The German ‘Energiewende’: RWE’s Strategic Choice

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This case is accompanied by a teaching note, available to faculty only. Please send your request to freecase@oikosinternational.org. The authors are also thankful for any feedback and suggestions to further develop this case to Timo.busch@wiso.uni-hamburg.de.

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The German ‘Energiewende’: RWE’s Strategic Choice

Abstract

In July 2012 Peter Terium was named the new CEO of RWE, the biggest electricity provider in Germany. RWE has performed financially well over the previous 40 years with annual sales greater than €50bn since 2010. However, in 2014 the company had to disclose €2.8bn of net losses for the first time in its history. This prompted an urgent need to change RWE’s corporate strategy. Peter Terium now faces a number of challenges in order to guarantee the profitable future of RWE.

First, RWE has to deal with the consequences of a variety of regulations, namely: (a) The German electricity market liberalization, (b) the renewable energy law in Germany, (c) the European Emissions Trading System and (d) the German nuclear phase out. These regulations contribute to a major shift in the electricity market, often referred to as the German Energiewende. The cornerstones of this Energiewende are decentralized and renewable power generation. RWE’s business model is built on centralized electricity generation based on coal and nuclear power and, thus, is contradictory to the German Energiewende.

Second, RWE is endangered by market developments: (a) RWE’s bottom-line is suffering from decreasing electricity market prices as a result of an oversupply of electricity due to the growing amount of renewable sources. (b) Many small competitors, sometimes even RWE’s former customers, have entered the electricity market thereby decreasing RWE’s market share. (c) In 2014 one of RWE’s main competitors E.ON started to respond to the altering market conditions and announced a substantial change in its business strategy and to focus entirely on renewables.

Third, the company faces specific expectations from external stakeholders: (a) As a consequence of the developments above, 10,400 jobs are up for redundancy. Local governments – of which some are RWE’s shareholders – are worried about these figures. (b) RWE also carries reputational risks because some well-known NGOs like the WWF criticize its lack of a low-carbon strategy.

Finally, the organization also faces an internal challenge. The internal structures have developed over decades and are based on the dominant logics of centralized coal and nuclear power production. As is typical for change processes in large organizations, these dominant logics may lead to structural inertia.

This case has been written to facilitate classroom discussion and engage debates for MBA/MS-level students in the form of a stakeholder role-play. The case focuses on the challenge of RWE to determine its future corporate strategy. It enables students to understand how legislative developments, market transformations and new technologies can fundamentally impact incumbents in a traditional industry.
Introduction

“Utilities in Europe and North America have to change their business model, whether they like it or not...This requires creative thinking, but that’s part of this new market era.”(International Energy Agency)

The first of July in 2012 was an important day for Peter Terium. He replaced Jürgen Großmann the CEO of the RWE AG. RWE is the number one electricity provider in the German market and has generated annual sales greater than €50bn since 2010. The company is the third largest electricity provider and the fifth largest supplier in the gas market in the EU.

However, Peter Terium entered RWE’s chief executive position in a critical strategic and financial situation. One year after his appointment RWE disclosed its first negative financial result of €2.8bn (see Exhibit 1 for detailed financial information). This was the first negative bottom line RWE has reported since the announcement of the Federal Republic of Germany. At the same time, RWE declared to cut up to 10,400 jobs and halve its investment into renewable energies.

RWE explained the critical situation with the following statement: “The European energy sector is undergoing fundamental changes. Political intervention is making our business challenging. In addition, the subsidized expansion of renewables in Germany is causing the margins and utilization of conventional power stations to decline. All of this is having a significant effect on our earnings.”

Peter Terium pointed out that there is the risk that RWE’s profitability could continue to decline: “...we would be facing difficult times ... Back then, in February 2013, a megawatt hour of electricity was traded at €42 on the German forward market. By the end of 2013, this figure had dropped to just €37. In other words, our power plants will earn even less in the coming years than we had feared.”

Investors share that uncertain outlook for RWE. Since the beginning of 2008 RWE’s share price has declined from €98 to €21 per share in August 2013, the lowest value in the last decade (Exhibit 2 illustrates share price information).

