



FRIEDRICH NAUMANN
STIFTUNG Für die Freiheit.

ENERGY POLICY

Liberal concepts for a sustainable
and affordable energy supply

FOCUS

Imprint

Publisher

Friedrich Naumann Foundation for Freedom
Truman House
Karl-Marx-Strasse 2
D-14482 Potsdam-Babelsberg, Germany

📧/freiheit.org

📘/FriedrichNaumannStiftungFreiheit

📺/FNFreiheit

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Publication date

July 2019

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1 Energy & climate

Each year, Germany emits about 9.6 tonnes of CO₂ per person, much of it contributed by the burning of fossil fuels.¹ Emissions result from burning lignite, hard coal and natural gas to generate power; from heating and cooling buildings; and from vehicles powered by internal combustion engines. The emissions from electricity generation as well as from certain high-intensity energy users, such as the iron and steel industry, are subject to the European Emissions Trading System (EU-ETS), a system which caps the total amount of CO₂ emissions. Companies subject to the ETS have to buy certificates to be allowed to emit any CO₂ at all. In these industry sectors, CO₂ emissions have declined. For other sectors such as transportation and buildings, there are numerous regulations that aim to reduce their CO₂ emissions, but despite the proliferating red tape, CO₂ emissions in these industries are on the rise.

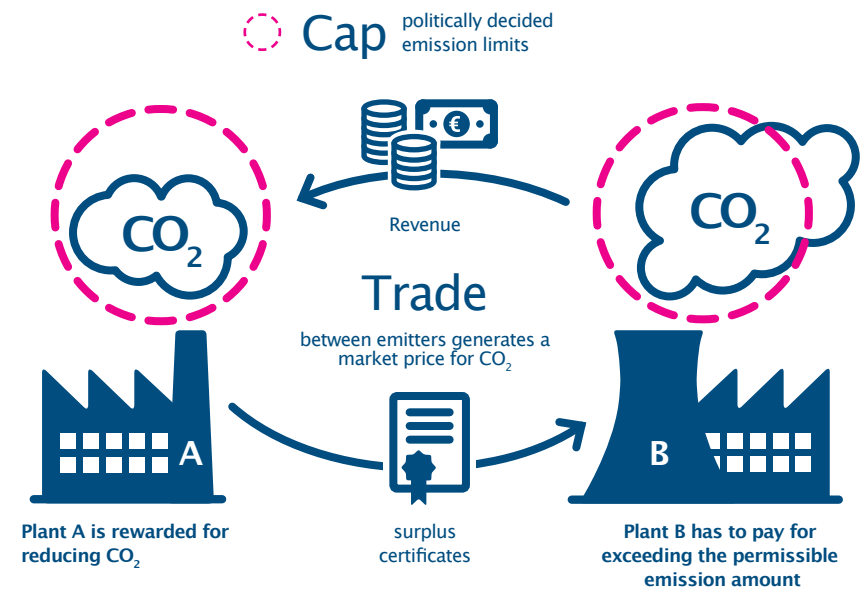
Idea for the future

The signatories to the Paris Agreement committed themselves to keeping global warming below 2°C. To achieve this objective, CO₂ emissions have to be reduced, and this requires making CO₂ emissions more expensive. Achieving climate protection objectives is more efficient and cost effective when it is done as a joint effort; uncoordinated solo efforts by individual countries raise costs for consumers, citizens and companies alike, without really helping the climate. Efficient climate protection requires innovation and new technologies. Emissions from the transport and building sectors should also be priced and included in the EU-ETS. Only when emitting CO₂ incurs a cost will there be an incentive to reduce emissions. In the medium term, introducing a global emissions trade with a uniform worldwide price for CO₂ is a desirable scenario. To improve climate protection efforts, Germany can take the lead and extend the EU-ETS to the transport and building sectors at a national level.

¹ BMUB 2018

How does emissions trading work?

