Benchmarking European power and utility asset impairments

Testing times ahead
EY has tracked the rise and fall of asset impairments in the European sector for the past five years, and last year’s report showed 2013 impairment figures at a high. While 2014 impairments were lower than the previous year, they remain significant compared to the overall figures posted since 2010.

Taking a sample of 16 big European utilities, we seek to understand the main drivers of impairment and their comparative influence, and scrutinize 2014 annual reports to compare how companies tackle the issue. One key question is whether further big impairments are still to come: in this year’s report, we’ve taken a close look at the factors likely to trigger it.

Pricing and regulation key causes of impairment

Europe’s leading energy utilities wrote €22.9b off their balance sheets in 2014. This is chiefly the consequence of depressed energy prices in Europe (see page 8). In 2014, electricity as well as oil and gas market prices all fell, leading utilities to book impairment of generation and exploration and production (E&P) assets. At the time of writing, there is no hint of any recovery that might prompt utilities to start reversing these impairments.

Regulation proved to be the other key influence in 2014. Regulations focusing on security of supply and reducing CO₂ emissions were strong drivers for impairments in various locations. Regulation is evolving rapidly, and the latest developments could continue to influence asset profitability in the long term (see page 9).

Large impairment figures featured once again in 2014 as Europe’s power and utility companies continued to adapt to a new energy world.

This publication aims to help power and utility companies prepare for the 2015 round of impairment exercises by benchmarking the approach of different companies. It summarizes key factors affecting utility asset valuations today and in the future, as well as provides broad comparisons between major European utility reports and accounts.

If you would like to discuss how the issues raised here affect your local markets and your business, please speak to your usual EY contact. Alternatively, contact Guillaume Catoire at +33 1 46 93 46 16 or guillaume.catoire@fr.ey.com.
Renewables, energy efficiency and distributed generation all pressure traditional assets

Rapid transformation in the sector is creating big challenges for traditional European utilities. Continuing the theme of last year’s report, the main drivers of this change are the rise of renewable energy and improved energy efficiency, which put heavy pressure on conventional generation assets.

There’s much more transformation to come — in particular from distributed generation and new developments in demand response and storage capacities. Currently, distributed and microgeneration capacity in Great Britain is potentially enough to meet the demand of southeast England. But over the next twenty years, National Grid’s Future Energy Scenarios suggests that distributed and microgeneration capacity could at least double and perhaps even quadruple. We’ve assessed how such forces could impact the sector and lead to further impairment of traditional generation assets (see page 21).

The utility sector will look totally different in 10 years’ time: it is likely to undergo a similar evolution to the telecom sector in the past decade, with the value chain redefined and traditional players facing fierce competition from new entrants. This could have a resounding impact on asset impairment.

Key questions on future strategy

European utilities are already factoring these changes into their strategy. The most dramatic example is E.ON: at the end of 2014, it announced it was splitting into two companies, one of which would tackle the challenges of the “new energy world.”

Utilities have been forced to impair assets for several years running as the sector continues to transform. To avoid further big impairments and ensure that they are still profitable, thriving businesses in 10 years’ time, they will need to think carefully about where they spend their money today. That means assessing tomorrow’s value chain, deciding where they want to be positioned and planning how this translates into potential investments and asset rotation.

EY’s Power & Utilities Assurance and Valuation teams have deep knowledge of these highly complex issues and challenges. We are dedicated to helping clients assess the consequences of asset impairment for business and accounts. Please talk to your EY advisor or contact one of the authors of this paper to discuss the issues raised in more detail.
Impairment numbers stay high in 2014
Although impairments were lower in 2014 than in 2013, they remain significant and reflect how the utility model continues to be challenged by the emergence of a “new energy world.”

In 2014, our sample of 16 European utilities wrote €22.9b off their balance sheets. This is lower than the impairments they recorded in 2013, when impairment numbers were at a high of €32b. But it is still a significant figure, and it underlines the rate of change that utility companies in Europe continue to face. German utility E.ON’s response to this change has been to split into two separate companies. One will serve the “conventional energy world” while the other faces the challenges of the “new energy world.” The latter environment has been described by E.ON’s CEO, Dr. Johannes Teyssen, as “characterized by speed, agility, digitalization, technical innovations, and increasingly individual customer expectations.”

This report takes a deep dive into the financial reports of 16 European utilities to understand what is driving impairments, how utilities have calculated them and what may lie ahead in 2015 and beyond.

**Table 1. Impairment breakdown 2014**

<table>
<thead>
<tr>
<th></th>
<th>1st quartile</th>
<th>2nd quartile</th>
<th>3rd quartile</th>
<th>4th quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>€</td>
<td>€17.4b</td>
<td>€3.8b</td>
<td>€1.5b</td>
<td>€0.2b</td>
</tr>
<tr>
<td>%</td>
<td>76.0%</td>
<td>16.6%</td>
<td>6.5%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Source: EY analysis.

Impairment breakdowns over the 2010 through 2014 period (see Table 2) largely reflect the utility sector in Europe. The four biggest impairment contributors over this period were Engie (formerly GDF Suez), E.ON, Enel and RWE – four out of the five largest European electricity producers.

**Table 2. Impairment breakdown 2010-2014**

<table>
<thead>
<tr>
<th></th>
<th>1st quartile</th>
<th>2nd quartile</th>
<th>3rd quartile</th>
<th>4th quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>€</td>
<td>€55.4b</td>
<td>€22.1b</td>
<td>€6.8b</td>
<td>€0.6b</td>
</tr>
<tr>
<td>%</td>
<td>65.2%</td>
<td>26.0%</td>
<td>8.0%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Source: EY analysis.

Impairments in 2014 focus mainly on assets – with generation the most impaired

In 2014, impairment of goodwill represented €3.5b, a noticeable fall from the previous year. Meanwhile impairment posted on assets amounted to €19.4b (see Table 3) or 85% of the total impairment recorded in 2014.

