

THE RESIDENTIAL BUILDING SECTOR in GERMANY

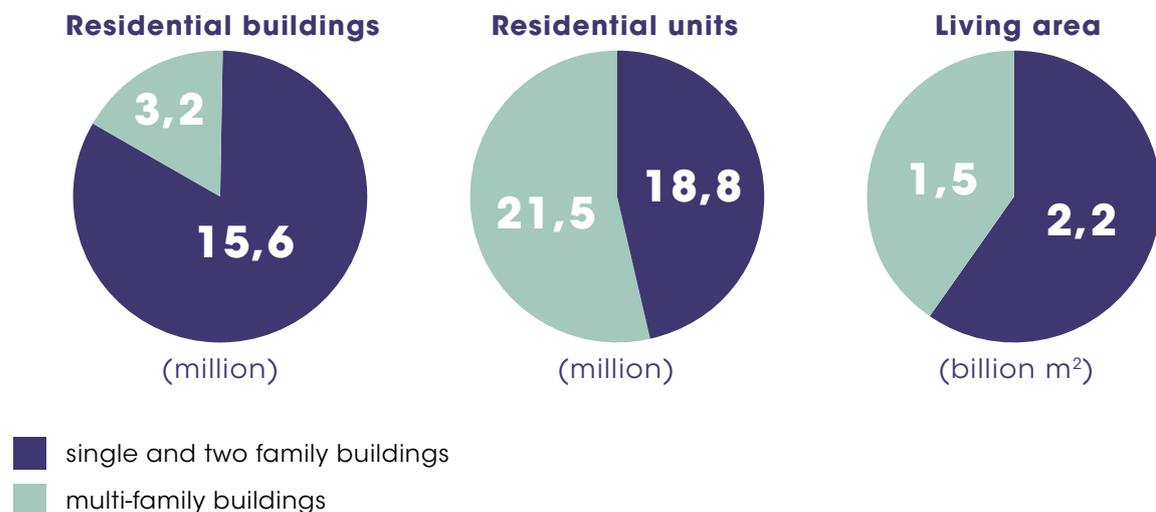
FACTSHEET



1. OVERVIEW OF THE RESIDENTIAL BUILDING SECTOR

Germany is the largest European country in terms of population, with 83 million inhabitants as of 2019. The majority of its building stock consists of residential buildings.

Figure 1 - Residential building stock in Germany



Germany's residential building stock is comprised of approximately 18,8 million buildings, **with the considerable majority (83%) being single and two-family buildings and only 17% being multi-family buildings.** However, there are more residential units in multi-family buildings (21,5 million) than in single and two-family buildings (18,8 million). Ownership structures of residential buildings are relatively diverse, ranging from private owners to owner associations, municipal housing companies and private housing companies. Approximately 47% of Germany's residential units are occupied by the owners, while **renting is quite popular all across the country.**

