

# »» As energy prices fall, SMEs have lower costs – and increased efforts for energy efficiency and energy cost savings

No. 223, 3 September 2018

Authors: Dr Michael Schwartz, phone: +49 69 7431-8695, michael.schwartz@kfw.de  
Anke Brüggemann, phone +49 69 7431-1736, anke.brueggemann@kfw.de

Small and medium-sized enterprises (SMEs) have moved up a notch in their efforts for greater energy efficiency and energy cost savings. The number of SMEs that have adopted specific energy measures grew by 1.4 million enterprises between 2014 and 2016.

Smaller businesses contributed a major portion of the positive developments for the SME sector as a whole, with a much higher share in measures implemented and investment growth. That is good news because they had a considerable amount of catching up to do.

The monitoring based on the KfW SME Panel shows that the burden from energy costs fell noticeably from the comparison period of 2011–2013. Only half as many SMEs reported high energy cost shares. The burden has decreased in absolute terms as well – across all segments. What is certain is that energy costs have become less important for SMEs since 2013.

Above all, they reflect the decline over the past four years in the prices of energy sources that are important in the business sector. The significant decline in the energy cost burden is thus attributable to a great extent to the lower prices of mineral oil products and natural gas. The increase in improvements to energy efficiency and

measures aimed at limiting energy costs contributed to this as well.

The vulnerability to possible energy price increases is currently much lower overall than four years ago. SMEs' profitability is under much less pressure and the level of sensitivity has decreased.

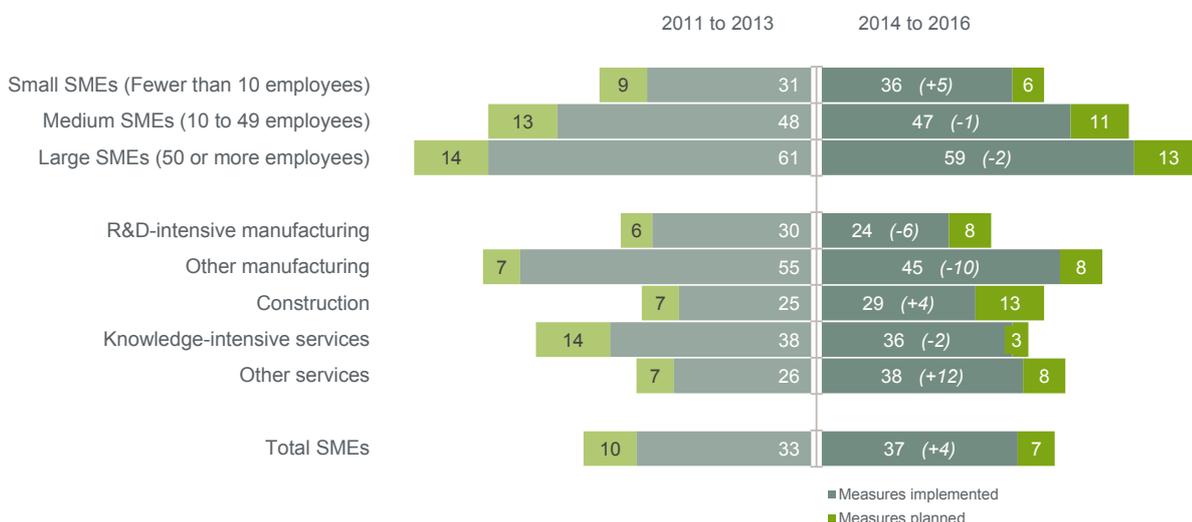
Efficient energy use is becoming increasingly important for small and medium-sized enterprises. The positive effects are obvious, as businesses save finite resources, become less vulnerable to energy price fluctuations and, not least, are rewarded for their efforts with lower energy costs. A visible change in awareness is underway in the SME sector. Many enterprises have already recognised that energy efficiency investments are worthwhile. The KfW SME Panel provides a data source that enables SMEs' energy savings and efficiency measures to be monitored on the basis of representative statements.<sup>1</sup> The initial analysis was performed four years ago<sup>2</sup> and the present study now allows a further evaluation.

