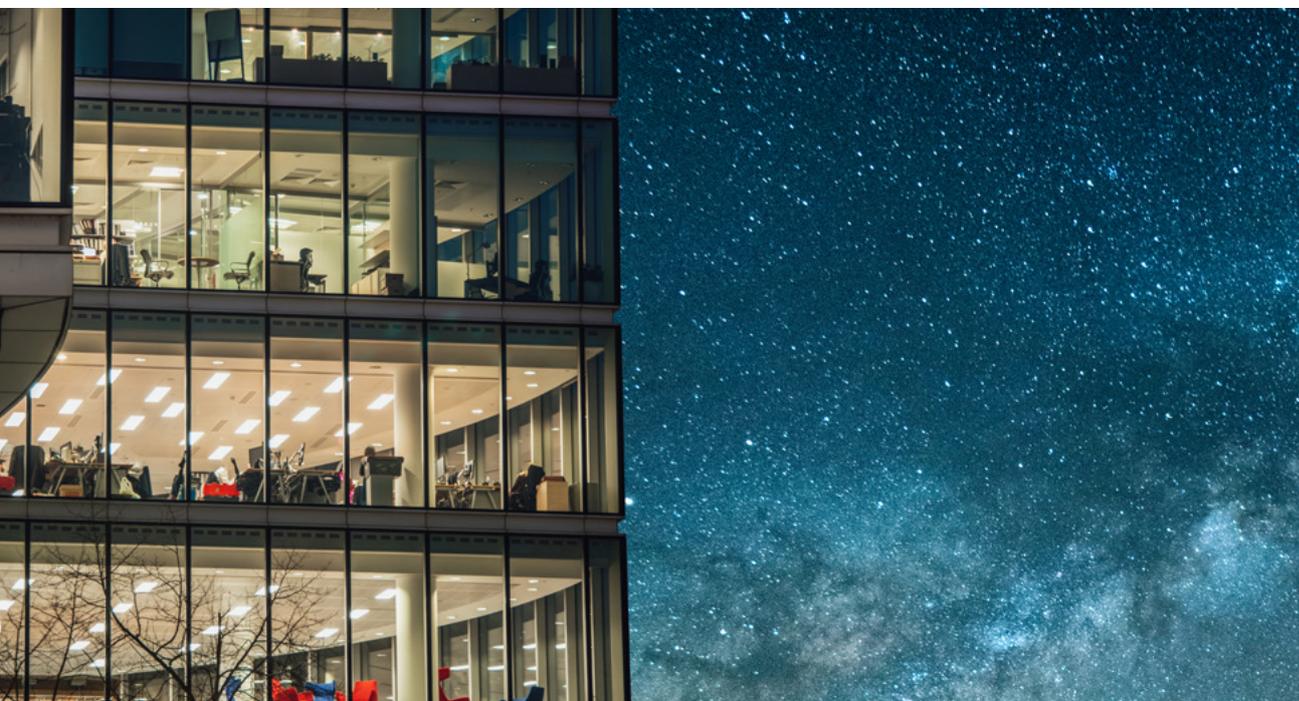


The narrowing window for energy transformation

15th PwC Global Power & Utilities Survey



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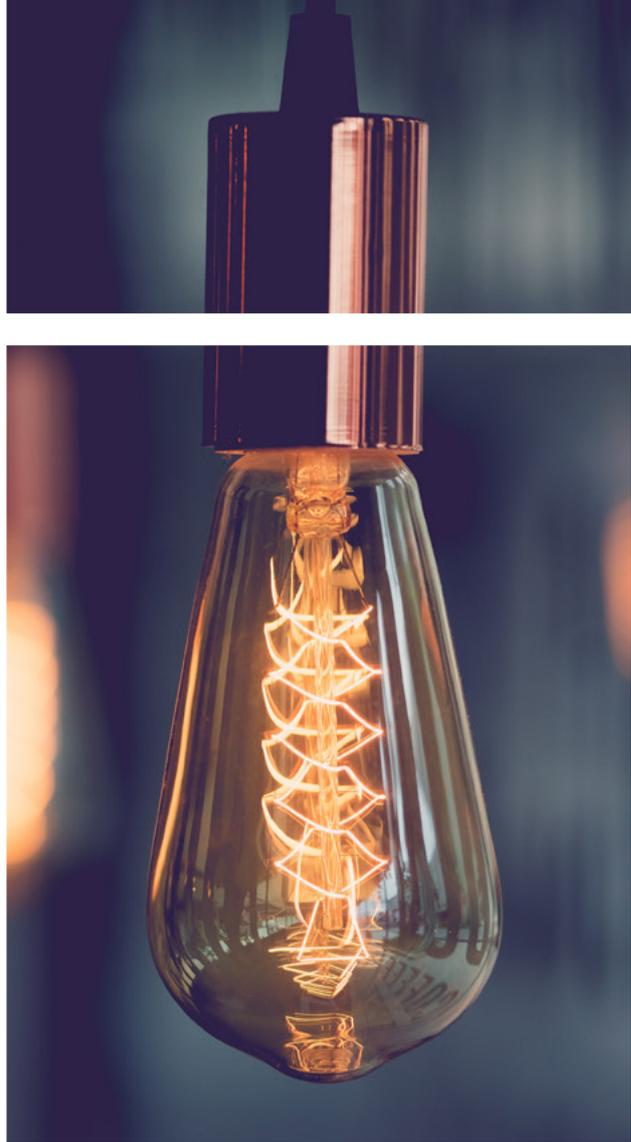


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About the survey

Between September and October 2018, we gathered the views of 118 power and utility company executives from over 100 companies and 56 different countries or territories in Europe, the Americas, Asia-Pacific, Middle East and Africa. The Europe region includes Russia. Global Data was proud to support PwC in researching the energy sector.



