Summary of the evaluation results

Funding effects BEG 2023

Evaluation of the funding programme „Federal Funding for Efficient Buildings (Bundesförderung für effiziente Gebäude, BEG)“ in the partial programmes BEG individual measures, BEG residential buildings and BEG non-residential buildings in the funding year 2023

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On behalf of
Federal Ministry of Economic Affairs and Climate Action of Germany

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Table of Contents

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 effects of the evaluation are based on the accounting conventions of the national energy balance and on specifications detailed by the BMWK[1] in the methodology guideline for evaluations within the energy efficiency sector. The updated analysis of factors related to primary energy and greenhouse gas (GHG) 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 for residential buildings. In contrast to previous years, the target achievement in 2023 is defined in accordance with the accounting conventions of the Climate Protection Act. No further objectives in terms of funding cases or gross value added have been defined for 2023.

The evaluation of the funding year 2023 is based on the analysis of funding data which had been made available by the KfW banking group and BAFA in the spring of 2024. The allocation of funding cases to the funding year is based on the approvals for BEG residential and non-residential buildings. Due to the processing backlog for BEG individual measures in 2022, the applications for BEG individual measures that were submitted but not yet processed will be used in the analysis. 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 14,000 grantees. The saving effects were evaluated through the building models designed by FIW and ITG, and the economic effects through the Input-Output-Model designed by Prognos AG.

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

2 BEG in the funding year 2023

The funding programme BEG has been offered since 2021. This BEG programme by the Federal Ministry of Economic Affairs and Climate Action of Germany (BMWK) consists of the following three partial programmes:

- **BEG residential buildings** for the renovation (systemic renovations) of existing residential buildings in accordance with efficiency house standards (by means of credit: KfW 261 and 264; additional subsidies: KfW 464),
- **BEG non-residential buildings** for the renovation (systemic renovations) of existing non-residential buildings in accordance with efficiency house standards (by means of credit: KfW 263 and 264; additional subsidies: KfW 464),
- **BEG individual measures** for the renovation of existing residential and non-residential buildings with individual measures (additional subsidies with BAFA).

The names of these BEG partial programmes describe the addressed funding items. The BEG partial programmes for residential and non-residential buildings are being offered by means of one credit subsidy option and one additional subsidy option for communal entities. The partial programme BEG individual measures is only being offered by means of additional subsidy option. The BEG credit models are being executed by the KfW banking group. BAFA is responsible for the subsidy model for individual measures.

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 as well as communal entities [only funding options KfW 264 and 464]). The credit funding includes both a repayment allowance and an interest reduction from federal funds.

Overall, the BEG funding programme has developed in a very dynamic way since 2021, also because of the changing (external) framework conditions. In the Federal Gazette (BAnz), various new guidelines (RiLi) and amendment announcements were published after the publication of the initial guideline.

In the funding year 2022 and at the turn of the year 2022/2023, the BEG funding of residential and non-residential buildings was fundamentally changed. From early 2022 onwards, funding for new construction projects was gradually reduced and the focus was instead placed on renovations. In the year 2023, the BEG funding for new buildings ceased and was transferred into the BEG KFN (climate-friendly new building) programme by the Federal Ministry of Housing, Urban Development and Construction (BMWSB). Furthermore, as of August 2022, the funding intensities were reduced and funding by means of additional subsidies for private and commercial applicants was terminated (funding option 461 and 463). In the BEG individual measures programme, credit funding (options 262, 263 and 264) was cancelled, the funding of fossil gas heating systems as renewable-ready or hybrid heating was terminated and the funding intensities were reduced. The bonus for a customised renovation schedule (iSFP bonus) for residential and non-residential buildings was cancelled; new bonuses were introduced, such as the "Worst Performing Buildings" (WPB) bonus in September 2022, and the bonus for "Serial Renovations" (SerSan) at the beginning of the year 2023.