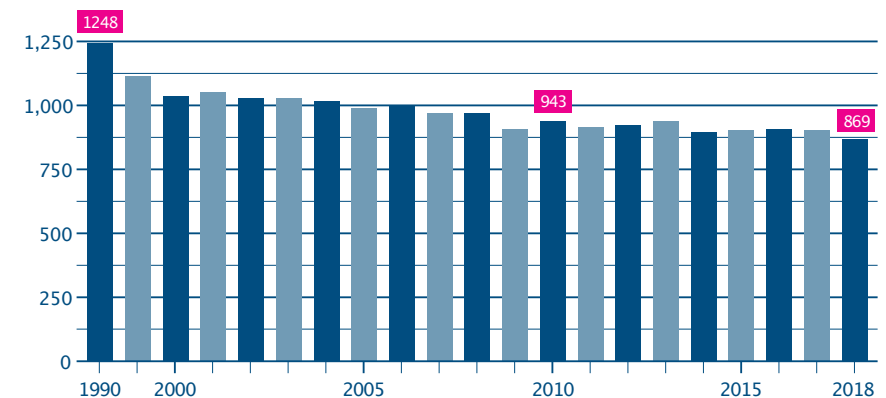
The cap-and-trade system



Own illustration

Level of greenhouse gas emissions in Germany

for the period 1990 to 2018 (million metric tonnes of CO₂ equivalents)



Source: Federal Environment Agency © Statista 2019

2 Energy & distribution

Germany's power mix relies mainly on fossil and renewable energy sources.² In recent decades, the share of electricity generated from renewables has risen sharply. Germany also has Europe's most expensive electricity. Taxes and levies are a major contributing factor to the steep prices, making up half of the price. This implies a high cost burden for households and companies alike. Electricity is currently not competitive for transport or for heat production. Furthermore, renewable energy sources fluctuate along with weather conditions and cannot produce a consistent amount of electricity at all times. In Germany, the most cost-effective way to generate renewable energy is through the offshore wind farms in the North Sea and the Baltic, but a great many companies are based in the south of Germany. For network operators, this means that ensuring continuity of supply is a challenge. The pace at which the German power grid is being upgraded is low and there is a lack of so-called power superhighways, which increases the risk of grid bottlenecks.

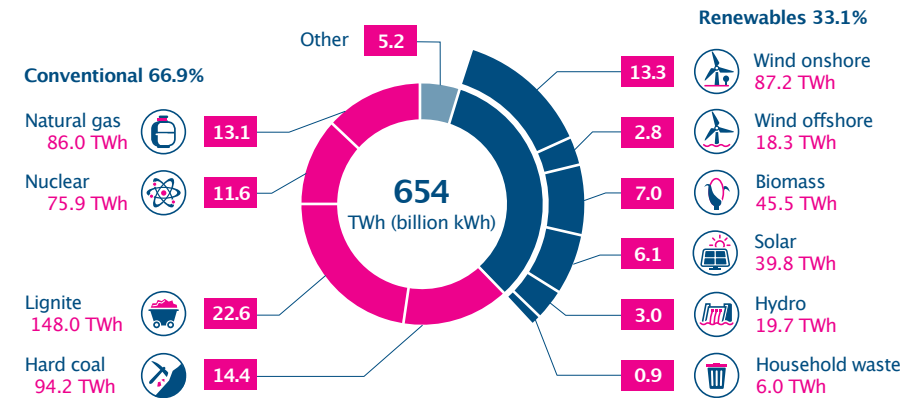
Idea for the future

The use of renewables in the power, heating and transport sectors can make a significant contribution to combating climate change. This is referred to as sector coupling, by means of which these industries are linked together. To make climate-friendly electricity competitive, taxes and levies such as the EEG surcharge (a levy under the Renewable Energy Sources Act) and the electricity tax have to be lowered. Securing the attractiveness of Germany as a manufacturing location and making the energy transition socially equitable for all citizens means that competition is needed and the question of costs has to be kept top of mind. Renewable energies have to be competitive while also guaranteeing security of supply. To avoid large-scale blackouts, the grid needs to be upgraded, and research into and development of storage technologies has to be accelerated.

