



# How diversification is remodeling utilities' growth strategies

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## Why does diversification matter?

Decarbonization, digitalization and decentralized energy systems are shaping a new energy and utility world, forcing power and utility (P&U) companies to set up new strategies. They have to transform their business models to meet the demands of a world in which customers can generate and trade electricity among themselves; where nontraditional new entrants from the automotive, telecommunications and oil and gas sectors are now serious competitors; and where networks are increasingly defined by multidirectional flows of data. Utilities are under increasing pressure to reduce costs and find new revenue streams, as margins from traditional sales decline.

The initial core business of energy players was to sell energy contracts. Now, they also offer optimization services to manage energy consumption, igniting bolder diversification moves in which technological enablers can help to design new offerings, and cross-sector sources of opportunity can shape new growth strategies.

## What are the recent moves in diversification strategy?

Historically, energy players relied on geographical acquisitions to extend their customer base. While this strategy will remain a core business growth lever, it presents two shortcomings: firstly, it will become increasingly cash intensive as the average target size grows along the concentration process, and secondly, while this defensive strategy can protect the core business, it cannot drive sustainable growth on its own.

Seeking new ways to generate growth inside and outside the energy sector, we have conducted an in-depth study of recent moves in diversification strategy. We have studied ~60 diversification use cases, ~30 clusters of use cases, ~10 new sectors, ~50 energy incumbents, 5 technological trends and ~40 new players. EY methodology is mainly based on desktop research focused on worldwide public data from the last five years. We also leveraged EY professionals in the power and utilities sector.



There are many attractive diversification sectors for energy players that are disputed by several new kind of players. Developing the ability to play in multiple fields across sectors (e.g., energy, software, hardware and consulting) will be the key to success in emerging clusters of activity, such as decentralized production, smart cities and mobility illustrating the need for cross-sector capabilities.

## **Where to play tomorrow**

Three clusters of activity have been identified. The first cluster of new product use cases with high potential value is emerging around energy players' core business. A second cluster of transition use cases is emerging, with new products at the crossroads of existing sectors, further away from energy players' core business. A third is foreseeable in the long term, composed of new products in new sectors. To reap the value in these three clusters, we have identified two prerequisites.

The first is to master key technologies such as: big data, the internet of things (IoT), artificial intelligence and machine learning. These technologies can be used throughout the construction of ecosystems for innovation projects to accelerate their maturity and applicability to energy use cases.

The second is the ability to nimbly craft cross-sector solutions and to better understand their customers to create products and services based on segmentation analysis. This will require energy incumbents to be proactive in cross-sector fields of play: for example, in energy, renewables, software, hardware consulting, maintenance and automation. Going beyond this challenge toward telecoms, health, financial services and mobility would be a move for the brave.

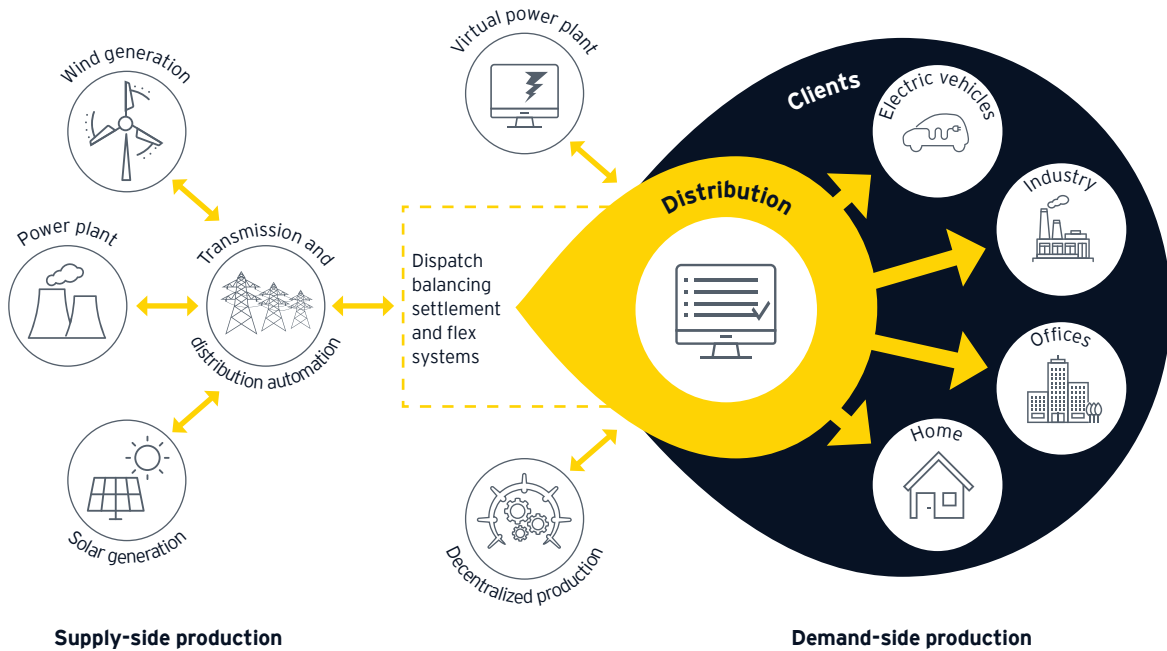
Incumbents capturing value in adjacent sectors are increasingly challenged by players that master the key technologies and will therefore need to position themselves quickly in emerging sectors to capture future growth.