**Table 3. Assets, rather than goodwill, still account for majority of impairments**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment of goodwill</td>
<td>€21.2b</td>
<td>€6.2b</td>
<td>€7.5b</td>
<td>€8.9b</td>
<td>€22.4b</td>
<td>€9.6b</td>
</tr>
<tr>
<td>Impairment of assets</td>
<td>€64.4b</td>
<td>€6.2b</td>
<td>€7.5b</td>
<td>€8.9b</td>
<td>€22.4b</td>
<td>€32.0b</td>
</tr>
<tr>
<td>Total impairment</td>
<td>€85.6b</td>
<td>€8.6b</td>
<td>€9.3b</td>
<td>€12.8b</td>
<td>€32.0b</td>
<td>€32.0b</td>
</tr>
</tbody>
</table>

Source: EY analysis; figures are rounded.

Generation assets continue to represent the greatest share of impairments. A total of €14.6b of generation assets were impaired in 2014, which is roughly equivalent to 2013 and represents 75% of the total asset impairments recorded in 2014 (see Table 4). Of this €14.6b, we identified that:

- €7.2b relates specifically to thermal generation assets (gas- or coal-fired).
- €1.6b relates to nuclear assets (which mainly correspond to two E.ON nuclear generation units in Sweden).
- €1.6b specifically relates to renewable generation assets.
- €0.6b specifically relates to hydro assets.
- The remaining €3.6b is not specifically categorized.

2. E.ON 2014 annual report.
Companies continue to impair assets and goodwill related to acquisitions concluded in brighter economic times. They are also engaging in divestments, mainly focused on conventional generation assets in specific locations. E.ON, for example, wrote down conventional generation capacity by €1.2b following a divestment process in Italy. And in Q4 2014, Vattenfall announced it was considering alternatives to ownership of its lignite operations in Germany.

E&P assets were another category hit in 2014, suffering from declining prices for oil and gas. A total of €2.2b of E&P assets were impaired in 2014 across the companies in our sample.

Other impairments booked in 2014 related to a diverse range of assets.

Table 4. Generation asset impairment in 2014 is similar to previous year

<table>
<thead>
<tr>
<th>Year</th>
<th>Generation assets</th>
<th>Other assets</th>
<th>Total impairment of assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>€14.6b</td>
<td>€4.8b</td>
<td>€19.4b</td>
</tr>
<tr>
<td>2013</td>
<td>€14.8b</td>
<td>€7.6b</td>
<td>€22.4b</td>
</tr>
<tr>
<td>2012</td>
<td>€6.0b</td>
<td>€2.9b</td>
<td>€8.9b</td>
</tr>
<tr>
<td>2011</td>
<td>€5.4b</td>
<td>€2.1b</td>
<td>€7.5b</td>
</tr>
<tr>
<td>2010</td>
<td>€3.3b</td>
<td>€2.9b</td>
<td>€6.2b</td>
</tr>
<tr>
<td>Total</td>
<td>€44.1b</td>
<td>€20.3b</td>
<td>€64.4b</td>
</tr>
</tbody>
</table>

Source: EY analysis; figures are rounded.

Geographically, impairments are almost evenly spread

In 2014, impairments recognized in Continental Western Europe and the Nordic regions decreased significantly compared to 2013, back to the levels observed over the 2010 through 2012 period (see Table 5). This is no surprise, given the massive impairments recognized in this location last year. The increase recorded in the UK is mainly due to impairments on E&P operations and conventional generation capacity, while the rise in Eastern Europe is mainly due to Enel’s €2.9b impairment of assets and goodwill at the Slovenské elektrárne CGU.

Table 5. Impairment – five-year geographic breakdown

<table>
<thead>
<tr>
<th>Year</th>
<th>Southern Europe</th>
<th>Continental Western Europe and Nordic region</th>
<th>UK</th>
<th>Eastern Europe</th>
<th>Others/ non-specific*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>€2.5b</td>
<td>€2.4b</td>
<td>€1.1b</td>
<td>€0.3b</td>
<td>€2.3b</td>
</tr>
<tr>
<td>2011</td>
<td>€3.4b</td>
<td>€2.7b</td>
<td>€1.4b</td>
<td>€0.6b</td>
<td>€1.2b</td>
</tr>
<tr>
<td>2012</td>
<td>€2.9b</td>
<td>€5.5b</td>
<td>€1.6b</td>
<td>€0.6b</td>
<td>€2.2b</td>
</tr>
<tr>
<td>2013</td>
<td>€2.5b</td>
<td>€21.1b</td>
<td>€2.6b</td>
<td>€2.0b</td>
<td>€3.8b</td>
</tr>
<tr>
<td>2014</td>
<td>€3.9b</td>
<td>€6.0b</td>
<td>€4.3b</td>
<td>€4.3b</td>
<td>€4.5b</td>
</tr>
<tr>
<td>Total</td>
<td>€15.2b</td>
<td>€37.7</td>
<td>€11.0b</td>
<td>€7.8b</td>
<td>€14.0b</td>
</tr>
</tbody>
</table>

Source: EY analysis; figures are rounded.

3. Impairments that could not be allocated to a specific region based on the information provided by companies were classified as non-specific.
The story behind the numbers
Although the amount of goodwill recognized on company balance sheets has decreased by 20% since the end of 2011 (see Table 6), it remains sizeable. Analyzing the key drivers underlying impairment will allow us to understand how the business environment for European utilities is evolving and assess the risk that further impairments lie ahead.

