

Energy hand in hand with telco

*Is a wave of merging electric utility and telco
assets imminent?*

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Executive summary

Liberalization of telco and energy sectors incentivized traditional telco and energy companies to look for new revenue sources beyond their traditional business scope. Telco companies have started to sell energy, gas and heat while energy companies often offer telco services. Simultaneously, we experienced fast development of internet and related services. Nowadays, broadband internet connection is an essential part of infrastructure and precondition for prosperity even in developing countries. Therefore, in multiple countries governments, both legislatively and financially, support providing households with broadband internet connection. Given the support, energy and telco companies in many countries cooperate with government, municipalities and regulators on deployment of next generation telco infrastructure. All in order to secure cost efficient network construction while avoiding any competition disrupting measures.

1. Liberalization and technology advances stimulate industry sectors to converge

For a long time ago, services a company provided were simply based on the core industry in which it operated. However, as markets in traditional industries become mature and saturated, companies are finding it difficult to grow their revenues further. In these markets, it is becoming increasingly difficult for traditional companies to find room for cost reduction or significant quality improvement of their goods and services, as they have been doing this for a long time. Instead, ever-present market liberalization continues to invite more and more competitors into their market, which increases pressure on their profitability.

In order to overcome these challenges and grow their revenues, companies are starting to look into entering other industries that are distinct from their core businesses, but at the same time, will still allow them to leverage some of their current capabilities. The primary driver that enables companies to enter new industries is advancing technologies. Therefore, it is not surprising that convergence started in the industry sectors most related to the new technologies. It has been some time since hardware companies such as IBM noticed that in order to grow, they would need to expand into software and IT services, while software companies such as Microsoft and Google entered the hardware market segment to build digital ecosystems of their own goods and services.

With ongoing market liberalization, next in the line were telco, information technology and media companies. It now seems natural that you can subscribe to TV media content via your telco operator. Similarly, although in the past traditional landline companies were the only providers of telephony services, nowadays, thanks to advanced information technologies, IP-telephony services can easily be bought from internet providers. However, industry convergence doesn't stop here. For instance, telco companies are looking to enter the banking sector by offering products such as loans and insurance, and the energy sector by bundling energy products with their telco services. Another example is retailers trying to enter the telco industry by offering mobile services packaged with their retail purchases. The telco industry is especially attractive to new entrants, as current players often have margins at 30–40 percent, which isn't the case for many other industries. The list of examples of industry convergence is only expected to grow in the upcoming years due to ever-advancing technologies and eagerness of companies to grow in spite of significant challenges in their core markets.

2. New political set up squeezed wholesale prices causing energy companies' value to drop

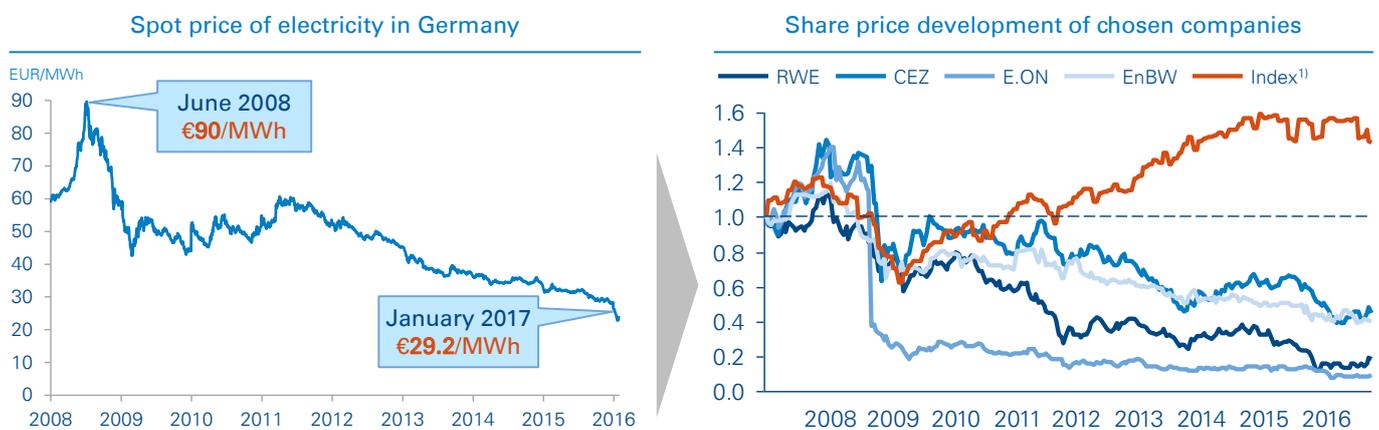
Nowadays, the energy sector is facing challenges that significantly change energetics as we know it. For instance, although fast development of new technologies allows cheaper renewable-energy generation, it also raises demands on the stability of the electricity supply to end customers and decreases, or even nullifies, profitability of investment into traditional sources of energy. The supply stability becomes problematic when using renewable-energy sources, as customers also want to spend energy when the wind is not blowing or the sun is not shining. However, no currently available technologies allow efficient storing of surplus energy. Therefore, operation without energy from traditional sources still is not possible. On the other hand, governments are massively subsidizing energy generation from renewable sources, while traditional sources have to finance their operations on their own in a situation in which renewable-energy generation growth increasingly limits the potential production volume of traditional energy sources.

