

Summary of the evaluation results

Funding Effects BEG 2021

Evaluation of the funding programme „Federal Funding for Efficient Buildings (‘‘Bundesförderung für effiziente Gebäude’’, BEG) in the partial programs BEG individual measures, BEG residential buildings and BEG non-residential buildings in the funding year 2021





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On behalf of

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and Climate Action of Germany

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About us

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1 Tasks and evaluation design

In 2021, the Federal Ministry for Economic Affairs and Climate Action of Germany (BMWK) assigned the evaluation of the programme „Federal Funding for Efficient Buildings (“Bundesförderung effiziente Gebäude”, BEG) in the partial programmes for residential buildings, non-residential buildings and individual measures for the funding years 2021 until 2023 to Prognos AG, the Ifeu institute, the FIW institute München (FIW) and the ITG Institute for Building Systems Engineering Research and Application Dresden (ITG). The evaluation is part of the performance review by the BMWK. In accordance with German law (§ 7 BHO), it is subdivided into target control, evaluation of effectiveness and a cost-benefit analysis. In addition, the evaluation aims to answer key questions posed by the BMWK and develop recommended actions. The evaluation is based on specifications detailed by the BMWK¹ in the methodology guideline for evaluations within the energy efficiency sector. The analysis of factors related to primary energy and greenhouse gas emissions deviated from this methodology guideline. In addition, a comparison of demand vs. consumption in accordance with the methodology developed by the IWU institute was carried out.

The evaluation of the funding year 2021 is based on the analysis of funding data which had been made available by the KfW banking group and BAFA in the spring of 2022. The funding data was cleaned by a cancellation rate, which had been consolidated historically by KfW and BAFA, in order to realistically show the waiving of claims for allowances, and hence not to over-estimate the funding effects. Further data and information were collected through means of an online survey with a sample of approximately 20,000 grantees. The saving effects were evaluated through the building models designed by FIW and ITG, the economic effects through the Input-Output-Modell designed by Prognos AG.

¹ Fraunhofer ISI; Prognos, ifeu, SUER (2020): Methodikleitfaden für Evaluationen von Energieeffizienzmaßnahmen des BMWi. On behalf of the Federal Ministry for Economic Affairs and Climate Action (BMWi) (Project Nr. 63/15 – „Aufstockung“). Karlsruhe, Basel, Heidelberg, Würzburg.

2 BEG in the funding year 2021

The funding programme BEG has been offered since 2021. It summarizes and restructures the CO₂-building renovation programme and especially the predecessor programmes “energy efficient building measures and renovation of residential/non-residential buildings” (EBS residential/non-residential buildings), as well as the “market incentive programme” (MAP). Funding with BEG in the funding year 2021 consists of the following partial programmes:

- **BEG residential buildings** for new building as well as renovation measures (systemic renovations) of existing residential buildings in accordance with efficiency house standards by means of subsidies/credit (KfW 261/264) as well as additional subsidies (KfW 461/464) since 01.07.2021,
- **BEG non-residential buildings** for new buildings as well as renovation measures (systemic renovations) of existing non-residential buildings in accordance with efficiency house standards by means of subsidies/credit (KfW 263/264) as well as additional subsidies (KfW 461/464) since 01.07.2021,
- **BEG individual measures** for individual renovation measures of existing residential and non-residential buildings by means of subsidies/credit (KfW 262/263/264, since 01.07.2021) as well as additional subsidies (BAFA, since 01.01.2021)

The funding programme can be accessed by all types of carriers of investment measures (e.g., private citizens, homeowners’ association (WEG), companies, other stakeholders active in the housing industry and communal entities [only funding options KfW 264/464]. The credit funding includes, in addition to the provision by KfW, a federal repayment allowance.

BEG funding projects for residential and non-residential buildings target new buildings and renovations of existing buildings in accordance with efficiency house standards. Of those costs eligible for funding, 25% are being granted as repayment allowances for new residential buildings, and 22.5% for non-residential buildings, respectively. In addition, funding recipients can take advantage of bonuses for renewable energies and sustainability (only for new buildings). The amount of (repayment) subsidies depends on the targeted efficiency building standard. The partial programme BEG individual measures targets the renovation of existing buildings with individual measures. In this case, individual measures related to building shell and plant technology are being funded with max. 20%, those related to heating technology with max. 40%. For renovations of residential buildings, additional bonuses can increase the total funding amount, such as the inclusion of an integrated renovation roadmap (iSFP). In most of these cases, including energy subject matter experts that are registered in the “list of energy efficiency experts for federal funding programmes” is mandatory.

