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The Rough Road to Revitalization for European Utilities

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The Rough Road to Revitalization for European Utilities

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AT A GLANCE

The utility industry in Europe is undergoing dramatic changes that are creating new sources of advantage and requiring bold action by company leaders.

Profit Pools Are Shifting

Earnings will come increasingly from areas such as distributed energy services and equipment—and less from conventional generation, networks, and commodity sales.

New Sources of Competitive Advantage

The changes sweeping the industry will call into question the vertically integrated structure that has dominated it for decades.

Four Steps to Reinvention

Utilities must move in four areas simultaneously, including radically rethinking their portfolio and drastically simplifying their processes and overall structure.

For decades, the story in the European utility industry has been the same: Large, vertically integrated utilities invested in and managed hard assets such as power generation plants and electric grids, earning stable returns. And investors looking for predictability made utilities a key component of their portfolios.

Today, virtually every aspect of that story is being rewritten. Powerful forces are fundamentally altering the utility industry in Europe and many other regions. Among the most significant are stagnating demand, the shift from conventional to renewable energy, and the growing popularity of distributed power, which allows users to generate energy on their premises. As a result, the profit pools for utilities will shift dramatically. For example, in power generation, once a major source of earnings, profits are eroding. And the impact of the shifts will intensify over time. The commodity retail business of selling power to businesses and consumers, for instance, will become less profitable as lean and mean digital players undercut established companies with lower prices and improve the customer experience through digital tools. Meanwhile, new segments, such as decentralized energy solutions, will capture a growing share of industry profits.

Our study of European utilities suggests that utility executives must rethink every aspect of their business. As the profit pools change, so will the sources of competitive advantage—and success will demand new capabilities. This is certainly true for emerging opportunities such as decentralized solutions, which call for digital expertise and an intense customer focus. But even traditional segments will require new approaches. In generation, for example, flexibility and lean operations will be more important than plant availability—a shift that will call for an entirely different corporate culture. In addition, the investment proposition for utilities is changing, necessitating a rethinking of their very structure. Scale within individual businesses will become more important, particularly in fast-growing service businesses, and the benefits of vertical integration will diminish.

As the profit pools for utilities change, so will the sources of competitive advantage.

To succeed in this period of unprecedented change, utilities must move quickly to transform their business. They need to decide which segments to focus on, shedding those that will not be strong earnings contributors and developing a compelling investment thesis based on a new, clearly defined vision. At the same time, they must radically improve the efficiency of their core operations. While many utilities have already reduced costs, they must make even more drastic changes in the years ahead. And, perhaps most critical, utilities need to become dramatically more agile, honing the ability to innovate and adapt to continuous change. Those that fail to make this switch will invite shareholder revolt—and the necessary changes will ultimately be forced upon them.

The Forces of Transformation

Numerous shifts are occurring simultaneously in the European utility industry. These will lead to major changes in the industry's profit pools.

1. Conventional generation continues losing ground to renewable energy such as wind and solar power.

2. Regulators are pushing to keep a lid on rate increases, a move that limits the returns that transmission and distribution system operators can earn on their networks.

3. Decentralized power generation, such as rooftop photovoltaic (PV) panels and combined heat and power (CHP), is replacing centralized power plants and networks.

4. Digitization is increasing the transparency of energy prices and thus putting pressure on them, squeezing traditional commodity segments such as trading and retail while boosting earnings from sophisticated solutions.

5. Earnings from providing services and equipment will grow as those from owning hard assets decline.

We developed a detailed model to analyze how profit pools, as measured by earnings before interest and taxes (EBIT), will change in the European electric power industry from 2015 through 2025. The model covers that industry's four primary segments: power generation, networks, trading, and customer-facing businesses. (See Exhibit 1.) For each segment, we have assessed three categories: equipment (which largely comprises companies outside the utility industry), service (which includes installation and maintenance of assets), and own and market (the ownership of hard assets and the sale of energy).

Like the other segments, trading will undergo significant changes, but we do not discuss it in as much detail because it does not contribute to earnings as significantly as the other three segments. (See the sidebar "The Energy Trading Squeeze.")

The steep decline in profitability in large-scale conventional generation is likely to continue.

Centralized generation shifts from conventional to renewable sources. The news in the conventional generation segment continues to be bad. The European Commission has committed to doubling the share of energy that comes from renewable sources from 2015 to 2025. (See Exhibit 2.) As more large-scale renewable sources come online, these plants offer cheaper energy as measured by marginal cost per megawatt hour. As a result, they supplant conventional sources in Europe's current energy-only market, which does not compensate generators for maintaining backup capacity. In part because of the rise of renewables, energy prices are down overall, and conventional plants are increasingly underutilized.

Renewable energy will continue to pose challenges for the industry. Fluctuations in the supply of renewable power force conventional plants to adjust their production accordingly, thus increasing their operating and maintenance costs. As a result, the steep decline in profitability in large-scale conventional generation over the past few years is likely to continue, partially offsetting increased earnings from large-scale renewable plants.