For BEG residential and non-residential buildings, only renovations to an efficiency house standard in accordance with different EH/EG-levels are now eligible for funding. A bonus for basic funding can be achieved for renovations in accordance with the renewable energy (EE) class and sustainability (NH) class. Measures on the building envelope or heating technology measures can be requested within the BEG individual measures programme. For systemic renovations, a WPB bonus and the SerSan bonus (only in residential buildings) can be claimed. Within BEG individual measures, a bonus for basic funding via individual renovation schedule (iSFP-bonus; only in residential buildings), a heating exchange bonus, or a bonus for efficient heat pumps can be requested.

With these changes to the funding criteria, the funding was orientated towards greater efficiency. Funding is now only available for renovation projects that show significantly higher specific savings than new building projects, resulting in a sustainably improved profitability for the funding provider.

3 BEG funding balance in the funding year 2023

Overall, BEG and its taxonomy enjoy a high level of acceptance on the market. In the funding year 2023, around 286,000 renovation projects were funded through it. The grantees themselves invested around 30 billion Euro. The contribution of federal funds amounted to around 7.6 billion Euro (see Table 1), of which 6.5 billion Euro are federal funds for repayment grants and other subsidies; 1.1 billion Euro are federal funds from interest rate subsidies[2].

The new buildings category is no longer included in the BEG funding programme within the BMWK and therefore not part of this evaluation.[3] Subsequently, this category is not listed in the following sections and is not included in the effects.

Table 1: BEG funding balance 2023

	Funding cases [number]	Residential units [number]	Usable area [in 1,000 m²]	Investments [in m Euro]	Federal funds [in m Euro]
BEG residential buildings	12,876	42,001	3,542	9,416	2,137
BEG non-residential buildings	655	--	915	1,742	490
BEG individual measures residential buildings	256,684	646,808	--*	15,152	4,020
BEG individual measures non-residential buildings	16,255	--	53,934	4,740	993
Total	**286,470**	**688,808**	**58,391**	**31,050**	**7,640**

Source: own representation
* no areas available in the funding data

In terms of renovations, around 95% of funding cases relate to renovations with individual measures (BEG individual measures) and five percent to funding for systemic renovation measures (BEG residential and non-residential buildings). Analysed by funding cases, non-residential buildings are only of minor importance. Compared to the year 2022, the number of funding cases has decreased in all three partial programmes; compared to 2021, the funding cases are at a similar level. This is due to the following: (1) funding for new buildings and additional subsidy programmes for non-municipal applicants were discontinued in the BEG residential and non-residential funding programmes, and (2) strong "pull-forward-effects" with regards to the changed funding conditions in the BEG individual measures programme having occurred during the funding period.

The distribution of the investment volume differs from that of the funding cases, but the basic focus remains the same. The renovation with individual measures (BEG individual measures)

[2] The BMWK's funding allocation for the entire BEG programme in 2023 is approximately 11 billion Euro and approximately 8.4 billion Euro for BEG individual measures. The difference for BEG individual measures is due to applications from 2022 (with a funding volume of approximately 3.5 billion Euro), which were not approved until 2023 due to the backlog in 2022. The effects were allocated to the funding year according to the application date (individual measures).
[3] Until the end of March 2023, BEG funding for new buildings at the BMWK was only provided on a provisional basis for the new KFN (Climate-Friendly New Building) programme in the BMWSB. Additional information can be found in the corresponding evaluation reports.

requires around 64% of the investment volume, the systemic renovations (BEG residential and non-residential buildings) combine around 36% of the investment volume. The distribution of funding raised does not differ fundamentally from that of the funding cases: with 78%, the majority of funding is provided for renovations with individual measures. For systemic renovations, 22% of the funding are being used.