The future financial performance and role of RWE as a key market player depends on Peter Terium’s new corporate strategy as well as his ability to increase RWE’s adaptability and resilience towards several fundamental developments.

First of all, RWE has to deal with the consequences of a variety of regulations. In 1998 Germany liberalized the electricity market. This regulation destroyed former electricity production monopolies and forced power utilities to unbundle electricity production and distribution. Simultaneously, it meant the loss of grid control and opened the market to new entrants. The next legislative development was Germany’s extension of the renewable energy law (EEG) in 2000. The law prioritizes renewable energies, provides essential funding for those technologies and sets high environmental protection targets. Five years later, in 2005, RWE faced the introduction of the EU Emission Trading System (EU ETS), which puts a price tag on CO₂ emissions. The last development occurred in 2011, when Germany decided to phase out nuclear energy by 2022 in the aftermath of the Fukushima accident in Japan.

These regulatory developments contribute to a major shift in the electricity market and place a huge amount of pressure on RWE to change. The company’s business model is mainly built...
on centralized power generation based on coal and nuclear energy. Non-renewable fuels make up 84% of the overall production capacities of the company (illustrated in Exhibit 3).xii However, the increasing use of renewable energy sources in Germany favors a decentralized approach to power generation. This so called German Energiewend challenges RWE to establish a new business model. On top of that, as one of the biggest emitters of CO₂ in the EU, RWE faces additional costs through the EU ETS. In sum, these regulations affect RWE’s production capacities, revenue and marginal costs of production and thus its financial bottom-line.

Second, RWE is endangered by market developments. Electricity market prices have decreased due to an oversupply of electricity generated by a growing amount of renewable energies. A megawatt hour of base load power was sold for an average of €33 on the spot market in the first quarter of 2014, €9 less than in the same period a year ago.xiii Peter Terium calls it the “crisis in the conventional electricity generation business.” The basic argument is that the crisis is attributable to the fall in the price of electricity as a result of the surplus of power plants in Europe and government subsidies for solar and wind power. Closely linked to this development is the phenomenon that recently many small-scale competitors entered the German electricity market. Small electricity providers utilizing solar or wind power have contributed to a decreasing market share of RWE. Certainly in light of the altering market conditions due to the German Energiewende, one of RWE’s main competitors E.ON has decided to substantially change its business strategy. In November 2014 the firm announced – next to several other steps – to focus entirely on renewables.xiv This development further demonstrates the need for RWE to start action as the electricity market is changing and calls for new business models.

Third, the company faces specific expectations from external stakeholders. As a consequence of the developments above, 10,400 jobs are up for elimination.xv This development is causing major concerns for local governments like the state of North Rhine-Westphalia and surrounding cities. This circumstance is important since some local governments hold shares in RWE. In addition, RWE also carries a reputational risk because some well-known environmental NGOs like the WWF criticize RWE’s environmental performance and lack of a low-carbon strategy.

Fourth, the organization also faces an internal challenge in light of the developments discussed above. RWE decided to build up a renewable energies department rather late, in 2008. This has also been acknowledged by Peter Terium himself: “Maybe we have started too late”.xvi Renewable energies only made up 6.4% of the electricity production in 2013.xvii The internal structures that have developed over decades are based on the dominant logic of centralized coal- and nuclear-based power production. As is typical for change processes in large organizations, these dominant logics may lead to structural inertia. Not all divisions, managers, and employees may see the necessity for a radical shift of RWE’s business model. Peter Terium points towards a cultural shock ahead of RWE: “...We have built power plants with capital investments of 20, 25 years so far. Therefore we needed continuity. This continuity of the past is a barrier on the way to new products that the energy transition needs.”xviii

A new corporate strategy and a large-scale transformation of RWE towards a profitable future is now of central relevance for Peter Terium. “Making RWE fit for the European energy transition is the biggest challenge”, he says.xix Peter Terium’s strategic decisions of 2014 will determine if RWE will remain a profitable and major electricity provider in Europe in the following years. As Peter Terium described in an interview, RWE is heading towards a
radical strategic shift. This shift will be of critical importance for the entire company: “We are a company that has to fight hard for its future. The energy transition clearly showed for the first time that the system will work without us.”

