

Emerging Energy Value Ecosystem

Volume I

Grounding Utilities' Dreams of **New Revenue Streams**



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Authors

Roberta Bigliani

Gaia Gallotti

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In Search of a New Identity

Across Europe, utilities are busy rethinking their strategies, go-to-markets, and operating models. Every day we witness utilities restructuring to create new companies and new business units, setting up strategic partnerships, bringing new propositions to the market, and making overhauling investments in digital technologies. All for the end goal of tapping into "new revenue streams" and improving their financial performances. These days, the words "new revenue streams" pop up in almost all conversations regarding utilities, especially in Europe. Yet, "new revenue streams" is not just the latest buzzword, nor is it a panacea utilities are just hoping will magically appear and save them. Utilities are conscious that their ability to thrive depends on them materializing revenues from services, and also products, that they previously did not offer.

The inherent individuality of each utility will drive each company to carve out its own unique future by selecting which new energy products and services they should pursue based on which best match their company culture and capabilities, and market needs. Only time will tell which opportunities utilities will be able to seize, and which opportunities will be lost, not only to competitors, but also due to market and technological disruptions. But questions remain: will utilities be quick enough to transform themselves and grasp these new revenue streams? For instance, is the connected home space already too crowded? Are utilities late to the game? Or, will peer-to-peer trading undermine the business potential of virtual power plants by eliminating the need for aggregation to play in existing wholesales markets?

Today, there are many questions surrounding utilities, certainly more than there are answers. In order to dig into the complexity of the industry transformation, TCS commissioned IDC to conduct a study involving utilities across Europe. The study focuses on understanding the opportunities for utilities, the changes in their operating models, and the technological impact of digital transformation. With

both country and value chain perspectives, this paper seeks to answer the following questions:

- » What are European utilities' realistic expectations for new revenues in the next two to three years? How much will they amount to, and from which areas will they come from?
- » On which energy technologies are European utilities betting to gain the most value?
- » How will European utilities' business roles be different by 2020? Which roles will be most important?

The Business Impact of New Revenue Streams

How Important Will New Energy Products and Services be for European Utilities in the Next Two to Three Years?

As the commodity business continues to suffer, utilities are looking elsewhere to create business value and compensate for the losses of selling less product. The reality is that to survive, utilities will need to tap into new revenue streams, specifically value-added products and services such as home comfort, distributed generation management, electric vehicle charging management, and energy-efficiency management. The inherent individuality of each utility will drive each company to carve out its own unique future by selecting which new energy products and services they should pursue based on which best match their company culture and capabilities, and market needs. How much these new energy products and services will impact utilities' revenues depends on myriad internal as well as external factors. Nonetheless, across Europe, 36% of utilities expect new energy products and services will make up 10% of their revenues in the next two to three years. This 10% could be seen by some as a small percentage, but put it into perspective. For a company like Engie, which is among the top 5 largest European utilities in terms of revenues, 10% would mean about €7 billion. This is more than the GDP of Monaco or Lichtenstein.

Utilities are already making diverse choices regarding which products and services to offer their customers. They are also bringing their new offerings to the market at different speeds and pace. The release of new products and services is also influenced by country specificities and regulations. For instance, offering electric vehicle charging services makes more sense in countries that vigorously and effectively support the uptake of plug-in electric vehicles like Norway and the Netherlands. In the Netherlands, not only are electric vehicles strongly incentivized, but an extensive network of public charging infrastructure was built nationwide to encourage the market. In fact, in 2015, sales of electric cars more than doubled in the Netherlands, where the market share reached close to 10%, the second-highest globally, after Norway (23%)¹. Driven by the local push for electric vehicles, in 2013, Dutch grid operator Alliander seized the opportunity to create Allego, a daughter company dedicated to building and managing charging infrastructure for electric vehicles. Not only is Allego rolling out charging points across the Netherlands, and Belgium, but it also won a tender to install and manage 220 charge points in Berlin, with ambitions to expand across Europe.

New Energy products and services will contribute to more than 10% of revenues for 36% of European utilities

¹ Source: IEA Global EV Outlook 2016)

**REGULATED
BUSINESSES** are
also eager to **move**
beyond their core
markets

"'Energy-as-a-service' is utilities' future mission. Utilities need to focus on what they do best and build out services on that basis. They need to position themselves to remove complexities, so that their clients can focus hassle-free on their own core business."