EXHIBIT 1 | Profit Pools Are Shifting Dramatically

		2015 Earnings[1] (€billions)	Trend	2025 Earnings[1] (€billions)	EQUIPMENT OEM; projects			SERVICE Installation; service; maintenance			OWN AND MARKET Asset ownership; energy sales		
GENERATION	Large-scale conventional	1.5	↗	1.9	2.3	↘	2.0	1.0	↘	0.7
GENERATION	Large-scale renewable	1.5	↘	1.1	1.1	↗	1.6	2.9	↗	3.7
NETWORKS	TSO[2]	0.7	↘	0.5	7.5	↘	6.5			
NETWORKS	DSO	1.4	↘	1.3	12.4	↘	12.1			
TRADING	Commodity trading	NA		NA	NA		NA	2.5	↘	1.8
TRADING	Aggregation services[3]	0.0	→	0.0	0.0	→	0.0	0.1	↗	0.3
CUSTOMER	Commodity retail	NA		NA	NA		NA	9.9	↘	7.7
CUSTOMER	Decentralized solutions[4]	1.0	↗	1.9	0.3	↗	1.8	0.8	↗	1.7

EXPECTED CHANGE IN EARNINGS 2015 VS. 2025:
Increasing ↗ → Decreasing ↘
Size of the circle represents the magnitude of the change

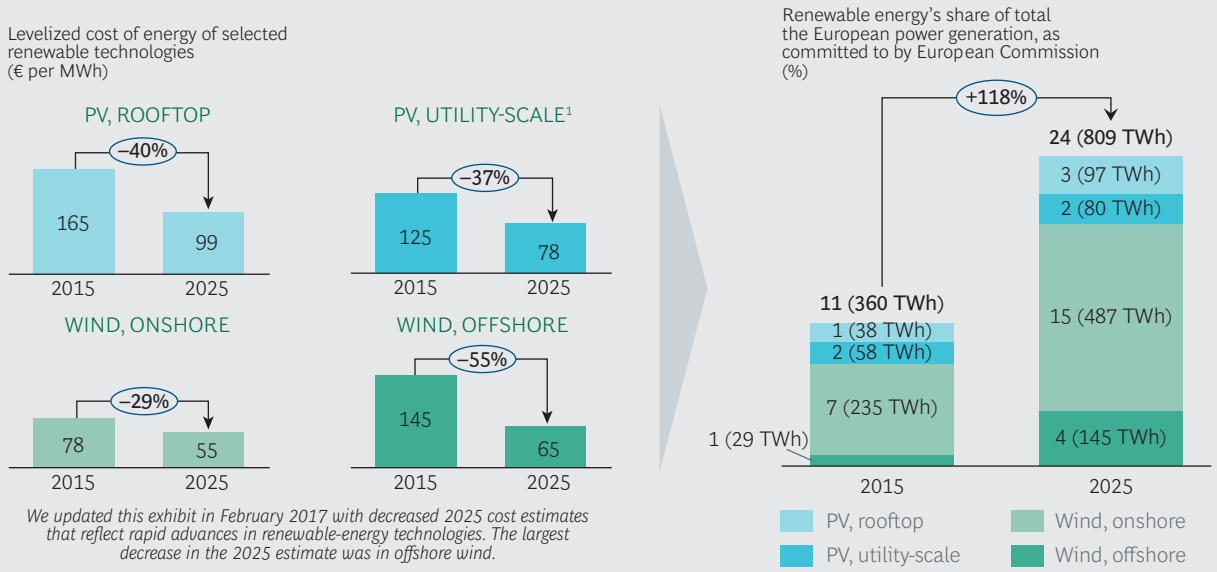
Source: BCG analysis.
Note: NA = not applicable.
[1]Earnings before interest and taxes.
[2]TSOs (transmission system operators) and DSOs (distribution system operators) service, own, and market their networks.
[3]A portion of the equipment reflected in decentralized solutions can also be used in the provision of aggregation services. The earnings from such equipment is included entirely in the decentralized solutions category.
[4]Distributed renewables and combined heat and power (CHP) systems, e-mobility, smart home, and storage.

THE ENERGY TRADING SQUEEZE

The business of trading—like every aspect of the utility industry—is being upended. Most significant: as pricing transparency increases, commodity trading profits will be squeezed.

There will be some growth in earnings, however, for aggregation services. These include the practice of combining the excess electricity generated by decentralized power sources into a "virtual power plant" to be sold to retail energy providers. But those earnings will be modest for the foreseeable future, falling well short of replacing the declining profits in commodity trading.

EXHIBIT 2 | As Costs for Renewable Energy Fall, Conventional Energy Is Being Displaced



Sources: European Commission, *EU Energy, Transport, and GHG Emissions Trends to 2050*, 2013; BCG analysis.
Note: PV = photovoltaic.
[1]Average across typical full-load hours at a weighted average cost of capital of 8%; best-practice costs may be considerably lower.

