| Improving data collection and verification processes | EEO scheme (UK) |
| Updating the list of eligible actions | Primes Energie (BE), EEO scheme (DK) |
| Improved technical recommendations/requirements | Warm Front (England) |
| Improving the application process | Primes Energie (BE) |
| Redesign of the incentives | Energy renovation of public sector buildings (CR) |
| Reinforcing support from policymakers and other stakeholders | Better Energy Homes (IE), Voluntary agreements (FI) |
| Evidences/accountability for decision-making (particularly about funding) | Better Energy Homes (IE), Energy Efficiency Fund (DE) |

# Key message (2)

## Good data is well-documented data

*"In reality, if two persons carry out impact evaluation of the same policy measure, they get different results. Even if I make the same calculation in successive years without proper documentation of the calculation method and definitions, the calculation can be different. This highlights the needs for good logic and documentation."*

(quote from the case on Energy Efficiency Agreements in Finland)

Guiding questions:

- ✓ Is the documentation sufficient for all readers to **understand the figures in the same way**?
- ✓ Is the documentation sufficient to **keep the memory** of the results?

*"The policy made possible to save 10 PJ"* → final/primary energy? annual/lifetime savings? from actions implemented over which period?

*"From its start, the policy triggered 100 M€ of investments."* → up to when? VAT included? total/marginal costs?

# Key message (3)

**Evaluation method = f(evaluation objectives ; constraints)**

| | |
|---|---|
| Example 1: objective = providing visibility to actors about how energy savings will be accounted for | Engineering calculations easier to implement/monitor |
| Example 2: objective = assessing net impacts (is the policy efficient?) | Statistical methods or surveys often needed |

**+ practical factors/constraints** : data availability, timeline, budget, expertise & experience of the evaluators, …

Statistical methods (e.g., comparing participants and control group) often recommended as best practices, but not frequently used

→ many difficulties encountered (data access & quality, sample size, matching samples, …)

# Key message (3)

**Evaluation method = f(evaluation objectives ; constraints)**

*"It is important to distinguish M&V and evaluation. M&V provides data and feedback as a regular basis for managing the scheme. Evaluation provides an independent and in-depth analysis of the scheme and its impacts, in order to draw recommendations."*

*"The call for tenders for an evaluation has a major influence on what can be done in the evaluation. A good call for tenders can pave the way for a good evaluation and vice versa."*

*"Our experience is that when preparing a tender for an evaluation, the specifications for the evaluation should be focused on **defining clear evaluation questions**. The choice of the evaluation methods to answer these questions should be up to the bidders. This makes possible to compare offers with different methodologies."*

Quotes from the case on the Danish EEO scheme

# Other lessons learnt / issues

- ✓ "Reliable" does not mean 100% accurate, but clear and accurate enough to set the basis for decision making / stakeholders' confidence
- ✓ Identifying the most relevant data for collection is a continuous process
- ✓ Regular monitoring and ex-post evaluations are complementary
- ✓ No method is the silver bullet or gold standard: compare to validate
- ✓ Assessing net impacts (when appropriate) can be challenging
- ✓ Communication about evaluation results/conclusions can be as important as the evaluation itself

→ Key messages to be further refined and complemented with the upcoming case studies, then summarized in a report

Comments and suggestions are welcome !