Table 6. Net carrying amount of goodwill on utility balance sheets 2010-2014

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engie</td>
<td>21,222</td>
<td>20,420</td>
<td>29,535</td>
<td>31,362</td>
</tr>
<tr>
<td>Enel</td>
<td>14,027</td>
<td>14,967</td>
<td>15,809</td>
<td>18,342</td>
</tr>
<tr>
<td>E.ON</td>
<td>11,812</td>
<td>12,666</td>
<td>13,309</td>
<td>14,083</td>
</tr>
<tr>
<td>RWE</td>
<td>11,507</td>
<td>11,374</td>
<td>13,545</td>
<td>13,593</td>
</tr>
<tr>
<td>EDF</td>
<td>9,694</td>
<td>9,081</td>
<td>9,400</td>
<td>11,648</td>
</tr>
<tr>
<td>Iberdrola</td>
<td>8,354</td>
<td>7,801</td>
<td>8,306</td>
<td>8,273</td>
</tr>
<tr>
<td>Gas Natural</td>
<td>4,959</td>
<td>4,495</td>
<td>4,568</td>
<td>5,876</td>
</tr>
<tr>
<td>Veolia</td>
<td>4,499</td>
<td>3,486</td>
<td>4,795</td>
<td>5,796</td>
</tr>
<tr>
<td>Energia De Portugal</td>
<td>3,321</td>
<td>3,253</td>
<td>3,276</td>
<td>3,327</td>
</tr>
<tr>
<td>Suez Environnement</td>
<td>3,262</td>
<td>3,095</td>
<td>3,257</td>
<td>3,265</td>
</tr>
<tr>
<td>Centrica</td>
<td>3,350</td>
<td>3,381</td>
<td>3,116</td>
<td>3,024</td>
</tr>
<tr>
<td>Vattenfall</td>
<td>1,411</td>
<td>2,636</td>
<td>3,437</td>
<td>3,849</td>
</tr>
<tr>
<td>Verbund</td>
<td>742</td>
<td>742</td>
<td>606</td>
<td>606</td>
</tr>
<tr>
<td>SSE</td>
<td>706</td>
<td>752</td>
<td>752</td>
<td>820</td>
</tr>
<tr>
<td>CEZ</td>
<td>339</td>
<td>347</td>
<td>387</td>
<td>387</td>
</tr>
<tr>
<td>Fortum</td>
<td>170</td>
<td>275</td>
<td>309</td>
<td>294</td>
</tr>
</tbody>
</table>

Source: EY analysis, figures are rounded.

2013 and 2012 goodwill numbers could be different from the ones presented in our previous asset impairment papers due to restatements that occurred in 2014 mainly as a consequence of the introduction of the new consolidation standard.

We reviewed the information disclosed by the 16 utilities’ annual reports, assessing the relative importance of five main impairment triggers (see Figure 1). Unsurprisingly (and similar to last year’s report), the pricing environment remains the prime trigger. The story of 2014 is one of declining energy prices across the board. Regulation was also an important 2014 impairment trigger, with governments adapting legislation to achieve ambitious CO₂ reduction targets and to secure energy supply.

One surprise for 2014 is the lack of importance companies assign to supply and demand in triggering impairment. These two drivers are almost never mentioned on a stand-alone basis in company annual reports: they are merely presented as factors that contribute to a challenging business environment with falling prices.

Financing conditions were not an area of focus in terms of impairments in 2014.

Figure 1. Key drivers of impairments posted in 2014

1. Pricing environment: the story in 2014

Despite cost-cutting efforts, deteriorating prices have led some utilities to write off assets that were incapable of breaking even.

In terms of pricing environment, most indicators have been in the red in 2014 from the European utility point of view (e.g., Figure 2 shows wholesale power prices remained at historically low levels through 2014). Unsurprisingly, this is the main reason to review cash flow assumptions and trigger impairments.
The price at which potential buyers are ready to purchase utility assets is also depressed and can trigger impairment, as book value needs to be realigned with realizable value. Enel, for example, had to recognize impairment losses on assets classified as held for sale: “Finally, impairment losses on assets classified as held for sale amounted to €2,878 million. They regard the property, plant and equipment and goodwill of Slovenské elektráne. The impairment loss was determined on the basis of non-binding offers received so far to align the carrying amount of its assets with their estimated realizable value, net of transaction costs.”

2. Regulation: changes impact impairment in 2014

New regulation aimed at securing energy supply, or reducing the environmental footprint of energy production, led to revaluation of profitability at some energy-generating facilities.

Last year’s study warned that the introduction of capacity remuneration mechanisms could be a trigger for future impairments (or indeed, reversal of impairments). 2014 was the first year that capacity market auctions were conducted in the UK as part of the country’s Electricity Market Reform program. The auction clearing price was £19.40/kW/year (€24.67/kW/year) — significantly below market expectations that had been close to £25/kW/year (€31.79/kW/year). One outcome was to push some older capacity into closure, and a number of utilities across our sample cite the result of the capacity auction in the UK as a driver for impairment:

- Centrica states that “reflecting the result of the capacity auction and declining power prices, we recognized a post-tax impairment of £459 million on our UK gas-fired power generation assets and a post-tax impairment of £214 million on our investment on the nuclear fleet.”

- Engie underlines the effect of the capacity auction in triggering impairment: “Worsening forecast for clean dark spreads and clean spark spreads as well as the initial results of public capacity auctions in the UK have led the group to record an impairment loss of €181 million on certain thermal power generation assets.”