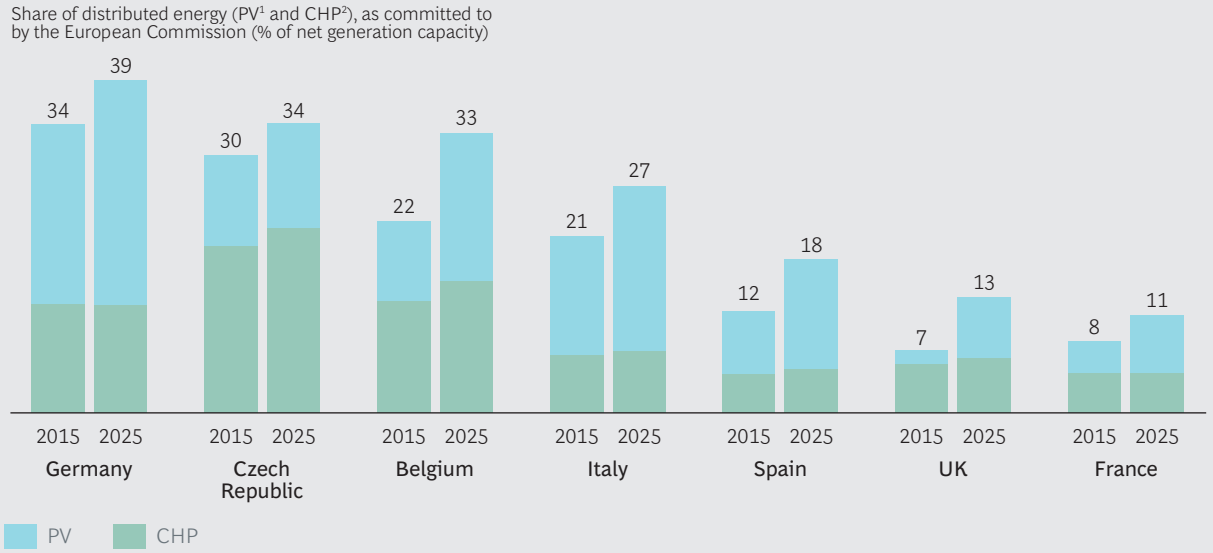
The one significant piece of positive news in conventional generation is the forecasted growth in earnings from large-scale equipment. This will stem primarily from the need to extend the life of or replace aging power plants in France and the UK—facilities that account for dozens of gigawatts in capacity. Without significant investment, those countries might face large gaps in power supply in the years ahead. Simultaneously, earnings from renewable equipment and projects are coming under pressure as the industry matures.

Networks face decreasing profits. The demand for electricity that moves across the grids owned by both transmission system operators (TSOs) and distribution system operators (DSOs) will be stable at best in the years ahead—and may decline. An increase in energy efficiency will be a key factor in either scenario, as will the growing popularity of distributed energy. In fact, the European Commission has committed to significant increases in the share of distributed energy. (See Exhibit 3.)

This comes as both TSOs and DSOs need to continue investing in the grid, in part so that it can handle the fluctuating flow of renewable energy. Recouping those investments will be challenging, however, as regulators in EU countries look to limit tariff increases following a period of significant increases. (See Exhibit 4.)