² Fraunhofer ISE 2018

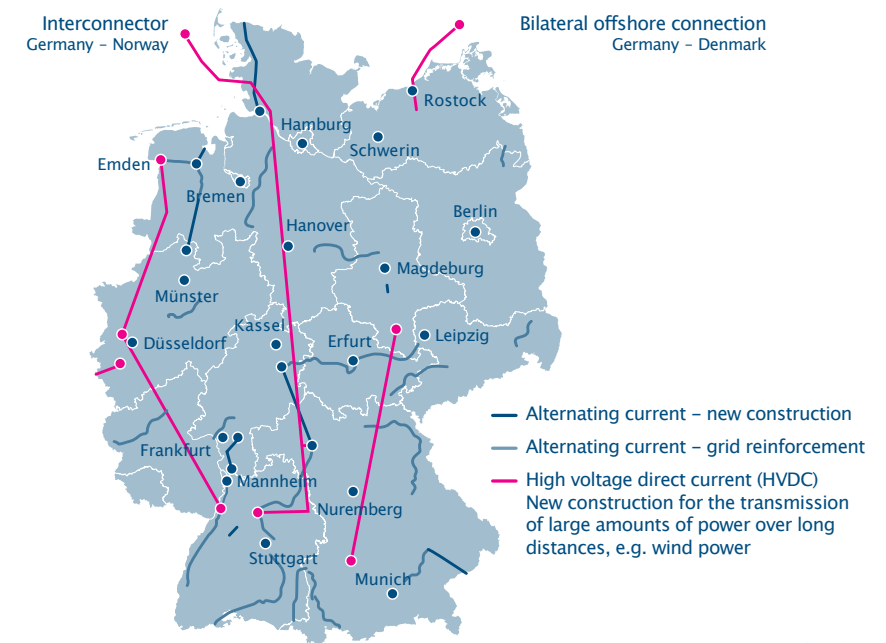
Germany's power mix 2017 (gross)

Gross electricity production by energy source (in %)



Source: AGEB e.V. 2018

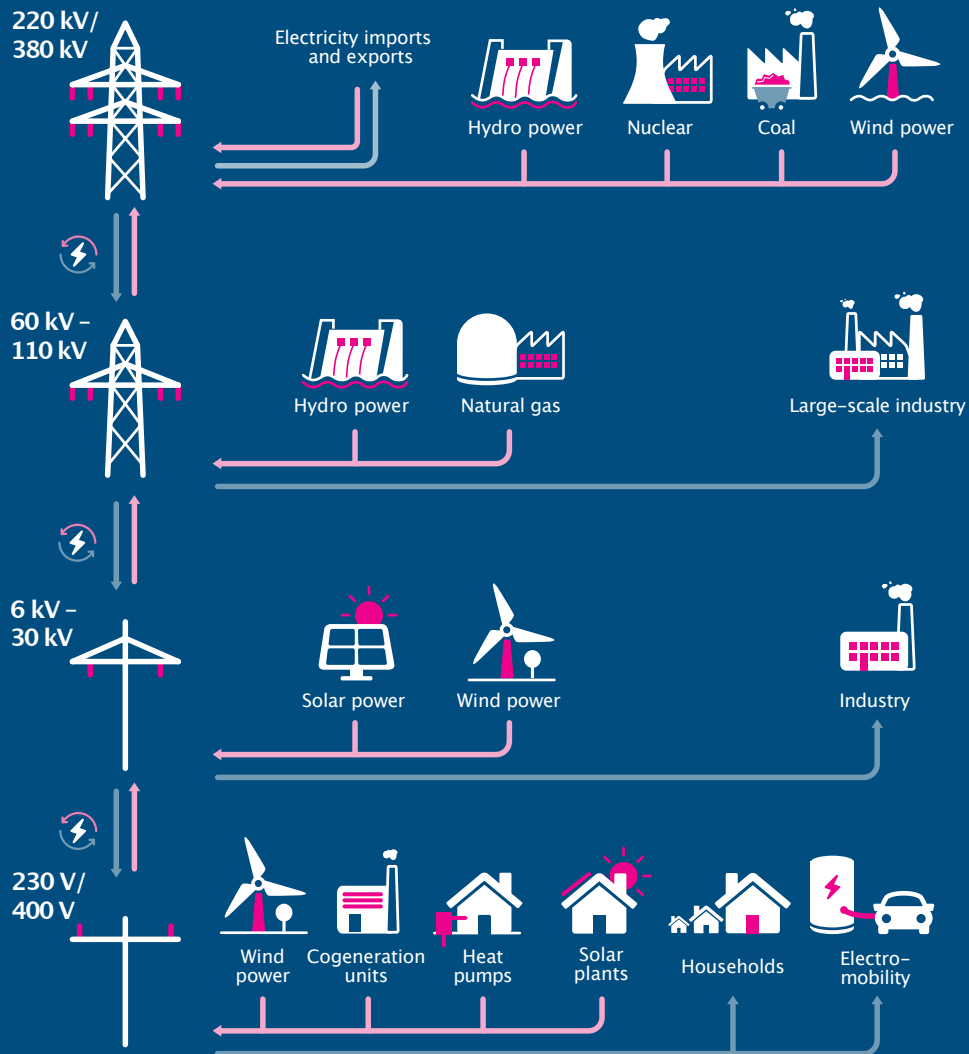
Concepts for grid upgrades by 2022



Source: Transmission system operators (TSOs)