Figure 2. Evolution of European power prices (1 year forward baseload) in 2014

![Figure 2](image-url)
Benchmarking European power and utility asset impairments

- RWE is also feeling the effect of capacity auctions in the UK as: "An impairment loss of €183 million was recognised for British power plants in the Conventional Power Generation Segment, due to changes in the market situation as a result of the capacity market auction."\(^{11}\)

Strong impacts of regulation at a local market level are also demonstrated by the following:

- E.ON: In the 2014 consolidated financial statements, the company reports regulation as a trigger for impairment twice:
  - "In addition, a Swedish thermal power plant was fully written down by an amount of €320 million because it is expected that the facility will be rendered economically inoperable as a consequence of environmental specification."\(^{12}\)
  - "990 M€ relates to two nuclear generation units in Sweden, which were written down in the fourth quarter to a recoverable amount of €22 million. The primary reasons for this charge were lower expected power sales, the additional investment needed to fulfill government-mandated safety specifications for long-term operation and the associated review of the potential useful life of the units."\(^{13}\)

- CEZ: Explaining impairment booked on its Bulgarian distribution and sales CGU, the CEZ 2014 annual report pointed to the "updated outlook of electricity distribution regulation and subsequent decrease in expected revenues."\(^{14}\)

3. Supply and demand: intensifying challenges in business environment

Falling electricity demand and overcapacity continue to pile pressure on conventional generation assets.

Although they are not mentioned as stand-alone drivers for impairments in 2014, we still believe supply and demand should be considered important triggers for impairment. Many companies continue to quote them as decisive factors contributing to a generally challenging environment for European utilities.

Describing the 2014 market and business environment in its 2014 annual report, Vattenfall says: "Owing to weak demand and low electricity prices, large scale conventional power plant are increasingly losing competitiveness to subsidised renewable energy sources such as wind power."\(^{15}\) The company further states that "through technological development of production and installation, the cost of generating electricity from renewable sources of energy has fallen significantly – for wind by approximately 30% in recent years. The cost for solar energy has also fallen sharply. With today's low electricity prices, it is not profitable to build any type of new generation capacity without subsidies or support system."\(^{16}\) This highlights how renewables have tended to push conventional power generation out of the merit order.

Demand for gas storage can also trigger impairment, as highlighted by SSE's 2014 annual report. Describing the outcome of impairment tests for its gas storage CGU, the company notes: "The prospects in the medium term for the CGU continue to be impacted by lower volatility in the gas market and lower demand for gas storage. As a consequence, an impairment charge of £137.7m [€175.10] ... was recognised in the current year reflecting the immediate and longer term economic viability of the CGU."\(^{17}\)

4. Financing conditions: no impact in 2014

In 2014, financing conditions are not mentioned as having an impact on impairment. This is consistent with the fact that, as Table 7 shows, discount rates were fairly stable in 2014 compared with 2013.

Table 7. Selected examples show no major changes in discount rates between 2013 and 2014

<table>
<thead>
<tr>
<th>Company</th>
<th>Change in discount rate parameters from 2013 to 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrica</td>
<td>Pre-tax rates used in 2014 range from 7.4% to 8.4%  (unchanged from 2013).</td>
</tr>
<tr>
<td>E.ON</td>
<td>Post-tax rates used in 2014 range from 4.8% to 8.3%  (range of 4.9% to 8.6% in 2013).</td>
</tr>
<tr>
<td>Iberdrola</td>
<td>Pre-tax rates used in 2014 range from 5.26% to 10.64% (range of 5.38% to 10.29% in 2013).</td>
</tr>
<tr>
<td>Scottish &amp; Southern (SSE)</td>
<td>Pre-tax real rates used in 2014 range from 7% to 10%  (unchanged from 2013).</td>
</tr>
<tr>
<td>Vattenfall</td>
<td>Post-tax rates used in 2014 ranged from 5.4% to 7.0%  (range of 5.4% to 6.8% in 2013).</td>
</tr>
<tr>
<td>Engie</td>
<td>Post-tax rates used in 2014 ranged from 4.9% to 15.0% (range of 5.2% to 15.1% in 2013).</td>
</tr>
</tbody>
</table>

Source: EY analysis of company annual report and accounts.

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12. Ibid.
13. Ibid.
16. Ibid.
17. Annual Report 2014, SSE.
3 How companies determine impairments
So how do utilities determine impairments – and how do methods compare across our sample? We have scrutinized the disclosures our utilities make in their annual reports in terms of how they determine:

- The level of cash-generating unit (CGU) at which possible impairment is to be tested
- The method used to compute what value is recoverable for each CGU
- The key parameters that models used to determine the recoverable amounts at CGUs

As a general rule, companies tend to give more information on asset impairments when they face big impairments. However, we can see some consistency in the ways companies communicate about impairment.

**Companies rarely disclose much detail on their rationale for defining CGUs**

The companies in our sample tend to talk broadly about how they define a CGU, without giving details about how they define the perimeter of each CGU. By analyzing their annual reports, it is clear that the factors generally considered in defining CGUs include:

- The nature of the activities (generation, distribution, trading)
- Geographic locations
- The perimeter of different legal entities

One company that gives more details about how it groups assets into CGUs is Gas Natural. For example, describing the CGUs that are part of its gas distribution business, the company’s 2014 annual report explains:

“These units have been defined using the following criteria:

- **Gas distribution:**
  - Gas distribution Spain: The development, operations and maintenance of the gas distribution network is managed jointly.
  - Gas distribution Latin America: There is a CGU for each country in which it operates (Argentina, Brazil, Colombia and Mexico), as these are businesses subject to different regulatory frameworks.
  - Gas distribution Others: Relates to the gas distribution assets in Italy.”

**Companies usually disclose methods to compute recoverable amounts per CGU**

The companies in our sample usually disclose their methodology for determining the recoverable amount of each CGU:

- Seven companies say they use the “value in use” methodology.
- Three companies say that the recoverable amount of an asset/CGU is the higher of either “fair value less cost to sell” methodology or the value in use methodology.
- Three companies disclose the underlying rationale for choosing one methodology rather than another. E.ON, for example, states in its 2014 annual report that: “The recoverable amount primarily used to test a business for impairment is the fair value less costs to sell; at the Russia focus region, however, the recoverable amount is based on the value in use. The value in use for the Russia region is determined in local currency and according to the regulatory framework over a detailed planning period of 16 years.”