How should RWE strategically resettle towards a profitable and sustainable future? Taking into account diverging internal interests, market and legislative uncertainty and a tremendously altering competitive environment, what should RWE’s investment priorities be?

The German electricity market

The big 4

Before the market liberalization in 1998 the electricity market in Germany was split up into regional monopolies under governmental control. This market structure with low competition was seen as the best solution for a secure electricity supply and low prices.

Four big energy incumbents (respectively their predecessors) dominated the electricity market in Germany: RWE, E.ON, Vattenfall and EnBW. In 1998 80% of all German power plants belonged to them.

The monopolistic position of the big four on the German energy market was still undeniable in 2005. As a consequence they have been in the spotlight of several inquiries by the EU-commission. For example, in 2006 E.ON was fined and forced to sell company shares of 50 of their communal and regional energy suppliers. The EU-commission was suspicious that E.ON had withheld cheap energy capacities to increase the electricity market price. The commission concludes that “In the present case the German energy market is controlled by E.ON, RWE and Vattenfall. E.ON, RWE and Vattenfall could have agreed on a price increase strategy.”

In 2007 a similar conclusion was provided by the German Kartellamt, which is the national ministry with the task to protect a competitive market situation in Germany: “The analysis of the relative strengths on the German energy market yields, that in Germany some providers (RWE, E.ON, Vattenfall and maybe EnBW) own a market dominant position.”

Liberalization of the electricity market

The competition in the electricity and gas market in Germany was leveraged by the European Commission in 1996 as it passed the 96/92/EG directive in order to launch the development of an European-wide electricity market. In 1998 Germany followed this EU policy with the help of two national regulations which undermined the regional monopolies. First of all, grid operations had to be separated from the electricity production. Previously all parts of the electricity value chain (production, transmission, sale) had been controlled by the regional monopolies. The separation led to an organizational split up of the regional monopolies into a grid operator and an electricity provider. Second, access to the grid was granted to third parties in order to allow more competition. Since the electricity market liberalization in 1998 electricity customers have been allowed to decide which electricity retailer they want to contract. The same happened for the gas market in 2003. The market liberalization in both cases led to a price decline of electricity and then respectively gas.
The main steps of the electricity market liberalization can be summed up as follows:

- Third party access to transmission and distribution grids.
- Regulation of the grid access charges and network connection requirements.
- Unbundling of the grid operators to allow free competition without discrimination.

Since the liberalization of the electricity market and especially since 2010 the market share of the big four has declined rapidly. The main reasons for the decline are the growth of renewable energy capacities, the shutdown of nuclear power plants and the sale of power generation capacities by the big four. Moreover, the amount of companies which engage in the German electricity market has quadrupled from 12,642 in 2005 to 48,223 in 2011. In 2010 RWE, E.ON, Vattenfall and EnBW only made up 46.9% of the available installed capacities in the German electricity market.

The current development in the electricity market and the growing number of actors in the system indicates that the market share of the big four will decrease even further. For example, more than 20% of all German industrial companies declared that they plan to generate electricity via decentralized renewable on-site production.

**Merit order**

The merit order is essential to understand how prices are determined in the electricity market and which power plants are utilized to meet the electricity demand. Basically, it is a methodology to rank different sources of electricity production in ascending order based on their marginal costs of production. As a consequence those power plants with the lowest marginal costs are the first ones brought online to meet the electricity demand at a given point in time. The sources with the highest marginal costs are the last ones in line. Following the logic of the merit order the costs of electricity production can be minimized for a given demand.

Currently the German law prioritizes renewable energies. Once renewable energy capacities have been installed, they have nearly no marginal costs of production. Therefore, in situations with a high supply of renewable energy, power plants with high marginal costs are pressed out of the market. At the same time, this situation leads to falling spot market prices of electricity. A study of the price sensitivity of renewable energies conducted in 2010 by the German Research Centre for Energy Economics shows that on average an additional supply of wind energy of 4.6 GW can decrease the spot market electricity price by €11/MWh.