Germany's power grid

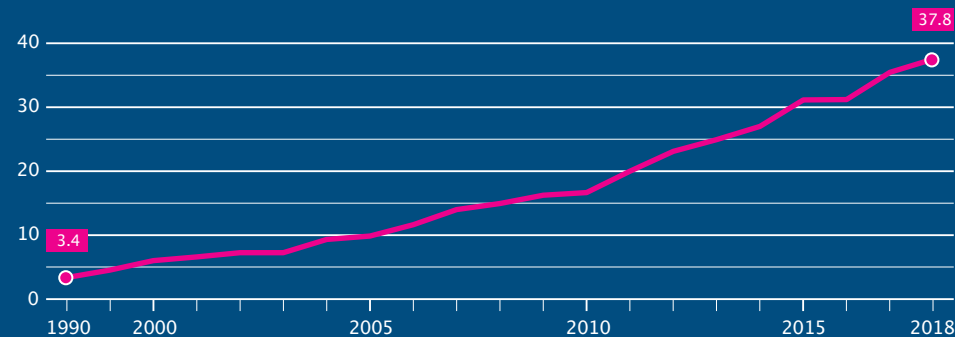
Network levels and power flows



Source: Association of Local Utilities (VKU), April 2012

Gross electricity consumption by share of renewable energy

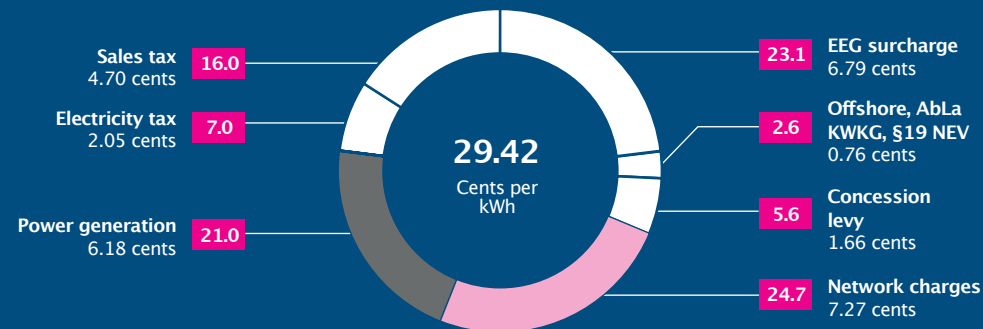
in Germany for the period 1990 to 2018 (in %)



Source: AGEB, AGEE-Stat, © Statista 2019

Electricity price composition 2018

Average price of electricity for household customers in Germany* (in %)

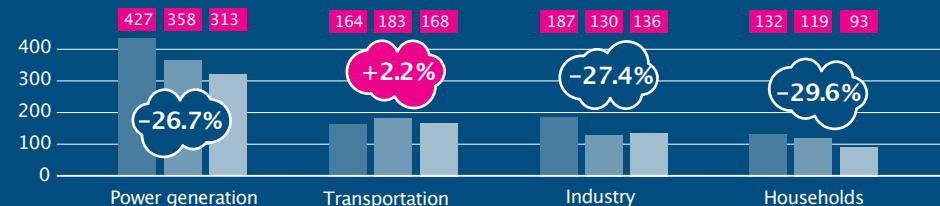


Taxes and levies 2018 (white 54.3%)
*3,500 kWh annual consumption (3 persons)

Source: BDEW 2018

Who emits greenhouse gases in Germany?