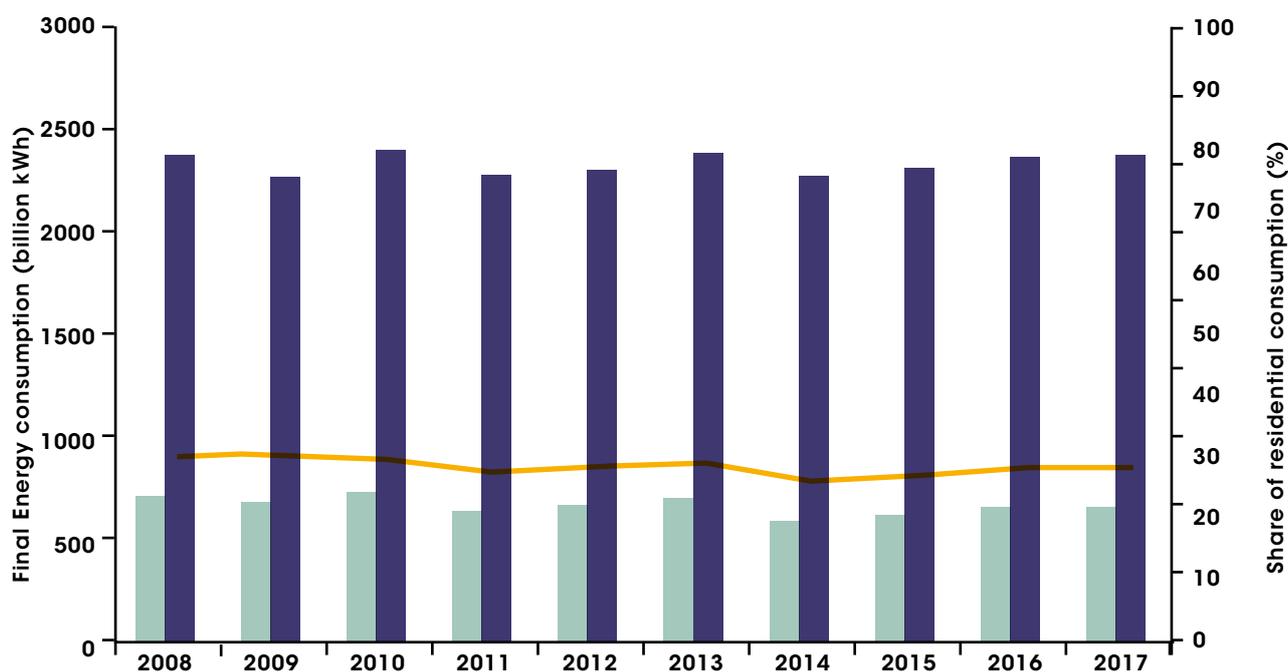
Table 1 - Ownership types of residential buildings in Germany (Zensus, 2011)

| Owner | Number of buildings | Number of residential units |
|---|---------------------|-----------------------------|
| Association of condominium owners | 1,689,623 | 8,689,427 |
| Private individual(s) | 15,487,234 | 22,845,055 |
| Municipality or municipal housing company | 306,489 | 2,253,450 |
| Private housing company | 304,777 | 2,142,167 |
| Others | 471,237 | 3,240,268 |

Energy consumption

The figure below shows the evolution of energy consumption in the residential building sector compared to the evolution of overall energy consumption in Germany. The residential building sector's final energy consumption accounts for approximately 30% of the national final energy consumption, and 64% of the total building energy consumption.

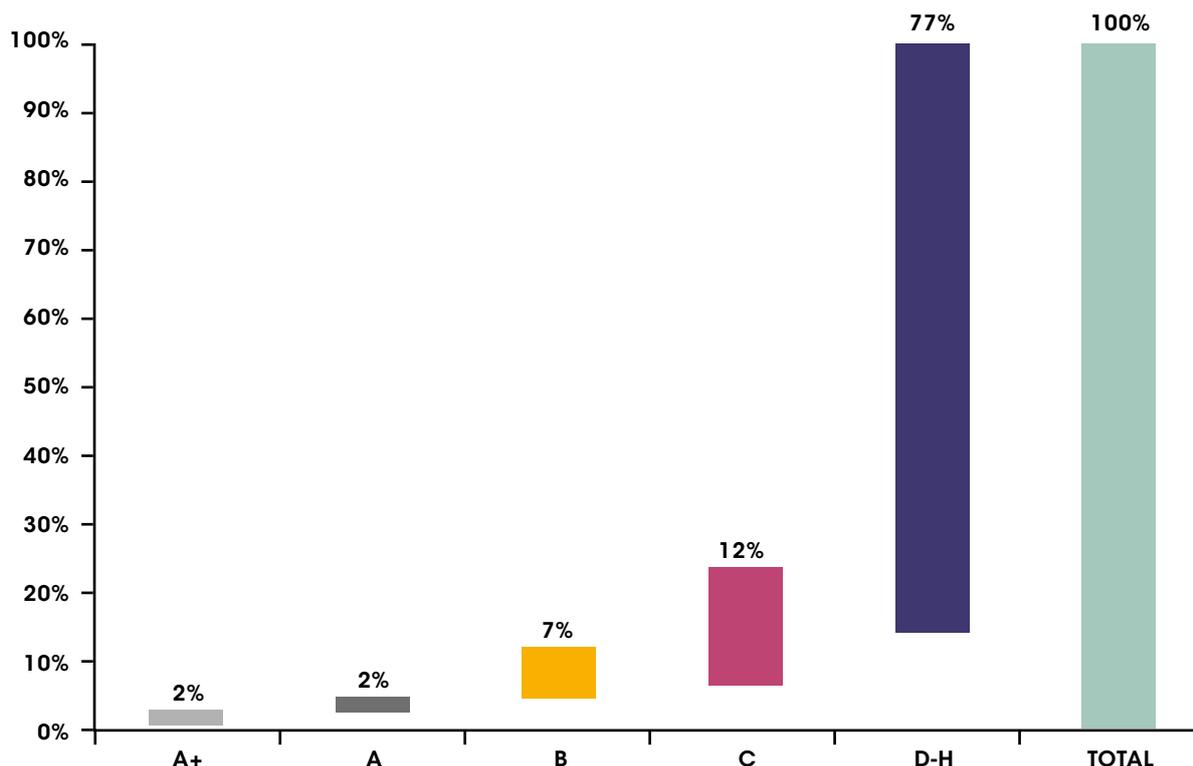
Figure 2 - Evolution of national and residential buildings' final energy consumption in Germany (Eurostat, 2018), (Eurostat, 2019)