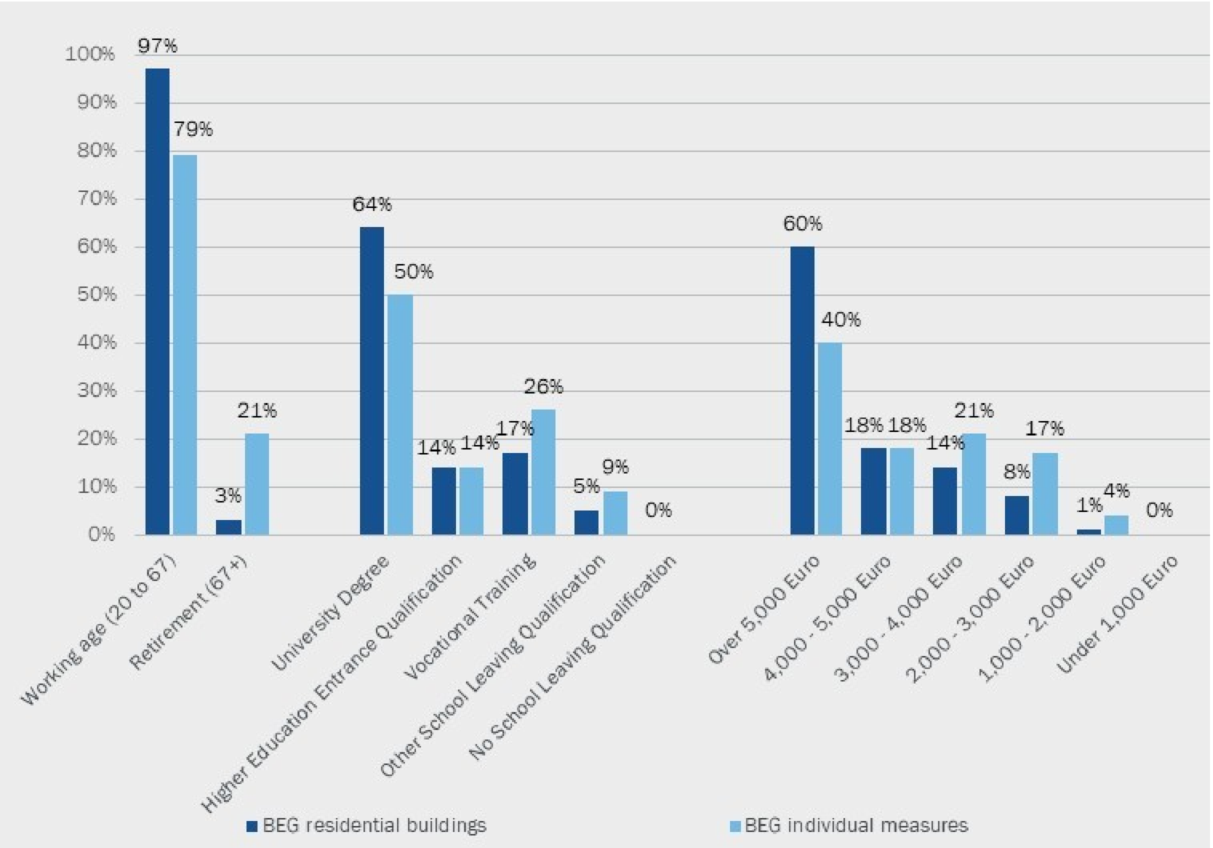
For systemic renovations in residential buildings, the efficiency house standards 55 and 70 (including EE and NH classes, respectively) are of dominant importance, each accounting for approximately 30% of funding cases. In the category of non-residential buildings, the efficiency house standards 40 and 55 are most frequently represented, each accounting for approximately 33% of funding cases. The standards mentioned here before each account for between 17% and 36% of funding cases. The distribution of investments and funding is approximately the same. Renovations with individual measures are primarily carried out on the building envelope and the heating technology. They account for around 47% and 44% of the funding cases in BEG individual measures, respectively, and 40% each of the investments. With 55%, the majority of funding for individual measures is spent on heating technology measures. When analysing individual measures for non-residential buildings, system technology is much more important than for those for residential buildings.

Target groups and regional focus

The majority of applicants to the BEG programme are private building owners (89%). When investment volume and funding means are considered, however, their percentage is considerably lower with about 57% and 62%, respectively. Here it becomes apparent that commercial and communal grantees (housing companies, incl. communes/communal organisations) invest in general in larger buildings with more residential units.