# Next steps of EPATEE

**Online toolbox**
making resources easy to use

**Experience sharing**
targeted workshops, webinars, etc.

See: https://epatee.eu/
then "**events**" tab

+ guidance on how to integrate evaluation into the policy cycle

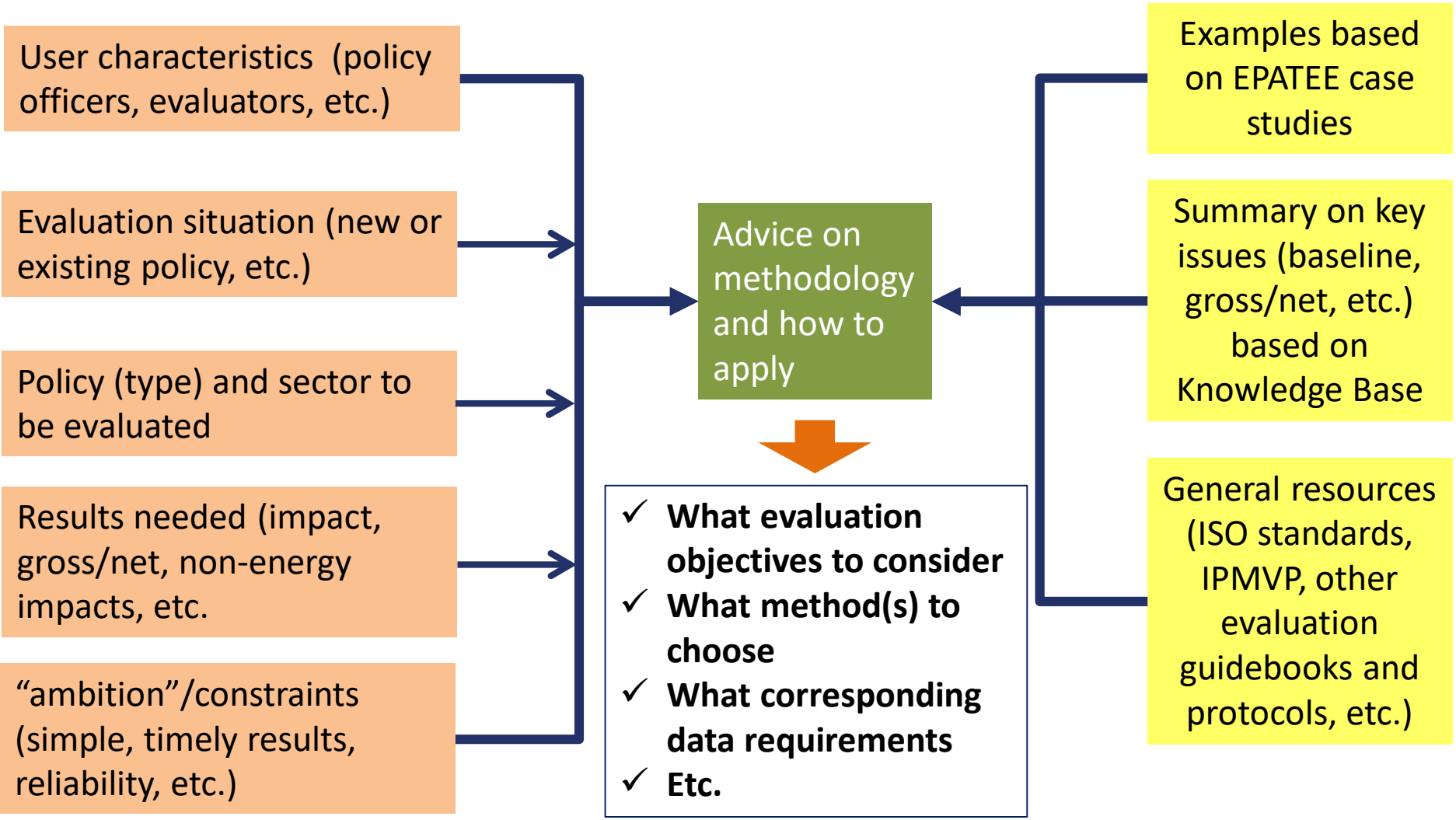
→ from early planning to evaluation use

**Direct support**

bilateral exchanges with public authorities/agencies having specific needs or questions related to evaluation
→ contact@epatee.eu

+ create or improve conditions for a **community of experience/knowledge sharing**

# EPATEE's Toolbox set-up



# THANK YOU !

- Stay tuned with EPATEE activities and results:

→ **Newsletter** : https://epatee.eu/subscribe-our-newsletter

→ **Twitter** : @epatee_eu ; https://twitter.com/epatee_eu

- To search the **Knowledge Base** or see the **reports about the surveys and interviews**:

https://epatee.eu/main-results

- To look at the case studies**:**

https://epatee.eu/case-studies

**For any comment, suggestion or question**:

contact@epatee.eu

# Additional slides

# How to use the Knowledge Base?

**Instruments per type of policy:**

- legislative/normative (mandatory standards, mandatory DSM, regulations on buildings, heating systems, vehicles, others)
- legislative/information (mandatory audits, mandatory energy managers or management systems, building certificates, mandatory labelling, others)
- financial (grants, subsidized loans, others)
- fiscal/tariffs (eco- or energy tax, CO2 tax, tax exemption, tax reduction, special depreciation, others)
- information/education (energy billing, information campaigns, voluntary energy audits, regional or local information centres, voluntary labelling, others)
- cooperative (technology procurement, voluntary agreements, voluntary DSM measures, green procurement, ESCOs, others)
- market-based instruments (energy efficiency obligations (EEO), energy efficiency auctions/tender systems (EEA), emission trading systems (ETS), JI or CDM)