Theoretically, the price for CO₂ allowances has another effect on the merit-order. The higher the price for CO₂ allowances is, the higher the marginal costs of electricity production of fossil fuel based power plants are. Eventually, the most CO₂-intensive power plants can be pressed out of the market. For example, electricity production based on coal rather than gas is generating more CO₂/MWh. If the price for CO₂ allowances increases the price for coal-based electricity will thus increase to a larger extent compared to gas. This uneven price effect is important since it can change the sequence of the merit order. Gas power plants usually have higher marginal costs in a standard case (without a price for CO₂) and in a situation with low CO₂-prices. In case of high CO₂-prices coal power plants have the higher marginal costs of electricity production.
The EU Emission trading system

Mechanism

The EU ETS (EU Emissions Trading System) is “the cornerstone of the EU’s drive to reduce its emissions of man-made greenhouse gases” and to be in line with the Kyoto Protocol emission targets. By putting a price on CO₂ emissions, firms obtain an incentive to invest in clean, low carbon technologies.

The system is based on a cap-and-trade mechanism and aims to reduce CO₂ emissions in high emitting industry sectors such as the cement industry and electricity generation. Currently, it covers more than 11,000 installations, which account for 45% of total CO₂ emissions in the EU. The EU sets an emission limit which is defined as the cap. Under this cap, individual EU member states obtain emission allowances and decide how to allocate their allowances to individual sectors. The involved companies can trade their allocated emission allowances (called certificates). The cap-and-trade mechanism shall provide the flexibility to reduce emissions where it is most cost-effective. This entails that companies with low abatement costs will reduce emissions and sell their certificates while companies with high abatement cost will buy these certificates in case their own coverage is not sufficient.

The introduction of the EU ETS was structured in three phases: The first trading period (2005-2007) was conducted as a pilot phase. Phase one covered installations from power generation and energy intensive companies. 95% of the allowances were handed out for free and on the basis of estimated emission data. The penalty for non-compliance was €40 per ton. The remaining 5% could be used for auctions, but only a few nations used that mechanism. As a consequence nearly all allowances have been distributed for free. The unused allowances could not be transferred into the next phase. In the second trading period (2008-2012) the share of free allowances was slightly cut to 90% and the cap was reduced by 6.5% compared to the emission level of 2005. In the third trading period (2013-2020) a cap for the EU ETS was introduced which is to be reduced by 1.74% each year. This regression leads to a 21% lower European-wide cap in 2020 compared to 2005. Furthermore, the issuing of allowances is replaced by an auction procedure. In 2013 more than 40% of certificates were auctioned. This share will increase progressively each year. Exhibit 6 illustrates how the CO₂ allowance price has developed throughout the three different phases.

CO₂ price effect on RWE

In 2013, RWE’s power plant capacity was based on 84% fossil fuels. As one of the biggest CO₂ emitters in the EU, RWE’s power installations are covered by the EU ETS. As a result the company is directly affected by price developments of CO₂ allowances. When the CO₂ price moves up, RWE’s marginal costs of power generation will increase. Table 1 illustrates how much CO₂ allowances RWE has received for free and additionally needed to buy between 2005 and 2013.

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<tr>
<td>2013</td>
<td>163.6</td>
<td>7.4</td>
<td>155.9</td>
</tr>
<tr>
<td>2012</td>
<td>179.8</td>
<td>121.4</td>
<td>58.4</td>
</tr>
<tr>
<td>2011</td>
<td>161.9</td>
<td>116.6</td>
<td>45.3</td>
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</tbody>
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Table 1: RWE’s CO₂ emissions, received free allowances and shortage of CO₂ allowances

<table>
<thead>
<tr>
<th>Year</th>
<th>CO₂ Emissions</th>
<th>Free Allotments</th>
<th>Shortage</th>
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<tbody>
<tr>
<td>2010</td>
<td>164.9</td>
<td>115.1</td>
<td>49.8</td>
</tr>
<tr>
<td>2009</td>
<td>149.1</td>
<td>105.2</td>
<td>43.9</td>
</tr>
<tr>
<td>2008</td>
<td>172.1</td>
<td>104.6</td>
<td>67.5</td>
</tr>
<tr>
<td>2007</td>
<td>187.1</td>
<td>169.8</td>
<td>17.3</td>
</tr>
<tr>
<td>2006</td>
<td>149</td>
<td>141</td>
<td>8</td>
</tr>
<tr>
<td>2005</td>
<td>150</td>
<td>142</td>
<td>8</td>
</tr>
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Although the allowances were allocated for free to firms in the first two trading periods, electricity providers like RWE incorporated the CO₂ price as a cost factor – no matter if they actually paid a price for the allowances or not. The artificial price for a ton CO₂ is passed on to their customers. This effect is called “windfall profits”. It cannot be denied that during the early days of the EU ETS especially electricity companies realized additional profits due to the freely allocated allowances. Until 2012 electricity companies made an estimated additional profit of around €14bn - €34bn only in Germany.

