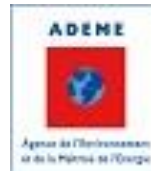




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ODYSSEE-MURE

*ODYSSEE-MURE, a decision support tool
for energy efficiency policy evaluation
Second project meeting
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Good practice impact evaluation: case study 2: The German energy efficiency fund

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Proposed steps for a case study on impact evaluation (adjusted to the case studies in EPATEE)

Step 0: Check if the energy efficiency policy which is evaluated is already described and update in the MURE database.

Step 1: Short description of the evaluation study

Step 2: Financial means and output

Step 3: Collection of data on energy savings

Step 4: Calculation method(s) for energy savings and key methodological choices

Step 5: Other aspects evaluated

Step 0: Measure description in MURE

| | | | | | | | | |
|---|---|---------------|-------------|--------------------------|------------------|-----------------------|-----------|-------------------|
| Measure Code | GEN-GER50 | | | | | | | |
| Country | Germany | | | | | | | |
| Title | Energy Efficiency Fund (Energieeffizienzfonds) | | | | | | | |
| Reference | Gesetz zur Errichtung eines Sondervermögens Energie- und Klimafonds (EKFG) von Dezember 2010 (BGBl. I, S. 1807) | | | | | | | |
| Status | Issuing Date | Starting Date | Ending Date | Semi-quantitative Impact | European Measure | NEEAP Measure (1,2,3) | Article 7 | Impact Evaluation |
| Ongoing | 1/2011 | 2011 | | High | No | No | No | No |
| Financing | € 306 from 2015 to 2015 | | | | | | | |
| Types | 10) Financial Measures - CO2 / energy efficiency / renewables funds | | | | | | | |
| Targeted End Use | Total final consumption | | | | | | | |
| View quantitative evaluation impact | | | | | | | | |
| View Detailed Measure Description | | | | | | | | |

→

21 June 2017

Title of the measure: GEN-GER-50 – Energy Efficiency Fund

General description

The Energy Efficiency Fund (EEF) was established in 2011 with the aim of further exploiting existing energy savings potential in multiple sectors (e.g., private consumers, industry, municipalities). Initial funding equaled EUR 90 million in 2011, and rose to EUR 306 million in 2015. The target groups to be addressed, and the orientation of the individual EE policies to be financed by the EEF, have already been outlined in the German federal government's Energy Concept. At the moment, 23 EE policies and programs are directly financed by the EEF (Heinrich et al. 2017). Among them are

- → National funding schemes for the uptake of organizational concepts (energy audits and energy management systems) and the implementation of energy efficient technological solutions (cross-cutting technologies as well as process technologies) in companies.
- → Energy advice programs for private households and small and medium enterprises.
- → The National Runner Initiative, which bundles measures for speeding up the market penetration of high-quality services and products (top runners) that contribute to reducing electricity consumption.
- → An innovative pilot program using smart plugs, terminals or meters for the search of most cost-effective energy-saving technologies and business models. (Blohm 2016).
- → A national energy efficiency label for existing heating installations to motivate building owners to replace old, inefficient heating systems and to raise the replacement rate.
- → The national top-runner initiative (NTRI) is meant to provide information, promote dialogue and inject new ideas for improving energy efficiency of electricity-using products. It aims to work alongside the value chain – from the product manufacturers, over retail trade to the consumers – in order to accelerate the market penetration of highly energy efficiency products and services (top runners).

The allocation of finances to the fund at first amounted to EUR 90 million in 2011, and most recently EUR 306 million in 2015. The target groups to be addressed by the Energy Efficiency Fund and the orientation of the measures financed from this have already been outlined in the German federal government's energy concept (BMWi and BMU 2010). The purpose of the fund is to address both private consumers as well as industry and municipalities, to increase their potential for energy and electricity savings and thus also to reduce their energy costs in the long term.