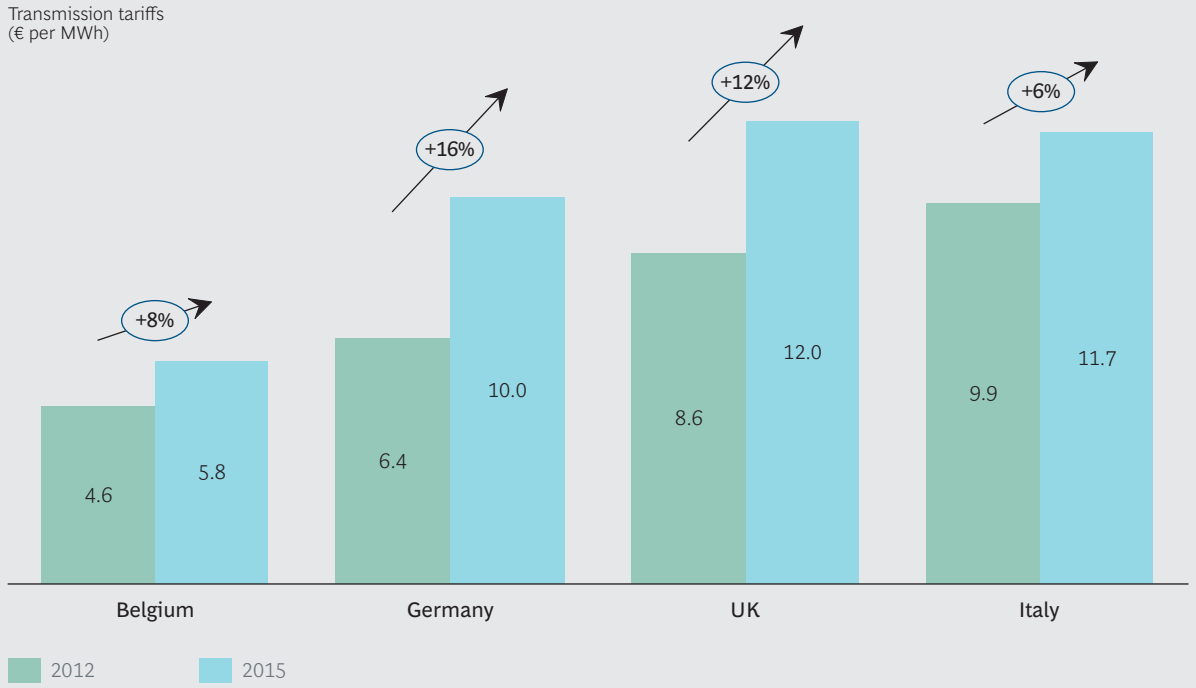
While regulatory frameworks differ among countries, there is a clear trend toward limiting rate increases. Most EU countries moved from the traditional approach of setting a fixed rate of return that TSOs can earn on their asset base to a more stringent approach that involves putting a cap on the value of that asset base. They have

EXHIBIT 3 | The Political Consensus Exists in Europe to Increase the Share of Distributed Energy



Sources: European Commission, *EU Energy, Transport, and GHG Emissions Trends to 2050*, 2013; BCG analysis.
Note: Net generation capacity is the amount available to the market excluding the electricity used by the plant itself. PV = photovoltaic; CHP = combined heat and power.
[1]Using rooftop and utility-scale PV.
[2]Installed capacity up to 100 MW.

EXHIBIT 4 | Transmission Costs Have Risen Rapidly



Source: European Network of Transmission System Operators for Electricity, *Annual Report 2015.*
Note: Percentage increases are compound annual growth rates from 2012 to 2015.

also aimed to keep rates low by reducing the permitted rate of return over time. Such reductions will continue in the near future as the impact of historically low interest rates in recent years is eventually reflected in tariff setting. In addition, some regulators have created incentives for utilities to cut costs each year in a further bid to keep a lid on tariffs. And countries such as the UK and Italy have instituted additional provisions to improve performance as well as incentives tied to measures such as a TSO's track record in avoiding outages.

As a result of that combination of weak demand and increased regulatory pressure, earnings in the segment will be under pressure in the years ahead.

The traditional customer-facing business declines as new service opportunities emerge. While earnings in conventional generation have already been battered, going forward the commodity retail business will see the steepest decline in profits.

This will stem in part from mounting price pressure as low-cost digital players use digital marketing channels and data analysis to grab market share. New technologies will also increase transparency, allowing customers to shift to the lowest-priced providers. In addition, the demand for energy will continue to fall thanks to a greater focus on energy efficiency and the expansion of distributed energy.

The growth of distributed power poses a major challenge. The cost to acquire and serve customers does not depend on how much energy they consume. As a result, heavy users are typically the most profitable. But those users are the ones that are most likely to invest in distributed energy systems. And as those customers generate more of their own power on-site and buy less energy from the grid, they become less profitable for energy retailers. All this is taking place against a backdrop of intensifying competition. (See the sidebar "The Heat Is On.")

As earnings in the commodity business slip because of both margin contractions and volume declines, decentralized solutions will strongly expand. These solutions

THE HEAT IS ON

Competition in the retail energy business is intensifying—in large part because of new technology. Some new retail players operate almost exclusively on digital channels, using the internet and apps to market their services and interact with clients. And some players have become adept at mining customer data to refine their marketing, analyzing what factors drive up churn rates or identifying the customers most likely to pay their bills on time. At the same time, though, digital technologies let potential customers quickly identify the cheapest energy prices—and switch providers with two clicks of the mouse.