The BEG credit models are being executed solely by the KfW banking group; for the subsidy model, KfW and BAFA are jointly responsible.

3 BEG funding balance in the funding year 2021

Overall, BEG and its taxonomy enjoy a high level of acceptance on the market. In the funding year 2021, around 309,000 projects were funded through it. The grantees themselves invested just short of 79 billion Euro. The contribution of federal funds amounted to about 13 billion Euro (Table 1).

Table 1: BEG funding balance 2021

	Funding cases [number]	Residential units [number]	Usable area [in 1,000 m ²]	Investments [in m Euro]	Federal funds [in m Euro]
BEG residential buildings	85,447	212,041	–	48,527	6,428
New buildings	75,437	180,991	–	44,363	5,007
Renovations	10,010	31,050	–	4,164	1,421
BEG non-residential buildings	4,035	–	11,600	19,956	3,119
New buildings	3,521	–	10,173	18,467	2,633
Renovations	514	–	1,427	1,489	486
BEG individual measures	219,237	427,773	–	10,252	3,349
Residential	210,627	427,773	–	8,969	3,003
Non-residential	8,610	–	–*	1,283	346
Total	308,719	639,814	11,600	78,735	12,896

Source: own representation
* no information available

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About 71% of funding cases fall into the category renovations with individual measures (BEG individual measures), 3% into the category of systemic renovation measures, as well as 26% into the category of new buildings (residential and non-residential buildings). Analysed per funding cases, non-residential buildings are only of marginal importance.

When analysing investments per funded projects, funding of new buildings gains considerable value – about 80% of investments are being made in the category of new buildings (residential and non-residential buildings). Renovations with individual measures take up about 13% of the investment volume, systemic renovations (residential and non-residential buildings) cover about 7% of the investment volume. Applied funding means and their localisation reveal a different picture than that of funding cases: with 59%, the largest part of funding measures is being invested in new buildings, of which 39% for residential and 20% for non-residential buildings. About 26% of funding means are being invested in renovations with individual measures, and 15% in systemic renovations.

Especially in the category of new residential buildings the efficiency house standard 55 (incl. renewable energy class/sustainability class) plays a dominant role: this standard is being chosen in 80% of the cases of new buildings, triggers the same amount of investments and absorbs about 72% of funding means in the category of new residential buildings. In the category of renovations with individual measures, especially measures targeting improvements for building shell and

heating technology are being executed. Those measures make out about 37% and 52% of funding cases, respectively; analysed per investment, these numbers look very similar. However, about 68% of funding means are being invested in the category of heating measures. When analysing renovations with individual measures for non-residential buildings, plant technology plays a more important role than is the case for residential buildings.

Target groups and regional focus

The majority of applicants of the programme are private building owners (91%). When investment volume and funding means are considered, however, their percentage is much lower with about 48%. Here it becomes apparent, that commercial grantees (housing companies, incl. communes/communal organisations) invest in general in bigger buildings with more residential units when renovating or building new units. About three quarters of residential units (owned by private citizens) that are being renovated with BEG residential buildings funds are used by the owners; in the category of new buildings, this percentage decreases to about 60%. Here, the rental business has a bigger influence than in the category of renovation projects. In the process, especially commercial entities invest in renovating or building new social housing; private grantees only do this to a small extent.