Moreover, the whole energy infrastructure was originally set so that electricity plants would be sufficiently utilized, which is the only way the investment spent on their construction can be profitable. Furthermore, integration of renewable energy

requires substantial additional investment into transmission, and especially distribution networks, in order to secure supply stability and prevent blackouts. The economic formula of securing profitability of past and current investments has been disrupted. It can be seen with the decrease of spot prices of electricity, e.g., in Germany, where the prices fell from €90/MWh in June 2008 to €23/MWh in January 2016 (although the bill for end customers was unaffected). In January 2017 electricity was traded for €29.20/MWh. This trend did, of course, significantly decrease share prices of energy companies.

Therefore, similar to other industries, CEOs of energy companies are also intensively looking for solutions related to new business models, changes in strategy, reorganization and improvement of their companies' performances. One of many possible strategic solutions is maximizing revenues from existing customer bases and offering new services. Energy companies already have connections with end customers, and know how to address them and handle billing or communicate with them using existing customer relationship management (CRM) systems. Therefore, in addition to energy products, they can offer non-energy services such as telco and insurance.

Figure 1: Decrease of spot price of electricity and share price development of chosen energy companies



1) Dow Jones Industrial Average
Source: Arthur D. Little Analysis, Thomson Reuters

3. Smart grid brings challenges, but also potential synergies with telco businesses

Another challenge that energy companies will face in the upcoming years is smartification of their power grids into so-called "smart grids". Smart grids use Information Communication Technologies (ICT) solutions within all components of the power grid, from generation plants to end points at customers' premises, to monitor and control electricity transmission and distribution. Energy companies can thus use them to improve energy efficiency, avoid black-outs (or at least reduce their duration), and optimize power delivery to costumers, including management of input from intermittent renewable power sources such as solar plants. Furthermore, smart-grid components installed directly on customers' premises allow energy companies to monitor customers' energy use and outages or report power quality. This information can be sent in real time to the energy company, or even directly to the customer's smart device. If interested, customers can subsequently use this information in various applications to optimize their own energy consumption and management.

However, despite all the positives it brings, implementation of a smart grid might be very challenging financially. In order to function properly, a smart grid needs a robust and flexible

communication network. This network might consist of several technologies, such as mobile data services, Power Line Communication (PLC) technology or fiber-optic infrastructure. Although the fiber-optic solution is the most expensive to deploy, it also has substantially better-quality characteristics, which are necessary in some parts of smart-grid infrastructure.

Energy companies have three basic options for acquiring necessary infrastructure. They can use services of external telco players, build it themselves for purely internal use, or build it themselves to also use for external telco business purposes. As the deployment of an extensive smart-grid network requires substantial investment, building such an infrastructure purely for own internal purposes may not be viable. On the other hand, once the energy company operates its own communication network, it can realize significant synergies with the proposition of external telco services (either wholesale or for end customers).

