Energy companies are powering strategy with innovation

PwC power & utilities roundtable discussion paper

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The roundtable

Senior executives and experts from 18 countries and four continents gathered for a PwC roundtable on energy strategy and innovation in Vienna in May 2019. Leading players, industrial customers, suppliers and analysts from the energy and energy-related sectors discussed how they are deploying innovation to respond to the big strategic choices they face in an era of energy transformation. This report captures some of the key thinking from the discussion.

Introduction

As the the transformation of the energy sector gathers momentum, many companies find themselves at a strategic crossroads where they have to make tough choices on which direction to take. These strategic choices were the focus of a comprehensive May 2019 PwC Strategy& report that examined how the world's 40 largest listed power utilities (the Global Top 40, or GT40) are embracing change.[1] A key finding was that a commitment to sustained innovation in multiple dimensions is an important indicator of a utility's ability to pursue its strategies. Our roundtable in Vienna convened senior executives of European and global industry players and PwC leaders to discuss the new mission-critical role that innovation is playing in an era of energy transformation.

Norbert Schwieters, PwC's Global Energy, Utilities & Resources Leader, observed: "Innovation has never been a capability that the utility industry believed would be required as a table stake for market success. But in the future marketplace that is beginning to emerge, innovation will be a differentiator between those companies that will be recognised as market leaders and those that will simply be part of the pack."

OMV, Austria's largest international energy company, is embarking on two big bets. A first wave of realignment is pivoting from oil and gas (O&G) to a much stronger emphasis on gas. OMV's current development pipeline has more than ten gas projects and only a single oil project. In its second wave of change, the Vienna-based company will shift from being a pure O&G player to becoming a leading downstream petrochemicals company. Instead of viewing hydrocarbons as an energy product, OMV will increasingly use oil as a feedstock for the production of chemical, industrial and consumer products.

1. Global Power Strategies: the future of the utilities industry and the players that are driving success, PwC's Strategy&, 2019

1 Choosing your strategic path

"The industry faces two paths: either you transform from O&G into a wider energy company or you transform into a chemicals company," OMV CEO Rainer Seele said. "But not all refineries are suitable to switch into petrochemicals, so the entry barriers to the chemicals path can be much higher than transforming along the energy path. You must have the DNA and the infrastructure inside your company to run chemical processes. If I am going to start a new business path for my company, I have to ask myself two questions. First, what are my strengths? And second, what is my competitive advantage?" OMV has decided that it has the required strengths and infrastructure to pursue the path of diversification.

The need for companies to understand and capitalise on their individual DNA is crucial. As the GT40 study emphasises, the optimal model for strategy design and execution is not externally derived and portable across utilities. Rather, it is tailored to fit the philosophies of the executive leadership team and the aptitude, key differentiating capabilities and 'personality' of the organisation. In short, it is unique and forged in the DNA of the business. It is a foundation for both strategy and innovation.

OMV is using its chemical processes know-how to unlock innovative solutions to the world's sustainability challenges. It is developing ways to recycle post-industrial plastics into synthetic crude oil using a pyrolysis process in its ReOil pilot plant at the Schwechat refinery, just outside Vienna. The aim is to create a circular economy for plastics, like there is for paper — using plastics that might otherwise go to waste as a feedstock for producing new plastics, or as energy for mobility.

The need for transformative strategic change is not confined to companies that have traditionally been heavily focused on hydrocarbons. The megatrends of decarbonisation, decentralisation and digitisation are compelling power utility companies to evolve faster than ever before. The analysis by PwC's Strategy& of the GT40's strategic actions showed many companies are embracing radical change, reinventing themselves, aggressively pursuing business model innovation and entering new markets for energy solutions and services.[2]

2. Global Power Strategies: the future of the utilities industry and the players that are driving success, PwC's Strategy&, 2019

2 New innovation, new markets

Many European companies have led the way in terms of innovation. But innovation is by no means confined to GT40 companies covered in our analysis or to Europe. AES Corporation, based in the US, runs a diverse power-generation and distribution portfolio. But in a joint venture with Siemens, it is claiming a major stake in the burgeoning global energy-storage market, which is forecast to grow at around 7% a year to more than US$13bn by 2022.[3]

Bernerd Da Santos, Executive Vice President and Chief Operating Officer of AES, described the lead his company has taken: "Last year we deployed 776MW of energy storage worldwide, and we are building the largest battery energy-storage facility in the world, a 100MW, four-hour-duration unit in California. We are also leaders in the US in the application of drones, second only to NASA. We are using drones to improve safety by reducing hazards across our work and increasing the availability and productivity of our energy solutions."