Private grantees can usually be classified as well earning private citizens of working age and with high qualifications. On average, younger and better qualified persons with a higher income prefer the BEG residential buildings funding option, as opposed to funding options for renovations with individual measures. The social structure of grantees is more heterogeneous when analysing individual measures of renovations of residential buildings vs. renovations of residential units (Figure 1). For the BEG programme for non-residential buildings, in-depth socio-economic analyses were not carried out due to the high number of commercial applicants.

Figure 1: Socio-economic characteristics for BEG residential buildings vs. individual measures



Source: own representation

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 is observed.

4 BEG achievements in the funding year 2023

With the funding guideline dated 30 December 2022, the BEG objectives were focused on the goal of reducing GHG emissions. In contrast to previous years, the target achievement in 2023 is defined according to the accounting conventions of the Climate Protection Act.[4] There are no further goals for either funding cases or gross value added in the year 2023. The target value in the funding year 2023 is 2.3 Mt CO_2-equivalents (CO_2-eq) for the entire BEG funding programme (residential buildings, non-residential buildings, individual measures). The guidelines do not document a division of the target value into individual partial programmes.

For the entire year 2023, the BEG achieves savings of around 2.5 Mt CO_2-eq which correspond to a target achievement level of 109%. With 102%, BEG individual measures (2.3 Mt CO_2-eq) account for the majority of this achievement; BEG residential buildings contribute five percent to achieving this target (0.1 Mt CO_2-eq) and BEG non-residential buildings two percent (0.04 Mt CO_2-eq) (Figure 2).

Figure 2: BEG 2023 target achievement level in the building sector and contribution to KSG targets by BEG partial programmes (KSG accounting convention)

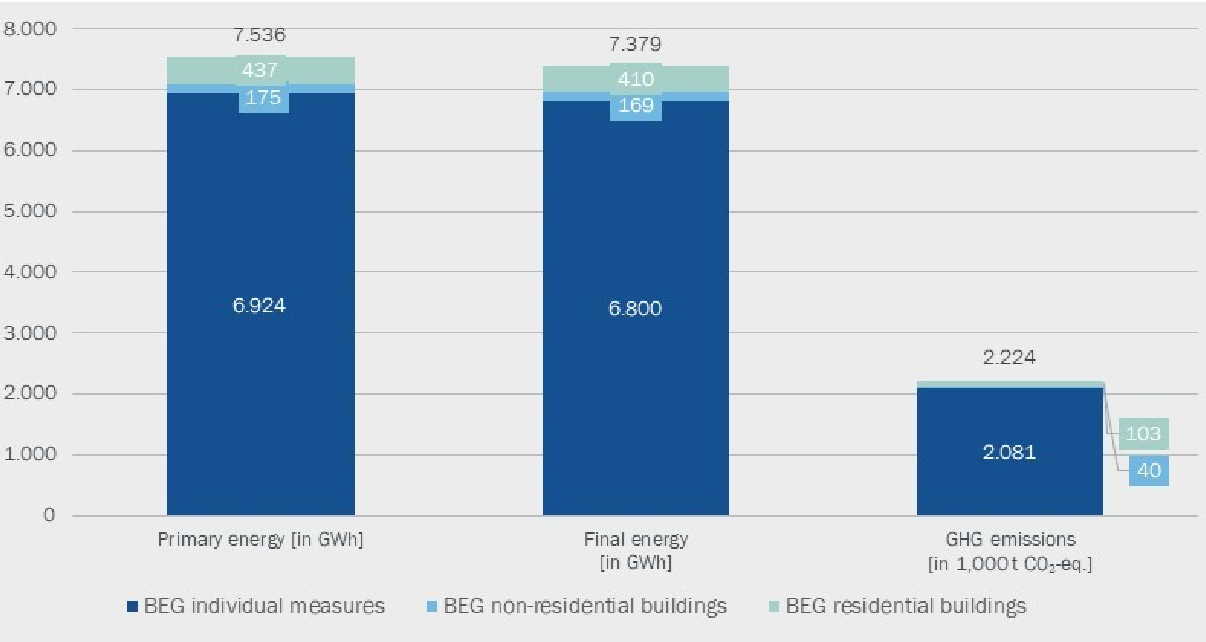
Source: own analysis and representation

[4] The accounting area according to the Climate Protection Act differs from the accounting area for an evaluation according to the methodology guidelines: in the latter, all savings that can be assigned to the funding programme are accounted for (originator principle), in the former only those in the relevant sector (here: building sector, source principle).

