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Evaluation of multi-measures schemes: Lessons learnt from the German scheme “Energy and Resource Efficiency in the Economy”

Outline

1. Overview of the EEE
2. The EEE’s key features
3. Evaluation results
4. Monitoring energy savings
5. Lessons learnt





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Overview of the EEE

Federal Funding Scheme

Energy- and Resource Efficiency in the Economy (EEE)

Funding of:	EEE Modules:	Implementing agencies:
Technology- focused individual measures	**Module 1**: Cross-cutting technologies **Module 2**: Process heat from renewable energies **Module 3**: I&C, sensors and energy management software **Module 6**: Electrification in micro and small enterprises	**BAFA** Grant **KfW** Loan with repayment subsidy
Technology-open systemic measures	**Module 4**: Optimization of plants and processes **Funding competition:** Optimization of plants and processes	**VDI/VDE-IT** Grant
Conceptual measures	**Module 5**: Transformation plans	

2019-2023

55,342 funded projects

2.9 billion euros in subsidies paid out

9.7 billion euros in triggered investments

- Companies of all sectors and sizes, municipal utilities and energy service providers that want to invest in efficient and sustainable technologies and processes can access support with the EEE

Source: Based on BMWK (https://energiewechsel.de/KAENEF/Redaktion/DE/Dossier/eew-energie-und-ressourceneffizienz-in-der-wirtschaft.html)

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How the competitive funding works
(simplified example)

What is subsidised?

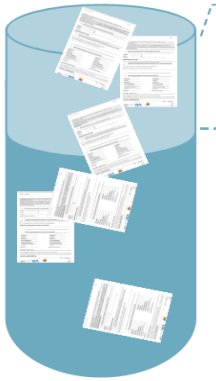
- Technology-open measures
- as in Module 4

Funding conditions

- a maximum of 20 million euros per project
- up to 60% of the eligible costs (self-selected)

What does competition mean?

- Projects compete for funding budget (6 rounds per year, 2 months each)
- Projects with the best funding efficiency (= funding / CO_2 savings) are funded



Bundesministerium für Wirtschaft und Klimaschutz

Exemplary funding round

Early tender deadline with application volume of € 60 million (150% oversubscription)

Total funding budget of € 40 million

A maximum of 80% of applicants "win" (securing competition)

Ranking	Funding efficiency	Funding applied for
~~32.~~	~~920 €/t~~	~~1.800.000 €~~
~~...~~	~~... €/t~~	~~... €~~
~~17.~~	~~620 €/t~~	~~3.700.000 €~~
16.	570 €/t	1.350.000 €
15.	530 €/t	450.000 €
14.	460 €/t	1.650.000 €
...	... €/t	... €
3.	320 €/t	950.000 €
2.	300 €/t	2.300.000 €
1.	270 €/t	4.500.000 €

Source: Based on BMWK (https://www.effizienznetzwerke.org/app/uploads/2023/10/01_Lipka_230921-Rechtsrahmen-und-Foerderung-EnEff_IEEKN-Jahresveranstaltung.pdf)

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The EEE's key features

1. **High and increasing funding volume over time, with a rise in triggered investment**
   - **Approved funding:** From 100 Mio € in 2019 to more than 1,200 Mio € in 2023
   - **Triggered investment:** From 2019 to 2023 about 9.7 Billion €, thereof in 2023 3.7 Billion € (leverage effect: 3.4)
2. **Wide range of energy efficiency technologies funded (since 2021, resource efficiency as well)**
3. **Technological openness of Module 4 and the funding competition**
4. **Wide range of funding options (grants, loans, competition)**
5. **SME-friendly: ~ 75% of approvals and 50% of subsidy go to SMEs**
6. **Highly dynamic programme development since 2019**

Evaluation of the EEE
Methodology & Data

Methodology Guide for Evaluation of Energy Efficiency Measures

Download (PDF, 2 MB)

Available online (in German): https://www.bmwk.de/Redaktion/DE/Downloads/M-O/methodik-leitfaden-fuer-evaluationen-von-energieeffizienzmassnamen.html

Data sources for EEE evaluation

1. **Administrative data** from funding databases
   - Cover mainly: Information on beneficiaries, classifications, financial data and savings
2. **Online survey** of successful applications
   - Cover mainly: Complementary data and views on the funding process

