

# How businesses can address the risks related to energy consumption

*Energy prices will continue to rise and will become more volatile. In the face of this, large energy consumers will have to get smarter with how they use energy, and it soon might be beneficial for them to be generating more of it themselves says Antonio Volpin.*

**T**alking about the dynamic of energy prices, two things are pretty certain. The first is that energy prices will continue to go up. And this is even if commodity prices remain flat and retailers do not increase their margins. The growth will be driven by policy or by regulated costs, like the Renewables Obligation, feed-in tariffs, the new electricity market reform, or network costs.

On the basis of Department of Energy and Climate Change data, McKinsey estimates that electricity prices for mid-sized users, for example, are likely to rise 30% over the next seven years. The recent deal signed by the government for the new Hinkley nuclear power station confirms this trend. The power station is due on grid in 2023, and the government clearly thinks it will have a good deal at double the current wholesale price.

The second certainty is that changes in energy prices will become more and more difficult to predict. This is not because energy commodities are becoming more volatile (they may actually be becoming less so), but exactly because a larger proportion of the bill will be driven by regulation or policy. In total, the share of the bill from regulated or policy driven items will rise from its current 40% to at least 60% by 2020 (assuming stable wholesale prices).

That means the most important risk for bills is political, and unfortunately politicians and regulators can change their minds and policies at any time. We see this political volatility on a daily basis in the current debates over energy in parliament. If we look at what has happened over the past few years, we realise that regulatory intervention is unpredictable and can create huge price movements, in both directions.

To mention just two examples, when the German government declared the sudden nuclear ban after Fukushima, wholesale power prices in central Europe spiked almost overnight. Nobody could have predicted anything like that. On the

other hand, the Spanish government's recent sudden, unexpected cut of renewable subsidies destroyed investors' value also overnight.

As far as the UK is concerned, there is a very long list of pending policy decisions that will impact the price of energy. What kind of capacity market are we going to have? How much renewable capacity? What will the level be for the Contract for Differences for low carbon technologies? How would the opposition's proposed retail price freeze impact the rest of the market? The list goes on and on.

This kind of policy-driven uncertainty cannot be hedged in any way. So, what are the options for energy users who want to limit their exposure and ultimately their energy bill?

In the short to medium term, the safest, and possibly only, option is to reduce energy consumption. The good news is that the potential for doing this is huge. According to a recent McKinsey study, the commercial sector could reduce electricity demand by as much as 40% by 2030. The industrial sector could reduce it by 25%. The total saved electricity would amount to 70 TWh per year, more than the total energy demand of Greece or Portugal.

## Implementation

Surprisingly, it is not that difficult to achieve these savings. In the commercial sector, just three areas of intervention would ensure almost 80% of the savings. The most important is better insulation of buildings, which includes more efficient shells of new builds and retrofitting the old ones. This alone could deliver 42% of the total savings.

Then, installing lighting controls (eg dimmable ballasts, photo sensors to optimise light for occupants, timers) in all commercial buildings could save another 27% of the total potential.

The third area is more efficient heating, ventilation and air conditioning (HVAC) systems. Most older installations don't

come close to minimising energy consumption. HVAC technology has taken giant steps forward; by retrofitting or replacing older systems, companies can reduce their energy consumption by up to 40%. New technologies include compressorless air conditioning, enabled by technologies like liquid desiccant or evaporative cooling. The rest of the savings can be achieved by more efficient refrigerators and electronic equipment and by installing LEDs instead of CFLs.

All these measures, according to our estimates, would be NPV positive within about five years.

Equally, in the industrial sector the potential is huge. More efficient utilisation of pumps can deliver 40% of the potential savings. Replacing motors with more efficient and more rightly sized ones can deliver an additional 25% of the savings (we found that in many cases motors are run at low load factors, causing massive inefficiencies). Finally, measures like lighting, refrigerator and HVAC controls also have big potential.

As in the commercial sector, these measures are all NPV positive. And the potential is huge in almost all industrial sectors. In fact, some sectors, such as retail, could reduce energy consumption by as much as 50% – double the average for the industrial sector as a whole – according to the analysis.

## Five barriers to uptake

So if achieving huge efficiencies is so simple, why don't businesses, in the face of increasing energy costs and growing uncertainty, adopt them en masse? All research suggests they have not, and in a recent McKinsey poll, most businesses energy buyers were quick to admit that they are not doing much.

In the research, McKinsey identified five main barriers to adopting these NPV-positive energy-saving measures.

First, there are not enough energy saving policies dedicated to the business sector. Almost every incentive or subsidy in the UK and at EU level is still very focused on households or residential buildings.

Second, businesses evaluate their investment payback on too short a timescale. Most energy-saving measures achieve payback within 3–5 years. Most businesses only consider investments that pay back within two years.

The third barrier concerns agency – particularly in the commercial sector. Incentives are misaligned when the owner of the facility or the building is not the one using the building. As a result, invest-

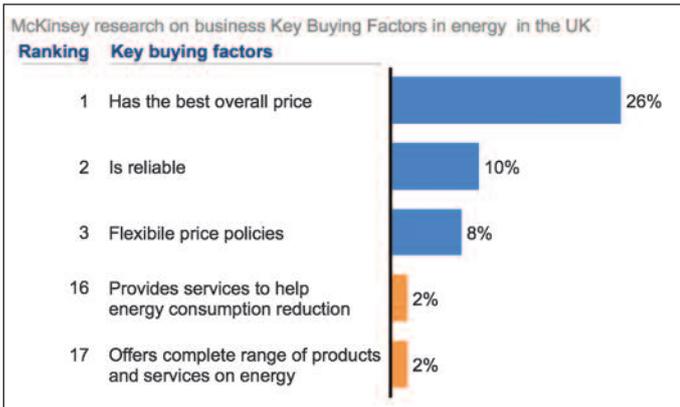


Figure 1. Business users do not prioritise a service that helps to reduce consumption  
Source: McKinsey