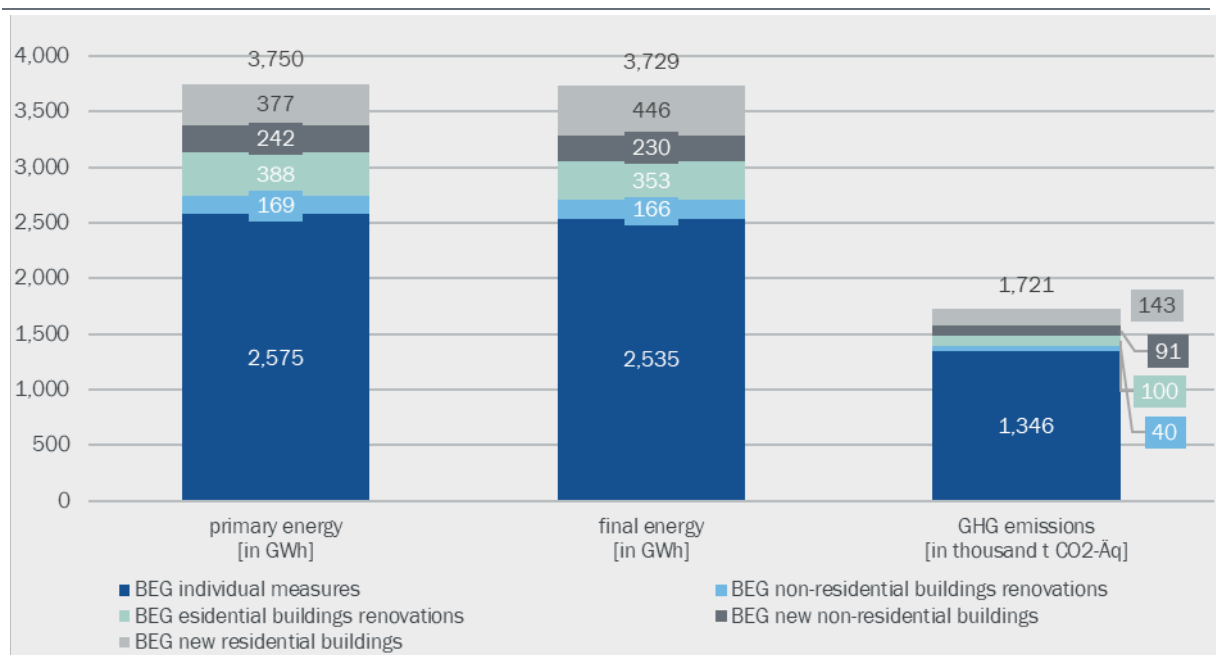
Private grantees can usually be classified as well earning private citizens of working age and with a high qualification. On average, younger and better qualified persons with a higher wage prefer the BEG residential buildings funding option for new buildings, as opposed to funding options for renovations with individual measures. The social structure of grantees is more homogeneous when analysing renovations of residential buildings vs. building new residential units.

The regional focus of the funding programme is on those federal states that exhibit a dense population and economic power, namely Bavaria and Baden-Württemberg, as well as North Rhine-Westphalia. Here, most of the funding cases/residential units and the highest commitment and investment volumes are located. In the East German federal states, only a low demand for the funding programme was observed.

4 BEG achievements in the funding year 2021

With the funded measures in the year 2021, around 3.7 TWh of final/primary energy are being saved in average per year. This leads to a yearly reduction of GHG emissions by approximately 1.7 m t CO₂-Äq.² With approximately 78%, the biggest part of GHG savings is being made with individual measures. Systemic renovations account for 8% and new buildings for about 14% of GHG savings.

Figure 1: Average yearly savings through BEG 2021



Source: own representation

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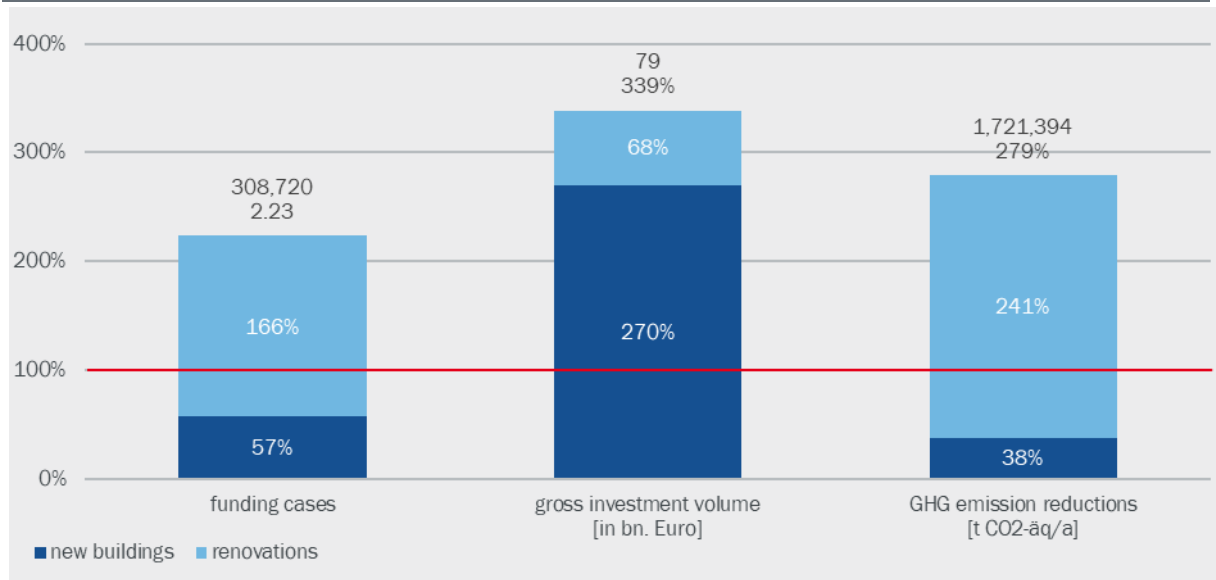
With the investments that are being triggered by the funding programme, gross value-added effects of about 67 billion Euro are achieved in Germany, and corresponding with it about 900,000 full time equivalents (FTE) are secured or created.³ Especially small and medium-sized enterprises see these effects. The essential drivers for this gross value-added effect and employment effects are new building projects for both residential (57%) and non-residential (24%) units.