Global energy transformation is gathering pace, driven by the twin forces of changing customer expectations and rapid technological evolution. In response, companies must undertake a strategic shift to prepare for new energy markets. Yet 82 percent of utility executives in our latest Global Power & Utilities Survey say their company is not yet ready for the transformation. In the meantime, new players from outside the sector are sizing up opportunities in energy markets around the world.

Traditional utility companies are aware that there is a narrow window of opportunity – about five years – to build and acquire the strategies and capabilities needed to stay ahead.

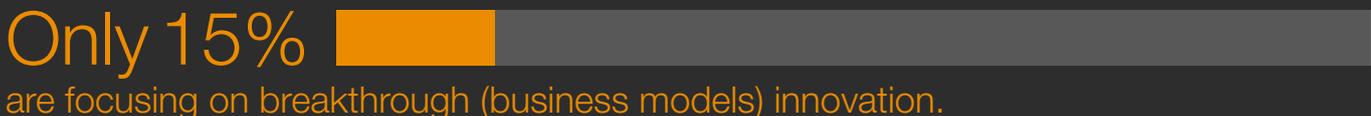
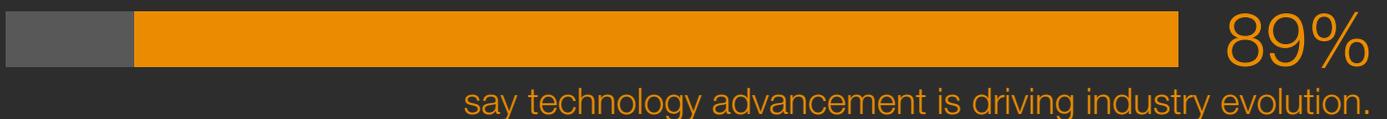
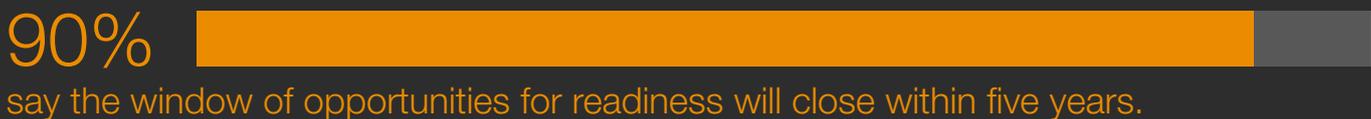
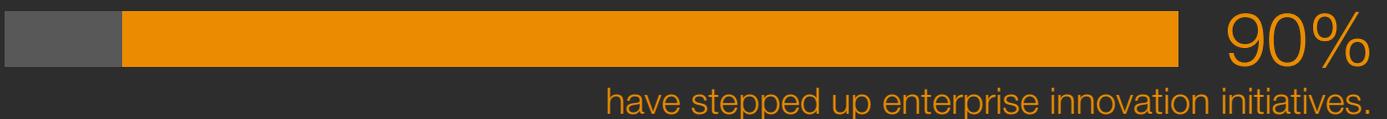
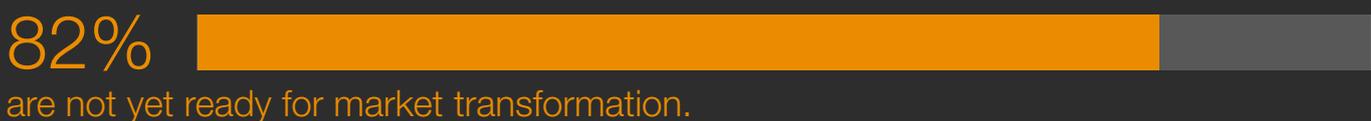
With each passing month, customers increasingly expect more convenience and control, power generation becomes more distributed, and the expanding array of digital tools and platforms become more central to operations and customer relationships – and, as a result, to competitive advantage.

To understand how companies are viewing this window of opportunity, we have canvassed industry executives for their views on how these forces will affect energy markets and highlighted the results across four focus areas: Keeping pace with change; Business model transformation; Customer experience; and Building collaboration and innovation.

The results highlight something of a dichotomy. Leaders recognize that they have a limited amount of time to get ready for the new environment and are taking what they believe are necessary steps to evolve their organizations. But comparatively few are on the path to a fundamental transformation of their business model designed around meeting rapidly shifting consumer expectations and potentially disruptive technologies.

As a result, it remains an open question as to whether utilities respond quickly enough to satisfy customers or will other emerging competitors fill the space.

PwC's 15th Global Power & Utilities Survey highlights





Keeping pace with change

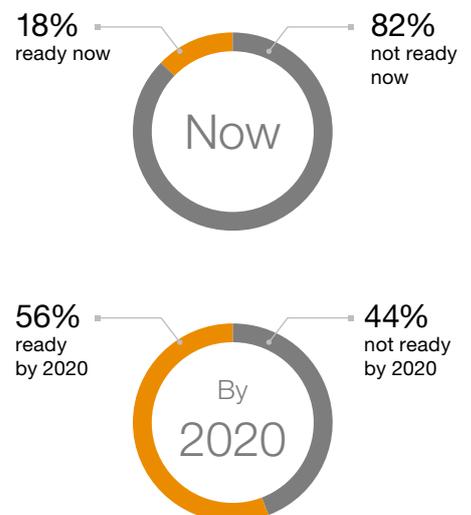
The convergent effects of technological advances, policy measures, the growth of distributed generation, new forms of competition and changes in customer behaviour are transforming power markets around the world. While the pace of these changes varies from market to market, it is clearly accelerating at a speed beyond what leaders thought possible just a few years ago.

No component of the value chain – from upstream generation, through grid and network operations, to beyond the meter – will be unaffected. Broadly speaking, the power and utilities sector is set to evolve from an analogue, scale-driven, centralised and standardised model to one that is digital, distributed and personalised. These concurrent shifts demand the adaption of strategies and capabilities that are different from those traditionally employed (and mastered) by utility companies. An industry accustomed to long-term and large-scale asset investment timescales now has to adjust to much shorter technology and project cycles.