5 BEG effects in the funding year 2023

To determine the effects of the funding programme, the savings - in addition to the target achievement described in section 4 according to KSG methodology - are also determined in accordance with the balancing convention of the national energy balance according to BMWK's methodology guidelines for evaluations of energy efficiency measures. As a result, the funded measures realised in the funding year 2023 will save an average of around 7.5 TWh of primary energy or 7.4 TWh of final energy per year. As a consequence, GHG emissions are reduced annually by around 2.2 million tons of CO_2 eq. With around 92%, the largest part of GHG savings stems from renovations with individual measures (BEG individual measures). Systemic renovations in residential buildings account for six percent and systemic renovations in non-residential buildings for around two percent of GHG savings (see Figure 3). In reality, these effects can occur over a period of up to four years, depending on the time at which the measures are implemented (implementation/access period).[5]

Figure 3: Average annual savings through BEG 2023



Source: own representation © Prognos / ifeu / FIW / ITG 2025

[5] This is due to methodological reasons: a final statement on the funding effects can only be made once the processes have been completed, i.e. with the existence of proof of use. The statements in the present evaluation consider this time delay and assessment uncertainty through the (historically determined) cancellation rate. In contrast to the previous approach, the funding cases for BEG individual measures were assigned to the respective period according to the month of the respective application date and no longer to the respective approval date in order to be able to consider the high number of funding cases despite the processing backlog in the funding years 2022 and 2023.

In addition to achieving savings, the BEG programme also achieves economic effects. The investments made through the BEG funding programme in 2023 lead to value creation effects totalling around 25.8 billion euros. Due to the corporate structure in the construction industry, the majority of this takes place in small and medium-sized companies. The determined gross value-added effects are accompanied by corresponding employment effects. In 2023, the BEG funding programme secures or creates a total of around 359,000 jobs (full-time equivalents [FTE]).

Measured against the investments triggered, the funding achieves high gross value-added effects. This is due to the fact that investments are being made in particular in renovations of the building shell and modernisations of heating systems in the construction industry. In these industries, a significant part of the added value and employment arises directly on site at the building during installation. As a result, comparatively little added value and employment is lost to countries abroad, which means that the resulting effects benefit local companies to a large extent.

Figure 4: Economic effects of the BEG 2023

Source: own representation

© Prognos / ifeu / FIW / ITG 2025

Apart from energy savings, reduction of GHG emissions and economic effects, the BEG funding programme also triggers these further effects in the funding year 2023:

- The funding programme contributes considerably to the execution of measures and the increase of renovation rates.
- Investment obstacles – especially economical ones – are being reduced through the funding programme.
- 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 15.9 billion Euro over the expected time of useful life; approximately 14.6 billion Euro fall into the category of renovations with individual measures
- The level of awareness regarding possible efficiency measures is being raised with approximately 65% to 80% of grantees.