² Savings per methodology guideline. The accounting space for an evaluation in accordance with the methodology guideline differs from the accounting space in accordance with KSG/KSSP: With the former, all savings that can be assigned to the funding programme are being considered; with the latter, only those relevant in the respective sector (here: building sector) are being considered. Changes of energy carriers etc. therefore influence the respective effect that is to be reported/balanced. When accounting in accordance with KSG scope, about 1.8 m t CO₂-Äq are being saved.

³ These effects can be distributed over the course of up to four years and are dependent on the point in time when the measure is realised (implementation/retrieval period), respectively.

These figures show that the yearly achievement targets of the programme⁴ that were described in the funding guidelines are surpassed by far. The renovation measures (systemic and individual) contribute the most to the achievement of funding cases and GHG reduction, the new buildings the most to the gross investments.

Figure 2: Achievement of programme targets in accordance with funding guidelines BEG 2021



Source: own representation

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⁴ As the funding measures BEG residential buildings, non-residential buildings and the credit option for BEG individual measures were only launched as of 01.07.2021, the achievement targets described in the guidelines were adjusted to the shorter duration.

5 BEG effects in the funding year 2021

Apart from energy savings, reduction of GHG emissions and employment effects, the BEG funding programme also triggers these further effects in the funding year 2021:

- The funding programme contributes considerably to the execution of measures and the increase of renovation and new building rates.
- The scope of planned measures (e.g., higher efficiency level, number of measures) is being expanded by the funding programme.
- The energy/heating costs are being reduced by 11.6 billion Euro over the expected time of useful life; here, approximately 9.9 billion Euro fall into the category of renovations.
- The level of awareness regarding possible efficiency measures is being raised with approximately 60% of grantees.
- Investment obstacles – especially economical ones – are being reduced through the funding programme.

These effects as well as the accompanying leverage and additionality effects (leverage 6.1; around 65 billion Euro additional investments) point to the fact that the BEG funding programme seems suitable and causal for the onset of action as well as target achievement. Deadweight effects appear; however, they are being mitigated to a big extent by transmission and expansion effects. In total, the gross effect is only being reduced by about 10%. Especially for companies, this reduction is higher, i.e. in this case higher deadweight effects and in particular lesser expansion effects are observed. This can be due to planned (replacement) investments, as well as – in view of the low-interest phase - a consciously chosen investment strategy.

The funding environment of the BEG programme has a supportive effect: synergies are being generated that are often used in combination or in addition with the chosen measures. Especially the on-site advice as well as the programme to optimise heating measures of the BAFA are to be named here.

Only about a third of the surveyed grantees reported that the COVID-19 pandemic had effects on the implementation of measures. These were mainly delays due to lockdown or a lower availability of craftspersons and building materials. A small share reported that the implementation could be expanded (higher efficiency level, more measures) and/or being accelerated.