Inputs feeding valuation models: companies disclose methods, but few numbers

The following inputs are traditionally used to determine the recoverable amounts per CGU:

- Discount rates
- Commodity prices and cash flow forecasts
- Operating assumptions about sales forecasts, market share evolution and projected wages

Among these parameters, the discount rate is systematically disclosed by our sample. However, the level at which such numbers are disclosed – be it area or CGU – is rarely consistent across companies: it varies depending on organizational structure. This makes it difficult to compare discount rates across the sample.

Forecast commodity prices are a key input into the cash flow forecast used by utilities to compute the recoverable amount of specific CGUs. The companies in our sample rarely communicate detailed assumptions about power or other commodity prices. However, they do often disclose their methodology for forecasting (see Table 8).

### Table 8: Examples of how companies forecast commodity prices in determining the recoverable amount of CGUs

<table>
<thead>
<tr>
<th>Company</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrica</td>
<td>“Based on observable market data and in part on internal estimates - Where forward market prices are not available, prices are determined based on internal model inputs.”</td>
</tr>
<tr>
<td>E.ON</td>
<td>“Based on market data, where publicly available.”</td>
</tr>
<tr>
<td>EDF</td>
<td>“Over the MTP horizon, energy prices are determined based on available forward prices.”</td>
</tr>
<tr>
<td>EDP</td>
<td>“Prices of electricity, gas and coal were defined considering market expectations regarding future price curves and considering the regulation in force. Contracted prices for future long term purchases were also used.”</td>
</tr>
<tr>
<td>Iberdrola</td>
<td>“The ones agreed upon in the signed price purchase agreements. For deregulated business: For unsold production, future prices in the market where the Iberdrola group operates were used.”</td>
</tr>
<tr>
<td>Gas Natural</td>
<td>Information is detailed per CGU and/or product. For example, in the paragraph describing assumptions used in its Electricity Spain Unit, Gas Natural states: “Electricity price. Market electricity prices used have been calculated using models that cross expected demand with supply forecasts, taking into account the foreseeable evolution of generation capacity in Spain, based on sector forecasts. Cost of fuel. Estimated based on long-term supply contracts and the expected evolution of price curves and market experience where it operates.”</td>
</tr>
<tr>
<td>SSE</td>
<td>“Based on observable market data and, where this is not available, on internal estimates.”</td>
</tr>
</tbody>
</table>

Source: EY analysis of company annual reports and accounts.

For cash flow forecasting itself, our companies’ annual reports usually present their methodology. We tend to see the following:

- In the short term, cash flows are derived from an approved business plan.
- In the medium to long term (the period beyond an approved business plan), more than half of our sample determines cash flow forecasts using an extrapolation method based on the growth rate. The value of this growth rate is regularly disclosed. However, only eight companies in our sample provide information on how the growth rate is determined. The granularity of this information varies from one company to another.
With the exception of a few companies, operating assumptions are made at a consolidated level rather than at a CGU level. One company that presents its methodology to determine operating assumptions at the CGU level is Centrica (see Table 9):

**Table 9. Centrica key operating assumptions per CGU**

<table>
<thead>
<tr>
<th>CGU</th>
<th>Gross margin</th>
<th>Revenues</th>
<th>Operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Gas — business energy and supply services</td>
<td>Existing customers: based on contractual terms. New customers and renewals: based on gross margin achieved in the period leading up to the date of the business plan. Both adjusted for current market conditions and transportation cost inflation.</td>
<td>Market share: percentage immediately prior to business plan. Adjusted for: growth forecasts which are based on sales and marketing activity and recent customer acquisitions. Gas and electricity revenues based on forward market prices.</td>
<td>Wages: projected headcount in line with expected activity. Salary increases based on inflation expectations. Credit losses: historical assumptions regarding provisions have been updated to reflect the current UK environment.</td>
</tr>
<tr>
<td>British Gas — residential services</td>
<td>Futures sales: based on percentages achieved in the period up to the approval of the business plan.</td>
<td>Market share: percentage immediately prior to the business plan. Adjusted for change in growth rates to reflect the current economic environment in the UK.</td>
<td>Wages: projected headcount in line with expected efficiency program. Credit losses: historical assumptions regarding provisions have been updated to reflect the current UK environment.</td>
</tr>
</tbody>
</table>

Sources: EY analysis of company annual report and accounts.

Little consistency in disclosure – but utilities tend to suggest limited risk of further impairment

The companies are not strictly consistent with each other in disclosing information on how they compute impairment. Beyond providing this information, it is mandatory under IAS 36 for companies to provide sensitivity analysis.

In the majority of cases, most of the companies conclude that, within the bounds of reasonable changes in key assumptions, no additional impairments will arise. This is consistent with what they have said in previous years. And yet the utility industry in Europe has continued to be hit by impairments year after year.

So, you might ask, where have utilities gone wrong in assessing what constitutes a reasonable change in key assumptions? To find out what may lie ahead, in the next section, we analyze how our five key impairment triggers have evolved since the end of December 2014 and assess whether their evolution implies a risk of further impairments. As we’ll see, this analysis reveals that drivers of impairment remain strong for the coming year.
4 What could trigger impairments in future?
Our analysis shows that European utilities found a depressed pricing environment to be the most important impairment trigger during 2014. We believe this is likely to remain the case for 2015, especially since pricing is, to an extent, a synthesis of expectations about the other impairment drivers.

A good example of how these drivers can interact is the German Government’s proposal, since withdrawn, to introduce a climate change levy targeting older fossil-fuel generation capacity. In December 2014, the German Government announced a policy aim of limiting CO₂ emissions from older power stations. Were such a proposal to have been implemented, it would have had a significant impact on supply because the less efficient, older thermal plant would be forced to stop generating. Any restriction in supply could be expected to drive German wholesale power prices higher: RWE suggested by as much as €5/MWh in this instance.¹⁹

In this section, we analyze the drivers of impairment in order of their expected significance for 2015 and their likely impact on the next impairment exercise.