National final energy consumption (billion kWh)
Residential final energy consumption (billion kWh)
Share of residential on total energy consumption (%)

There are two types of energy labels in Germany: those based on actual energy consumption levels (*Verbrauchsausweis*) and those based on estimated energy demand levels (*Bedarfsausweis*). As of 2014, only about 10% of the building stock was rated in the top categories of A+/A/ B.

Figure 3 – Distribution of Germany’s building stock per energy(dena, 2016)



Almost **two-thirds of the living area of today’s building stock was constructed in the 1970s or earlier**, i.e. before the first Thermal Insulation Ordinance came into effect. For these buildings, annual energy demand levels are significantly higher than for the remaining building stock. This means the energy savings potential for this segment is particularly high.

Energy suppliers

There are four large privately owned energy suppliers operating supra-regionally in Germany. The majority of German energy suppliers, however, are small and medium-sized municipal enterprises, which supply two-thirds of the country’s total electricity. In addition, there are private small and medium-sized energy suppliers, whose number has grown faster than the number of public suppliers in the last decade. Since market liberalisation in 1996, more than 40% of electricity customers and more than 35% of gas customers have switched providers at least once, but many have also done so several times.

In the entire value chain from generation to supply there are about 2,200 companies on the German energy market. Germany has the highest number of energy suppliers in Europe.

As space heating and hot water account for the largest share of final energy consumption in residential buildings (98%), the transition to more efficient heating systems, thermal insulation of the building envelope and the use of renewable energies are the measures with the greatest potential to reduce energy demand.



2. REGULATORY FRAMEWORK

The regulation of the residential building renovation market dates back to the 1970s, with the First Thermal Insulation Ordinance being adopted in 1977. Since then, the **regulatory framework has continuously become more comprehensive**, including for instance the Renewable Energies Act (2009) and the Energy Saving Ordinance (2014/2019). Recently, these regulations have been merged in the Building Energy Act (2019).



Thermal Insulation Ordinance 1977

Introduction of minimum standards for thermal insulation in external building components, seals around windows and joints in new buildings



Heating Cost Ordinance 1981; last amendment 2009

Governs the allocation of costs for heating and hot water production in centrally supplied buildings with two or more units

- Overall goal: to encourage energy savings
- Obligation to carry out metering



Renewable Energies Heat Act 2009

Obligation to use renewable energies in new buildings and for major renovations of public sector buildings

- For all buildings with a floor space > 50 m²: energy demand for heating/cooling purposes must be partially met by renewable energies



Energy Saving Act last amendment 2013

Introduction of a nearly zero-energy standard for new buildings that applies to all new public buildings from 2019 onwards and to all other new buildings from 2021 onwards



Energy Saving Ordinance 2014; last amendment 2016

Stipulates energy requirements¹ in existing buildings when external components of the building envelope are modified or when the heated or cooled usable area is extended. It also includes:

- Increased energy efficiency standards for new buildings
- Obligation to disclose key energy figures in real estate advertisements, including energy performance certificates
- Obligation to document efficiency classes in energy performance certificates for residential buildings
- Obligation to decommission temperature boilers installed before 1985



¹ Allowed heat transmission coefficients and primary energy consumption levels do not exceed by more than 40% the figures of the respective reference buildings.