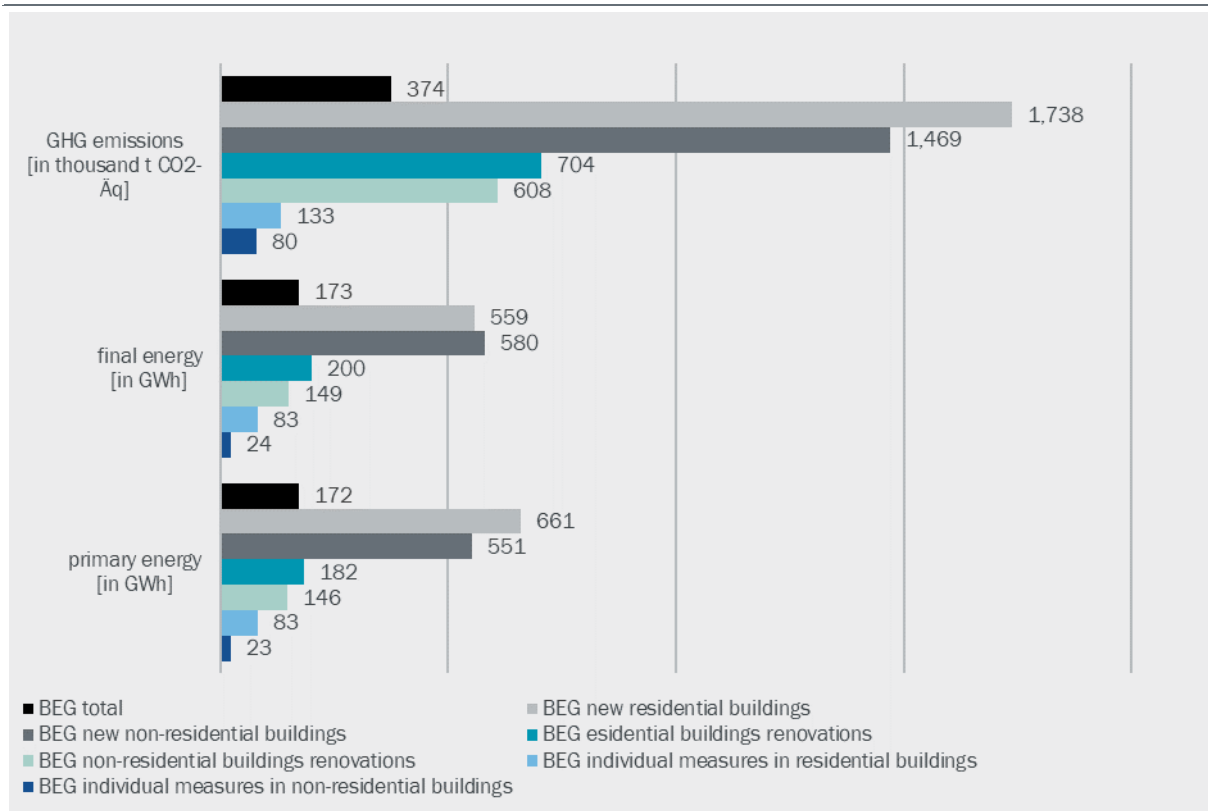
6 Profitability of the BEG in the funding year 2021

The following funding efficiencies can be observed for the BEG:

- On average, funding means of 7,492 Euro have to be invested to reduce CO₂ emissions by one ton per year;
- 3,485 Euro and 3,439 Euro of funding means have to be invested to save one MWh of final energy and primary energy.

Calculated over the course of the expected useful life of the funded measures, the operating expenses amount to 374 Euro/t CO₂-Äq and 173 Euro/MWh final energy, as well as 172 Euro/MWh primary energy, respectively. Especially new buildings (residential and non-residential buildings) can be categorised as low funding efficiency, renovations are significantly cheaper and more cost efficient.

Figure 3: BEG funding efficiencies in the funding year 2021 over the course of the expected useful life according to NAPE



Source: own representation

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Expected useful life according to NAPE with residential buildings 20.10 years, with non-residential buildings 19.75 years

The funding efficiency for new buildings is strongly influenced by new buildings in the sustainability class with efficiency standard 40 and efficiency standard 55 – here, high funding sums have to be invested to reach the same level of savings compared to new buildings without sustainability class, which leads to low funding efficiencies. When analysing the category of renovation projects with individual measures, especially measures to improve the building shell strongly influence the profitability and lead to a lower total funding efficiency.

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Legal Notice

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