Year	Invitations
2023	10,876
2022	9,456
2021	10,890
2020	9,285
2019	6,460

→ **Response rate ~ 20%**

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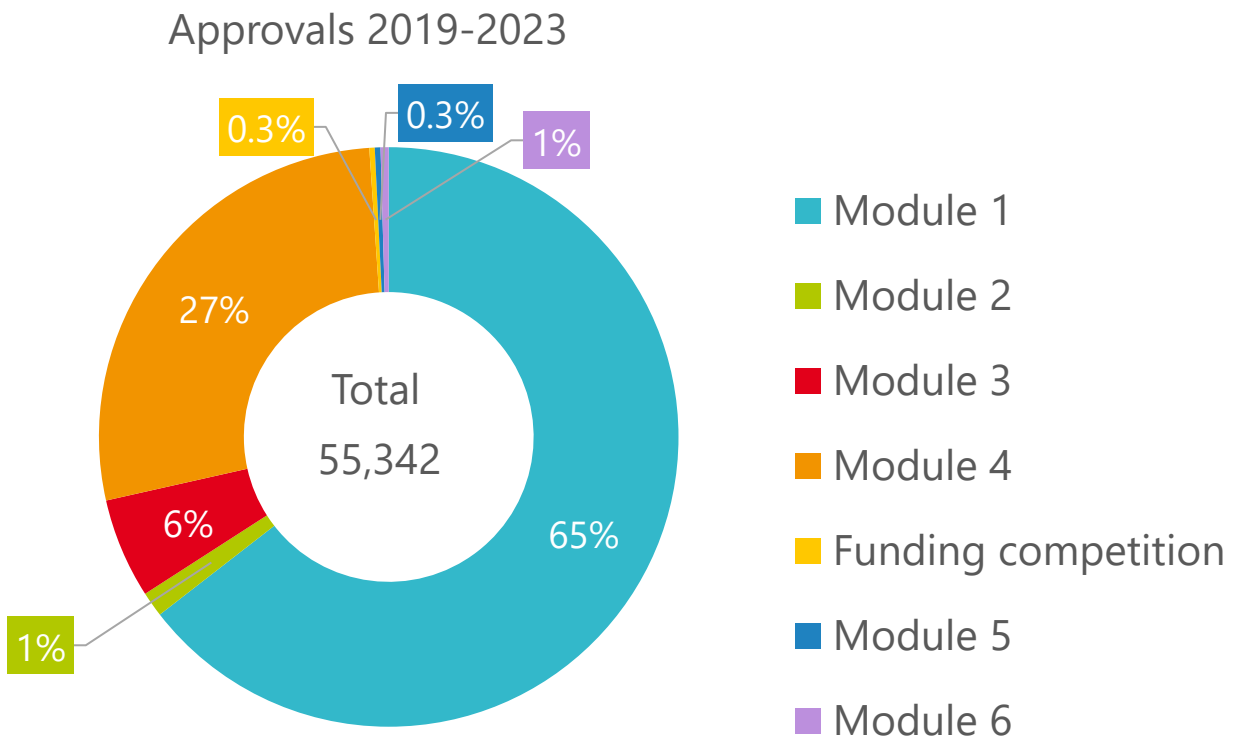
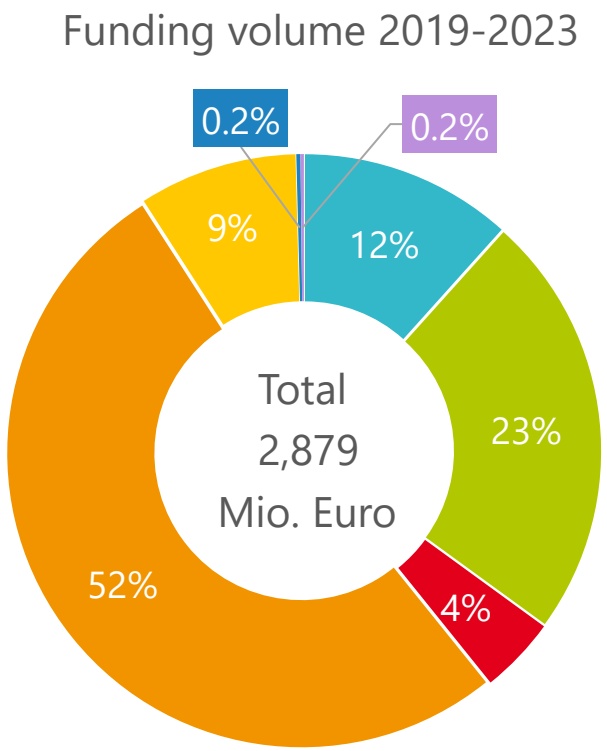
Evaluation results
2019-2023