Building Energy Act GEG 2019

The Building Energy Act (GEG) merges the Energy Saving Act, the Energy Saving Ordinance and the Renewable Energies Heat Act into one law without significant material changes.



Climate Protection Package September 2019

Agreed plans and action points related to energy renovation for residential buildings:

- Tax incentives for energy refurbishment measures for owner-occupiers (in the form of a deduction from tax duty)
- Replacement subsidy for oil heaters (additional federal-state subsidy of up to 40%)
- *Bundesförderung für effiziente Gebäude* (BEG): newly conceived federal support programme for efficient buildings to bundle the existing investment grant programmes in the building sector into a single, comprehensive, optimised and modernised subsidy offer and higher financial allocation
- Promotion of serial renovation
- Further development of the energy standard (after an assessment that will be conducted in 2023)
- Extension of the subsidy for energy counselling services (e.g. grant increase up to 80 %)

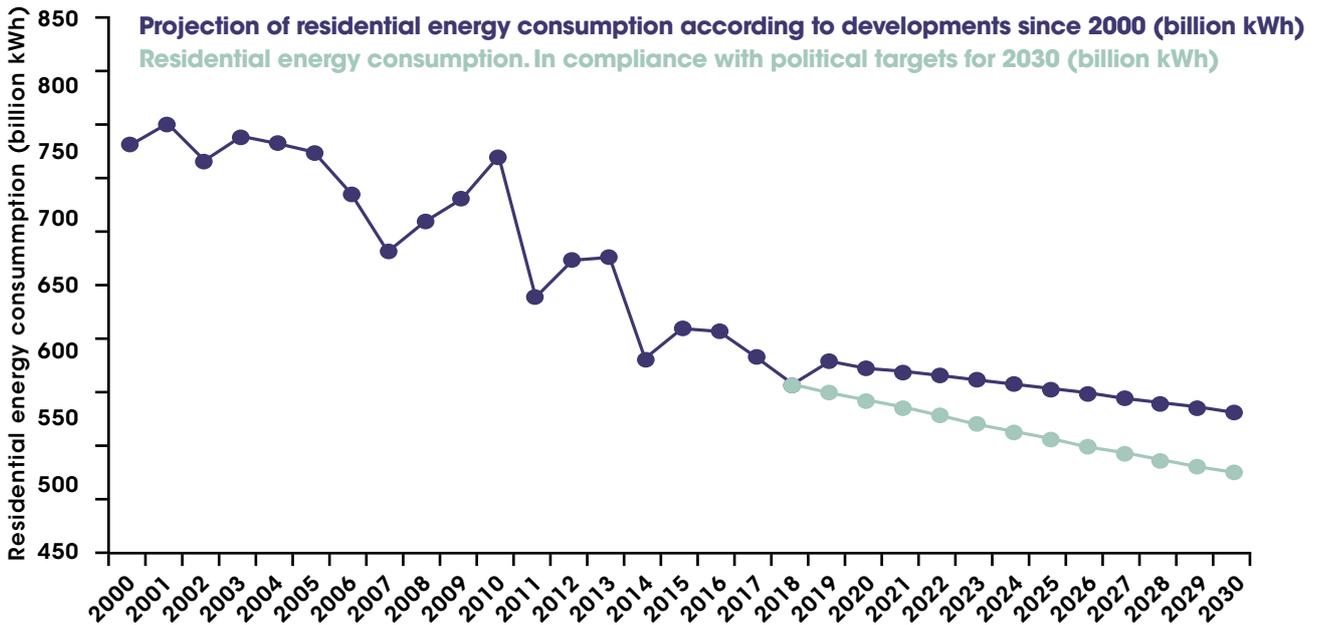




3. POTENTIAL IMPACT OF BUILDING ENERGY RENOVATION ON THE MARKET

Germany's overall long-term political goals include a 55% reduction of greenhouse gas emissions by 2030 and a reduction of 80% by 2050. The buildings sector is considered key for this development and should be almost climate-neutral by 2050. The figure below shows the current projected reduction (in blue) compared to the long-term goal (in green).