There is an awareness that more agile business model thinking is needed for utilities to adapt to this changing environment. But that awareness hasn't necessarily translated into action. An 82% majority of utility company executives say that their company is not ready yet for market transformation. And a sizeable proportion (44%) still don't expect to be prepared by 2020 (Figure 1).

But that might be too late. When we last conducted our Global Power & Utilities Survey in 2015, 97% of senior executives anticipated that a medium to very high level of disruption of their main home market would be taking place by 2020.

Figure 1: Readiness for market transformation

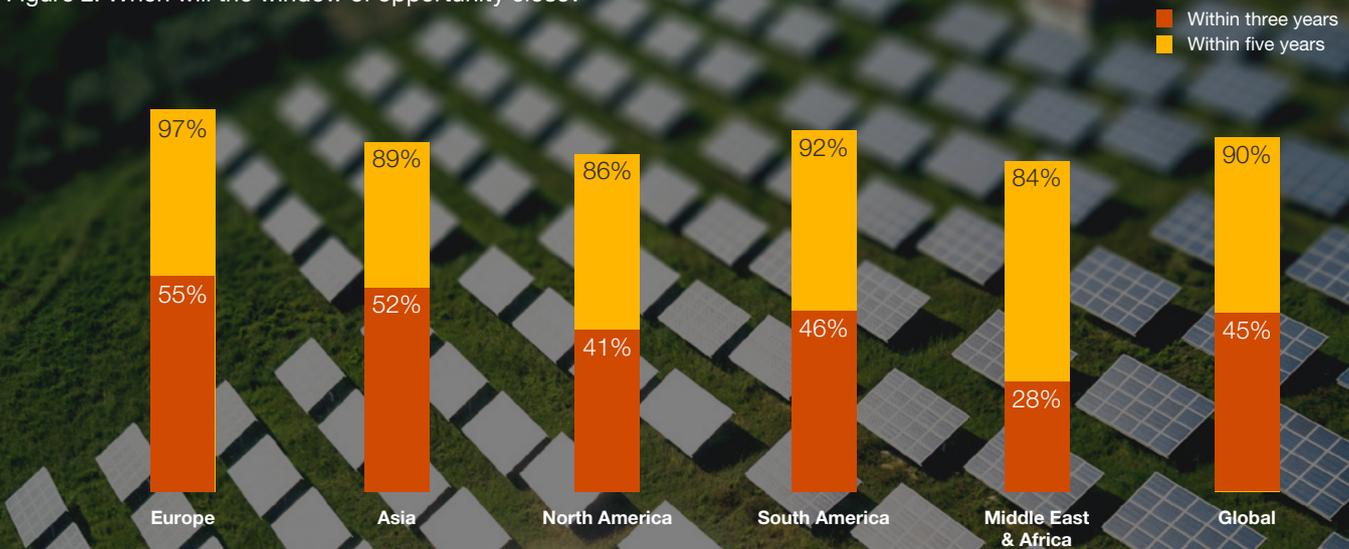


Source: PwC Global Power & Utilities Survey 2018

The danger for some companies is the temptation to kick the can down the road and hope that they will not be overtaken in the meantime. There is some evidence that this is what's happening. Only 5% now think that the window of opportunity for them to shift strategy is as urgent as next year – i.e., before the 2020 deadline identified in the 2015 survey. Far more companies, 40% globally, see their window to act as extending to the next three years, and 45% see it as up to five years off (Figure 2). One in ten companies think it can be put off to beyond five years.

Judging the pace of transformation is a key challenge. Both the timing and the focus of change vary according to local markets around the world. In some markets, the economics of centralised generation have already been hit hard, with disruption being felt upstream as well as downstream. In other markets, the focus for change is typically downstream. Across the regions, the window of opportunity to get ready for energy transformation is seen as closing fastest in Europe and slowest in the Middle East & Africa (MEA). But even in the MEA, the vast majority feel that the crunch time is only five years away. And everywhere the vast majority see the next five years as being critical.

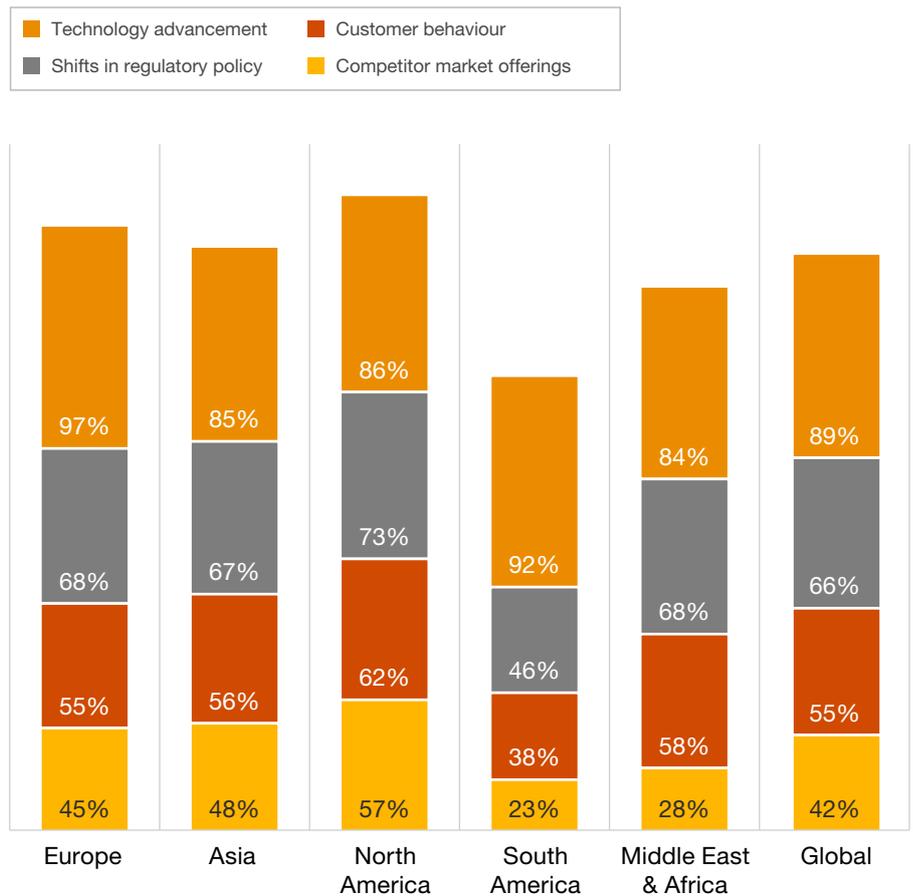
Figure 2: When will the window of opportunity close?