In 2012 RWE received 121.4m tons of freely allocated CO₂ allowances, which represent a financial relief of €1.2bn. Despite the free allowances, RWE was 58.4m tons of CO₂ short and the company had to buy additional allowances to comply with the EU ETS. With an average trading price of €7.5 per ton of CO₂ in 2012 the lack of allowances generated estimated costs of €438m.

One year later in 2013, the EU ETS system entered the third trading period, in which the amount of freely allocated allowances was cut. Moreover, the power sector needed to buy most of its allowances in auctions. In that year RWE generated 163.8m tons of CO₂. However, the amount of free CO₂ allowances decreased from 121.4m in 2012 to 7.4m in 2013. As a result RWE was 155.9m allowances short that had to be compensated by traded CO₂ allowances. The average price for traded CO₂ allowances in 2013 was €4.7 per ton of CO₂ yielding an estimated additional burden of €733m. In comparison to a financial relief of €1.2bn in 2012, this development was fundamentally impacting the financial result of 2013. At the current emission levels of RWE, the consequence is an overall price sensitivity of €156m per one euro of price increase for one ton of CO₂.

Next to these negative consequences, the overall profitability of RWE’s production plants is determined by the level of CO₂ prices. The marginal costs of power production regulate the order of how power plants are brought online in order to meet the demand for electricity. This merit-order effect determines the time online and profitability of a power plant. Depending on the actual magnitude, the CO₂ price can have the following effects for RWE:

- First, new efficient coal power plants are more profitable compared to old but amortized ones.
- Second, it inverts the situation that coal is cheaper than gas. When CO₂ prices are at a certain level gas power plants have lower marginal costs compared to coal power plants.

In a nutshell the CO₂ allowance price directly affects the bottom-line of RWE’s conventional electricity production. In November 2013 the EU announced their plan to backload 900m tons of CO₂ from the auction contingent for 2014 – 2016 as a reaction to the surplus of emission allowances. The effect on the CO₂ allowance prices and thus RWE’s bottom line is so far not foreseeable.
The German Energiewende

Environmental targets

In response to the IPCC report forecasts and the predicted consequences of climate change governments all over the world announced dedicated emission reduction and energy saving targets, e.g., the 20/20 target (minus 20% emissions by the year 2020) of the European Union. In absolute numbers Germany is generating the largest amount of CO\textsubscript{2} emissions in the EU and is, therefore, one of the most important protagonists in the European Union to meet climate mitigation targets. The required large scale transformation of Germany’s energy sector is called Energiewende.

The Energiewende aims for three long-term targets that shall be achieved by 2050. The first target aims to reduce CO\textsubscript{2} emissions. Germany is attempting to reduce its overall CO\textsubscript{2} emissions by 40% in 2020 and 80% in 2050 compared to the level of 1990. The second target is to increase the share of renewable energies to reach 80% in the electricity and 60% in the energy market in 2050. Third, Germany is targeting high energy and electricity savings through efficiency measures, e.g., a 50% primary energy reduction in 2050.

Simultaneously to these three targets, Germany decided to phase out nuclear energy by 2022. Nuclear energy still made up 15.4% of the produced electricity in Germany in 2013. This needs to be completely substituted in the following years.

The EEG funding mechanism

The early phases of the Energiewende were initiated in 1991 when Germany decided to actively promote renewable energies via a fixed funding mechanism, a so called feed-in tariff. The main purpose was to increase the share of renewable energies, create jobs, and bring renewable technologies to market maturity. The feed-in tariff is a minimum financial compensation per kWh that the operators of renewable technologies receive. In parallel, grid operators were obliged to prioritize renewable energies and always provide access and grid-connection.