Figure 4 - Evolution of energy consumption in the residential building sector since 2000
(Federal Ministry for Economic Affairs and Energy, 2019; Eurostat, 2020; World Bank, n.d.)



To finance the energy renovation measures needed to meet Germany's climate targets in the buildings sector - assuming an annual 2% energy renovation rate for residential buildings - projections show additional annual investment costs of €9 billion until 2030 and €14 billion until 2050, contrasting with annual energy cost savings for residential buildings of €11,1 billion by 2030 and of €32 billion by 2050.

Energy efficiency measures may increase GDP by about 1% per annum by 2050, and - depending on labour mobility and increased productivity - create between 66,000 and 250,000 new jobs by 2030.

ENERGY EFFICIENCY MEASURES

may increase **GDP** by **1% PER ANNUM BY 2050**

and **CREATE** up to **250,000 NEW JOBS BY 2030**





4. FINANCING THE ENERGY RENOVATION OF BUILDINGS

In order to finance energy efficiency renovation across the residential sector, a wide range of public grants and subsidies are available, as well as more 'traditional' private financing schemes.

ONLY EXISTING BUILDING STOCK

|  FINANCING INSTITUTION |  FINANCIAL INSTRUMENT |  SUPPORT PROGRAMME NAME |  DESCRIPTION |
|---|--|--|---|
| KfW - CO₂ Building Renovation Programme | SOFT LOAN (with amortisation bonus) | Energieeffizient Sanieren - Kredit (151)² | <ul style="list-style-type: none"> • Target: comprehensive refurbishment to a KfW efficiency house³, including monument renovation • Interest rate: reduced federal interest rates • Loan amount: maximum €100,000 |
| KfW - CO₂ Building Renovation Programme | SOFT LOAN (with amortisation bonus) | Energieeffizient Sanieren - Kredit (152)⁴ | <ul style="list-style-type: none"> • Target: single measures (e.g. window replacement, roof insulation) • Interest rate: reduced federal interest rates • Loan amount: maximum €50,000 |
| KfW - CO₂ Building Renovation Programme | GRANT | Energieeffizient Sanieren - Investitionszuschuss (430)⁵ | <ul style="list-style-type: none"> • Target: private homeowners who are renovating or buying energy-renovated living space • Grant amount: depends on the measure - maximum €48,000 |
| BAFA | GRANT | Energieberatung für Wohngebäude⁶ | Energy consulting for complete refurbishments or step-by-step refurbishment schedules, accessible for homeowners and tenants |