### SMEs are somewhat more committed

Between 2014 and 2016, slightly more small and medium-sized enterprises (SMEs) adopted measures aimed at improving their energy efficiency and saving energy

**Figure 1: Measures aimed at improving energy efficiency / saving energy costs**

Shares of enterprises with measures implemented or planned, in per cent



Source: Special surveys of the KfW SME Panel 2013 and 2017.

Note: This paper contains the opinion of the authors and does not necessarily represent the position of KfW.

costs (37%) than in the comparison period of 2011 to 2013 (Figure 1). That is nearly 1.4 million SMEs. Another 7% of SMEs are currently in the planning phase.

But the aggregate view conceals the drivers of the development. Only few segments show higher participation in the adoption of specific measures. The main contribution came from the significantly greater efforts of small SMEs with fewer than ten full-time equivalent employees<sup>3</sup> (+5 percentage points on the previous period) and SMEs from Other Services (+12 percentage points).

Because of the high number of these enterprises in the total population of the SME sector, the aggregate development is very closely coupled with its dynamic. A full ninety per cent of all SMEs have fewer than ten employees and 38% operate in the segment of Other Services.<sup>4</sup> The declines in the participation of other sub-sectors therefore weigh less heavily because of their comparatively lower structural shares.

**Energy costs have decreased noticeably in all segments**

Energy costs are of relatively low importance for enterprises' total costs and dropped once again in the period under review. Whereas in 2013 some 59% of SMEs had low energy cost shares of less than 5%, in 2017 that share was already 70% of SMEs (Figure 2).<sup>5</sup> At the same time, the share of enterprises with relatively high energy costs of 10% or more nearly halved and is currently at 11% (2013: 20%).

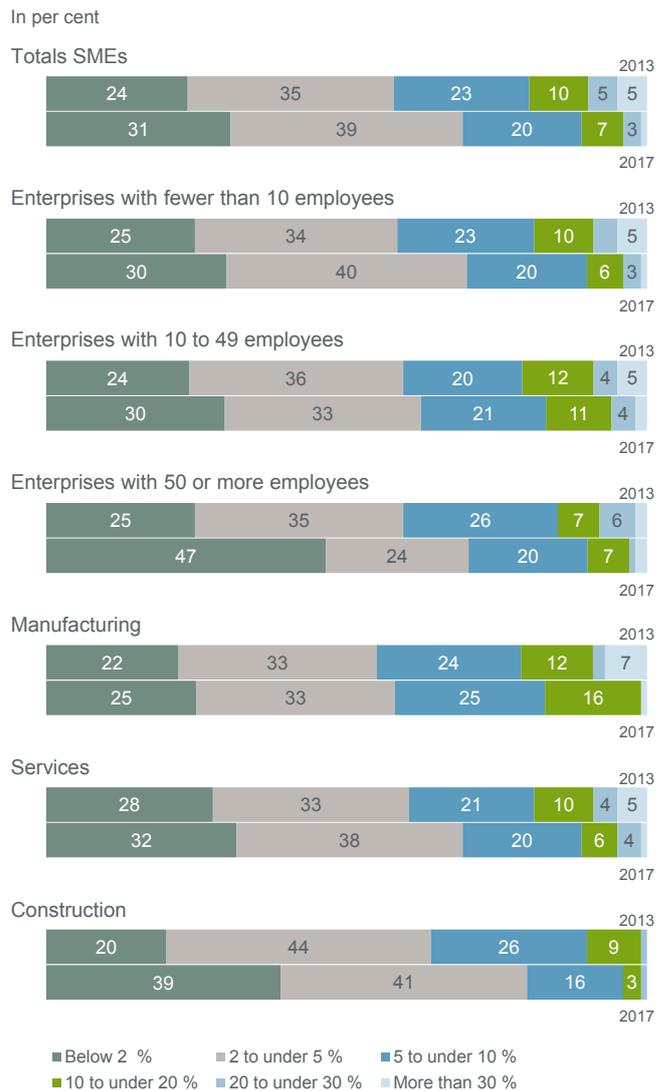
The developments were similar across the segments. The shares of businesses with low energy cost shares increased, while the shares of businesses with high energy cost shares decreased. On balance, the strongest shifts are found in small SMEs and the construction sector, although the differences between the segments are minor. The relative energy cost burden has thus fallen across the entire SME sector.