# 02

Why does diversification matter?

We are moving toward a new energy system, augmented and interconnected by digital technologies, where power and information flow in both directions



Source: When customers go off-grid, will energy companies be left in the dark? EY, June 2018.

## Decarbonization

A sharp cost reduction in renewable power is already challenging fuel-fired sources of energy. As energy players are going through a steep learning curve for each technology, the International Renewable Energy Agency (IRENA) shows that Levelized Costs Of Energy (LCOEs) are below that for fossil fuels.

Energy incumbents will acquire or invest in renewable energy projects to meet consumer demand and regulatory guidelines, mainly in wind and solar. While growing their share in the energy mix, renewables will put pressure on prices and on revenue growth.



### Recent massive power purchase agreements (PPAs) (October 2018)

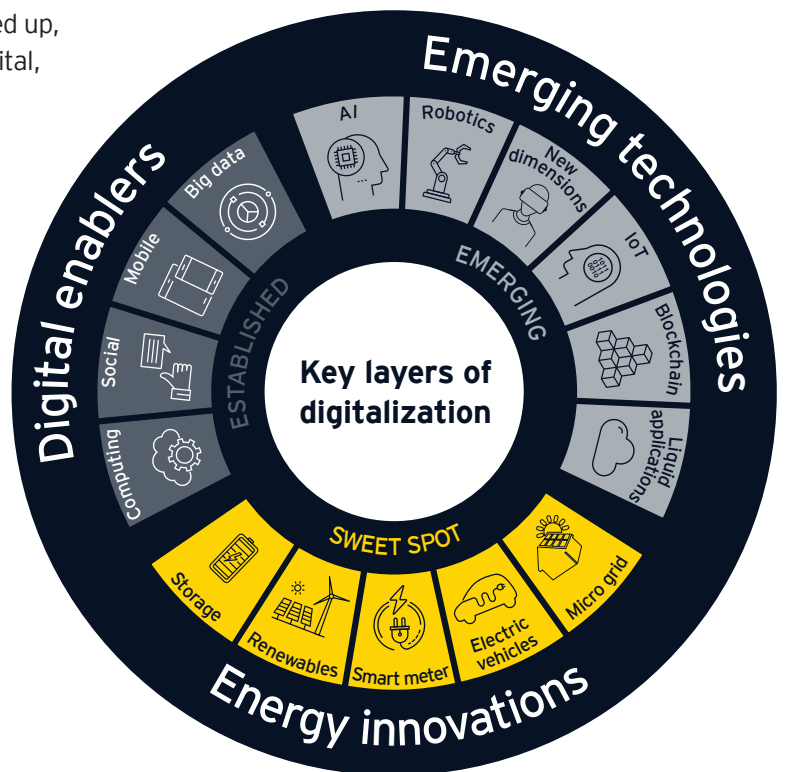
- ▶ Avanzalia and TSK Electrónica y Electricidad S.A. will set up a 150MW solar plant with a 22-year PPA.
- ▶ ENGIE will build a 130MW solar plant in Mexico and sell energy to local steel producer Gerdau Corsa through a long-term PPA.

Source: Power transactions and trends: Q3 2018, EY, 2018.