Impact evaluation

[A detailed case study on the evaluation will be added soon]

Step 1: Short description of the evaluation study

- The Energy Efficiency Fund (EFF) is an overarching instrument and finances 23 individual energy efficiency measures.
- The measures cover all end-use sectors and several types of instruments (mainly subsidy programs and informational programs)
- The overall fund and all individual policies are evaluated by external evaluators. A common evaluation methodology was developed by the evaluators of the EFF.
- The method must take into account the legal requirements of the Federal Budget Code. According to law, the monitoring of financial measures must consider the following levels:
 - (1) **Target achievement**: comparison of planned objectives with the actually achieved target realization.
 - (2) **Effectiveness**: was the measure was appropriate and causative
 - (3) **Efficiency**: was the implementation of the measure cost-effective
- The regulatory stipulations call for **appropriate indicators** for all monitoring levels.

Step 1: Development of indicators

| Level of monitoring | Indicator |
|--|---|
| A. Target achievement monitoring | |
| Lead question: What is the actual degree of target attainment for planned targets? | |
| Contribution to an energy-efficient economy | Degree of the contribution of EFF (qualitative) |
| Contribution to the achievement of climate protection targets | GHG reduction (t CO ₂ eqv.) |
| Exploitation of energy savings potentials | Reduction of final energy consumption (MWh) Reduction of fuel and electricity consumption (MWh) Reduction of primary energy consumption (MWh) |
| Reduction of energy costs | Achieved energy cost saving (EUR) |
| B. Effectiveness monitoring | |
| Lead questions: Is the measure causative for the target achievement? Is it suitable for this? How do unintended effects, indirect effects and interactions appear? | |
| Disclosure of gross and net values for quantitative indicators via an adjustment of effects. | |
| C. Efficiency monitoring | |
| Lead question: Is the use of the funding economical in regard to achieving the main targets (measure efficiency) and the resource consumption(execution efficiency)? | |
| Funding efficiency (view: funding body) | GHG-funding efficiency (t CO ₂ eqv./EUR) Energy-funding efficiency (MWh/EUR) |
| Bureaucracy and execution (view: funding body) | Costs for measure execution per saved GHG (t CO ₂ eqv./EUR) / per saved energy (EUR/MWh) |
| Bureaucracy and execution (view: funding body) | Costs for measure execution per funded case (EUR/case) |
| Leverage effect | Ratio triggered investment volume to funding volume |
| D. Procedure monitoring | |
| Lead question: Is there anything special that has to be taken into account when executing the measures? | |
| Procedure (view: funding beneficiary) | Satisfaction with execution (where applicable as a scale or qualitative statement) |
| Procedure (view: funding beneficiary) | Satisfaction with processing (where applicable as a scale or qualitative statement) |

Step 2: Means and outputs

- The total financial volume of the fund increased from 90 million Euro in 2011 to 306 million Euro in 2015.
- Since 2015, several new policies from the “National Action Plan on Energy Efficiency” (NAPE) are financed by the fund.
- For individual measures in the fund, several indicators for cost-effectiveness are calculated.

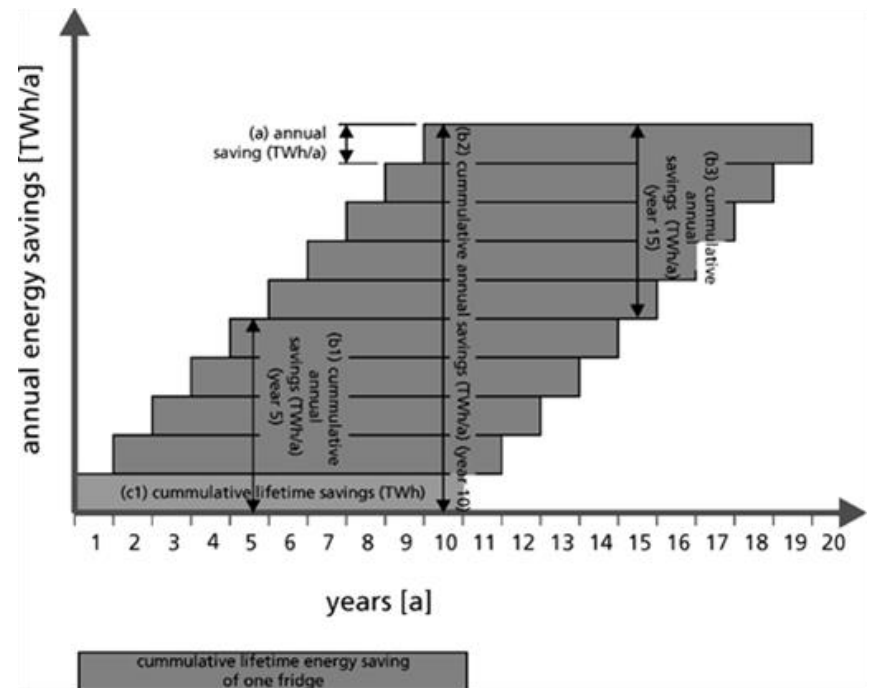
Example: Subsidy program for climate-friendly production processes