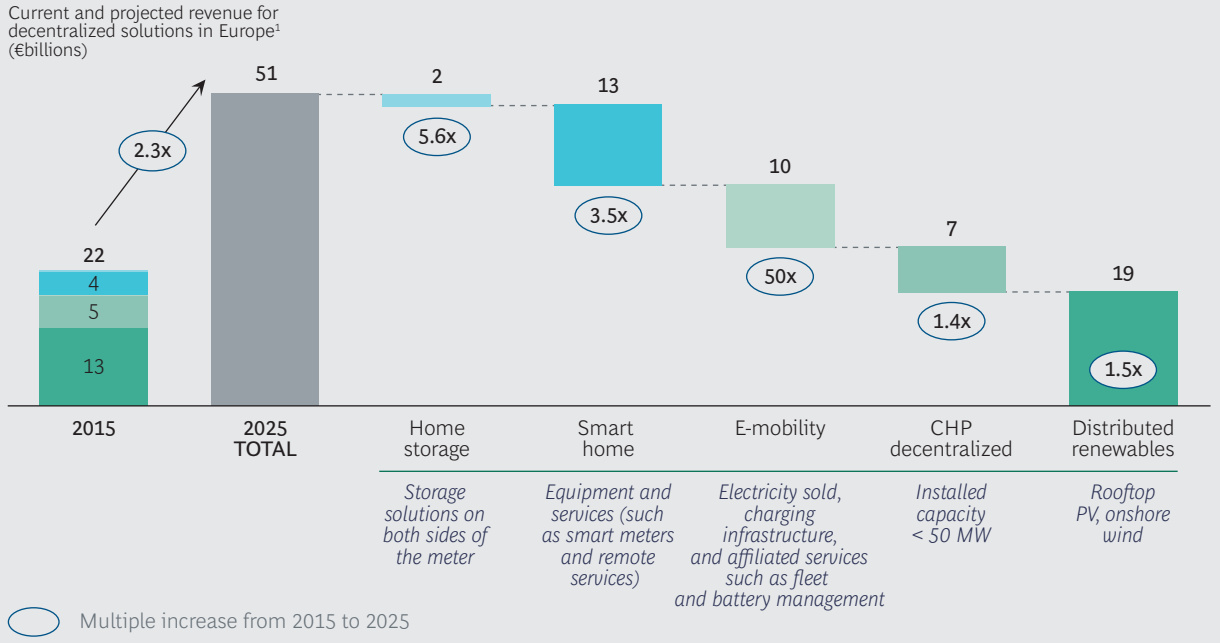
We estimate that to remain competitive, retail players must cut the cost of acquiring and serving customers by 50% over the next several years. Retailers that fail to achieve that level of efficiency will be forced out of the business.

include services related to decentralized renewable energy, CHP, electric car infrastructure and services, smart-home systems (which automate and connect systems such as heating and appliances), and home energy storage. (See Exhibit 5.) Although the exact size of the opportunity is difficult to gauge, there is no question that the market for decentralized solutions will be significant. We have taken a conservative view in forecasting the market size. If utilities move beyond their traditional role as energy providers, the opportunity could be much greater than we forecast.

Utilities are not typically large players in decentralized solutions. And they often lack the competitive advantages that determine success in them. Although utilities have large customer bases and access to a wealth of customer data, they often lack the retail skills required to sell solutions and may not be equipped to generate insights from customer data. And although utilities are usually technology-neutral—which should allow them to jump on the best tools available—many are plagued by a not-invented-here syndrome or are slow to integrate new technologies into product offerings. In addition, with a corporate culture that has been shaped by making investments in assets with 40-year life cycles, utilities typically lack the agility and speed required to succeed in the fast-moving solutions market.

As a result of the changes in customer-facing businesses—as well as in the other segments of the electric power industry—the industry's earnings structure will shift substantially toward services and solutions. While 9% of industry EBIT in 2015 stemmed from service-related businesses, we project that will increase to 14% by 2025.

EXHIBIT 5 | Major Revenue Source Emerges in Energy Solutions and Services



Source: BCG analysis.
Note: Revenues for home storage and e-mobility were less than $500 million in 2015.
[1]Including equipment, service, and operations.

New Sources of Competitive Advantage

As changes sweep through the energy market, the skills required to succeed in both traditional and emerging businesses will change as well. In this environment, vertical integration offers fewer benefits than before. Indeed, the traditional structure of large integrated utilities will become a liability. And scale in individual businesses is increasingly important. What constitutes adequate scale will differ by business. In commodity retail, for example, national reach will be important, while in certain services a strong regional presence may be enough.

New Sources of Competitive Advantage in Traditional Businesses

Only the most efficient of the traditional utilities will generate profits. Those that fail to adapt, instead continuing to rely on old approaches and outdated skill sets, will find their very survival threatened.

Generation: Companies must focus ruthlessly on costs and flexibility. As margins in the conventional generation business continue to suffer from the expansion of low-marginal- cost renewable energy sources and excess capacity, companies must make a step-change in their operations—radically lowering costs, increasing technical and operational flexibility to cope with fluctuating demand, and closing or selling off unprofitable power plants.

In the centralized renewable business, meanwhile, utilities need to industrialize the development process for large projects, developing efficient, replicable skills such as site selection, construction, and operation and maintenance.

Networks: Efficiency moves center stage. As regulators continue to put downward pressure on returns, maintaining healthy profits on electrical grids will become increasingly challenging. In 2015, EBIT margins for midrange performers in the network business (those in the middle two quartiles) were 5% to 15%. We expect the midrange group to produce EBIT margins of only 0 to 10% in 2025—while the bottom quartile will operate at a loss.