However, Da Santos emphasises that innovation is nothing without adaptation and adoption. "People have to adopt the technology or the platform. Otherwise you are going nowhere." In the case of utility-scale battery storage, AES finds itself with some ready adopters as industrial customers seek to safeguard the security of supply and utility customers seek answers to system balancing problems.

3. "Battery Energy Storage Market, Update 2019," GlobalData, April 2019

3 Overcoming uncertainties

Not all innovation has an immediate market ready to adopt it. But, as our GT40 study found, tomorrow's strategies need to be intentional, aggressive and consequential, even in the face of uncertainty. They need to recognise that imperfect knowledge about direction and outcome must not limit the ability to embrace the challenges that the sector's evolution will pose.

One of the major challenges facing those who are developing solutions to decarbonise or clean up heavy industrial processes is market uncertainty. It is unclear whether the market will pay a premium for such a solution or whether governments need to consider new market structures to support or provide incentives for such developments.

Pursuing sustainability solutions requires making hard choices about uncertain long-term projections. The diversified industrial group and steelmaker thyssenkrupp is investing in innovation to make its processes cleaner and more efficient. Wiebke Lüke is the project manager of thyssenkrupp's Carbon2Chem® project. She explained: "We are taking our top gases and already use about 60% of them to generate our own electricity. But in the future, we would like more of the electricity to come from renewables and, in any case, we are also seeking a way of using the rest of the top gases. With Carbon2Chem, we aim to produce valuable chemicals from them. The advantage is that the share of top gases from the blast furnace, coke oven and steel mill used to produce chemicals will no longer be burned off and less CO_2 will be generated. The carbon — including the CO_2 — is used for a second time in chemical production."

thyssenkrupp is investing around €60m in the project, which is funded by Germany's Ministry of Education and Research, alongside other partners, creating a cross-industrial circular economy initiative to use CO_2 as a raw material to produce outputs such as ammonia/urea and methanol. The project is preparing for industrial scale-up in 2020 ahead of commercial implementation, but the technical and wider challenges are considerable. Lüke explained: "The current emissions trading scheme is for existing technologies, but there is no current CO_2 tax structure that is right for this cross-industry initiative. We are in the position where industry is highly committed, but we can't do it without societal support and government support in the future."

4 Partnering to deliver innovation

The thyssenkrupp Carbon2Chem, which brings together partners from the chemical, energy and steel industries, is an example of cross-industry working that is becoming increasingly common as companies move to address the shared challenges of decarbonisation and digitalisation as well as new markets such as e-mobility. In the power utilities sector, there is a strong emphasis on partnering in order to acquire the new capabilities required to meet customers' emerging needs.

These capabilities-based strategic moves typically address new technology offerings, channel requirements and the challenges of a more flexible, decentralised electricity system. Miguel Gaspar Silva is Global Head Utilities Industry Business Unit (IBU) at the software company SAP, a key partner to companies in many of these areas. He notes that the growth of renewable energy is altering the utilities value chain. "In the emerging flexible electricity system of the future, taking care of imbalances will be a more important source of revenue than selling kilowatts."

SAP is a partner in a number of innovation consortiums at the EU level, supporting energy transition in Europe. These include FutureFlow, which is exploring new solutions for balancing the electricity system and managing flows in the European electricity network. The project encompasses commercial and industrial customers and distributed generation owners to demonstrate the benefits of collaboration in frequency restoration reserve markets and the cross-border integration of such markets. FutureFlow has a strong focus on Central and Eastern Europe; Austria, Hungary, Romania, Slovenia and Serbia are among the eight participant countries.