Integrated Utility

Who Has the Highest Expectations?

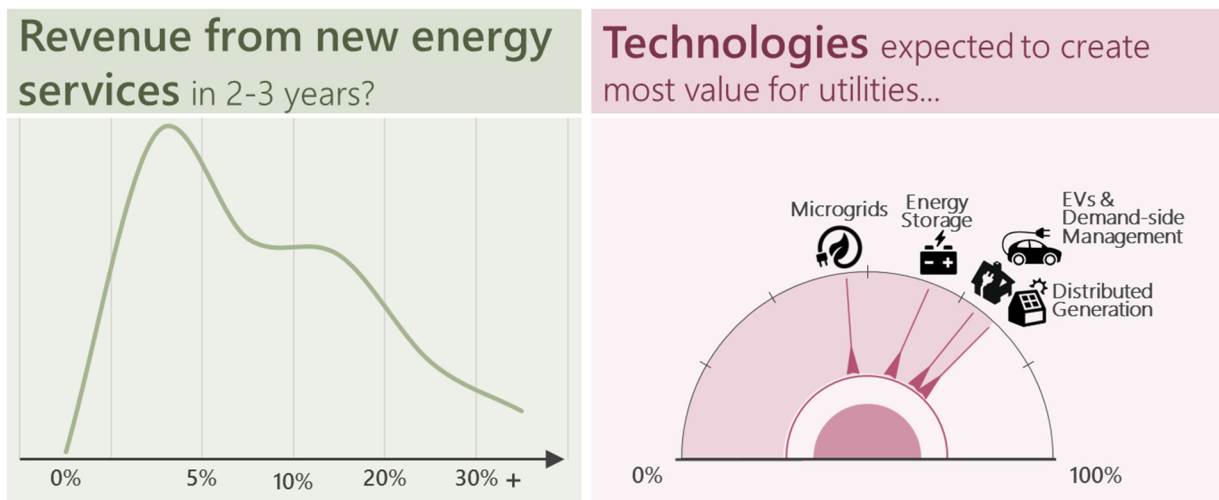
Overall, utilities in some European countries appear more confident than others when it comes to the real business impact of new energy products and services. French utilities across the entire value chain are the most optimistic and confident in expecting new energy products and services to generate over 10% of revenues in the next two to three years. But they are not alone, with 45% of German utilities indicating they expect over 10% of revenues from new energy products and services in the next two to three years. The remainder of European utilities surveyed, including those from BeNe, UKI, Nordics, and Southern Europe trail with lower expectations in terms of business impact. It is interesting to note how the challenges deriving from the nuclear phase out and negative profit performances have forced German utilities to anticipate their peers in the search for new opportunities.

In addition to the country level differences that emerged, the study also reveals diversity across the segment of the utilities' value chain. As could be expected, due to the liberalized nature of their business, generation companies and retailers are quite hopeful. While power generation is actually the segment of the traditional utility value chain that is suffering most in terms of shrinking profits, 63% of electricity producers expect that in the next two to three years more than 10% of their revenues will come from new energy services. Meanwhile retailers, which are predominantly selling electricity, see higher potential: 53% of them are expecting more than 10% of revenues from new products and services.

Regulated businesses are also eager to move beyond their core business, looking to play a different role in the evolving ecosystem. For instance, 42% of European DSOs estimate that more 10% of revenues will come from new value-added products and services in the next two to three years. Their ability to offer different kinds of products and services, will largely depends on national legislation and restrictions, as well as on their ability to create competitive subsidiaries outside of the regulated business. Study results revealed that German DSOs have significantly above-average expectations, 64%, of generating over 10% of revenues from new value-added products and services in the next two to three years.

Figure 1

What's it Worth? Which Technologies?



n=120

Source: IDC Energy Ecosystem Survey, 2016 – commissioned by TCS

Where Will New Revenues Come from?