| Indicator (efficiency monitoring) | 2015 | 2016 |
|--|--------|--------|
| GHG-funding efficiency (t CO ₂ eqv./EUR] | 12,8 | 14,3 |
| Energy-funding efficiency (MWh/EUR] | 35,6 | 48,2 |
| Costs for measure execution per saved GHG (t CO ₂ eqv./EUR) | 9,9 | 8,5 |
| Costs for measure execution per saved energy (EUR/MWh) | 3,5 | 2,5 |
| Costs for measure execution per funded case (EUR/case) | 26.000 | 24.300 |
| Ratio triggered investment volume to funding volume (leverage effect) | 115 | 113 |

Step 3: Collection of data on energy savings

The indicators on energy savings are accounted in several ways:

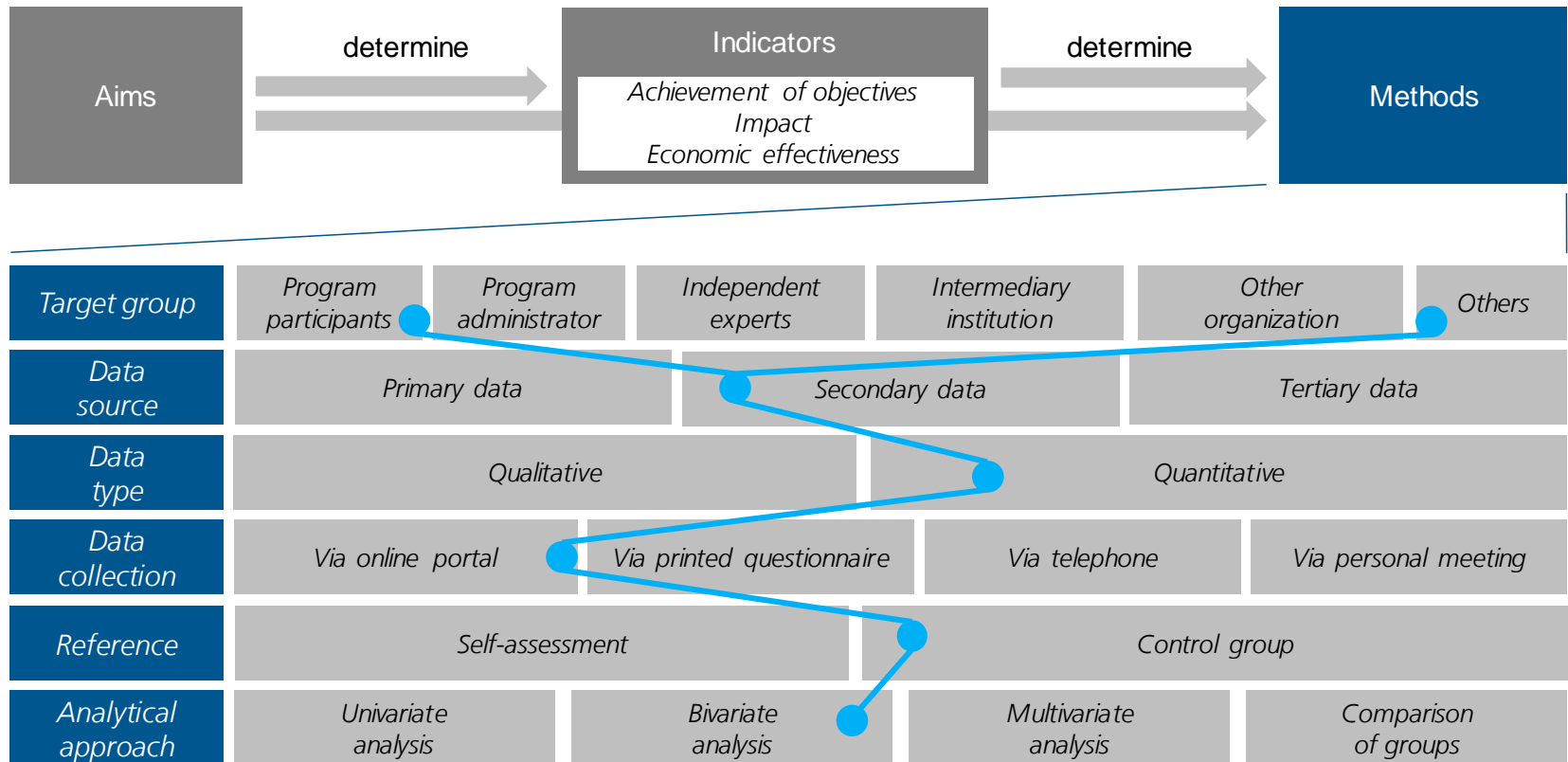
- new annual savings
- cumulative annual savings
- cumulative savings in a specific evaluation period
- cumulative savings taking into account the lifetime of an energy efficiency measure