Only the most efficient of the traditional utilities will generate profits.

To generate healthy returns, companies will need to make a major leap in efficiency through steps such as cost cutting and smarter management of capital expenditures. It will also be critical to harness new digital technologies that can further improve efficiency, such as those for workforce management and interaction with customers. Utilities must also be very judicious about their grid investments. Some investment is required to allow grids to handle the increasing supply of renewable energy, but overinvestment will lead to stranded assets. (See "How to Avoid 'Zombie' Grids in the Age of Solar Power," BCG article, April 2016.) Finally, utilities should emphasize effective regulatory management and have a voice in the development of regulations.

Customer-Facing Businesses: Radically low costs and new digital skills are required. In 2015, EBIT margins for companies in the two middle quartiles were 2% to 12%. We expect the range for those two quartiles to be –5% to 8% by 2025—with the bottom quartile posting even lower negative returns.

To compete successfully, these companies will need to become top-notch retailers. This will involve simplifying processes, operations, and offerings to improve the

customer experience while drastically reducing the costs of acquiring and servicing customers. It will also be critical for retailers to be on par with strong digital players in other industries, such as online retailing, which are setting the standard for customer service.

Mastery of Technology a Must in Emerging Businesses

Digital capabilities are also essential for developing and marketing the new products and services in the energy market made possible by rapidly advancing technology. These capabilities include the expertise to design and install decentralized power systems, integrate them into the existing energy infrastructure, and analyze energy consumption data in real time.

Many companies do not yet have the skills to succeed in new energy businesses.

New businesses will also call for a much stronger connection to the customer. In some cases, this will mean creating and operating a local sales force to serve both businesses and consumers. And utilities will need to offer financing options to customers installing CHP or renewable systems, including through contracts and energy-as-a-service offerings.

Many companies will find that they do not yet have all the skills to succeed in new businesses. The good news: neither do most of their rivals, many of which are from other industries. But addressing that gap calls for a shift in culture and mindset. It will be critical to create offerings that can be tailored to individual customers in a way that is efficient and replicable. Utilities also need to partner with companies outside the energy industry. Smart-home offerings, for example, will involve appliance and consumer electronics manufacturers.

In addition, utilities must become more innovative, with a well-developed ability to spot, develop, scale up, and integrate new business opportunities into their portfolio. And they must keep in mind that new businesses are likely to grow slowly and that many new services are not yet completely developed or defined. Pursuing these new areas will require a more agile and flexible way of working, changing direction in response to new developments and canceling failed projects quickly.

The Shifting Investment Dynamic

The dramatic changes in the utility industry are altering its longstanding investment proposition. In the past, utilities were viewed as stable, dividend-paying investments because of their asset-focused, high return, regulated business. But that is no longer the case. As the financial prospects diverge for various businesses owned and operated by utilities, the rationale for holding all those businesses in one entity dissipates. (See Exhibit 6.)

There are now four distinct categories in the utility space, each requiring particular capabilities, each with a different capital intensity, and each appealing to certain kinds of investors:

1. Businesses focused on capital-intensive, hard assets, such as TSOs, DSOs, and large-scale renewable generation plants, tend to appeal to investors in search of yield. In the past, this category encompassed the entire utility industry.

2. Businesses with distressed assets, mostly large conventional generation plants, are capital intensive, generate low returns, and have low valuations. These businesses are prime candidates for restructuring and typically attract funds that invest in turnarounds.

3. Asset-light service businesses include commodity retailers and service companies that provide decentralized energy services. These high-revenue-potential businesses tend to require significant scale to compete and are attractive to private equity.

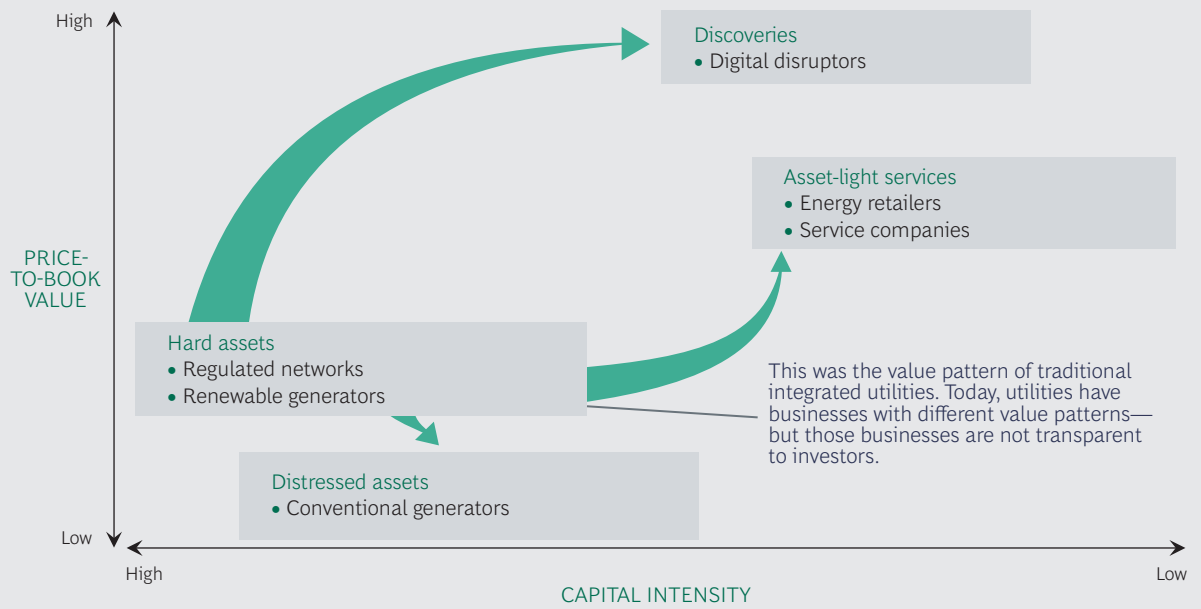
4. Businesses built around disruptive new technologies—what we call discovery businesses—are usually suited to venture capital investors.