Germany extended the renewable energy law (EEG) to accelerate the growth of those technologies in 2000. Cornerstones of the adjustment have been a stronger differentiation of the fixed funding along the different technologies, size of installation, and region. The funding is underlying a yearly degression since then. On top of that, the costs of renewable energies are distributed between all end customers. However, some electricity intensive companies have been exempted from that payment to maintain their international competitiveness. The energy transformation is a main agenda item for governmental policy debate and in 2014 the renewable energy law has undergone several alterations and adjustments.

The funding mechanism adopts the following procedure. Operators of renewable energies will get a guaranteed fixed price for each kWh they produce over a period of 20 years, determined by the size of the operation, technology in use and regional conditions (e.g., average sun and wind hours per year). This fixed price has to be paid by the grid operator the renewables are connected to. In order to compensate the funding costs, the grid operator can create revenues by selling the electricity on the spot market. However, in the last years, the spot market price for electricity was always lower than the fixed price that is guaranteed. The resulting gap between the costs for the fixed funding and the revenue is the basis for the
calculation of a compensation which has to be paid by each end-customer in form of an additional levy on every individual kWh.

The good news is that due to the EEG funding mechanism the electricity production mix of Germany consisted of around 23% renewable energies such as photovoltaic and wind power in 2013. The bad news is, the electricity prices have increased. Since the spot market price for electricity has been declining continuously and the amount of produced renewable kWh is increasing, the gap for grid operators between costs for the fixed funding and revenue on the spot market has become bigger - resulting in a higher necessary compensation. As main consequence, Germany faces a sharp increase of electricity prices with a growth of more than 20% since 2006. Exhibit 5 shows how the compensation for renewable energies has increased between 2003 and 2014.

The Energiewende Paradox

There is a paradox occurring in the German electricity market. Renewable energies increased to a share of 23% of the electricity production in Germany in 2013; yet at the same time electricity production based on CO2 intensive coal reached a new high. The share of coal rose by 1.2% to a total of 45.2% electricity production in 2013 – the highest level since 1990. This yields a paradoxical situation: even though there is the highest share of renewables ever, CO2 emissions from electricity generation increased in Germany due to a higher consumption of coal.

The main reason for this paradox is based on the merit-order. The price for coal in 2013 has dropped and electricity was cheaper than generated from gas. This meant that environmentally friendlier gas-fired power plants are crowded out of the market. As a consequence, more electricity was produced by coal than by gas. Another reason for the paradox is the German nuclear phase out required by 2022. The growing amount of renewable energies is mainly substituting the decreasing amount of nuclear energy while other, CO2-intensive power plants remain stable in the market.

German environmental organizations reacted promptly and called on the government to make sure that coal prices fully reflect the costs to the environment. They demanded the government to take steps to increase the price of emission allowances in the EU to force utilities to decrease the use of coal.

UBA (Germany’s Federal environmental office) Vice-President Holzmann said: “It is worrisome that the trend towards coal-generated electricity became even more pronounced in 2013. If it continues, we can hardly expect to achieve the Federal Government’s climate protection goal for 2020. The aim is for Germany to reduce greenhouse gas emissions by 40% over 1990 levels. According to the latest calculations by UBA, emissions have now been reduced by 23.8%.”

Vice-President Holzmann added, “We would be well-advised to continue with the rapid development of renewable energy. The changes to the Renewable Energies Act must ensure that the established expansion targets for renewable energy can be achieved...We also need to promote the conversion of fossil-fuel-fired power stations to become more flexible and emit less CO2.”
Local governments as RWE’s shareholder

RWE’s headquarter is in the city of Essen in the German federal state of North Rhine-Westphalia. The company plays a fundamental role as the economic engine of the region by providing a substantial proportion of income and jobs. The role of RWE was so important that local governments, including cities like Essen or Dortmund, hold about 24% of RWE’s shares. This situation is critical, because many local governments are highly indebted. The consequence is a great dependence on the company’s dividend payments. Some of these cities already planned their budgets on a payment of €2 per share that has now fallen to €1.