Distributed generation is believed to be the key to unleashing new revenue streams for utilities, according to 79% of European utilities. Despite initial wariness towards distributed generation technologies, as utilities witnessed their traditional business model being disrupted and their margins being eroded, the industry has now realized the actual potential distributed generation technologies offers; potential not just for themselves to reap, but also to be passed on to customers.

European DSOs expect that the top two ways in which they plan to create value for their customers is by investing to increase grid flexibility to accept more renewable and distributed generation, and by providing connection services to customers and retailers to help connect distributed generation resources. European DSOs indicated that two-way connectivity with renewable sources and EVs is their second most important performance indicator, following, of course, reliability of supply (i.e., SAIFI and SAIDI).

The belief in distributed generation's ability to create value is especially strong among utilities in the UKI, where 85% indicate that distributed generation will add the greatest value to their company. Interestingly, grid-connections in the British solar market grew 50% to about 3.7 GW in 2015, making up 46% of European capacity additions in 2015². In addition to utilities in the UKI, utilities in both BeNe and the Nordics also believe that distributed generation will add the greatest value to their company. However, how utilities across these regions plan to make the most of distributed generation greatly varies. Utilities in BeNe, overall end-

79% of European utilities believe
DISTRIBUTED GENERATION is the key to new revenue streams

² Source: Solar Market Report 2015

"To perform well in the Energy Value Ecosystem, utilities will need to adopt the right strategy suitable to them. Utilities may choose to aggregate & expand. Here the focus of the utility will be more on developing business competencies like customer service orientation, strategic planning, responsiveness and agility and expand to the new service domains like home energy service, insurance service provider, etc. Utilities' credibility as a reliable service provider will create a natural market for such services. Utilities may also build Platform to create an energy value ecosystem. Here the focus will be more on the developing the technological competencies to discover and unlock new services, for example Virtual Power Plants. Such platforms will be built on a digital spine with insight-driven autonomous operation for the experience-first economy. In the near future, defending the core utility business is not enough. Utilities would need to expand into the energy value ecosystem and probably leaders will be utilities that can do blend both of the above strategies."

*Sumit Kumar Ray, CTO,
TCS Utilities Business Unit*

customer focused, demonstrate preferences strongly related to the specific value chain segment to which they belong. In fact, electricity producers in BeNe believe that the value of distributed generation lies in constructing customer facilities; BeNe DSOs believe the value of distributed generation lies in maintaining customer facilities; and finally, BeNe retailers believe the value of distributed generation lies in aggregating capacity into a Virtual Power Plant. This is in stark contrast with their peers in the Nordics and UKI, where irrespective of value chain segments, utilities indicate preferences for setting up their own distributed generation facilities. In the UK, for instance, this is probably related to fact that the country has incentivized large-scale solar power plants.

Compared to the countries above, utilities in Germany and France, which remain Europe's fastest growing solar markets in terms of capacity additions, have lower expectations for the value that distributed generation will bring to their company. In both countries, utilities across the value chain believe the most effective way they will be able to extrapolate value from distributed generation is through a combination of maintaining customer facilities and aggregating capacity into a Virtual Power Plant. In Germany, electric vehicles are considered the most appealing source for new revenue streams. In fact, 95% of German utilities and 100% of German DSOs believe electric vehicles are the most promising technology in terms of value creation, significantly above the 76% European utility average. The majority of these companies indicate a preference to leverage value by offering smart EV charging services (i.e., helping customers optimize their charging), while fewer prefer to leverage value by aggregating EV battery capacity onto a VPP or by building EV charging stations. Considering recent steps taken by Germany's Bundesrat (Federal Council) to effectively ban petrol-powered cars in favor of electric vehicles for use on the roads by 2030, German utilities' conviction that EVs are the most promising technology comes as no surprise. While it is a non-binding resolution, it nonetheless marks Germany's intentions to support emission-free cars.

While their belief that EVs are the single most promising technology in terms of value creation for their companies, German utilities are also most inclined compared to their European peers to think that a combined approach of distributed generation, electric vehicles, and energy storage would be most fruitful for new revenue generation. As an example, in January 2017, innogy (RWE spin-off) launched a new dedicated business unit to pool all of the group's electric mobility activities, eMobility, and the same month it acquired BELECTRIC Solar & Battery, creating a new subsidiary, BELECTRIC innogy, to strengthen its position in the market for utility-scale photovoltaic power plants and battery storage systems. innogy has launched the Share&Charge community to allow the sharing of private charging stations. The community leverages blockchain technology for payment processes, including the transactions between charger and operator, and soon for the access and control function of the charging station.