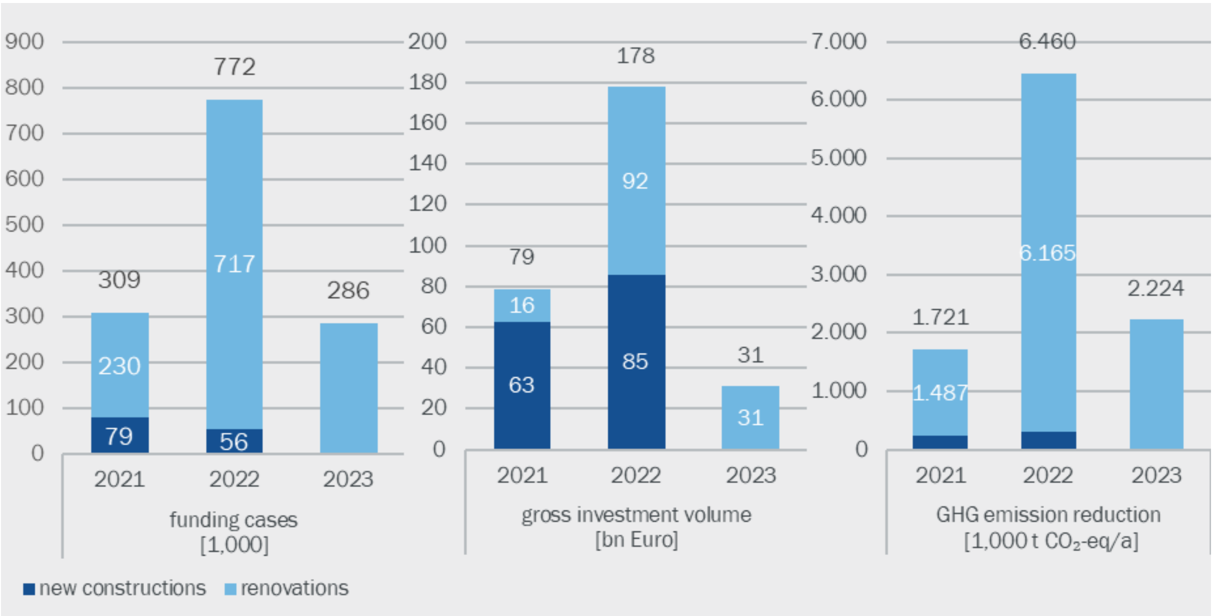
These effects as well as the accompanying leverage and additionality effects (leverage 5.9; around 21 billion Euro additional investments) point to the fact that the BEG funding programme seems suitable and causal for the onset of action as well as its target achievement. Deadweight effects appear; however, they are being mitigated to a large extent by transmission and expansion effects. This means that the scope of implemented projects is either larger than initially planned or triggers additional activities with other stakeholders. In total, the gross effect is only being reduced by about 0% to 20%.

About a fourth of the surveyed grantees reported that the Ukraine war and the aftereffects of the COVID-19 pandemic impacted the implementation of measures. For around half or two thirds of those affected, the implementation scope was expanded (higher level of efficiency, more measures). Stated reasons were concerns about future cost increases and the future economic situation as well as energy supply security.

6 Comparison between the funding years

The number of funding cases, gross investment volume and GHG emission reductions decreased significantly in the funding year 2023, compared to 2022 (see Figure 5). The main reasons for the decline in demand compared to 2022 are the reduced funding intensities for BEG individual measures and the elimination of BEG funding for new constructions with the BMWK. The funding year 2022 was an exceptional year seeing a very high demand just before the expiration of certain purposes of use, such as the expiration of new constructions within the BEG residential and non-residential buildings programmes or the reduction of funding intensities for BEG individual measures. In 2023, only renovations are eligible for funding. This leads to lower gross value-added effects, which are higher for new constructions than for renovations. However, it also leads to higher GHG savings, as renovations have higher specific savings than new constructions.