² Translation: „Energy-efficient renovation- loan 151“

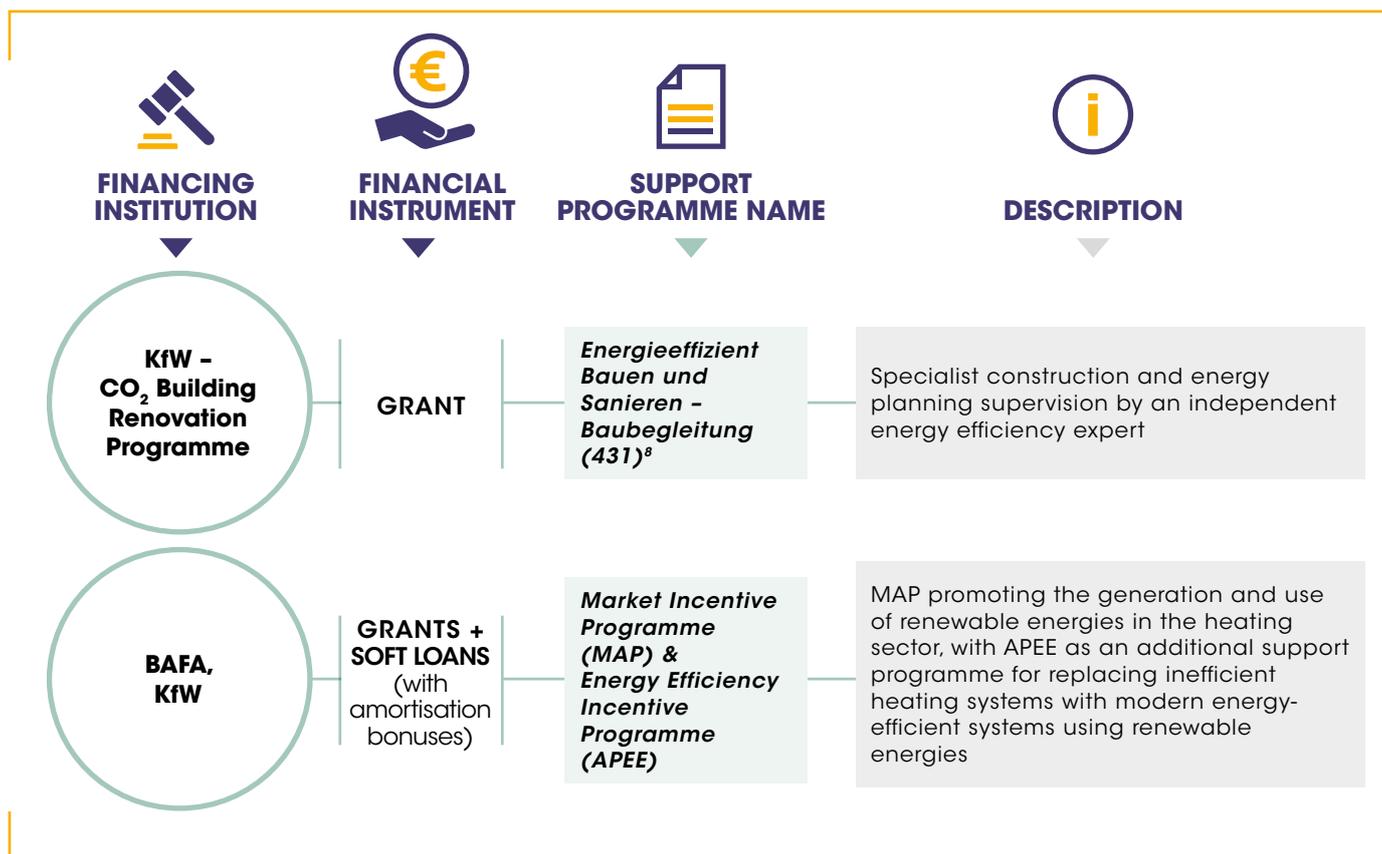
³ The KfW-Efficiency-House describes the energy efficiency status of a building. It draws on the reference values primary energy demand and transmission heat loss. The figures 55, 70, 85, 100 and 115 indicate the percentage of the required energy compared to the reference KfW-Efficiency-House 100.

⁴ Translation: „Energy-efficient renovation- loan 152“

⁵ Translation: „Energy-efficient – investment grant 430“

⁶ Translation: “Energy consulting for residential buildings”

NEW BUILDINGS AND EXISTING BUILDING STOCK



From 2005 until 2016, the refurbishment of around 2,595,000 dwellings in Germany was supported through the KfW CO₂ Building Renovation Programme. In the same period (2005-2017), the refurbishments supported by the 'Energieeffizient Sanieren' programme led to an emissions reduction of 7,534,000 tCO₂e/a and to final energy savings of 20,360 GWh/a. The most commonly used energy renovation measures of this programme is thermal insulation.

Disincentives often mentioned are the complex bureaucratic requirements of public support schemes combined with the current low-interest rate environment.

⁸ Translation: "Energy-efficient construction and renovation - construction supervision (431)"

More details are in the full report 



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