Emissions by sector in million metric tonnes of CO₂ equivalents



■ 1990 ■ 2000 ■ 2017 ☁ Change since 1990

Source: FAZ 2019

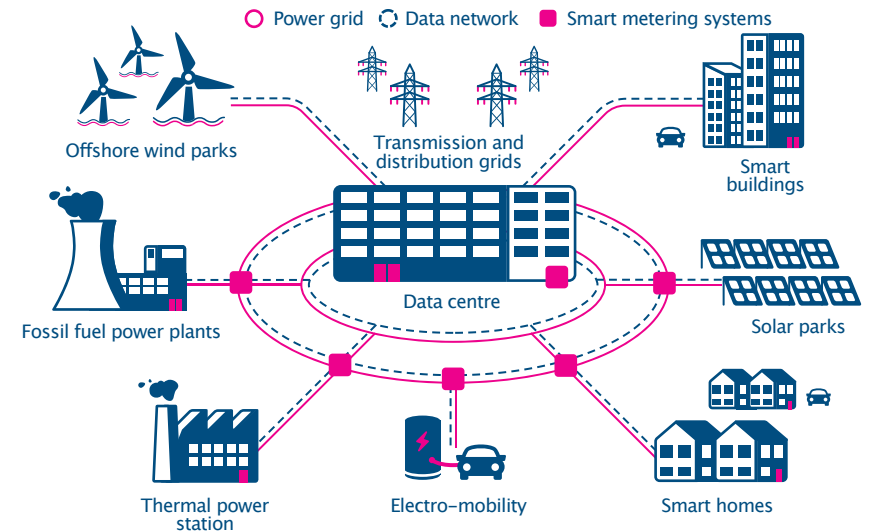
3 Energy & digitalisation

Digital and smart solutions are necessary to manage power grids safely and to compensate for the weather-dependent, fluctuating energy provided by renewables. The “old” power grid has a centralised and linear structure. Electricity was distributed directly from power stations to consumers. In the future, our electricity supply should be more decentralised. This means generating electricity close to where it is needed, for example near towns or industrial plants. Maintaining the manageability of the energy system is going to require a great deal of automation. Massive amounts of data will have to be recorded and processed in real time.

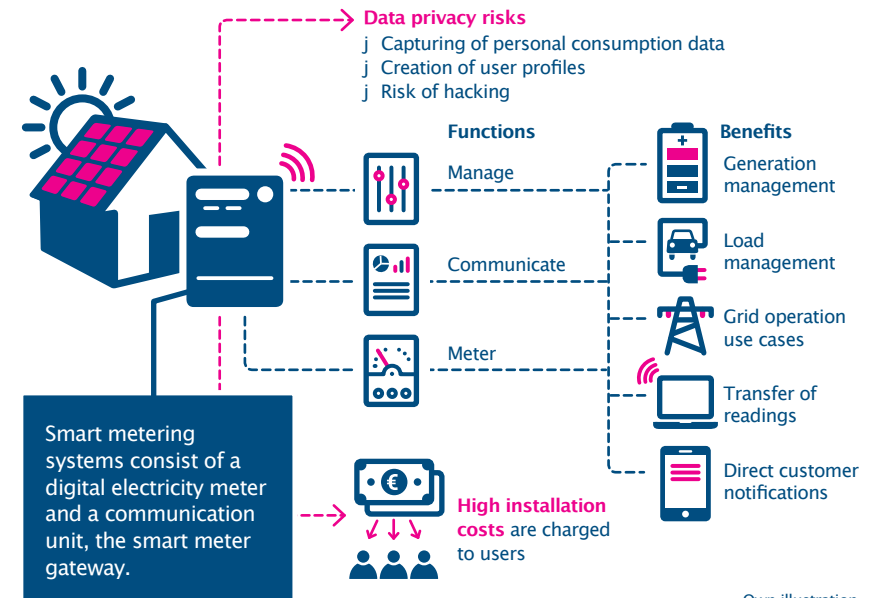
Idea for the future

Decentralised power generating systems and microgrids can be linked to create a “virtual power plant” and managed as such. This would make it possible to align individual consumption patterns and the uptake of surplus energy with the irregular electricity generation of renewables. Intelligent power metering systems (smart meters + gateways) will enable usage-dependent power tariffs while helping to coordinate electricity supply and demand. With all smart metering and communication systems, ensuring data privacy has to be a top priority. But certification of smart meters is taking far too long. The devices currently being licensed are already outdated and do not represent the state of the art. We need faster approval processes for innovative technologies. Intelligent metering systems may cause data protection issues because the data they capture allow detailed insights into the daily routines and habits of consumers. The data generated in this way must not be used to create personal user profiles without permission.