**SMEs are less dependent on energy costs**

It is not just the relative importance of energy costs compared with other cost types that has decreased. In principle, this result could be distorted by the fact that other cost components have simply grown more strongly than energy. But this argument can be rebutted because overall the trend to lower absolute energy costs in many enterprises is obvious (Figure 3).

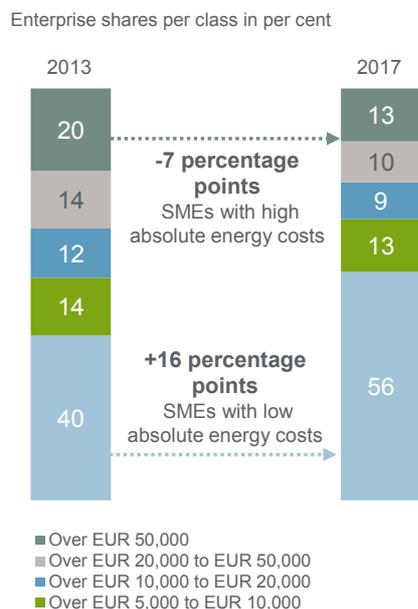
In the past four years, the share of SMEs that spend a maximum of EUR 5,000 on energy costs each year grew from 40 to 56%. During the same period, the share of enterprises that pay more than EUR 50,000 in energy costs per annum dropped from 20 to now 13%.

**Figure 2: Share of energy costs in total costs**



Source: Special surveys of the KfW SME Panel 2013 and 2017.