### What will influence 2015 impairments?

- **Pricing:** Recent price changes suggest that the economic environment will continue to be tough for gas-fired plants in 2015, though structural switching is closer in the UK.
- **Supply:** With renewable energy costs falling, new renewable capacity will continue to put pressure on traditional generation.
- **Policy:** Capacity remuneration mechanisms may offer a lifeline for thermal plants, but carbon levies could undermine valuations. At a European level, recent developments around the EU ETS scheme could eventually prove to be a game changer for impairment dynamics.
- **Demand:** Demand continues to decrease. The rise in renewables means production assets need to be flexible to meet the requirements of the future European electricity network.
- **Financing:** There is little discernible impact at present; this seems unlikely to change in the near future.

### 1. Pricing environment

Recent price changes suggest that the economic environment will continue to be tough for gas-fired plants in 2015, though structural switching is closer in the UK.

**Little sign of baseload power prices recovering**

European baseload power prices were relatively stable through 2014, albeit at historically low levels (see Figure 2, page 9). To date in 2015, they have tended to drift even further down. In May 2015, German year-ahead power prices fell to an 11-year low of €31/MWh, and day-ahead prices in April 2015 averaged €25/MWh, their lowest monthly average for over 12 years.

At the time of writing, there is little sign of any immediate improvement in baseload power prices. All things being equal, further impairments could be required if there is no change by the end of 2015. The extent is difficult to assess accurately because utilities rarely disclose the pricing assumptions underlying impairment computations.

Low oil prices should continue to support spark spreads

The picture is complicated by the collapse of the global oil price in the second half of 2014 (see Figure 3). This could have some positive impact on the level of impairments required in 2015 for gas-fired capacity: oil-indexed natural gas contracts will reflect the falling oil price on a lagged basis, reducing fuel costs for some owners of gas-fired capacity.

**Figure 3. Oil, coal and natural gas price evolution since January 2014**

The relationship between power prices and natural gas fuel costs is captured in European spark spreads (see Figure 4). Generally, there has been a modest degree of improvement compared to the start of 2014, as the cost of natural gas for generation started to reflect oil indexation and surplus global liquefied natural gas.

**Figure 4. Selected European spark spreads from January 2014 (one year forward baseload)**

This dynamic between baseload power prices and thermal fuel prices has the potential to drive further impairments of gas-fired plants:

- Already in 2015, the owners of Irsching 4 and Irsching 5, two state-of-the-art Combined Cycle Gas Turbines (CCGTs), have applied to the German energy regulator and the transmission system operator (TSO) to close from 1 April 2016. Irsching 4 (550 MW) and Irsching 5 (846 MW) have operated under

Tough times continue for gas-fired capacity in 2015

Despite the fact that natural gas prices drifted down in 2014, the operating environment for gas-fired generation remains extremely tough, particularly in central Europe.

Hard coal- and lignite-fired plants still enjoy a significant variable cost advantage over gas because of extremely soft coal prices globally. In April 2015, coal prices (calendar year ahead for delivery into Europe) fell to their lowest levels in eight years, and we have seen coal-fired plants being run in preference to gas-fired capacity during the first half of 2015, despite the EU ETS carbon price having recovered from the lows it reached in 2013. The competitive advantage of coal- and lignite-fired plants may have weakened since 2013, but gas-fired plants remain “out of the money” across much of Europe. Germany is shown as an example in Figure 5.

**Figure 5. Clean spreads for coal and natural gas generation in Germany since January 2014**

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20. This is most noticeable in the case of Italy, where gas-fired generation is most dependent on oil-indexed contracts.

21. Unit 5 has efficiency of 59.7%; Unit 4 has efficiency of 60.4%. This makes them two of the most efficient gas-fired plants in the world.
Bilateral contracts with TenneT, the TSO, for two years, and supplied no merchant power in 2014. When these contracts expire at the end of March 2016, the two CCGTs currently have no prospect of operating profitably, according to the owners.22

In February 2015, Centrica announced that it would close two of its gas-fired power stations in the UK, namely the 665 MW Killingholme plant and the 240 MW Brigg plant.23 Subsequently, Centrica announced that Brigg will remain open at reduced capacity after being converted to a distributed generation asset. Structural switching is closer in the UK than on the continent Structural switching from coal to natural gas (i.e., CCGTs running at baseload, displacing coal-fired plants) could potentially lead to previous impairments of gas-fired assets being reversed.

In the UK, this has been brought closer by the carbon price floor, a price support mechanism introduced from April 2012. The impact of price support is shown in Figure 6: the gap between baseload spreads for gas and coal narrows significantly, once the carbon price floor is taken into account. The price floor, now capped at £18 (€23.11) until 2020, reduces both spark and dark spreads, but it has a proportionately greater impact on the profitability of coal-fired plants.

The UK's carbon floor tax means that switching to natural gas at the expense of coal for baseload running is significantly closer than elsewhere in Europe. In its Summer Outlook 2015,24 UK TSO National Grid suggested that fuel pricing between coal and natural gas is likely to be very close this year. If structural switching occurs, it is possible we may see impairments reversed for some gas-fired capacity and booked against UK coal-fired plants instead. This would prefigure what could happen at a wider scale across Europe, if EU ETS carbon prices rise to a more meaningful level from their current range of €7 to €8/ton. For more on the EU ETS, please see the Policy section on the next page.

2. Supply

With renewable energy costs falling, new renewable capacity will continue to put pressure on traditional generation.

Supply will remain an important driver of impairments for utilities, as it is the only factor over which they have direct control.