"The combined management of distributed generation, storage and electric vehicle enables utilities to create a sustainable business; good for businesses and society."

Utility's Innovation Lab

Demand-side management is the most promising area in terms of value creation for French companies. Two market aspects likely led to this outcome. For starters, France is the first Member State in Europe to have opened both the ancillary services markets and wholesale market to demand response and independent aggregators. Additionally, on January 1, 2017, France's capacity market went live, enabling electricity capacity providers (e.g., power plants or demand side operators) and electricity suppliers to trade obligations, which is expected to unleash new possibilities for demand-side management and demand response.

The Evolution of Utilities' Business Role

What Role for European Utilities in 2020?

"The launch of a capacity and flexibility market, and the new decree on self-consumption, have transformed the French market to enable energy suppliers to concretely tap into new revenue streams as capacity providers, making France a leader in this."

Distribution System Operator

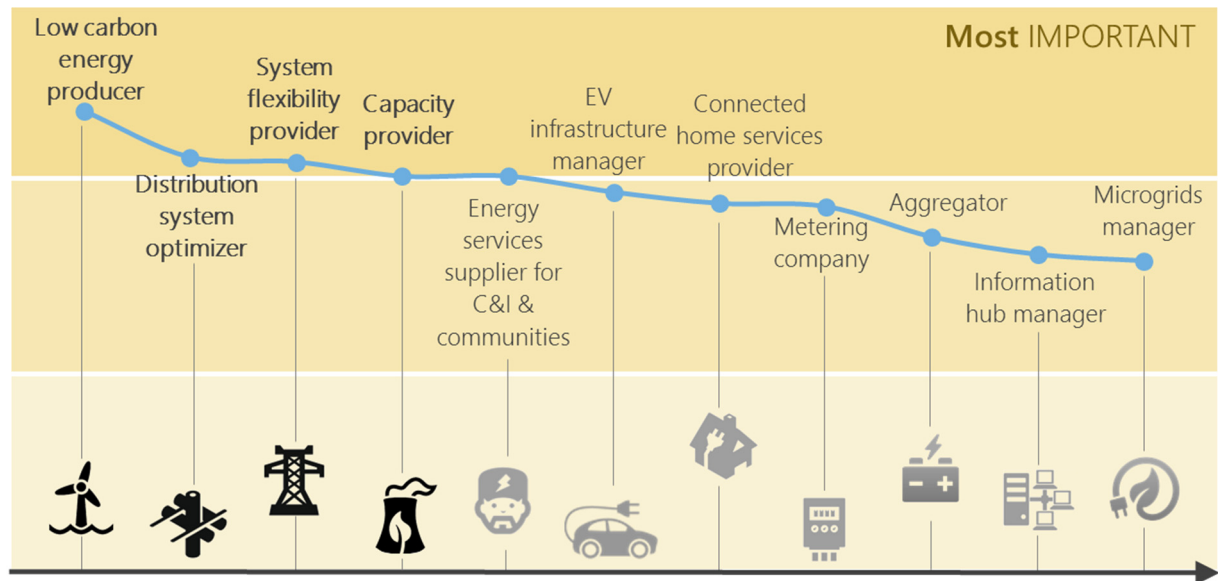
With European utilities' assumption that renewable distributed generation will add the most value to their companies in the near future, it is no surprise that 77% foresee the most important business role, at industry-level, to be low carbon energy producers by 2020. This feeling is foremost shared across electricity producers and energy retailers in BeNe, France, Nordics, and Southern Europe, and also by DSOs in the Nordics. Besides investing in distribution generation technologies and related services, there has been a very significant push for low carbon energy generation, especially in offshore wind power generation in many of these countries over the past 15-plus years. The North Sea specifically has been the basin for most projects, capturing 96.4% of all net capacity installations in 2016³. Considering offshore wind farm owners of cumulative installed capacity in 2016, the top five owners are all European utilities, and represent 45.1% of all installed capacity in Europe. DONG Energy maintained its position as the biggest owner of offshore wind power in Europe with 16.2% of installed capacity, Vattenfall returned as the second largest owner with 8.6%, followed by E.ON (8.3%), innogy (rebranded from RWE) (7.8%), and Stadtwerke München (4.2%). Among the top 15 offshore wind farm owners in 2016, European utilities SSE, Iberdrola, Eneco, and EnBW also made the list, demonstrating the importance of European utilities in furthering Europe's quest to become a global leader in renewable energy, and the relevance of clean energy technologies for the future of European.