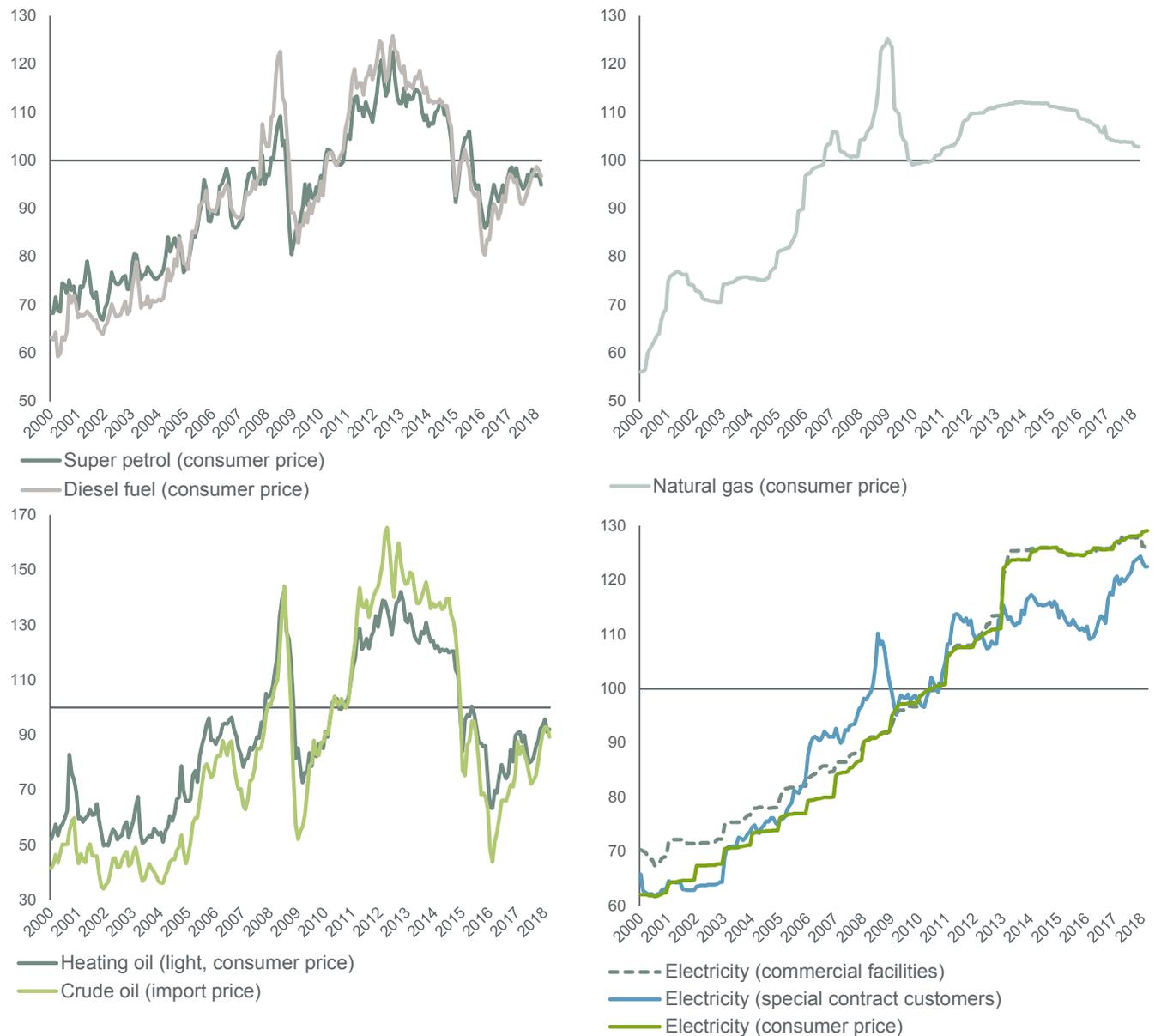
**Figure 3: Absolute energy costs**



Source: Special surveys of the KfW SME Panel 2013 and 2017.

**Figure 4: Price trends of major energy sources in the business sector in Germany from 2000 to 2018**

Indexed values, 2010=100



Source: Destatis.

**Energy prices have fallen noticeably since 2013**

It is true that measures aimed at optimising energy efficiency and energy costs have been implemented more often in the SME sector in the past. However, the drop in prices of most energy sources between 2013 and 2017 has likely had a significantly greater impact on reducing energy cost burdens (Figure 4).<sup>6</sup>

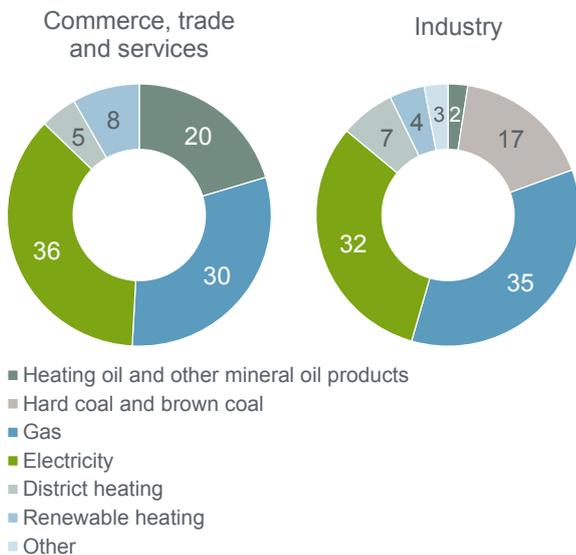
The energy consumption structure of German enterprises shows that they mainly procure heating oil and mineral oil products, natural gas, hard coal and electricity (Figure 5).<sup>7</sup> The prices of heating oil and other mineral oil products (especially fuels), which are particularly important to SMEs, have fallen significantly. Natural gas has become cheaper as well, although not by as much. Electricity has become more costly since the last survey period. Electricity accounts for roughly one third of businesses' energy consumption, with a

downward trend in industrial firms, trade and service enterprises (share in 2016: 36 % / share in 2012: 40 %<sup>8</sup>).