Figure 5: Achieved BEG funding effects in the years 2021 until 2023



Source: own representation

7 BEG profitability in the funding year 2023

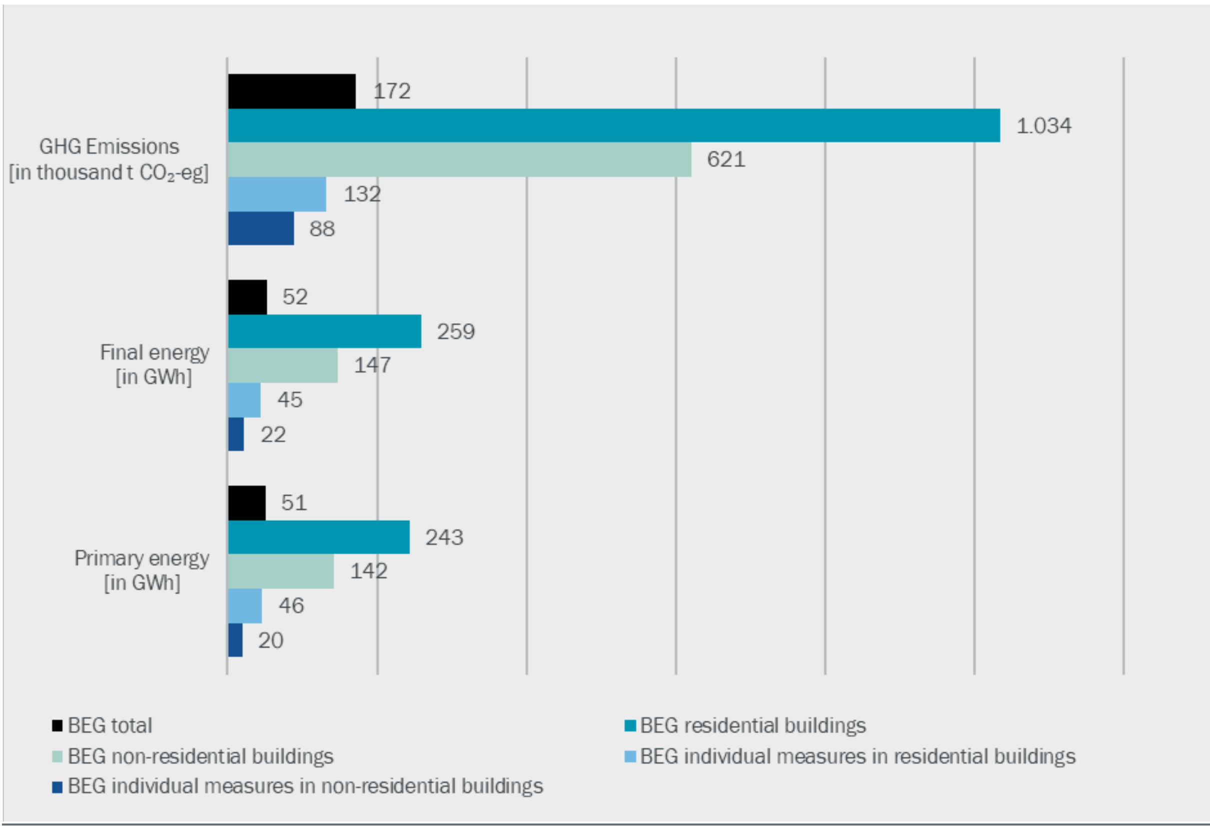
The following funding efficiencies can be observed for the BEG:

- to reduce GHG emissions by one ton annually, 3,436 Euro must be raised once;
- to save one MWh of final or primary energy annually, 1,035 and 1,014 Euro in funding must be used, respectively.

Calculated over the course of the expected useful life of the funded measures, the operating expenses amount to 172 Euro/t CO_2-eq and 52 Euro/MWh final energy, as well as 51 Euro/MWh primary energy, respectively.

Figure 6 shows the funding efficiencies according to the partial programmes. The systemic renovations according to EH standards are characterised by a lower funding efficiency; renovations with individual measures are significantly more cost-effective and cost-efficient.

Figure 6: BEG funding efficiencies in the funding year 2023 over the course of expected useful life in accordance with the National Action Plan on Energy Efficiency (NAPE)