Furthermore, maintaining jobs is a key priority for local governments. At the beginning of 2011, RWE had about 74,000 employees. However, Peter Terium announced that this number will decrease by 6,700 in 2016. These job cuts are on top of the 6,200 jobs lost already between 2011 and 2013. The city of Essen severely suffers from the job losses as RWE’s central administrative operations are based in Essen. The job cuts of RWE contribute to a further worsening of the local job market situation as other companies of that region such as Thyssen Krupp, Evonic, and Hochtief, also announced massive job cuts.

Moreover, linked to the Energiewende, there are further employment related impacts for the region, which stem from the coal mining industry. According to a newspaper report RWE is considering the closure of the open pit lignite mine Garzweiler by 2018. For the local governments in North Rhine-Westphalia, lignite mining is an important economic factor. The mining and power plant industry states that about 35,000 jobs are located around the cities. How many of them may actually be eliminated is still unclear. "We must be able to incorporate the brown coal in the energy transition, otherwise it looks bleak here," RWE Supervisory Board member Hans-Peter Lafos stated in the newspaper.

RWE’s history in renewable energies

In 1970, governments and companies worldwide started to deploy wind energy. In 1978 the Federal Ministry of Education and Research in Germany approached the electric utilities to participate in a large-scale demonstration project for wind energy called GROWIAN. The project was based on a MAN turbine with 100-meter-diameter rotor, 100-m tower, and 3 MW of maximum power output. RWE and other utilities decided to only provide less than 5% of the total research expenditures and pursued little engagement in wind power projects at that time.

Günter Klatte, former Member of the Board of Directors of RWE, said in an interview to the German newspaper Die Welt in February 1981: “We needed GROWIAN to prove, that wind power does not work”. He added in a stockholder’s meeting in 1982: “GROWIAN is something of a pedagogic model, to evangelize opponents of nuclear power to the true belief.”

However, wind technology was in its very early stage in the 1970s (only 10-50 kW turbines commercially available). On top of that, the electricity market was not yet liberalized, i.e., utilities had local monopolies on electricity production and distribution. German electricity providers openly confronted engagement in wind energy research and blocked almost all efforts to connect installed wind power to the grid.

Although wind energy has been profitable (largely thanks to the German feed-in tariff) since the late 1990s, RWE was rather reluctant to engage in the deployment of renewable energies. In February 2008 RWE founded RWE Innogy. The main aim of RWE Innogy is to
bundle renewable activities and competencies across the RWE Group. The department focuses on commercially mature renewable technologies and includes both onshore and offshore wind. Furthermore, the department conducts Research & Development and offers venture capital to drive the development of emerging technologies. RWE Innogy planned to invest a total of about €1bn in the expansion of renewable energy from 2014 to 2016. By the end of 2013, RWE Innogy was operating generation facilities with a total installed capacity of 2.9 GW. A comprehensive company profile of RWE Innogy is illustrated in Exhibit 4.

These numbers imply that as of 2013 renewable energies only make up 7.1% of the power plant capacity of RWE. 6.4% of RWE’s produced electricity was generated by renewable energies. This illustrates Peter Terium’s conclusion that RWE was “hesitant at the beginning” to invest in renewable energies.

RWE in the critique of NGOs

All of the recent developments are a lot to handle for Peter Terium. On top of these, RWE’s fossil fuel based power plant portfolio carries a large reputational risk. Well-known NGOs make vocal public criticism of fossil fuel based power generation, directly tackling RWE’s reputation.

A study by NGO World Wide Fund for Nature (WWF) ranked ”Europe’s worst climate polluting power stations” (details in Exhibit 7). What was called the “Dirty Thirty” listed the biggest CO₂ emitters in Europe and finds that 29 of the 30 dirtiest power plants are coal-fired. Germany performs badly in that survey, because it is home to six of the ten dirtiest plants. Three of them are run by RWE making the company one of the biggest CO₂ emitters in the European power sector.

“The power sector is responsible for 37% of all man-made CO₂,” said Imogen Zethoven, head of WWF’s global PowerSwitch! campaign. He continues: “Coal-fired power stations rank dirtiest, because they use the most CO₂-intensive fuel. To switch off global warming we have to replace them with cleaner alternatives, such as gas and renewables.” In their report WWF states: “Germany and the UK are the self-declared climate champions of the EU. However, Germany uses more coal to generate electricity than any other EU country...”