The decrease in both absolute and relative energy costs in the SME sector is more likely the result of lower energy prices than SMEs' greater commitment to energy efficiency measures. However, the available data do not permit a reliable statement to be made as to the particular contribution coming from these variables. Nor is there a standardised method of capturing energy costs for the overall business sector. That makes an accurate assessment difficult. But what is certain is that energy costs have become less important for SMEs since 2013.

**Figure 5: Structure of energy consumption of German enterprises by sector in 2016**

Shares of energy sources in per cent (shares in final energy consumption in Twh)



Source: German Federal Environment Agency; Working Group on Energy Balances (AGEB)

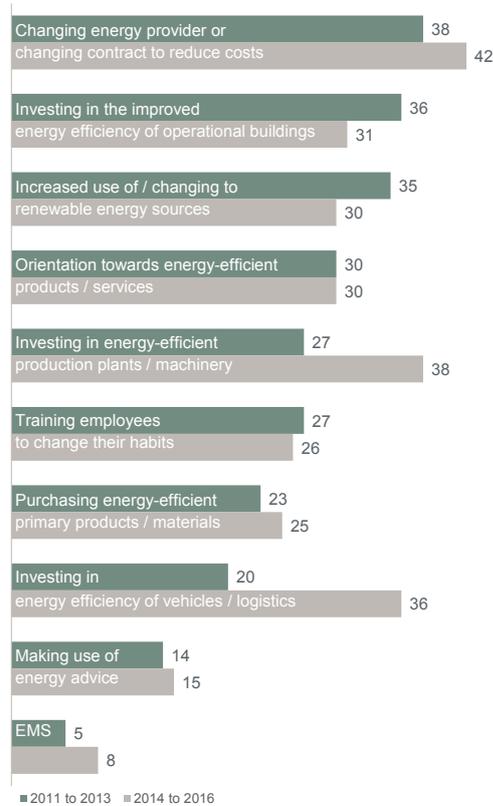
**Capital-intensive energy efficiency measures are gaining ground as investments grow**

Enterprises can avail themselves of a wide range of different measures to improve their energy efficiency and reduce or limit energy costs. In this regard, the current survey shows a reversal in the importance hierarchy (Figure 6). While in the period from 2011 to 2013 they prioritised measures that were easier to implement and less capital-intensive, between 2014 and 2016 SMEs focused much more strongly on investing. Investments in energy-efficient production facilities and equipment, as well as investments in energy-efficiency improvements of vehicles and logistics, have very obviously increased, as their shares have grown by 11 and 16 %, respectively. Thus, SMEs have undergone a transformation on the comparison period.

On closer inspection, however, it is clear that this is exclusively due to the increased investment propensity of small businesses (Figure 7). While large SMEs reduced their activities noticeably, small businesses were exceedingly eager to invest. But it is not clear what has caused large firms to invest less. They may have already reached an advanced level of investment, or they may feel less pressure to reduce energy costs (Figure 2 at least provides a strong argument for this), or they may generally have different investment priorities or a changed focus within the spectrum of possible energy-efficiency measures. With respect to the latter aspect in particular, it is noticeable that large SMEs have clearly increased their efforts to introduce a comprehensive energy management system (to 35 from 23 %, Figure 5).

**Figure 6: Specific measures aimed at improving energy efficiency / saving energy costs**

Shares of enterprises in per cent, multiple responses were possible



Source: Special surveys of the KfW SME Panel 2013 and 2017.

The overall increase in investment measures is therefore attributable in full to small businesses. This is extremely good news as the previous report found that small businesses in particular had a lot of catching up to do.