5 Digitalisation initiatives

The GT40 found that much of the investment aimed at boosting grid modernisation, resiliency, and new services and products is being funnelled into smart technologies and digitalisation. The Vienna roundtable heard from leaders of digitalisation initiatives in the region. Among them was Thomas Hillebrand, a board member of the Digital Asset Association Austria (DAAA), a non-profit independent advocacy group, seeking to create a platform for the blockchain-based digital assets ecosystem. “The goal of the DAAA is to work together with the regulators and relevant stakeholders to set digital asset initiatives on a safe and firm foundation,” Hillebrand said. He also commented on the importance of partnering: “Partnering through open innovation is crucial. A lot of in-house IT capacity is a suboptimal base for innovation. If you go into partnerships with startups or other tech companies, you create new concepts much faster. De-risking it by taking it off balance sheet and out of yearly budgets can be a game-changer for innovation initiatives.”

Dr. Josef Zöchling, head of the energy business at Wien Energie, outlined a wide range of digital initiatives in his company: “They include smart-meter tariffs. We did the first blockchain deal worldwide for gas trading. We have some autotraders in place which perform short-term trading for gas and electricity.

We have implemented new platforms for customers, including an integrated platform for billing. For our company, most of our DNA is in district heating. Our main future focus is to digitalise the heating system with new transformers. We would also like to install small-scale storage systems and combine them with sector coupling that will allow us to shift easily from the heating system to the electricity system.”

But Zöchling emphasised that it is crucial to learn the lessons from new digitalisation initiatives: “If we send out a paper letter for payment, we get a very high response, but if we send it out by email, the response is very low. Also, blockchain is dead for us in energy trading, as it couldn’t solve some very important problems around the risk metrics between trading companies. So you have to be careful to separate the good things from the bad things in digitalisation.”

Q&A: Around Central and Eastern Europe

Q: How is the trend from centralised to decentralised generation affecting you?

Svetlana Ivanichkina, Financial Director, Inter RAO (Russia):

We are mainly focused on the modernisation of our existing assets. We don't see distributed generation as a strong current issue for our company, and I would say that is still five to ten years away. A big priority at the moment is our old district heating networks, which need a big investment to maintain and develop. A key question for us is how to restructure these heating networks to make them economically effective for both the customers and the producers.

Q: What are the biggest challenges you are currently facing?

Gabor Hiezl, CEO, Hungarian National Utilities (NKM):

The biggest immediate challenge for distribution companies is the integration of the fast-growing photovoltaic installations into the network. The normal, traditional networks are not built for this new type of operation. Digitalisation is another challenge but we see that more as an opportunity than a threat. As a state-owned company, we have big plans for both digitalisation of internal operations [and] for our client side as well.

Q: What happens to hydrocarbon companies if none of our grandchildren are driving internal combustion engine cars?

Viktor Sverla, Head of Group Strategy, MOL (Hungary):

The question is not only the drive train. It is possible that our grandchildren will not own cars or not even drive cars at all. Mobility is one of our focus areas of our new strategy, but we believe the mobility landscape will be much different that far in the future than it is today. It will become more and more service-based, especially if we assume self-driving cars will become widespread. We want transport to be a significant part of our business in the future, just as it is today, but it will not be enough to sell fuels. It will also be necessary to become a mobility service provider. Regarding the question of the fuel and the drive train, we won't get stuck with gasoline and diesel. Our strategy is to provide the fuels our customers will need, be they electricity, CNG, LNG, hydrogen, bio or synthetic fuels.

Hard choices

Disruptive shifts are affecting the whole value chain of utilities, leading companies to think differently about how to leverage innovation as a market enabler. The viewpoints expressed at the roundtable highlighted the importance not just of making major shifts in strategy, but of matching those strategic shifts with innovation.

Summing up the discussion at the roundtable, David Etheridge, Global Power & Utilities Advisory Leader, PwC US, observed: "We've had the issues that we've seen over the past few years — sustainability, new customer demands, changing policy and regulation, new technologies, new entrants — but now companies are making big bets on the hard choices that need to be made." He also emphasised the importance of knowing your capabilities:

"Companies have to either exploit the innovation DNA they have or, if they haven't got it, they need to embark on the right strategies to acquire it."

In the GT40 report, European utilities were particularly clear in stating their ambitions to be innovation leaders in the global energy sector and putting forth ambitious investment plans and growth expectations. The report found that European utilities are active in establishing innovation labs, R&D centres and startup incubators. It is clear from the roundtable discussion that such innovation is not confined to the largest players, but pervades the entire sector and stretches across sector boundaries into the world of suppliers and big industrial customers.

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Thank you