Source: PwC Global Power & Utilities Survey 2018

Some companies may take comfort from market structures that protect them to some extent. But regardless of market structure, companies can expect a strong degree of disruption to come from technological change alone. Indeed, technology rather than competition is identified as the strongest driving force behind transformation (Figure 3). 'Business as usual' simply is not an option.

Figure 3: What is driving industry evolution?*



* Percent saying strong or very strong driver

Source: PwC Global Power & Utilities Survey, 2018



Regional snapshot: Industry evolution

- Technology advancement is seen as the strongest driver in every region.
- Results are broadly comparable across Europe, Asia and North America.
- Not surprisingly, given the nature of their markets, utility executives in South America and the MEA say market competition plays a much weaker role. Instead, they are more likely to rank factors internal to their companies (not reported in our main tables) as the strongest drivers underpinning technology advancement
- For example, in South America 77% cite 'internal utility innovation' as being a strong or very strong driver (compared to only 50% globally) and business model evolution is rated similarly strongly by 72% of MEA utility executives (compared to 65% globally).



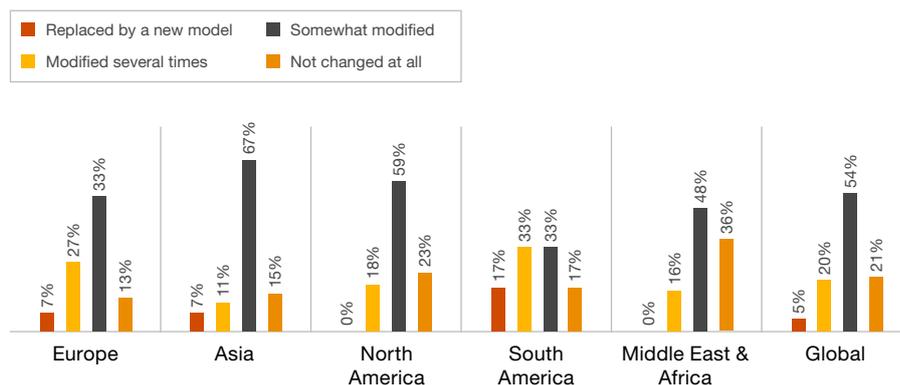
Business model transformation

As the pace of technological evolution quickens, incumbent utilities need to transform their business models. Over the last several decades, utilities have been able to survive by gradually accepting new technologies while relying on long-established business models. In more recent years, they have moved into a world in which technology adoption is much more rapid and disruptive, and in which business models have to change quickly to reflect new energy market dynamics.

Back in 2015, in our last Global Power & Utilities Survey, only 26% of industry respondents thought that traditional power-sector company business models would serve them well into the future. Three years later, two-thirds (65%) of our survey participants globally say business model evolution is a strong driver of industry change, and the majority (79%) report some degree of business model change.

But the change seems incremental rather than fundamental. Only a quarter say that their company business model has changed significantly, in the form of either a move to a completely new model (5%) or by way of several modifications to the previous model (20%). Indeed, one in five (21%) report no change at all in their business model (Figure 4).

Figure 4: Transformation of business models



Source: PwC Global Power & Utilities Survey, 2018



Regional snapshot: business model transformation

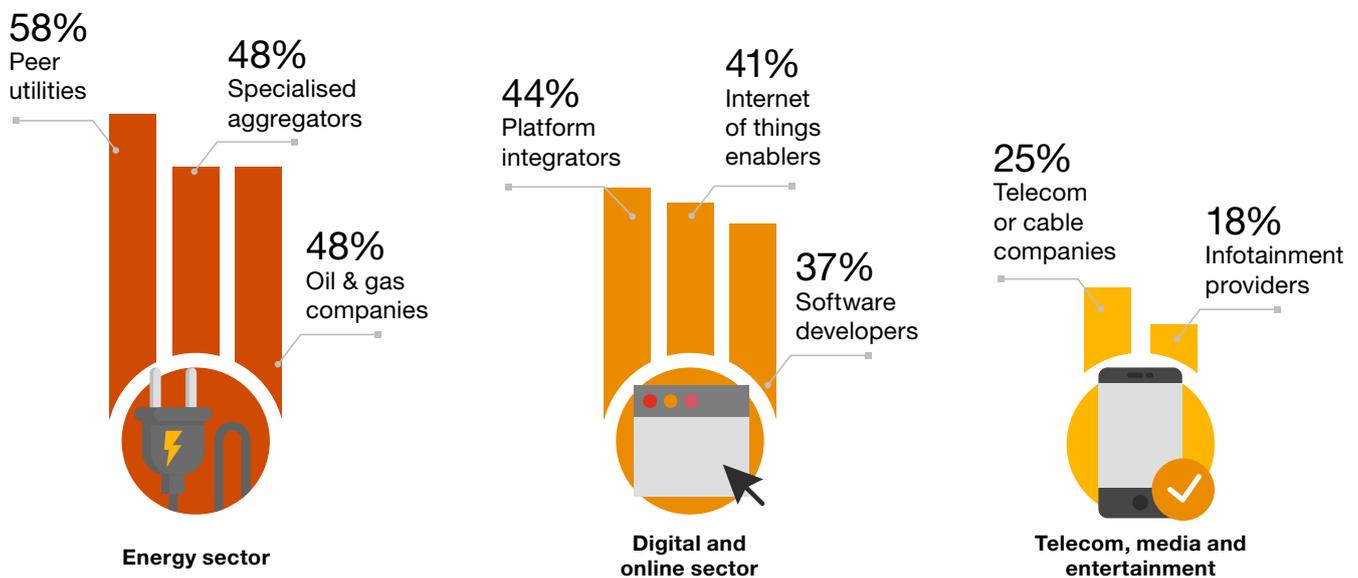
- Two-thirds (65%) of our survey participants globally say business model evolution is a strong driver of industry change and few (21%) report that they haven't changed their business model at all in response.
- But there are big regional variations. Over a third (34%) of MEA utility company executives and, perhaps surprisingly, nearly a quarter (23%) of those in North America report no change yet to their business models.
- And along with those in the MEA, North American survey participants are least likely to report that their company business model has already changed significantly, either with a move to a completely new model or by way of several modifications to the previous model. Only 18% of those in North America and 16% of those in the MEA report such change in contrast to 34% in Europe and a very high 50% in South America.