In this environment, investors are turning away from vertically integrated companies. An examination of the ratio of enterprise value (equity plus debt) to EBITDA of energy companies, as well as of the S&P 500, shows that the valuation for integrated utilities has fallen well below that of pure-play energy companies as well as the market overall. (See Exhibit 7.)

Investors in integrated utilities are unlikely to sit by as those stocks underperform. Shareholders will probably become activists when the utilities they hold produce poor financial results, lack financial transparency (such as information on the performance of various units), or display an inability to make tough decisions.

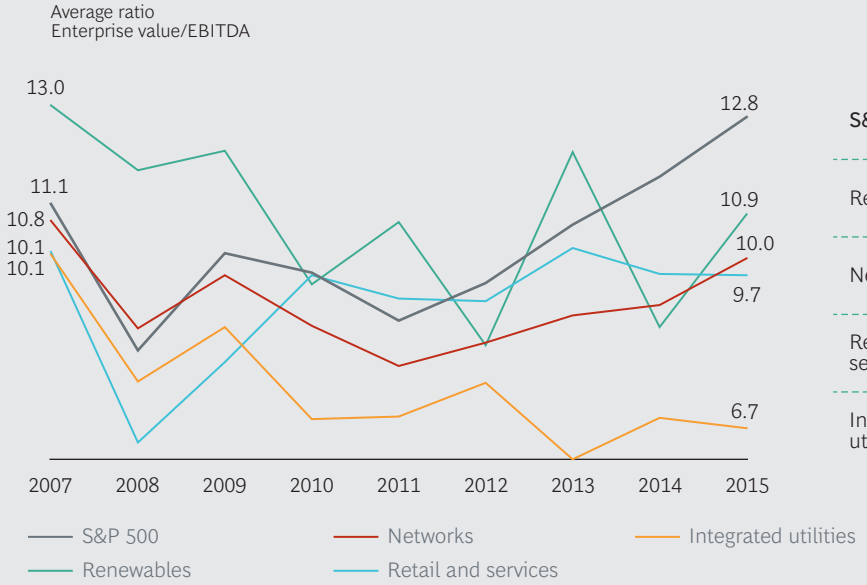
In such cases, activist shareholders can force dramatic change. Management may be compelled to drastically restructure the portfolio and direct or redeploy capital

Exhibit 6 | The Rationale for Vertically Integrated Utilities Weakens as Businesses Diverge



Source: BCG analysis.

EXHIBIT 7 | Investors' Confidence in Integrated Utilities Is Deteriorating



	2007	2015	CAGR
S&P 500	11.1	12.8	1.8%
Renewables	13.0	10.9	–2.2%
Networks	10.8	10.0	–1.0%
Retail and services	10.1	9.7	–0.5%
Integrated utilities	10.1	6.7	–5.0%

Sources: Capital IQ; BCG analysis.
Note: Enterprise value = equity + debt.

toward business units with better prospects. In some cases, investors may even force changes in the board or management.

A Call to Action for Utility Leaders

In order to thrive amid the radical changes sweeping the energy industry, utility leaders must rethink everything—from the composition of their portfolio of businesses to the way they operate. Drawing on our extensive work helping utilities remake their strategy and operations, we have identified four steps to this reinvention.

Clean house. As a first step, utilities can divest unproductive assets and relentlessly cut costs to maximize the returns of their operations. Certainly, many companies have already taken steps to reduce costs. But they will need to go much further. The levels of efficiency that were adequate just a few years ago will be insufficient in the future.

Utilities have multiple levers at their disposal. They can remove management layers and improve efficiency through steps such as the creation of shared services across units and the outsourcing or offshoring of commodity tasks. Within individual functions, management must identify and eliminate unnecessary processes and tasks. Whichever levers they pull, however, managers need to recognize the culture shift these efforts involve.