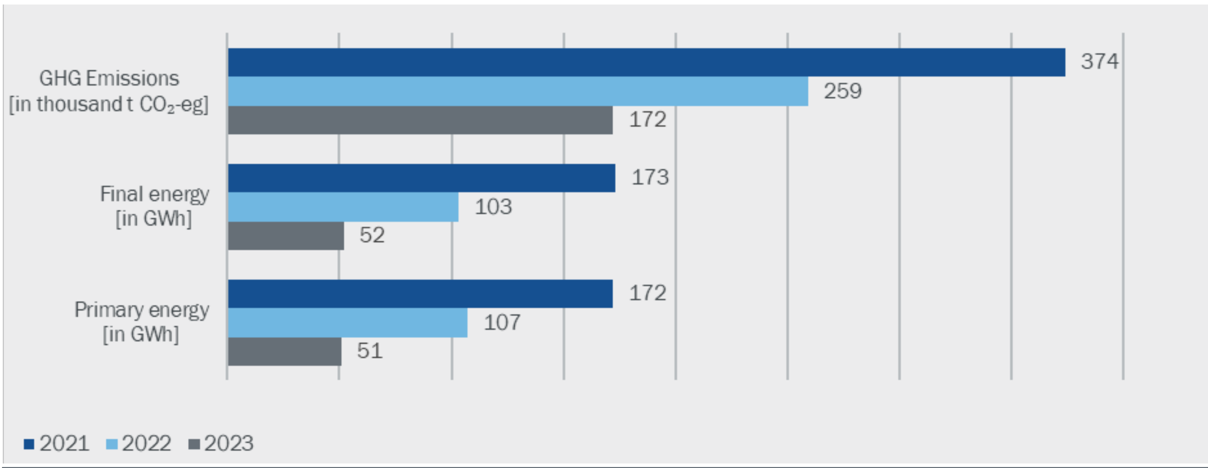
Source: own representation © Prognos / ifeu / FIW / ITG 2025
Useful life according to NAPE with residential buildings 20.1 years, with non-residential buildings 19.8 years.
Effect determined as gross value.

The economic viability of the BEG funding programme in its entirety is largely determined by the renovation with individual measures. These significantly improve the overall economic efficiency.

Compared to the previous year, the BEG funding efficiencies have improved overall (Figure 7). On the one hand, at the beginning of 2023, new buildings – which are less funding-efficient - were no longer supported by the BEG funding programme; on the other hand, funding rates were lower throughout the year compared to previous years. As in the previous year, further influencing factors that led to an improvement in funding efficiency can be seen in changes to the subsidised building stock and the energy source mix. Overall, however, these changes are less significant than the changed funding status and funding intensities. The influencing factors and their effectiveness differ between the individual BEG partial programmes. A detailed description can be found in the corresponding evaluation reports.

The development of the funding efficiency of the overall BEG programme is essentially due to the higher share of the partial programme BEG individual measures in federal funds and savings, which shows better funding efficiency compared to the partial programmes BEG residential buildings and BEG non-residential buildings. A detailed examination reveals significant differences in funding efficiency between individual funding areas (and the respective partial programmes), which are presented in more detail in the individual evaluation reports of the partial programmes.

Figure 7: Comparison of the BEG funding efficiencies in the funding years 2021 to 2023 over the course of expected useful life in accordance with NAPE



Source: own representation © Prognos / ifeu / FIW / ITG 2025
Useful life according to NAPE with residential buildings 20.1 years, with non-residential buildings 19.8 years.
Effect determined as gross value.

Between 2021 and 2023, approximately 0.4% of the total funds raised are used for the administration of the BEG programme. These administrative costs include expenses such as project-related consulting services for submission of the application and continued accompaniment, as well as the specific approval and verification processes. In addition, cross-project expenses such as the necessary IT systems or public relations work are included. However, these do not include the expenses for the activities of the BMWK. Administrative expenses cannot be reported individually for each project and are generally spread over several years. The year-by-year determination of the BEG funding efficiency therefore contains systematic biases. The determination of the harmonised GHG funding efficiency is based on specifications agreed upon between the Federal Ministry of Finance and the BMWK. In this case (in contrast to the funding efficiencies shown in the previous figures), the net effects over the useful life are related to the total financial resources raised (funding and administrative expenses). Overall, also from this perspective, the GHG funding efficiency of the BEG programme has improved over the years (Table 2).

Table 2: Comparison of the harmonised GHG funding efficiency (based on net savings, incl. administrative costs) of the BEG in the funding years 2021 to 2023 over the course of useful life according to NAPE

	BEG	BEG residential buildings	BEG non-residential buildings	BEG individual measures
2021	414	1,427	1,292	138
2022	298	1,432	1,224	144
2023	214	1,047	700	151
Total (2021-2023)	**300**	**1,378**	**1,200**	**145**

Source: own representation © Prognos / ifeu / FIW / ITG 2025
Useful life according to NAPE with residential buildings 20.1 years, with non-residential buildings 19.8 years; effect determined as gross value, includes administrative costs.

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