**Companies continue to switch providers but shun advice**

Switching energy providers still ranks first among the implemented measures and has even become slightly more relevant. During the period under review, 42 % of enterprises made this move. It is quick and cost-effective and directly reflected in the enterprises' cost structure.

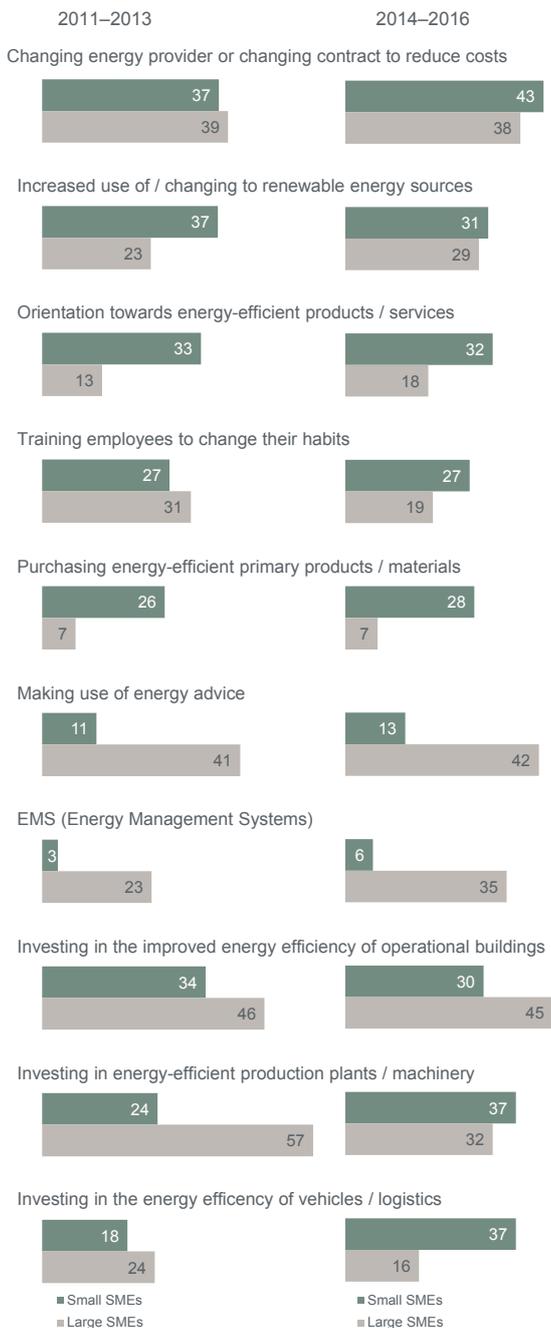
Energy advice, by contrast, continues to be largely shunned by small SMEs. Only 13 % of small businesses have used such advice (comparison period: 11 %). But more information and advice can be the key to greater problem awareness and detecting previously underestimated savings potentials.

**SMEs can better mitigate future energy price increases: their returns are more robust ...**

The profit situation of SMEs highlights the positive effect of a reduced share of energy costs. Their vulnerability to future (renewed) energy cost increases is currently much lower than in 2013.

**Figure 7: Measures by company size**

Shares of enterprises in per cent, multiple responses were possible



Source: Special surveys of the KfW SME Panel 2013 and 2017.

A 10% energy cost increase currently reduces SMEs' average profit margin from 7.3 to 7.1%, all else being equal.<sup>9</sup> The drop by an average of just 0.2 percentage points shows that energy costs no longer have the leverage they had in 2013. At the time, the effect was twice as strong (0.5 percentage points).<sup>10</sup> An assumed energy cost increase of 50% reduces the average profit margin to 5.4% (-1.9 percentage points). This effect, too, has decreased noticeably.

The reduced vulnerability is also in part the result of the general, relatively robust profitability growth of small and medium-sized enterprises. It has grown by more than one

third since 2005. Recently, businesses with fewer than 50 employees were actually more profitable than ever before.