4. Telco business offers revenue growth and synergies with energy business

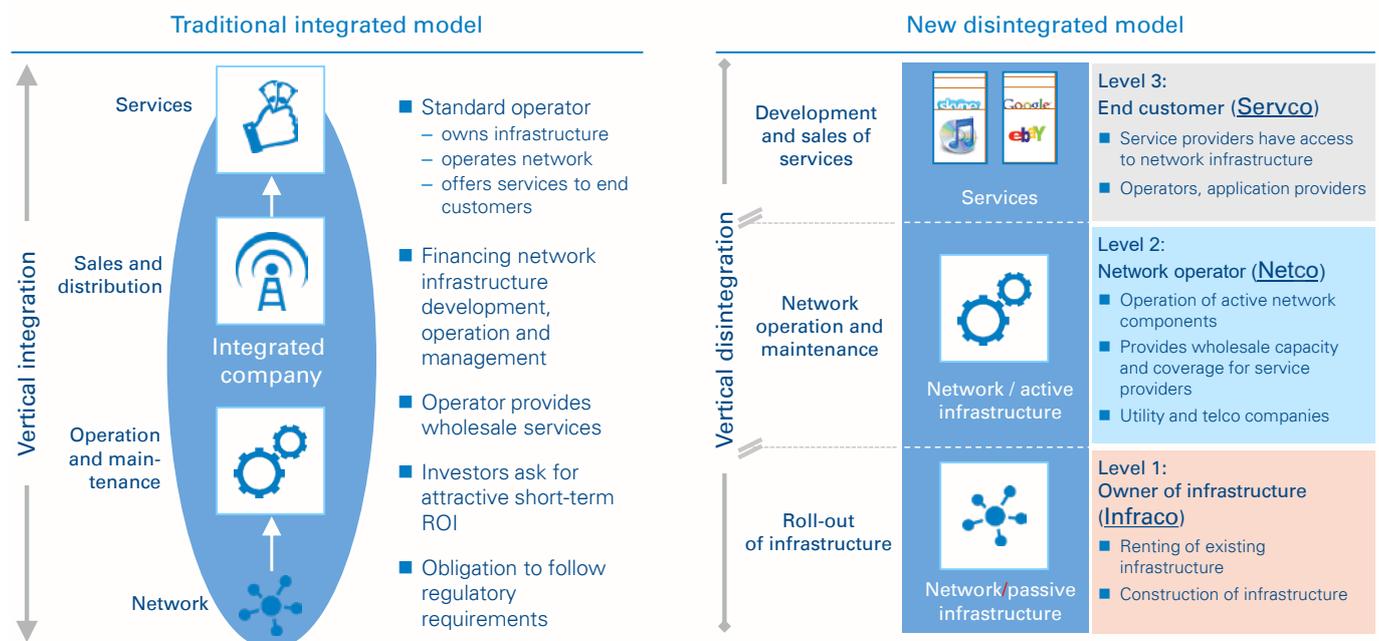
Not long ago, voice and data services were provided exclusively by vertically integrated telco companies. Standard telco operators used to own telco infrastructures, be in charge of their operation and maintenance, sell and distribute voice and data services, and have big ambitions to produce new services and applications with added value (the applications we currently have in our smart phones). Globalization of the sector and entry of new players into the traditional telco value chain, especially in the provision of services with added value, such as Apple, Google, eBay and Yahoo, led to vertical disintegration. The present disintegrated model is divided into so-called infracos, netcos and servcos.

- **Infraco:** Owner of the infrastructure, which secures construction of the telco network and its rental

- **Netco:** Network operator managing active network components and providing wholesale capacity and coverage for service providers
- **Servco:** Telco operator or provider of applications that sells services on the network infrastructure to which it has access

Moreover, the disintegration of the traditional telco model has led to “commoditization” of such services as broadband internet connection. For instance, a White House report (US) about broadband connection issued in September 2015 states: “Broadband internet connection is now starting to stand side by side with traditional commodities such as water, heat, electricity and sewage.” According to this report, “the broadband internet connection is now a completely essential part of infrastructure of municipalities.” The European Union is aware of this, and provides several measures that should support construction of