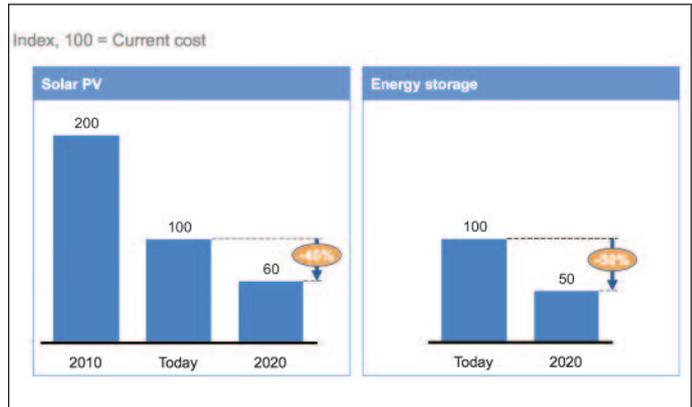


Figure 2. Expected cost reduction of new technologies  
Source: McKinsey

ment often doesn't happen. For example, we discovered that in many cases the facilities management company gets paid on the number of light bulbs replaced. Clearly, it has no incentive at all to install more efficient, but more expensive ones.

The fourth difficulty comes with organisational boundaries within businesses, where the buyer of energy does not control or is not in charge of the machinery that uses energy, and a third person is in charge of investment decisions. This makes it very difficult, if not impossible, to have an integrated view of the potential for energy efficiency.

The final barrier is lack of financing. Many measures to reduce energy consumption require an initial capital outlay – a particular challenge for small businesses. However, with service and product providers frequently providing the financial resources, finances are becoming less and less of a barrier.

On top of these five challenges, businesses seem to have a mind-set barrier too. McKinsey recently carried out another piece of proprietary research among UK businesses, asking companies what they cared about most when choosing their electricity supplier.

As Figure 1 shows, by far the most important factors relate to unit price, with polled businesses attributing disproportionate importance to the price of the kWh they buy. In contrast, they ranked the importance of factors like the suppliers' ability to provide services and give advice on saving energy as very low. Perhaps it is time to rethink our approach to purchasing energy.

### Solutions – get off the grid?

Providers of energy services can significantly improve the way they market their products to potential customers. They can easily break through some of the five barriers above by, for example:

- focusing more on business customers (especially SMEs) that struggle to manage energy efficiently and that might appreciate support (in the

same way an SME often outsources IT services to an external provider with an end-to-end approach);

- improving their ability to offer their products on the basis of total cost of ownership rather than just payback; and
- offering financial support for investments in energy efficiency.

In the short term, energy efficiency is the best way to address rising cost and exploding uncertainty. Perhaps it is the only way. In the medium term though, there may be a more radical option: getting rid of our need for energy from the main grid altogether. This is becoming an increasingly likely possibility, driven by technological disruption.

The costs of technologies like solar generation and energy storage have collapsed in recent years, and McKinsey expects them to fall even further (see Figure 2).

This means solar and energy storage options will be 'in the money' even without high subsidies (perhaps without any subsidies at all). As a result, they will become a real competitive alternative. For example, we expect that in about three to five years solar panels installed in the UK will be able to produce electricity at a cost equal to the tariffs paid by small and mid-sized business. In no more than five years, solar panels are likely to be a cheaper option than electricity from the grid for many businesses.

The cost of energy supplied by these innovative sources might start somewhat higher than that supplied by the main network. But once installed, the cost will remain the same for decades (potentially even going down as technology improves). That would make a major difference for energy users: no commodity risk, no political risk. Already in countries like Germany we are seeing dozens of business users installing such local generation systems.

This technology-driven revolution will create a massive shift in value across the value chain. According to a McKinsey study on the European energy sector, tens of billions of Euros in profit could disap-

pear from the power generation business within a matter of years. An even higher amount could be generated downstream. The opportunity will be in installing and servicing local generation systems, providing energy efficiency services and optimising the new flows of energy taking place at a local level. Think about a 'cloud of power generation sources'.

'Cloud energy' could be truly revolutionary. Traditional incumbent players will disappear and new ones will dominate. To avoid the sorry end of some of the giants of the high tech industry, the energy suppliers of today will have to be very keen to ride this wave. The jury is still out on this.

In the UK, a good test of how prepared incumbent energy suppliers are is the coming rollout of smart meters to every energy user. Will retailers be able to exploit the huge amount of data available to provide innovative services to their customers? Will utilities be able to learn from the experience of other countries that have already installed smart meters, to offer a 'service' over and above just the remote metering of energy consumption?

According to McKinsey research, utilities have the privilege of being the companies with the greatest amount of proprietary customer data (eg very detailed real time consumption data), but are also among those with the poorest ability to extract value from those data. It will be intriguing to see, for example, whether utilities will abandon their 'cost per MWh' perspective in favour of a 'total cost per customer' one, focusing on really extracting value from the customer base rather than just selling a commodity with an uplift vis-à-vis the wholesale price.

In summary, it is a fascinating time in the energy sector, with challenges and opportunities, both for energy suppliers and users.

Antonio Volpin is Senior Partner at McKinsey & Company, and leads the Electric Power and Natural Gas practice. [www.mckinsey.com](http://www.mckinsey.com)