# Digitalization: technological advances are driving sector convergence, and transforming business and operating models

As the evolution of technology continues to speed up, there is a opportunity for utilities to combine digital, emerging technologies and energy innovations to bring value to their customers and society. Technological advances are blurring boundaries among previously unrelated sectors by presenting new opportunities to help deliver innovative services, interact with customers and markets, and determine how and what services to provide.





## Distributed energy system: generation is becoming more distributed and closer to the end consumer

Consumers want to be an active part of the energy value chain and wish to promote renewable energy production in the meantime.

Decentralization will be economically sustainable in the near future, thanks to disruptive technologies combined with deeper industrial know-how and operational excellence, which will lead to the creation of local energy systems. EY countdown clock\* research shows that an irreversible change in the electricity ecosystem will take place, with three tipping points within which:



1. Distributed energy will reach cost and performance parity with grid-delivered energy as early as 2021 in Oceania.

2. Electricity delivery cost will exceed the cost of production and local storage in the Northeast US region in 2039.

\*Source: *When customers go off-grid, will energy companies be left in the dark?* EY, June 2018.





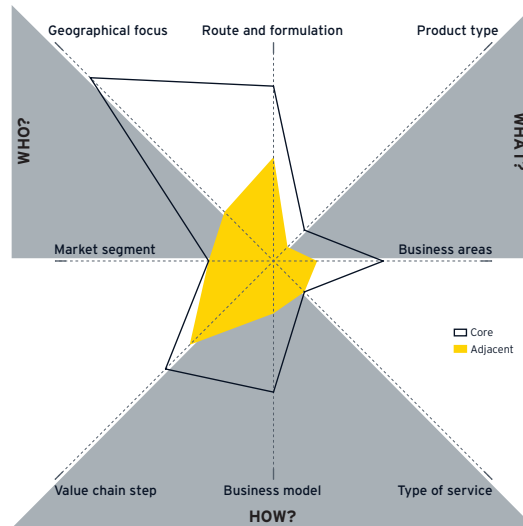
# 03

What are the recent moves in diversification strategy?



Diversification is one possible strategic positioning move and is often approached from several angles to get a full assessment before making a decision

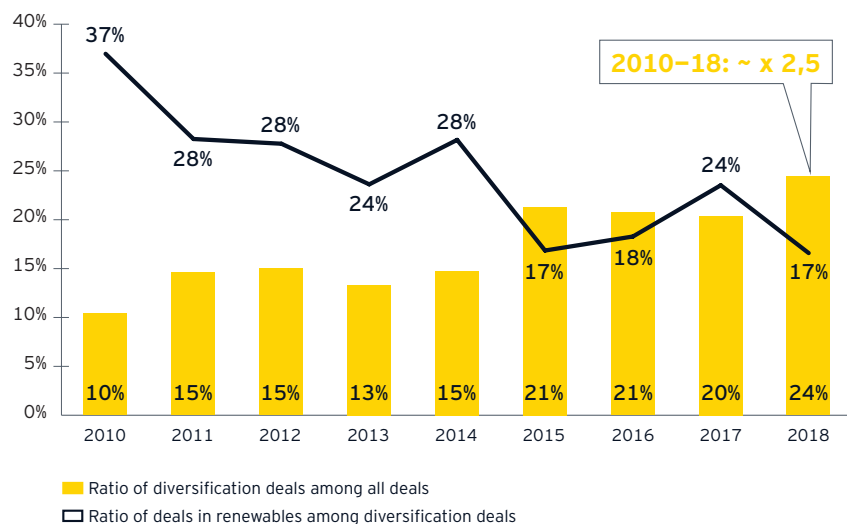
A diversification opportunity is frequently evaluated in relation to an existing core business or portfolio. Its attractiveness is therefore measured in absolute terms (intrinsic value) and relative contribution to the core business.



Source: EY-Parthenon StratPack, diversification framework.