Whether this rate of business model change across the industry is fast enough will depend on the regulatory and market context that companies operate in. In some contexts, completely new models will be the order of the day. In others, the traditional regulated and integrated business model will need to shift, but not disappear. Evolved models will coexist with traditional archetypes.

The success of business model change will depend on whether utility companies get the focus right. Farsighted companies have the opportunity to transform how countries, economies, producers and consumers think about energy, its use and its value. New hardware, software and system tools are emerging that will fundamentally shift the role of the utility, the leverage of technology, the management of network and premises assets and devices, and the participation of the customer.

Many players from outside the power utilities sector are eyeing these opportunities, including companies from the online, digital and data management worlds. These new competitors are increasingly on the radar of incumbent power utilities. But in the eyes of our survey participants, they still rank below energy players in terms of competitive threat (Figure 5). Around half of the executives in our survey pointed to energy sector rivals as a greater threat. They expressed a significant degree of concern about competition from oil and gas companies, reflecting the influence of recent moves by some oil majors into the power sector.

Figure 5: Strongest future competitive threat*



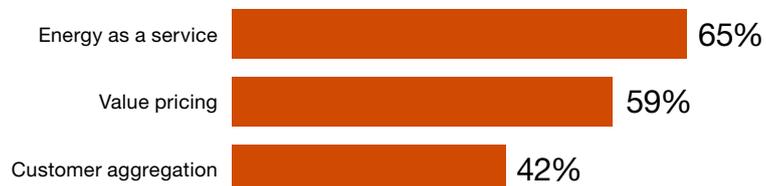
*% saying strong or very strong competitive threat

Source: PwC Global Power & Utilities Survey 2018

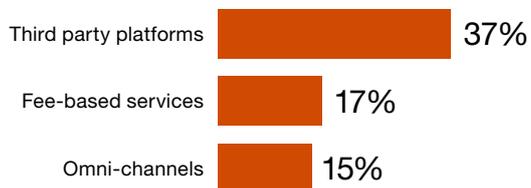
Despite the emergence of new competitors, the scope of business model change among power utilities in our survey still appears somewhat limited. Asked to identify and rank the new business model elements that their company is focusing on, a third said none. Among the remainder, most identified new business model elements that were natural extensions of their traditional territory, such as energy as a service and value pricing, or well-established practices, such as customer aggregation. More innovative moves, such as digital partnering with third-party platforms or engaging in an omnichannel customer engagement strategy, featured in the top three choices of only a minority of survey respondents (Figure 6).

Figure 6: Most important elements for the new business model*

“Close to home” new business model elements



“Further reach” new business model elements



*% ranking these in their top three of new business model elements

Source: PwC Global Power & Utilities Survey 2018





Customer experience

New developments, such as smart grids, microgrids, local generation and local storage, all create further opportunities to engage with customers. Advanced technology is enabling the development of new energy platforms in areas such as distributed energy resources (DER) integration, electric mobility, the Internet of Things (IoT) and energy transactions. At the same time, customers are increasingly accustomed to their own power generation, control and even storage options. And new technology players, from the worlds of data and software development, are taking up key positions and, in some cases, disintermediating existing customer relationships.

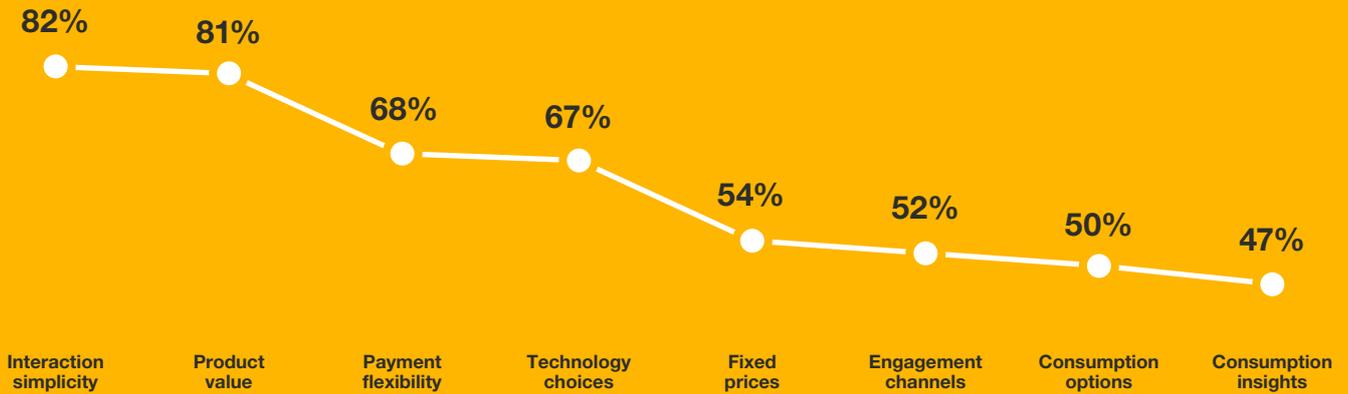
The upshot is that business and residential customers are becoming empowered in unexpected and potent ways. This trend is as relevant in regulated monopoly markets as it is in open competitive markets.