- of which 74% SMEs



- of which 51% SMEs

Neusel et al. (2024): Jahresbericht 2023. Online available (German): https://www.bmwk.de/Redaktion/DE/Evaluationen/Foerdermassnahmen/241217-evaluation-eew-jahresbericht2023.pdf?__blob=publicationFile&v=

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Evaluation results
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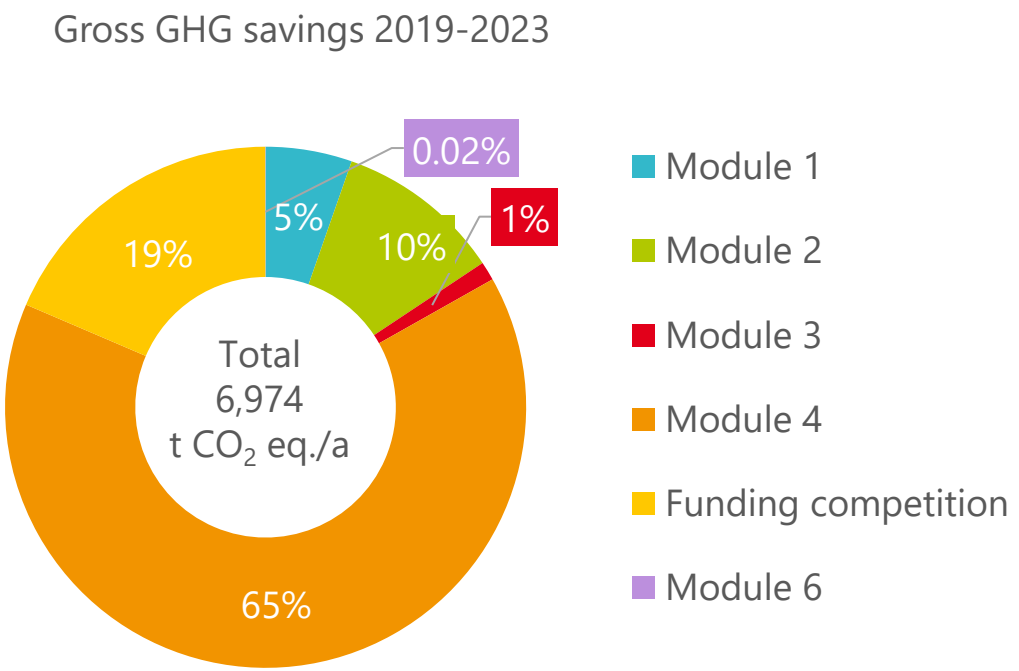

- All measures funded from 2019 to 2023 achieve gross savings of over 7 million tonnes of $CO_{2\text{-eq.}}$ per year
- Overall lifetime-related GHG funding efficiency* of 70 Euro per tonne $CO_{2\text{-eq.}}$

* funding incl. administrative costs in relation to GHG-savings over lifetime

Neusel et al. (2024): Jahresbericht 2023. Online available (German): https://www.bmwk.de/Redaktion/DE/Evaluationen/Foerdermassnahmen/241217-evaluation-eew-jahresbericht2023.pdf?__blob=publicationFile&v=

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Monitoring energy savings

- To determine the savings, **customized quantification methods** tailored to the modules were developed.
- Some modules (Module 5 and parts of Module 3) are not aimed at direct savings, but at **“conceptualized” savings** triggered by follow-up actions. They serve as **door openers**.
- In some modules, e.g. the funding competition in 2023, there are many projects with significant additional electricity consumption as a result of **electrification**. This significantly reduces final energy savings.
- **Resource efficiency** projects account for a significant share of the GHG savings. The resources saved are heterogeneous.
  - Emission reduction effect of resource efficiency measures does not necessarily take place in the country where it has been triggered. Recommendation: Taking a conscious decision how emission **savings from imported materials** are handled.

Lessons learnt

- Highly dynamic funding scheme with **several amendments since 2019**
- New **resource efficiency** funding element has got off to a **good start** in the year 2021
- Increased **focus on electrification**
- Improved funding conditions for **SMEs**

- ➢ It is important to distinguish major structural breaks to prepare for them in an ongoing evaluation
- ➢ Policy-makers need to be aware that a redesign of a funding programme may also have substantial repercussions on its evaluation

Contact

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