Some companies have begun moving aggressively in this regard. For example, BCG has been part of a larger team working with a leading utility on a multiyear culture change program. The company, which had gone through multiple rounds

of cost cutting, wanted to deliver ongoing sustainable savings while building a culture focused on performance. A key element of the program was the introduction of both bottom-up lean principles and a top-down leadership program. That shift, in combination with efforts to improve customer focus, leadership quality, and employee satisfaction, yielded a significant improvement in overall performance.

Such change programs, however, are largely the exception, not the rule. While many companies have taken steps to cut costs, few have managed to significantly reduce the complexity of their operations or to address the shift in culture that requires.

Be your own activist. Utility leaders should fundamentally change how they run the businesses that remain in their portfolio. For years, utilities have operated as conglomerates, in which a centralized organization manages all businesses. Some have even been "conglomerates of conglomerates," comprising multiple regional vertically integrated companies. The conglomerate model creates vulnerabilities and may lead to criticisms from activist shareholders on governance, portfolio management, and dividend policies.

This model is outdated. Today it makes more sense to shift to a structure built around business units, with decentralized decision making that gives business unit heads the freedom to run their businesses more effectively. Business units should be operated with a clear understanding of both the role they serve in the overall portfolio and the differing scale requirements in each.

This means identifying goals for each unit and establishing KPIs that track the unit's progress toward them. Distressed conventional generation assets, for example, should be managed to maximize profits and to earn a stable credit rating. To achieve this, executives can zero in on KPIs such as EBIT, return on capital employed, and the unit's cost of capital. Executives running asset-light services such as commodity retail, meanwhile, will focus on expanding scale and cutting costs with an eye on metrics such as gross margins and working capital. The key is to run each unit in a disciplined way so that it can meet its objectives.

Many utilities have cut costs, but few have significantly reduced the complexity of their operations.

The move toward a structure organized around business units requires increased transparency—in both how capital is allocated among units and the returns they generate. Certainly there is a downside to making that information available to investors. After all, such insights will be valuable to competitors looking to encroach on the most profitable businesses and to regulators looking for ways to limit rates. But for all businesses in a company to be valued fairly, investors need visibility into them. Greater transparency can also pave the way for transactions in which outside investors buy a partial stake in some businesses. Those investors provide not only capital but also, more important, management expertise.

The shift to a business-unit focus calls for a new corporate mindset. Too often, the culture in utilities focuses on managing the organization for reliability, thus permitting slow decision making and duplicative work. To change this, managers must review all processes and involve all employees in a commitment to improving operational performance. Lean approaches embedded into daily routines are an import-

ant part of this effort. And as utilities adapt, leaders in the corporate center have to up their game. The central organization must be streamlined and agile, with a performance-focused culture that delivers ruthless execution by a team of analytics-savvy managers.

Utilities should focus on the businesses where they can succeed, and be ruthless in execution.

Focus the company. Utilities should zero in on businesses with the best earnings potential. This means divesting those that are not part of the new strategy and investing in scale and new capabilities in the remaining core. Scale will be particularly important in renewable power generation, aggregation services within trading, commodity retail, and decentralized solutions.

For example, we worked with a large European utility that was assessing the attractiveness of its businesses. As a result of that analysis, the company decided to focus its downstream activities on two groups—small businesses and residential customers—that were likely to buy services such as heating system maintenance in addition to commodity energy.

At the same time, it will be critical to ensure that the investor base is suited to the new focus. Management should outline a clear strategy and vision and communicate those to targeted investors.

Find new pockets of growth. Utilities can and should pursue a growth strategy—whether in emerging or traditional businesses.

Decentralized solutions, for example, offer significant growth potential. In the commodity retail business, meanwhile, utilities can reduce costs by streamlining offerings and processes and investing in digital tools to expand their market share. Companies in conventional generation can look for acquisition opportunities.

There is no one-size-fits-all strategy for growth. In the US, a large utility paid a 95% premium for a company with significant renewable assets. The deal gave the acquirer a strong position in a growing area—and expanded the company's skills and capabilities in the renewable space. Another US utility is buying conventional power plants at a discount—in one case of 53% of value. This positions the company well for a likely recovery of energy prices.

The large European utility mentioned earlier has also targeted new growth opportunities. The company expanded to a region outside of Europe, successfully building an operation that included both commodity retail offerings and fast-growing services.

THE CHALLENGES FACING the European utility industry today are unprecedented. That's because the basic foundation of the industry—earning stable and predictable returns on hard assets—has shifted. No doubt some may think that recent efforts to improve efficiency and enter new businesses are adequate responses. Certainly, those actions are a good start, but they are merely the first steps in a long journey to remake the industry from the bottom up. To thrive in a fast-changing energy landscape, utilities must embrace the need for radical change.

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