Power utilities cannot afford a marginal relevance to the customer or to be seen as having the wrong set of assets, technologies or capabilities to compete in the emerging world. In broad terms, companies need to move beyond asset-based strategies to focus much more on solutions for customers. A key element of this approach is the recognition that customers who embrace distributed generation and other technologies want to take more control of how their energy is produced and supplied. Companies need to be adept at building a meaningful customer experience, one in which customers feel in control and are able to interact with the utility in simple and easy ways.

Our survey showed mixed messages about just how well power utility executives understand this (Figure 7). On the one hand, the need for easy and simple interaction tops the list of the most important attributes that executives believe customers are seeking. On the other hand, giving customers consumption insights is at the bottom of the list. And less than a third of survey participants put the trio of simplicity, choice and control in their list of the top three factors that are most important in competing for the customer (Figure 8).

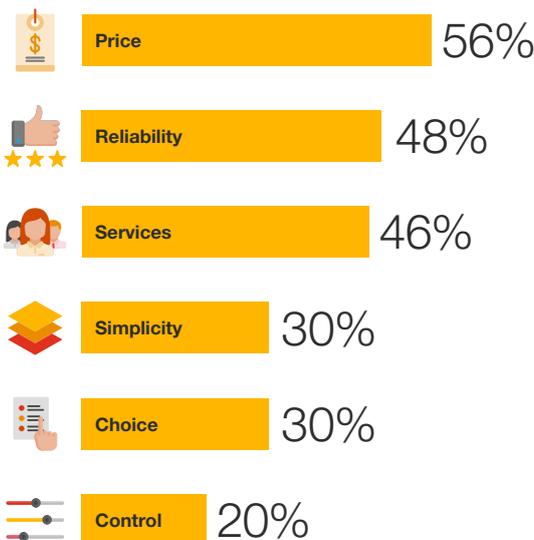
We expect that emerging competitors would answer such a question differently, as we see many examples of customers seeking to take control of both their energy costs and supply with behind the meter solutions. We hope that utilities aren't over-estimating their ability to read future market dynamics.

Figure 7: Most important attributes companies believe customers are seeking*



Source: PwC Global Power & Utilities Survey 2018

Figure 8: Competing for the customer: are utilities underestimating simplicity, control and choice?*



*% listing each factor among their top three most important bases for competition

Source: PwC Global Power & Utilities Survey 2018

Regional snapshot: customer experience

- Price and reliability remain critical considerations when companies list the factors that are most important in competing for customers. This is especially the case in regions where energy access and affordability can't be taken for granted or where severe weather events can impact reliability. In every region but Europe, these factors continue to trump attributes such as the simplicity and control that is increasingly possible with digital technology and with home generation and storage.
- But in Europe, where reliability is more certain, more executives are likely to name simplicity than reliability as key to competing for the customer and it begins to rival price as a leading factor.
- This is not to say that companies in other regions underestimate simplicity. In answer to a separate question, at least three quarters of utility company executives in all regions give a strong rating to 'interaction simplicity' as an important attribute sought by customers. It is just not strong enough to rank at the head of more fundamental concerns about price and reliability.



Building innovation and collaboration

In an era of rapid technological change and energy market transformation, power utility companies cannot ignore the imperative to innovate. Many observers expect more innovation to occur in the utilities sector in the next 20 years than has occurred since the time of Thomas Edison. Consequently, companies need to think very differently about how to leverage innovation as a market enabler and as a key part of their wider enterprise strategy.

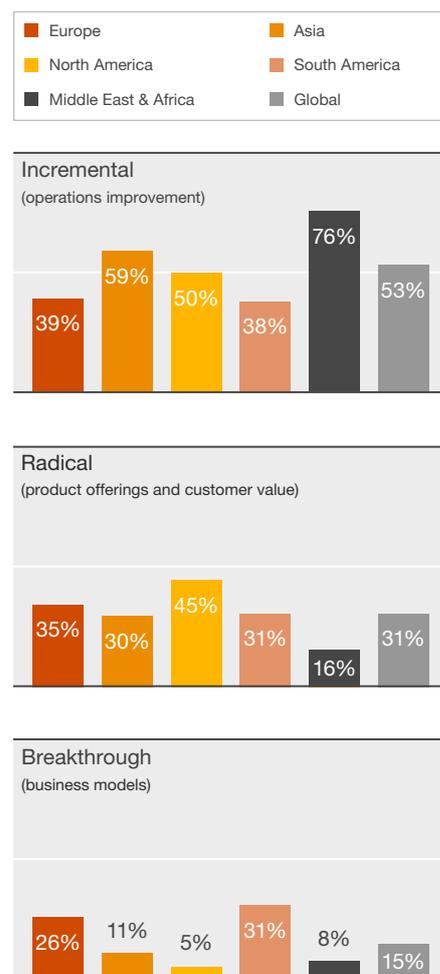
Utilities leaders have traditionally not considered far-reaching innovation as a necessary capability for market success. Technology advancement has largely come from the original equipment manufacturers (OEMs) serving the industry. And the innovation that has taken place has generally been directed at selected R&D activities related to generation and incremental operational improvements.