Finally, the capacity provider role is expected to be important for European utilities by 2020. However, this belief varies across value chain segment and country or region. Specifically, among utilities in BeNe and Germany energy retailers expect this to become a major role for the industry by 2020, while among UKI utilities electricity producers expect the capacity provider role to be most relevant for utilities. Meanwhile, in France it's electricity producers and DSOs that share this view. Interestingly, Nordic utilities are aligned across the value chain in the belief that the capacity provider role will be of upmost importance. Considering the shift towards higher penetration of distributed, renewable, and intermittent energy sources, European utilities will have the opportunity, through the role of capacity providers, to position themselves as security of supply guarantors.

³ Source: Wind Europe "The European offshore wind industry: Key trends and statistics 2016"

Figure 2

What Will European Utilities Do in 2020?



n=120

Source: IDC Energy Ecosystem Survey, 2016 - commissioned by TCS

Grab the Opportunities

Across European utilities there is widespread consensus that traditional business models no longer work. In the electricity business, for instance, the value of conventional power generation continues to decline. Utilities are looking for new business models and roles to rebalance their profit pools and more effectively satisfy the needs of more demanding customers. This paper briefly outlined the most relevant ones, leveraging the findings of a detailed study conducted across European utilities.

In their search for a new identity, utility executives need to make difficult decisions. They have to define what the company wants to become, how to execute the vision and the transformation program, and prioritize the allocation of people and financial resources to produce the desired outcomes. While doing so, utility executives should consider the following:

- » **Shut-down the "Chief Idea Killer."** Too often organizations make it difficult for creative people to develop growth ideas. "This is not possible." "Regulation will never allow it." "It is too risky." "It is against procedures." How many times have you heard this? To change this attitude, collaborate with the ecosystem and bring more disruptive approaches inside your company.
- » **Speed matters.** When setting the vision of what the company wants to be, factor in the time dimension. Opportunities never last forever, and in today's digital economy traditional entry barriers are vanishing. To give speed to your company transformation, consider alternative organizational models, ways to collaborate, and different procurement approaches, both for talent and business capabilities, including digital infrastructures.
- » **De-risk failures.** For one successful idea there are at least two/three failures. No one wants to fail, but it happens and cannot be avoided. It is then important to recognize failures and quickly move on. Experimentation with new business models, technologies, experiences, products, and services cannot be random or uncontrolled. Define milestones and agile processes to determine success and whether to refine, pivot, or shelve initiatives.

"As industries and markets reinvent themselves in the digital economy, we see the utilities responding in several ways. Each utility has its own context and will evolve in ways uniquely suited to its legacy and its chosen market. However, what's common is that we see most of the progressive utilities invest in: distributed generation, electric vehicles and energy storage together, complemented by a strong technology platform."

*Sandeep Simon Head,
Europe, TCS Utilities
Business Unit*

Appendix

Methodology

This IDC Executive Brief presents a section of the major findings of the 2016 IDC Energy Ecosystem Survey, commissioned by TCS. The survey ran between October and November 2016, and covered 120 senior IT and non-IT decision-makers from European utilities across Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom.

IDC Energy Insights analysts shared the survey results with senior utility executives across Europe for further insight and validation. The IDC Executive Brief also captured the views of senior TCS subject-matter experts.

This IDC Executive Brief is the first of three IDC Executive Briefs that analyze this specific survey of European utilities. It focuses on European utilities' attitudes regarding their future, analyzing where they expect to derive future revenues, which technologies present the most opportunities for them to gain value, and which business role will be most important for them by 2020.

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