Net capacity still being added across EU

Throughout 2014, net capacity additions across the EU for the year was once again dominated by renewables (see Figure 7). In total, around 27 GW of new generating capacity was installed in 2014, 8 to 9 GW less than the previous year, with wind and solar PV (Photo Voltaic) accounting for some 70% of these installations. We can expect a similar pattern for 2015.

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Falling costs will encourage further renewables build-out

There’s little prospect of any significant tightening of capacity margins across Europe, as it seems likely that renewable build-out will continue to receive policy support. In addition, the underlying technology costs of renewables have continued to fall, making them increasingly price competitive.

We saw a good example of falling technology costs in the UK’s first Contract for Difference (CFD) auction for renewables, held in February 2015. The winners of the 15-year CFDs were more cost competitive than many anticipated: offshore wind contracts were awarded in the range of £114 to £119 (€156 to €163)/MWh, while onshore wind bids were successful at £79 to £83 (€108 to €114)/MWh, and solar PV capacity was contracted in the range of £50 to £79 (€68 to €108)/MWh. These price ranges were lower than previously set strike prices by approximately 18%, 17% and 60%, respectively.25

These factors likely to offset planned closures of non-renewables

Despite the planned retirement of large amounts of non-renewable capacity, we feel that there is little immediate threat that capacity margins will come under significant pressure around the EU. If this is correct, it seems very unlikely that supply constraints will underpin any reversal of existing asset impairments.

The risk, at least for 2015, is that the opposite will be the case: further expansion of renewables capacity will continue to exert downward pressure on power prices, potentially causing further impairment to the value of conventional generation assets.

3. Policy

Policy decisions at both European and national level affecting utilities could drive significant change in the sector and impact the degree of asset impairments.

European Commission’s electricity market design plans: too early to tell potential impact on impairment

To strengthen the EU’s internal energy market at a time when national mechanisms are having a divisive effect, the European Commission (EC) is considering plans for a new EU electricity market design. This includes reassessing the regulatory framework, as part of a wider energy union strategy.

Initial proposals, published in July 2015, support more convergence and integration in European energy policy. Areas of focus include deployment of renewables in a cost-effective way, security of supply and energy efficiency/demand response — as part of a new deal for energy consumers. With a consultation process now underway, it is too early to say what eventual implications the electricity market design initiative is likely to have for future impairments. However, the emphasis already placed on ‘empowering energy consumers’ appears to envisage an energy future in which distributed generation is actively encouraged.26

The adoption of the energy union strategy will undoubtedly be a lengthy and complicated process. In the meantime, there are a number of other policy measures that have implications for the future track of impairments: we discuss what we consider to be the two most important below.

Capacity remuneration mechanisms bolster value of thermal capacity

In last year’s paper, we noted the growing attractiveness of capacity remuneration mechanisms as a policy lever to support security of supply — aiming in particular to stop closures of flexible thermal capacity.

In April 2015, France began accepting applications for power market capacity certification. The mechanism allows suppliers to contribute to security of supply by guaranteeing to match customer demand with contracted capacity. In the same month, the EC launched a sector inquiry to determine whether capacity mechanisms proposed by Member States might breach rules on state aid. This involves Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Poland, Portugal, Spain and Sweden, all of which either already have or are currently considering a capacity mechanism of some kind. The EC wishes to prevent national mechanisms that will distort cross-border trade or competition between capacity providers, which would run counter to its goal of a single EU energy market. Preliminary findings are due to be published by the end of 2015, with final results expected by mid-2016.

Local regulation aimed at securing supply and reducing CO₂ emissions continues to play a role in defining the merit order for power plants. At a European level, recent developments around the EU ETS scheme could prove to be a future game changer for the dynamics of impairment.


At this level, carbon pricing would start to become a major drag on the economics of baseload coal-fired generation, with gas-fired capacity gaining a commercial advantage. In that case, we could see impairments of coal-fired capacity and potentially even the reversal of impairments currently booked against gas-fired plants.

We also note that the next United Nations Conference on Climate Change (COP21), due to be held in late 2015, could lead to a new treaty to reduce emissions. A single global price for emissions has been called for by many of the largest energy companies and, if implemented, this could provide further indirect support to the CO₂ prices over the longer term.

4. Demand

Demand continues to decrease. The rise in renewables means production assets need to be flexible to meet the requirements of the future European electricity network.

Demand for grid-based power across Europe fell in 2014 for the fourth year in succession, totaling 3,210 TWh across the ENTSO-E perimeter. ENTSO-E identified three reasons for this 2.4% decrease on the prior year:

- Weather patterns: a milder winter led to reduced consumption and in particular meant a peak load of 522 GW for the year, 35 GW lower than the peak load in the cold spell of February 2012.
- Economic weakness: a weak economic backdrop and the relocation of some heavy industry outside Europe meant lower demand.
- Energy efficiency: more energy efficient buildings, lighting and appliances resulted in lower consumption.

Demand likely to remain weak in 2015

So far, there is little to suggest that demand patterns for 2015 will be significantly different. For example, National Grid's 2015 Summer Outlook is anticipating both gas and electricity demand in Great Britain to be covered comfortably, and the expected peak summer demand of 37.5 GW is at its lowest ever.

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Such a decline in demand is unlikely to be a major driver of generation asset impairments; the industry should be able to adjust its plans for adding new capacity to match this trend. However, we can expect the demand pattern to change. Combined with the growth of intermittent renewable generation capacity, this could lead to assets being impaired because they lack the flexibility to respond to new patterns of demand and the resulting supply/demand dynamic.

5. Financing conditions

There is little discernible impact at present; this seems unlikely to change in the near future.

Financing conditions played a very limited role in asset impairments at year-end 2014.

While economic growth around Europe remains sluggish, it seems likely that central banks will not risk any change in approach. There is a risk that, if interest rates rise, it may make financing assets more difficult, potentially triggering impaired valuations. However, we do not believe this is likely at the present point.