# How to use the Knowledge Base?

## Bottom-up methods

- Method 1: Direct measurement of unitary energy savings (unit usually participant)
- Method 2: Unitary energy savings are established on the basis of billing analysis (unit usually participant)
- Method 3: Deemed estimate of unitary energy savings (unit usually equipment; could be participant if end-use actions are uniform)
- Method 4: Mixed deemed and ex-post estimate; unitary energy savings based on equipment sales data, inspection of samples, monitoring of equipment (unit usually equipment; could be participant if end-use actions are uniform)
- Method 5: Detailed engineering estimates (e.g. calibrated simulation); implying more or less complex modelling of the individual unit (e.g. by calculating an energy balance of an individual building or company in the dataset - hence unit usually participant)
- Mix bottom-up/top-down methods
- Method 6: Modelling (e.g. stock-modelling, simulation)
- Method 7: Based on share of specific equipment or practice in the market (diffusion indicators)

## Top-down methods

- Method 8: Monitoring of energy consumption indicators (either energy consumption for whole sectors or sub-sectors, or specific energy consumption indicators for specific end use equipment).
- Method 9: Top-down modelling (e.g. econometric methods, simulation at aggregated level)

## Others

- Method 10: Diverse methods (e.g. combinations of methods, guidelines or meta-evaluations that consider several types of methods)

# Search by Categories

**Year of publication**
1984 — 2017

**Language**
None selected

**Study type**
2 selected
- Evaluation report
- Evaluation paper

**Type of policy instrument**
financial

**Sector**
Buildings

**Geographical scope**
Austria

## Your search returned 2 results

REFINE SEARCH  NEW SEARCH

**Austria**
German
2015

**Evaluierung und Monitoring des Städtischen Energieeffizienz-Programms (SEP) der Stadt Wien für die Jahre 2006-2015**
Karner et al.
Study type: evaluation report
Geographical scope: Austria
MORE INFORMATION  SHOW DOCUMENT

**Austria**
German
2014

**Evaluierung der Umweltförderungen des Bundes 2011 - 2013**
Karner et al.
Study type: evaluation report
Geographical scope: Austria
MORE INFORMATION  SHOW DOCUMENT

**Austria**

German
2015

## Evaluierung und Monitoring des Städtischen Energieeffizienz-Programms (SEP) der Stadt Wien für die Jahre 2006-2015

**Karner et al.**
Study type: evaluation report
Geographical scope: Austria
MORE INFORMATION SHOW DOCUMENT

| | |
|---|---|
| Type of policy \| legislative / normative | mandatory standards |
| Type of policy \| financial | grants |
| Type of policy \| information / education | several |
| Sector addressed by policy \| Buildings | ✔ |
| Sector addressed by policy \| Household (other than buildings) | ✔ |
| Sector addressed by policy \| Services private (other than buildings) | ✔ |
| Sector addressed by policy \| Services public (other than buildings) | ✔ |
| Sector addressed by policy \| Industry (other than buildings) | ✔ |
| Sector addressed by policy \| Transport | ✔ |
| Evaluation type \| Ex-post | ✔ |
| Evaluation type \| Bottom-up | ✔ |
| Evaluation type \| Top-down | ✔ |
| Objective of evaluation | combined |
| Data Collection | both |
| Calculation method | method 10 |
| Baseline / counterfactual | before/after |
| Savings data presentation \| Gross | ✔ |
| Normalisation factors \| Other | ✔ |
| Other impacts \| Avoided CO2 emissions | ✔ |

# Sharing concrete examples

## Ireland

### Better Energy Homes

- The Finance Ministry was willing to increase the budget of the scheme after seeing the results of the cost-benefit analysis.

*"One may have fear to do an ex-post impact evaluation, because it may show smaller results than based on the engineering estimates. However **this increases the robustness of the results and therefore the confidence funders can have in them**"*

## Denmark

### Energy Efficiency Obligation

- The ex-post evaluations provide a basis to discuss further improvements of the scheme (e.g., list of eligible actions, prioritisation factors, additionality criteria)

*"It is important to distinguish M&V and evaluation. M&V provides data and feedback as a regular basis for managing the scheme. Evaluation provides an **independent and in-depth analysis** of the scheme and its impacts, in order to **draw recommendations**."*

# Sharing concrete examples

**Finland**

**Voluntary agreements**

- Regular monitoring & evaluation enables a **feedback loop** with participants, that is critical for **continuous improvements** (e.g., optimizing data collection and reporting requirements) and participants' involvement.

*"The success factors of this well-working policy measure have been good monitoring and evaluation, strong results and communication of results"*

**Croatia**

**Individual heat metering in multi-family buildings**

- Ex-post studies provided the basis to discuss under which conditions individual metering can be cost-effective for end-users

**Austria**

**UFI (Federal aids for environmental protection measures)**

- Results used to fine-tune the incentives, adapt requirements for specific projects, …
- Summary evaluation report communicated to the Parliament