Since 2017, diversification has been intensifying, and is decreasingly driven by investment in renewable solutions

Percentage of deals outside P&U sector made by P&U players  
(number of deals)



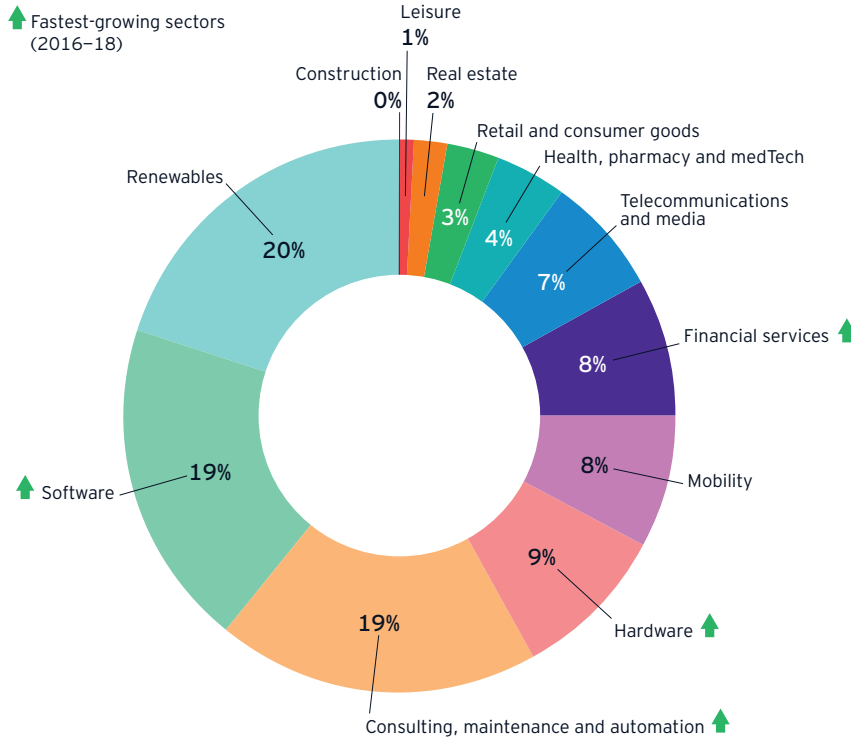
Source: Capital IQ; Thomson ONE and EY analysis.



# The main diversification sectors are renewable energies, software and consulting services

## Diversification deals by sector

(average number transaction deals closed worldwide, 2013–18)



“Software” includes a wide range of optimization tools for grids, network management or trading platforms.

“Consulting, maintenance and automation” includes energy optimization services for industry and governments (e.g., lighting systems).

“Hardware” includes energy storage systems (batteries) or performance energy transmission systems, efficient lighting systems and home products.

Source: Capital IQ; Thomson ONE and EY analysis.

**Eighty percent of the deals** are made in sectors where energy incumbents can activate important synergies with their current assets (e.g., expertise, technology and infrastructure).

**Forty-seven percent of the deals** are driven by technological enablers; proof that awareness of technological disruption risk is widespread.

**Over the last five years**, the priority has been to transform business models into a greener, more intelligent energy system.

**Mobility sector is overlooked** by energy players, since they only represent 8% of the deals, while the potential value is greater.

**Twenty-five percent of the deals** are made in sectors far from their core business, showing energy incumbents have adopted a dual approach in their innovation portfolio.

Energy players should **deepen their penetration** beyond storage and electric vehicle grid compatibility.





## FOCUS

### Flagship diversification moves from incumbents from European utility companies in the past five years

**Enel** is moving in two directions: first, through investment in **renewables** in new geographies; second, through **innovative offers** developed by Enel X (e-home, e-city, e-industry and e-mobility) addressing **emerging market segments** with software, hardware, and consulting and maintenance solutions, as well as telecommunications with open fiber.

**Iberdrola** is developing **maintenance solutions** for wind farms, power lines, industry and civil works with its investment in Arborea Intellbird, which provides inspection products and services, combining drones and AI to improve the quality and speed of inspections.

**EDP** is proactive in the development of **software for smart grid management**: with its PREDIS big data project, it is producing disaggregated load forecasts at PT level based on historical load profiles, seasonality and weather data.

**E.ON** is innovating, through partnerships with other players, in three axes: **renewables, energy optimization and decentralized systems**. The company has partnered with Kite Power Systems to generate wind energy sails; with Elcore, developing fuel cell technology for homes; and with Greensmith and Bidgely on decentralized energy system management. In Denmark, E.ON is developing vehicle-to-grid solutions with Nissan.

**EDF Energy** is pursuing bold initiatives in adjacent sectors: entering **software and consulting** for smart cities, it is developing the EDF city platform, offering urban planning tools to local authorities. In **telecommunications**, the company is developing a security operations center with Orange Cyberdefense. Finally, in **financial services**, EDF offers sustainable investment solutions.