For some measures within the fund, a quantitative collection of energy savings is not possible.

Step 3: Collection of data on energy savings

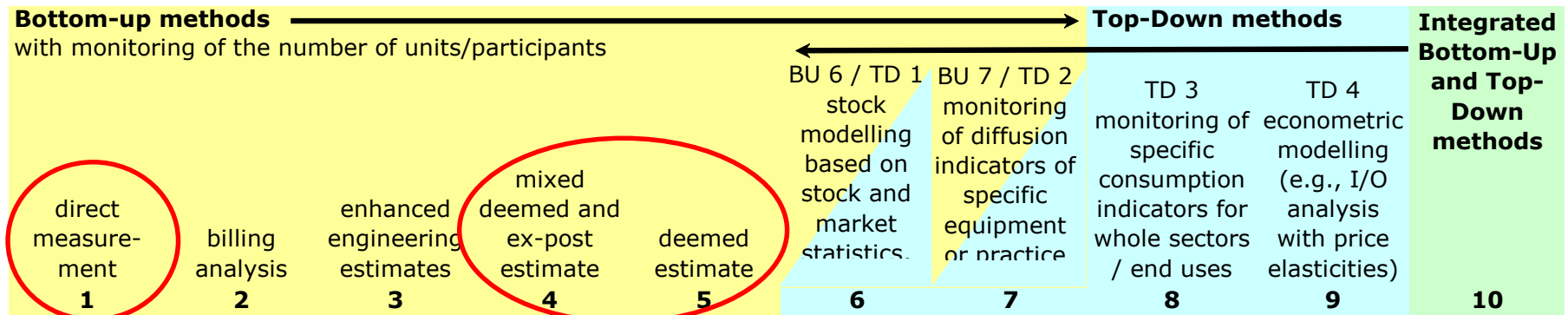
Depending on the individual measure within the fund, a broad spectrum of methods for data collection is applied.



Blue line: Design of the evaluation approach

Step 4: Calculation method(s) for energy savings

The dominating calculation method for energy savings within the EFF are deemed savings. One individual policy is based on the use of smart meters.



Adjustment of effects:

| Impact / Effects | Description |
|------------------------|---|
| Gross impact | Impact before considering effects |
| - Free-rider effects | Saving would have occurred without saving policy |
| + Follow-on effects | Effects through not yet completely realized actions |
| - Pull-forward effects | Effects through earlier implementation of actions |
| +/- Structural effects | Effects through changes of central structure variables |
| +/- Transfer effects | Effects through the transfer to third parties and other areas |
| +/- Double-counting | Effects through interactions of measures |
| - Rebound effects | Effects through additional consumption as a result of energy cost savings |
| = Net impact | Impact after adjusting for effects |

Step 5: Other aspects evaluated

- Calculation of GHG-savings and GHG-related indicators for cost-effectiveness
- Indicators for procedure monitoring (mainly semi-quantitative, using a scale)
- Broad approach taking into account several evaluation levels (target achievement, effectiveness, efficiency)

Thank you for your attention