But that mind-set is shifting, and many companies are looking to find ways to embed a culture of innovation into their core thinking. Ultimately, innovation will become a fundamental ingredient of a company's go-to-market strategy. It will be a means through which they defend their positions, take market share from other competitors and increase opportunities for commercialisation of technologies and market solutions.

Our survey shows evidence of a shift in innovation focus taking place in the power utilities sector through the development of enterprise innovation initiatives that put innovation on a wider footing within the organisation. More than half (56%) of survey participants report that their company has been taking this approach for three years or more, and a further third (34%) have moved to this footing in the past three years. Only one in ten report no formal move in this direction yet.

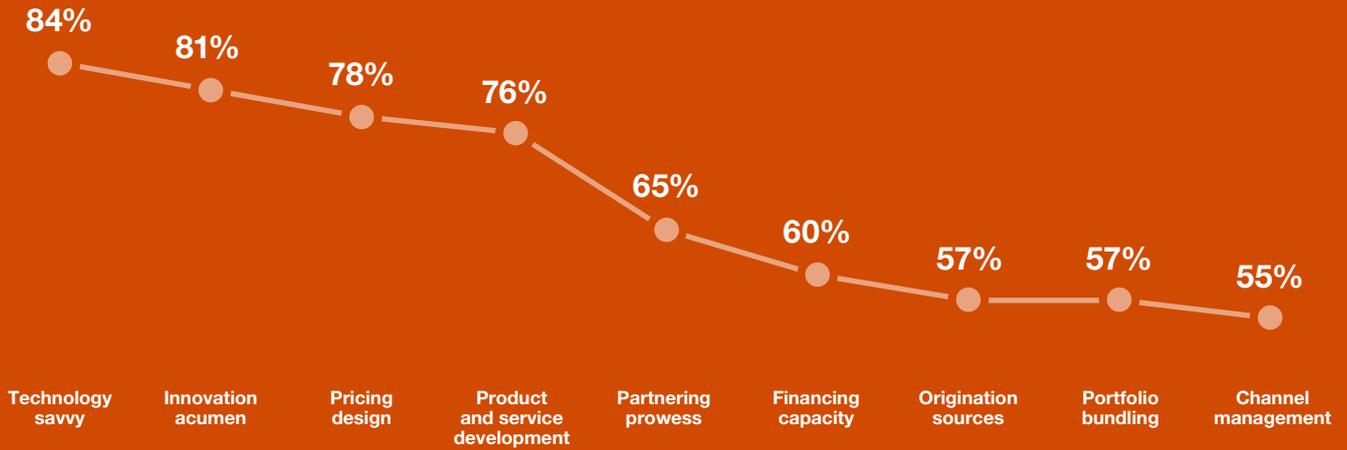
Despite this, a majority (54%) of our survey participants characterised their companies' innovation efforts as still focused on incremental improvements in operations, particularly in the MEA but also to a lesser extent in Asia. However, a small but significant number (15%) are explicitly linking innovation to their business model strategy, and nearly a third (31%) are tying innovation explicitly into market-facing strategies concerning product development and customer value (Figure 9).

Figure 9: How would you describe your main innovation focus?



Source: PwC Global Power & Utilities Survey 2018

Figure 10: Most important internal capabilities needed to compete successfully



Source: PwC Global Power & Utilities Survey 2018

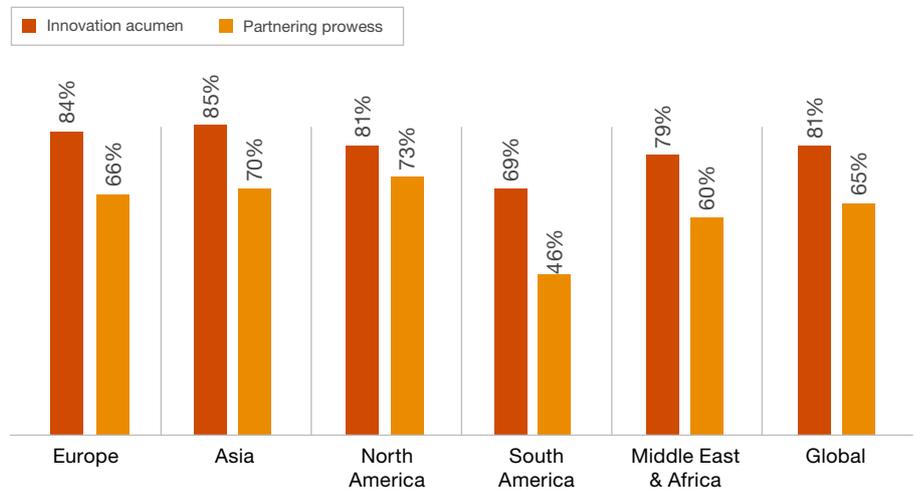
Innovation acumen is strongly rated as an important capability that utilities recognise they will need to compete successfully in new energy markets. Globally, in addition to technological prowess, it ranks as the most prized internal capability that utility companies will need (figure 10). But the bottom of the list reveals that the new focus on technological development and innovation isn't necessarily extending to market-facing activities. Far fewer survey respondents put an emphasis on go-to-market capabilities, such as portfolio bundling and channel management.

Regional snapshot: Innovation and collaboration

- In North America half of utility executives report that their companies are shifting the main focus of their innovation efforts onto market-facing strategies concerning product development and customer value (45%) or onto business model breakthroughs (5%).
- In Europe and South America, the proportion focused on radical or breakthrough innovation is even higher with around three fifths of executives reporting their company has shifted their innovation focus in these directions.
- Innovation and partnering prowess are rated strongly by survey respondents in all the regions worldwide. South America is something of an outlier.