## Focus

### New players are already making bold moves to squeeze value from new clusters

**Schneider Electric** is at the forefront of hardware and software development for **integrated IoT management** with its EcoStruxure open architecture system (one billion objects connected). It is also expanding into software and consulting for **energy infrastructure** investment and maintenance through a partnership with CoSMo Company.

**Tesla** is leveraging its assets and expertise to expand further in the energy sector. It is active in **decentralized production** and **energy storage infrastructure** both for consumers, with its Powerwall and acquisition of SolarCity, and for institutions, such as the South Australian government, for which Tesla has built a 100MW Powerpack energy storage paired with the Neoen wind farm.

**Comcast** is leveraging its telecoms network expertise and large customer base to build an **integrated IoT management** platform for **smart homes** (Xfinity Home for security and energy efficiency) and for **enterprise IoT** needs (MachineQ). In decentralized production, Comcast commercializes and integrates with Sunrun solar roof products.

**Total** is diversifying toward a greener energy mix by, transferring its integrated approach to renewables. It is present in **renewables production** (acquisition of Lampiris and Eren), **power storage** (acquisition of Saft), **energy efficiency services** (acquisition of GreenFlex) and **power commercialization** (with Total Spring and the acquisition of Direct Energie).

Source: EY analysis.



# 04

Where to play tomorrow



# EY methodology combines distance from core business and time to market to explore clusters of use cases

The market landscape covers areas in which an energy incumbent can value its range of assets (technology, customer base and core business expertise).

Opportunities defined as new services and products that an incumbent can sell to these new markets have been graded on two dimensions: distance from core business and time to market (TTM).



## TTM

The TTM is graded on two main criteria:

- ▶ Access to customers
- ▶ Access to technology

## ● VALUE POOL EXPECTED

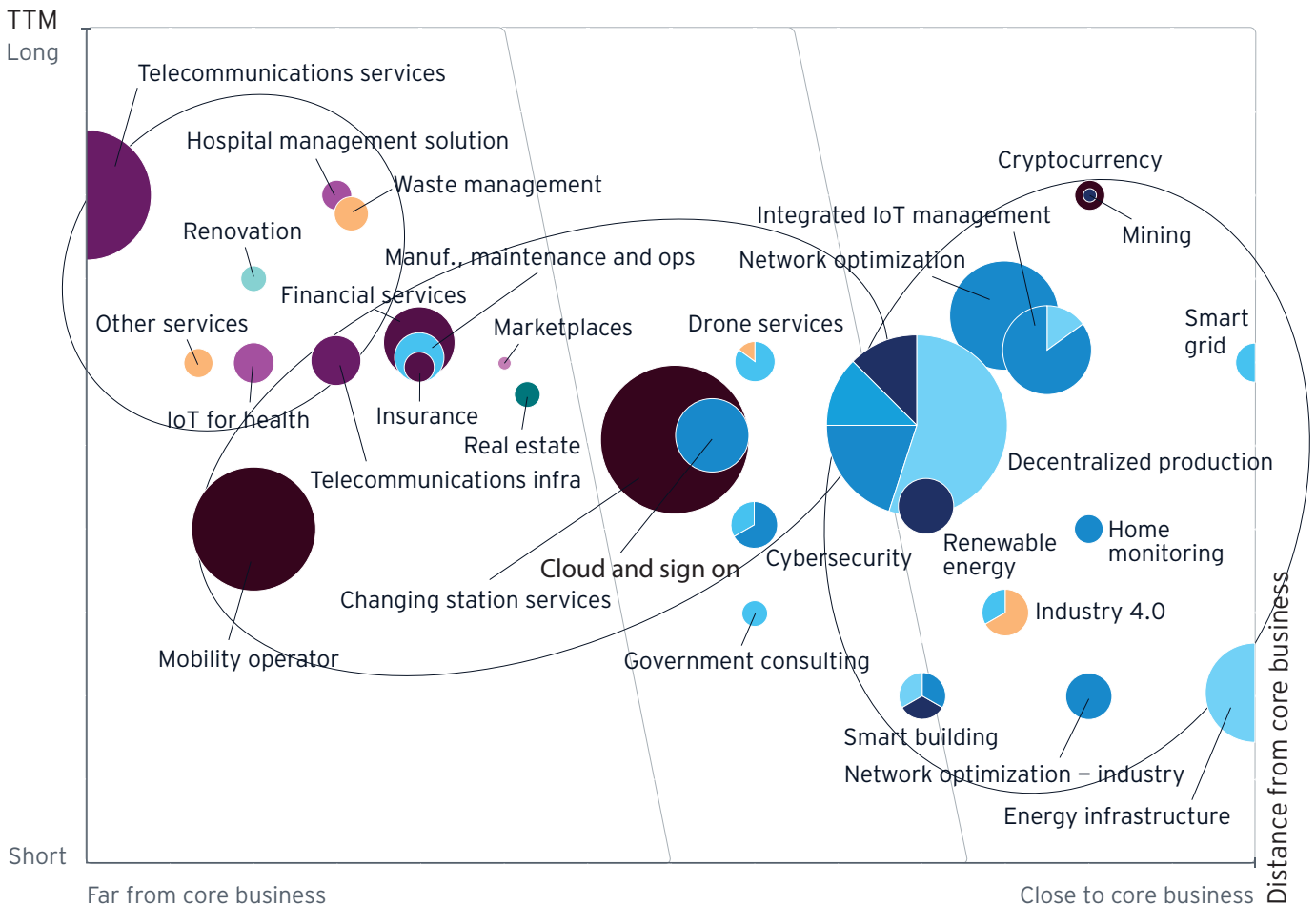


## DISTANCE FROM CORE BUSINESS

Key specific core business of an energy incumbent:

- ▶ Electric infrastructure and systems management (maintenance and operations)
- ▶ Network optimization (software and knowledge)

### Diversification clusters of use cases – value pool expected



- |                                |                                       |                |
|--------------------------------|---------------------------------------|----------------|
| ● Mobility                     | ● Energy                              | ● Real estate  |
| ● Financial services           | ● Renewable energy                    | ● Construction |
| ● Telecommunications and media | ● Software                            | ● Other        |
| ● Health, pharmacy and medtech | ● Consulting, maintenance, automation |                |
| ● Retail and consumer goods    | ● Hardware                            |                |

Source: EY analysis.





**200+**

INCUMBENTS' DIVERSIFICATION INITIATIVES  
BENCHMARKED FROM

**~90**

PLAYERS, BOTH "ENERGY NATIVES" OR NOT (≈50/50)

**60+**

DIVERSIFICATION USE CASES IDENTIFIED FOR  
AN ENERGY INCUMBENT IMPACTING

**20+**

SECTORS

- ▶ **The first cluster of new product use cases with high potential value is emerging near energy players' core business** (decentralized production, integrated IoT management, smart building, smart grids and smart meters). Energy players have important assets to face new competitors, but they need to develop their ability to create solutions combining several sectors (e.g., energy, renewables, software and hardware) and relying on the mastery of key technologies (e.g., big data, IoT, AI and machine learning).
- ▶ **The second cluster of transition use cases is emerging with new products at the crossroads of existing sectors** further from the energy core business (e.g., charging station, mobility operator, decentralized production, cloud, cybersecurity, smart city and drone services). Players such as Tesla, Google and Renault are competing to develop these use cases, which need to integrate a wide range of players into new ecosystems.
- ▶ **A third cluster is foreseeable in the long term, composed of new products in new sectors.** They would add significant value to energy players' transformation into greener and client-centered energy (e.g., waste management, renovation, insurance and the IoT for health). To enter this third cluster of activity, energy players will have to leverage assets developed for use cases closer to their core business, such as smart building, home monitoring and the IoT.
- ▶ **Being able to craft cross-sector solutions nimbly will be a prerequisite for incumbents and new players to capture emerging value pools.** Combining energy, renewables, software and hardware with consulting, maintenance and automation is their next great challenge. Going beyond this challenge toward telecoms, health, financial services and mobility would be a move for the brave.

# 05

How to prepare  
for diversification





## Incumbent companies are suffering from their lack of flexibility to adapt to the level of disruption required

Most utilities are exploring new ventures, but they are usually close to their core business and fail to meet the needs of existing customers.

However, a small core of customers embrace the disruptive offerings, giving market entrants a toehold. These offerings are developing more rapidly than incumbents expected. Their capabilities will soon surpass those of the prevailing products or services.