Smart grid



Smart metering



4 Energy & efficiency

Energy is used to produce certain desirable outcomes. In winter, for example, it may be used to heat your home. But if much of the heat is lost through poorly insulated windows, then the energy efficiency is low. Improving the energy efficiency allows us to reduce consumption and therefore CO₂ emissions. Lower energy use also helps protect resources and reduces the dependency on imports. Almost a third of all CO₂ emissions are generated in the building sector. In Germany, 40 percent of final energy is consumed in buildings, so the fact that 75 percent of residential buildings are not energy efficient is a concern.⁴

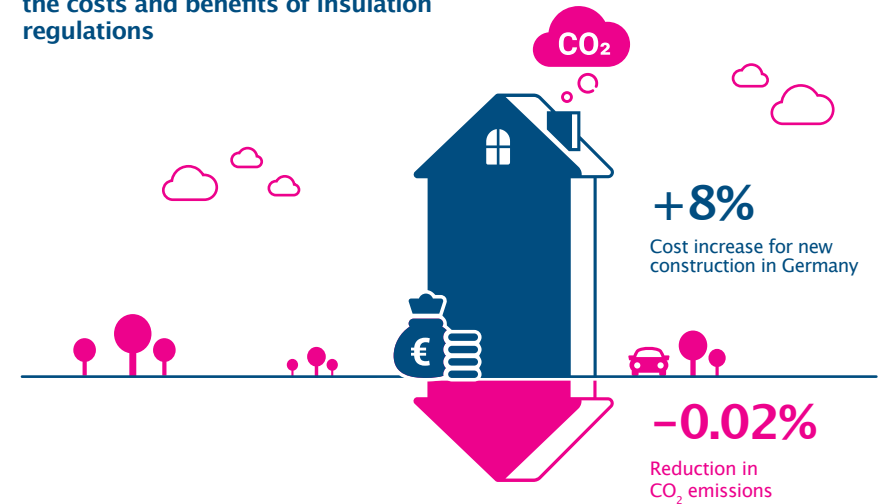
Idea for the future

Energy efficiency remains an important element of effective climate protection. In the policy debate, the question of energy-related building renovations remains near the top of the agenda. However, uneconomical energy efficiency regulations often inflate the cost of climate protection unnecessarily. Households and companies should always be able to choose the lowest-cost approach to reduce their greenhouse gas emissions. The Energy Saving Regulation (EnEV) is making construction expensive and causing rentals to rise – without doing enough for climate protection. It would make sense to redesign and combine various regulations such as the EnEV, the Energy Conservation Act (EnEG) and the Renewable Energy Heat Act (EEWärmeG) to create a unified Building Energy Act (Gebäude-Energie-Gesetz), provided that it does not mean intensifying current regulations. Instead, the existing flood of red tape and regulations should be reduced and consumers should be given more choice in implementation. Energy saving norms must not cause housing construction to slow down. Housing has to remain affordable. There is also a risk of rebound effects. Fuel-efficient cars are becoming faster and people are driving greater distances, meaning that part of the savings meant to protect the climate is lost. Affordable climate protection has to remain at the forefront of energy efficiency.

³ UBA 2018 (also applies to the following figures)

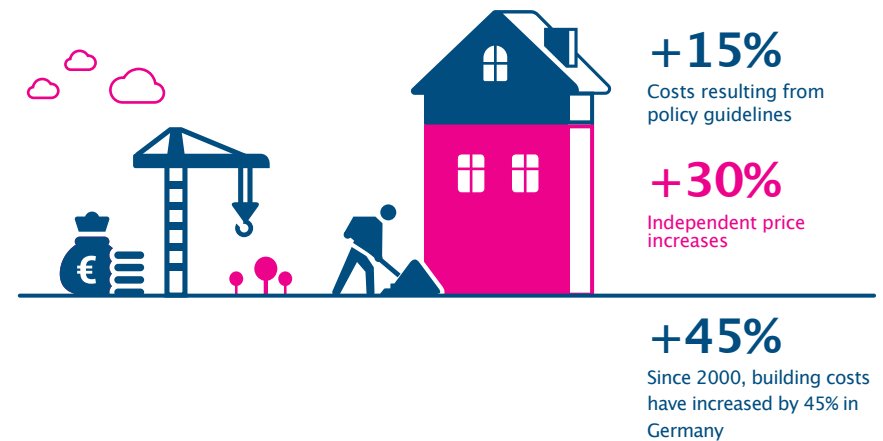
⁴ UBA 2019a This building stock was constructed before the first Thermal Insulation Regulation (Wärmeschutzverordnung) of 1977, which required cuts in energy consumption through building measures.

There is a large imbalance between the costs and benefits of insulation regulations



Source: Industry calculations as quoted in DER SPIEGEL (15/2016): Die neue Wohnungsnot

Government policies are a major contributor to building cost increases



Source: GdW e.V. (2018), Baukostensenkung