Power utility companies also recognise that they're unlikely to achieve success and true innovation on their own. Two-thirds of those we surveyed strongly rated partnering prowess as a much-needed capability. This reflects the development of an energy ecosystem that is integrated into wider markets, such as electric mobility and smart infrastructure, as well as the move to more open innovation models in which companies think about co-creation with partners, customers and suppliers ahead of traditional R&D (Figure 11).

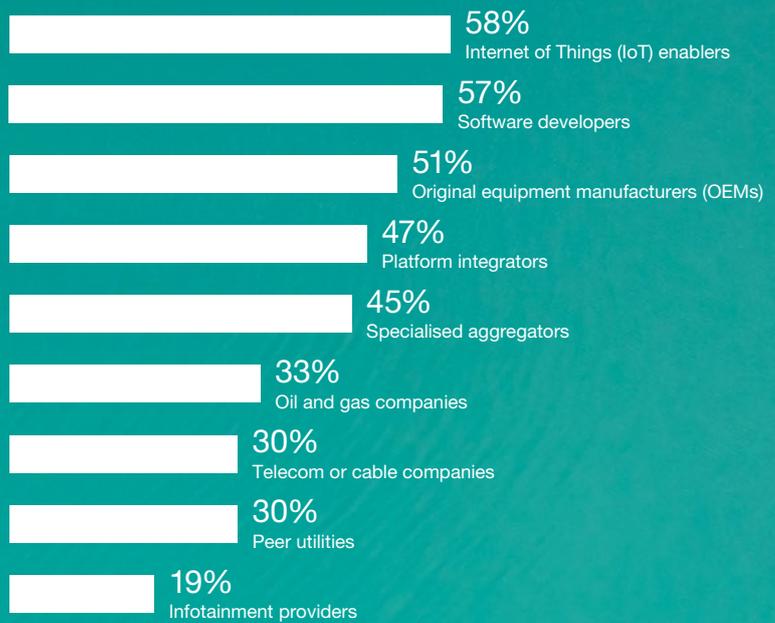
Figure 11: Importance of innovation and partnering for competing successfully – by region*



*rating important or very important
Source: PwC Global Power & Utilities Survey 2018

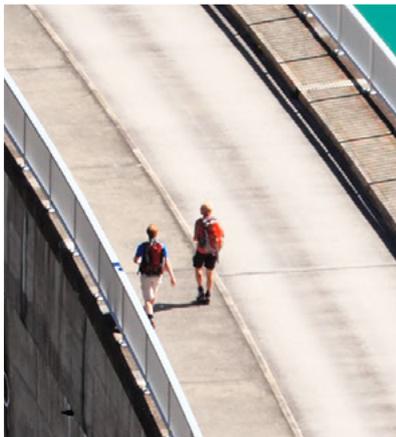
When it comes to partnering choices, utility companies are strongly focused on key developments, including IoT, digitalisation and online platforms. The Internet of Things and the industrial IoT lie at the heart of many aspects of energy transformation, including grid modernisation, demand response, the integration of DER and, of course, smart homes and workplaces. Players with IoT and software capabilities are eclipsing OEMs as the most sought-after partners for power utility companies (Figure 12).

Figure 12: Most attractive future partners to utilities*



*% rating strong or very strong

Source: PwC Global Power & Utilities Survey





Transforming your organisation for the future

What should companies do now to take advantage of the narrow window of opportunity for change? The temptation for companies grappling with the issues identified in our survey is to embark on a wholesale transformation initiative. But the success of such efforts are not assured, tending to be delivered over budget and after deadline. In the meantime, the outside environment has moved on and changed.

For companies to transform, they need to develop an ongoing mastery of change in which adaptability feels natural to leaders and employees. But this continuous adaptability and agility need to be rooted in firm foundations.

Five issues emerge from our survey as key building blocks for power and utility companies:

A strong future role and business direction



Even the most well-established incumbents need an identity based on a clear view of their future role in the new energy world. Companies that articulate an identity and direction will be able to invite participation, gain extra momentum and act as a reliable partner. Employees, suppliers and outside partners will be more willing to collaborate for future success and to help design aspects of the change programme. If you know where you are going, it will be easier to convince others to join you on the journey.

Customer and stakeholder trust



Trust is becoming even more important in the new, increasingly digitised energy in which customer relationships are changing, and companies are moving from being commodity suppliers to partners in devising energy solutions. Utilities have long focused on building reliability into their operations and reputations. Now their focus has to evolve to trust. You need to put psychology first: designing every move so that it resonates with customers, employees, investors, regulators and other stakeholders, making your company the kind of enterprise that people want to be associated with.



A firm innovation footing



Utility companies face the challenge of how to innovate in organisations that are well established in their own legacy culture and existing operational imperatives. Typically, you will develop and try out each new approach on an experimental basis and then syndicate those that prove themselves, implementing them at full scale. As you raise the bar a bit each day, the organisation shifts much more easily and effectively than it would if you had set up a dramatic scheme for demanding behaviour change across the enterprise.

Making the most of legacy assets



The legacy for many energy companies is centralised fossil fuel assets, and the future will be increasingly decarbonised and decentralised. But the attention you pay to managing your legacy can affect the entire transformation. You thus need a clear and effective plan for harvesting the best of your past while fixing or divesting anything that will distract from your future focus.

These issues are modelled in part, on the key building blocks of transformation identified by a recent gathering of PwC's experts on organisational change. For an in-depth discussion of delivering transformational change, read the article [here](#).

New capabilities to tackle new market challenges



Even in markets that are not openly competitive, advanced technology will demand that utilities become more outward-facing and adept at integrating their offerings with wider ecosystems. As well as effective partnering, this will place a premium on capabilities such as customer insights, customer management, market assessment, product innovation and management.

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