Figure 2: Traditional integrated model and new disintegrated telco model



Source: Arthur D. Little

optical networks to the premises of end customers. In 2010, the digital agenda for Europe was approved, and its targets are binding for all EU member states. The primary target is to achieve 100 percent household coverage of broadband internet with a minimum speed of 30 Mbit/s, and 50 percent household coverage with a minimum speed of 100 Mbit/s. For the period 2014–2020, the EU devoted over €20 bn to the construction of so-called next-generation access networks (NGN or NGA networks). At the same time, in addition to financial subsidies, several other measures are being taken to support deployment of NGN/NGA networks and save investment costs. Some of these measures are:

- **Maximum utilization of existing passive infrastructure** – this means utilization of existing energy, transport and telco networks
- **Reduction of the bureaucratic burden** on projecting and construction of new networks in the form of, e.g., easier obtaining of building permits and easements
- **Improvement of the transparency and coordination** of deploying new engineering networks in the form of, e.g.,

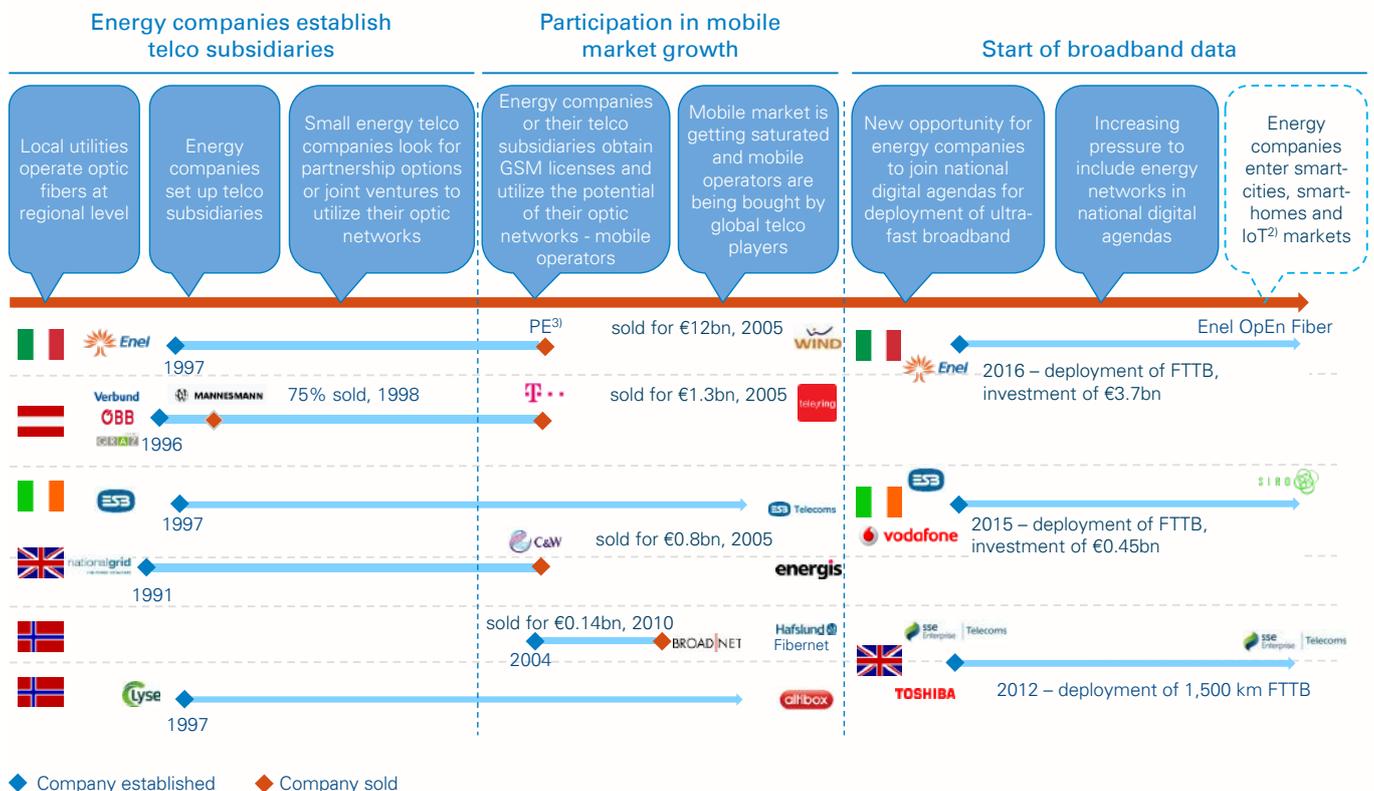
obligation to inform owners of telco licenses about planned excavation works