6. Further transformation in the sector could impact utilities as profoundly as the rise of renewables

For the past decade, European utilities have suffered from a sluggish economic environment and the rapid development of renewables. This has decreased grid-based demand and increased supply, resulting in depressed prices and leading to the level of impairments we have witnessed over the past several years.

Today, there are signs that economic recovery is underway, yet power prices are not rising. In parallel, there are signs that the power and utility landscape is evolving in ways that could have an impact just as profound as the rise of renewables, which could lead to further value impairments for today’s asset base.

Distributed generation and microgrids

On the back of ever-decreasing costs (e.g., Figure 9 illustrates the evolution of the levelized cost of energy (LOCE) for solar PV in the US), distributed generation (DG) is set to grow significantly in the coming years. GE estimates that 2012 saw US$150b invested globally in DG systems (including gas turbines, reciprocating engines and solar PV projects less than 100 MW in size), adding approximately 142 GW of installed capacity. GE believes annual DG capacity additions will grow to 200 GW by 2020—twice the growth rate of central generation capacity. Separately, Navigant suggests that, globally, new DG capacity will exceed new centralized generation capacity by as early as 2018.29

One result has been growing interest in the benefits of microgrids30 among industrial customers; notably, data center owners for whom reliable, cheap power is extremely important. Apple’s Maiden Data Center in North Carolina supplements its utility power supply with power from its own 40 MW on-site solar array and a fuel cell installation owned by Bloom Energy.31 The end result could be impaired valuations for all the assets of centralized grid-based systems.

Affordable energy storage

The rise of energy storage could adversely impact the traditional utility model, facilitating the development of intermittent renewables and microgrids. Battery-based energy storage had long been disregarded on the grounds of expense and has yet to prove it can be commercially viable in general use. But it is gaining momentum and recently received a publicity boost with Tesla’s announcement of its Powerwall domestic battery unit.32 Tesla is building a “Gigafactory” in Nevada that will produce more lithium ion batteries annually than were produced worldwide in 2013. Companies such as Fuji Pigment CO Ltd and American start-ups Pathion and Sakti 3 are also interested in developing their own similar technology solutions.


Figure 9. Solar PV LOCE in the US decreases significantly

<table>
<thead>
<tr>
<th>Year</th>
<th>LOCE (cents per kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$21.1</td>
</tr>
<tr>
<td>2012</td>
<td>$15.3</td>
</tr>
<tr>
<td>2013</td>
<td>$14.4</td>
</tr>
<tr>
<td>2014</td>
<td>$11.9</td>
</tr>
</tbody>
</table>


30. Electrical systems that can connect and disconnect from the wider grid.
Some US states are launching policies aimed at incentivizing energy storage. For example, in September 2014, Arizona Public Service (APS) and the state’s Residential Utility Consumer Office jointly filed a settlement that, if approved, would require APS to evaluate storage, efficiency, renewables and demand response as potential alternatives to building or upgrading conventional power plants between 2015 and 2021. Although energy storage development in Europe is considered slow today, the possibility exists that uptake could accelerate significantly if current US developments demonstrate genuine interest and economic profitability.

New energy services mean chance for new entrants to capture more of power and utility value chain

New businesses, such as energy efficiency and demand response, seem attractive, given their high margins and low entry barriers (Figure 10 shows gross margin comparisons for various power and utility businesses). It will not necessarily be utilities that step in to provide these new services: a wide range of players are competing to serve consumer needs. Utilities are navigating a complex environment where hardware providers, such as Google’s NEST business, software platform providers, such as EnergyHub, and aggregators, such as Converse, are all seeking to deliver value in a space traditionally served solely by the utilities.

Traditional utilities face the risk of becoming mere infrastructure managers and seeing value formerly captured by their production units transferred to other players in the value chain. This could lead to further impairment of their traditional generation assets.

Figure 10. Gross margin comparison for power and utility companies

Gross margin comparison for various P&U businesses (FY2014, US based companies)

Utilities have only to look at the recent history of the global telecoms sector to see how technological innovation can radically transform business models and value chains. If the need for traditional grid power declines in the face of the factors cited above, it could significantly impact the future value that can be placed on the assets of traditional power systems.

Benchmarking European power and utility asset impairments

Transformation in the sector increases risk for traditional utilities

2014 was another difficult year for European utilities, with €22.9b wiped off balance sheets. As the economy starts to recover, we might expect to start seeing impairments reversed in the expectation that demand and prices would start to rise again. However, as this report shows, traditional utilities are facing technology and competitive evolutions that could have as significant an impact on their business models as renewable energy has had, and that could further erode their markets.

New parameters for impairment tests

If traditional utilities are convinced that their business models are about to undergo further radical transformation, they need to start factoring this belief into their asset valuation models.

This could mean, for example, that they need to reassess the risks and rewards of their assets and review the discount rates and long-term growth rates used to determine value in use. It could also mean that they need to challenge the utilization rates that they use to forecast cash flows for production assets: emerging technologies could potentially steal demand that is currently being met by traditional generation.

Achieving clarity on future risk

In any case, as different utility sector stakeholders all become more aware of transformation in the industry, they will expect utilities to be very clear about the strategic response required to navigate through such significant change. Utilities will also need to be clear about the impacts on impairments to their existing asset base.

To achieve this clarity, utilities will need to answer the following questions:

- How will our value chain be transformed by disruptive technology and new competitors?
- How can we position ourselves to capture value as it moves to a different part of the chain?
- How can we make sure new entrants don't take our business away, and what does this mean in terms of investment?
- How should we allocate funding and investment today to ensure that tomorrow's production capacity meets the grid's needs?

The conclusions utilities reach and the responses that they adopt will determine the ultimate trajectory of future asset impairments.
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