**Table 1: Proportion of SMEs with losses**

Shares of enterprises with negative profit margin

Proportion of SMEs with losses	2013	2017
Status quo	15%	13%
Increase in energy costs by 50%		
SMEs that do not pass on the increase	28%	21%
SMEs that pass on 75% of the increase	23%	17%

Source: Special surveys of the KfW SME Panel 2013 and 2017.

The main factor was the stable, positive development of turnover (with the exception of the crisis year 2009), triggered by continued robust domestic economic performance.

Even the profits of SMEs with higher energy costs (5% or more) are currently showing a less sensitive response. In 2013 the profit margin of these enterprises dropped from 5.1% to an average rate of zero when energy costs rose by 50%. In 2017 an identical rise in this group of businesses would still have greatly reduced their profit margin but on average it would still have remained a positive 2.0% (from an initial level of 7.5%).

**... and fewer SMEs will incur losses if energy costs rise**

The share of enterprises with losses (a negative profit margin) also reflects SMEs' larger buffer (Table 1). In the status quo, 13% of enterprises recorded losses. If energy costs rise by 50%, the share of SMEs with losses will of course grow – but at a much less drastic rate than in 2013, namely by 'just' 8 percentage points (to 21%). In 2013 that rate was still 13 percentage points (from 15 to 28%).

What also plays a role here is to what extent enterprises are in a position to pass the energy cost increases they incur on to their customers. If energy costs rise by the 50% assumed above but 75% of the increase can be passed on to customers (measured as turnover growth), the share of SMEs with losses increases by just 4 percentage points (instead of 8 percentage points when they are not passed on). But what is decisive is the competition intensity prevailing for individual enterprises, as not all SMEs have this option. If customers can easily turn to alternative offers (low price elasticity of demand), this limits the option of passing cost increases on

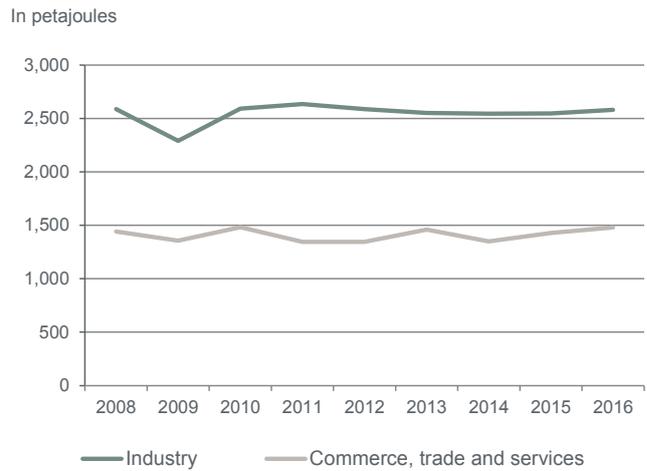
**Further efforts are necessary to achieve national energy conservation targets**

Besides expanding renewables, improving energy efficiency is one of the key pillars of implementing the energy transition in Germany. Primary energy consumption in Germany is to be reduced by 20% by 2020 and by 50% by 2050 compared with 2008 (status in 2017: -6%). To be able to achieve these reduction targets, the energy strategy of the German Federal Government set an explicit efficiency target for final energy consumption. It aims to increase aggregate final energy

productivity – i.e. the ratio of real gross domestic product to total final energy consumption – by an average 2.1 % per annum between 2008 and 2050. This is much more than the business sector has recently been able to achieve. Between 2008 and 2016, final energy productivity rose by an average 1.6 % per annum in manufacturing and by 0.7 % per annum in commerce, trade and services.<sup>11</sup>

These figures illustrate that the rate of efficiency improvement also needs to increase further in the business sector. This is also important because the efficiency gains achieved between 2008 and 2016 were just sufficient to offset additional energy consumption that resulted particularly from economic growth<sup>12</sup> and because absolute final energy consumption in manufacturing and commerce has stagnated for years (see Figure 8). ■

**Figure 8: Development of final energy consumption in the business sector**



Source: Federal Ministry of Economics and Technology, facts and figures (as at 6 July 2018)

**Database: The KfW SME Panel**

The KfW SME Panel (KfW-Mittelstandspanel) has been conducted since 2003 as recurring survey of small and medium-sized enterprises in Germany. The parent population of the KfW SME Panel includes all private-sector companies from all industries with annual turnovers of up to EUR 500 million.