- **Definition of clear rules for construction of NGA/NGN access in new buildings**

What role can utility companies (energy, gas, oil, etc.) potentially play in the construction of next-generation access networks? For instance, traditional energy companies usually own extensive telco infrastructure, including backbone networks of optic fibers. They use these networks for operation, monitoring and management of transmission and distribution networks of power plants. Furthermore, requirements for own energy telco networks are even higher. Ongoing integration of distributed production and always-increasing requirements from regulators for reliability of electricity supply require investment into monitoring systems and automated or remote-control network elements within implementation of smart grids.

At the same time, a significant portion of energy companies' infrastructure is usually a part of national critical infrastructure. Therefore, special security measures, including substantial

Figure 3: Energy companies participated in mobile market growth and are currently entering the broadband market



Notes: 1) UFB – ultra-fast broadband, minimum speed of 100 Mb/s; 2) IoT – Internet of Things; 3) PE – private equity
Source: Arthur D. Little

cybersecurity requirements, have to be followed when an energy company wants to deploy additional communication infrastructure on its power grid. These trends lead to higher demands on own telco networks and require considerable investment in them. Hence, as energy companies will probably not avoid substantial future investments into their telco infrastructure, it's only natural that they might be interested in also using this investment for external business purposes.

A lot of energy companies are already engaged in telco business in the form of "servcos". Energy companies usually provide telco services as mobile virtual network operators (MVNOs) or directly own mobile operators. At the end of the 1990s, energy companies started to set up subsidiary telco companies, participated in the fast growth of the mobile market and, after the saturation of the market, sold their shares in these companies to global telco players.

For example, in 1997 Italian electricity company Enel established Wind Telecom S.p.A, which became the third mobile operator in

the Italian telco market, right after Telecom Italia Mobile and Omnitel (now Vodafone Italy). In 2005 Enel sold Wind for €12 bn. Another example can be seen in Austria. Austrian telco Tele.ring was established in 1997 by Verbund – the country's largest electricity provider – Austrian railways (ÖBB), and so-called "Stadtwerke" Citykom Austria. At the beginning, Tele.ring provided fixed telco services and internet. After the capital entry of German mobile operator Mannesmann Mobilfunk, it added mobile telco services. Later, Vodafone acquired Mannesmann Mobilfunk, but subsequently sold it to American Western Wireless International, and in the end Deutsche Telekom bought the whole company for €1.3 bn in 2006. Currently, the former Tele.ring is part of T-Mobile Austria.

Nowadays, similar development is being repeated as energy companies build on their previous experience and engage in deployment of NGN/NGA networks and massive growth of broadband internet.

Overall, telco business is still an opportunity for energy companies

Altogether, it can be concluded that the telco business is an interesting opportunity for energy companies to grow. First, it represents potential to substantially grow revenues while using synergies with current capabilities such as CRM, billing systems and existing large customer bases. Moreover, diversification of sources of revenues is an attractive proposition for investors, especially when it targets rapidly growing market segments such as broadband data. Additionally, engagement in telco services can also benefit their core businesses. Telco infrastructure can be used for smart-grid purposes, which could significantly improve efficiency and reliability of power distribution, as well as give customers the possibility of better managing their own electricity consumption.

Hence, companies can save money on better power distribution while having more satisfied customers and better churn rates. In the future, engagement in telco business would consequently also improve the value propositions of utility companies towards customers for smart homes, and towards cities for smart-city projects. Therefore, capturing all these synergies by merging utility and telco assets appears to be a very likely scenario in the near future. Nowadays, the most attractive telco business area for energy companies appears to be deployment of fiber-optic networks for broadband internet. The participation of energy companies in the growth of the broadband market through deployment of fiber-optic networks is elaborated in detail in the Arthur D. Little viewpoint "Utilities' contribution to national fiber development."

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