## Innovation is often perceived by incumbents as part of their core business

EY teams interviewed 101 of the world's 5,000 largest companies ranked by revenue, and 100 senior institutional investors worldwide, representing firms with at least US\$1b of assets under management. CEOs perceive changing customer behaviors and new business models as the second and fourth most disruptive factors for their business, whereas institutional investors rank them in fourth and second place respectively. Indeed, both executives and investors believe that energy incumbents' core business will be challenged but perceive the root cause of disruption differently.

As tension appears between the need to drive the current business and investment in future disruption, every successful business should now:

- ▶ Consider how to become skilled at both initiating and responding to disruption
- ▶ Shift the organizational mindset from "doing" to "being"
- ▶ Re-strategize – frequently revisit the plan, re-design the future and re-pilot concepts

**55%**

OF INSTITUTIONAL INVESTORS THINK THAT COMPANIES SHOULD INVEST IN EXPLORING POTENTIALLY DISRUPTIVE BUSINESS MODELS.

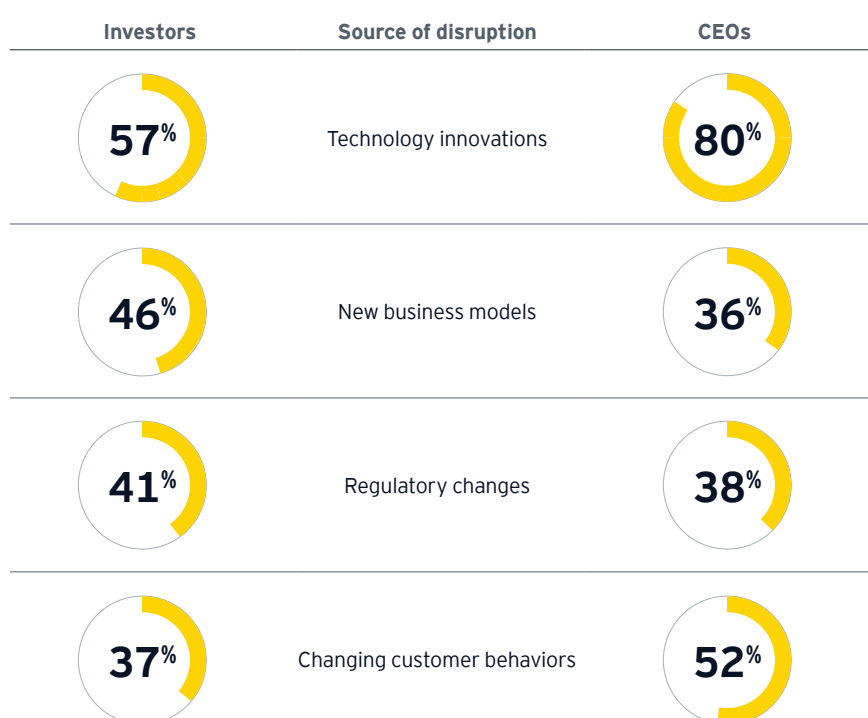
**67%**

OF INVESTORS WANT COMPANIES TO UNDERTAKE POTENTIALLY DISRUPTIVE INNOVATION PROJECTS, EVEN IF THEY ARE RISKY AND MAY NOT DELIVER SHORT-TERM RETURNS.

**73%**

OF INSTITUTIONAL INVESTORS DECLARED THAT CORPORATE DISRUPTION READINESS WILL BECOME A MORE IMPORTANT INVESTMENT DECISION-MAKING FACTOR OVER THE NEXT FIVE YEARS.

### Top disruptive factors over the next five years



Source: How can you be both the disruptor and the disrupted? EY, 2017.







# How EY teams can help

## 1. Analyzing new business model opportunities

- ▶ Identify promising use cases on the market
- ▶ Map potential partners from a cross-sector convergence perspective
- ▶ Evaluate the distance from core business and assets

## 2. Optimizing strategic decision-making processes

- ▶ Measure a diversification opportunity in absolute terms (intrinsic value) and relative contribution to (or fit with) the core business
- ▶ Link market attractiveness to the ability to deliver
- ▶ Evaluate the intrinsic attractiveness of opportunities

## 3. Executing the investment plan

- ▶ Build a business case for the diversification opportunity
- ▶ Prepare strategic and financial due diligence
- ▶ Establish the route to market







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