With data based on up to 15,000 companies a year, the KfW SME Panel is the only representative survey of the German SME sector, making it the most important source of data on issues relevant to the SME sector. The main survey of the 15th wave was conducted in the period from 13 February 2017 to 23 June 2017.

The findings presented here are based on a supplementary survey to the KfW SME Panel in September 2017. Responses from a total of 2,100 enterprises were evaluated. Owing to their connection to the main database, the special evaluations presented here provide a representative picture as well.

Further information on the survey and the ways in which the data are allowed to be used in the context of research partnerships as well as the current annual report can be obtained at [www.kfw-mittelstandspanel.de](http://www.kfw-mittelstandspanel.de)

<sup>1</sup> For the current edition of the KfW SME Panel, see Schwartz, M. (2017): **KfW SME Panel 2017: Germany’s domestic economy continues to break records— sectoral transformation poses new challenges**, KfW Research.

<sup>2</sup> Schwartz, M. and Braun, M. (2013), **Energy costs and energy efficiency in the SME sector**, Focus on Economics No. 40, KfW Research.

<sup>3</sup> As opposed to the number of persons in gainful employment, the concept of full-time equivalent (FTE) employees maps actual labour demand. FTE employees are calculated from the number of full-time employees (including business owners) plus the number of part-time employees multiplied by the factor 0.5. Apprentices are not included.

<sup>4</sup> Among others, these include enterprises in the areas health and social services, education and training, the hospitality and hotel industry and culture and sport.

<sup>5</sup> In deviation from businesses’ participation in energy-saving measures, their energy cost shares were recorded on the basis of the relevant status quo at the time of the survey (September 2017). The reference period of 2014 to 2016 was chosen to be able to capture only those measures that were actually implemented so as to ensure comparability.

<sup>6</sup> Source of energy price trend in Germany: Federal Statistical Office (2018), Data on energy price trends, Long-time series from January 2000 to March 2018, Wiesbaden.

<sup>7</sup> Source: Working Group on Energy Balances (Energy Balances Group) (2018), Evaluation Tables on the Energy Balances of the Federal Republic of Germany 1990 to 2016, as at September 2017, <https://www.umweltbundesamt.de/daten/energie/energieverbrauch-nach-energietraegern-sektoren> (in German only).

<sup>8</sup> Cf. Dieckhöner, C., Domnick, C. and Schwartz, M. (2014), Steigende Energiepreise – Wie anfällig ist der Mittelstand? (Rising energy prices – how vulnerable are SMEs’ profits?), *Volkswirtschaft Kompakt (Economics in Brief)* No. 56, KfW Research (in German only).

<sup>9</sup> Profit margin is defined as the ratio of pre-tax profit to turnover. The figure shows the mean values of profit margin weighted against turnover.

<sup>10</sup> Cf. Dieckhöner, C., Domnick, C. and Schwartz, M. (2014), Lassen höhere Energiekosten die Mittelstandsgewinne abschmelzen? (Do higher energy costs reduce SMEs’ profits? – in German only), Focus on Economics No. 69, KfW Research.

<sup>11</sup> Cf. Federal Ministry of Economics and Technology, Zahlen und Fakten Energiedaten (*Energy facts and figures – our title translation*) (as at 6 July 2018), in German only

<sup>12</sup> Cf. Brüggemann, A. (2018), **How energy-efficient is Germany?**, Focus on Economics No. 213, KfW Research.