WWF directly opposed RWE’s current business model by issuing statements such as: “EU policy makers should pay more attention to the share of coal in the (EU) energy mix in order to secure power sector decarbonisation. To this end, policies specifically designed to speed up the phase out of coal based emissions need to be put in place.”

Zethoven demands the EU improve the environmental performance of the power sector: “A crucial part of the solution to CO₂ emissions from power production is the European Emission Trading Scheme...WWF is pushing for strong pollution limits and clear incentives to invest in wind, water and sun to be included in the second phase. Only tough limits on CO₂ will force the utilities to replace dirty coal plants with cleaner gas or clean renewables.”

RWE and its business practices are not only criticized by the WWF. In 2002 RWE received a letter from the NGO Germanwatch. Germanwatch is engaging for global equity and the preservation of livelihoods. In this letter the NGO’s former CEO Klaus Milke positioned the NGO in its battle for a greener energy production and directly criticized RWE’s environmental strategy:
RWE as an energy utility is still actively pursuing their production … with the environmentally damaging coal and the high-risk nuclear technology. Both do not contribute to a safe and future oriented supply of energy and they do not enhance climate protection. [...] Moreover, we see the opportunities RWE could exploit with proactive behavior towards the emission trading system. However, your political behavior of the last months contradicts the assumption that your company is trying to follow a sustainable path. [...] Sustainability indices and investment funds that incorporate sustainable criteria, gain in importance for corporate image and capital acquisition. Therefore Germanwatch is campaigning for, that RWE will no longer be listed in the Dow Jones Sustainability Index. In order to do so, Germanwatch approached the Sustainable Asset Management (SAM) in Zürich, which manages the Dow Jones Sustainability Index, to delist RWE. Moreover, we will publish our claim in the Germanwatch newspaper.

Germanwatch as an Environment and Development Organization is requesting you, to restructure your company in a sustainable way and, in particular, align your company policy and lobbying activity for the benefit of the people of North Rhine-Westphalia and the whole earth.”

RWE’s financial situation and outlook

In 2013, Peter Terium faced a net loss of €2.8bn. RWE had never before disclosed a negative financial result. Thus, the key question is what the outlook for RWE’s financial situation and future performance is.

As a consequence of the drop in profit RWE halved the dividend on shares from €2 to €1 in 2013. On top of that, RWE has €31bn of net debts including €10bn of provisions for the phase out of nuclear power. Exhibit 1 provides a detailed overview of RWE’s key financial figures in 2013. The outlook does not improve in 2014. In the first quarter the recurrent net income, the measure on which the dividend is based, declined by 35.5% from €1.3bn to €838m. The EBITDA (Earnings before interest, tax, depreciation and amortization) fell 15% to €2.59bn.

Many investors seem to lose trust in the traditional electricity industry, which is manifested in the share price performance of RWE. In 2008 RWE’s share price reached €98. Ever since then the share price continuously declined and reached its lowest value in August 2013 with €21. This share price movement is also reflected by the dividend. In 2010 a dividend of €3.50 per share was paid, in 2013 this was only about €1 (Illustrated in Exhibit 2).

The situation could get even worse since analysts, e.g., the largest private bank UBS, urge investors to be aware of risks regarding their energy related investments: “Big power stations in Europe could be redundant within 10-20 years as electric cars, cheaper batteries and new solar technologies transform the way electricity is generated, stored and distributed.” They expect: “Large-scale power generation, however, will be the dinosaur of the future energy system: Too big, too inflexible, not even relevant for backup power in the long run.”

Peter Terium sees RWE’s financial issues emerging because Germany switched to renewable energies and blamed the “crisis in the conventional electricity generation business” for the company’s bad financial performance in 2013. He said, “We are passing through a vale
of tears. Our traditional business model is breaking apart under our feet. We are directing all of our efforts to overcoming this crisis through drastic cost savings.”

With decreasing wholesale market prices many power plants are not profitable anymore. One quarter of all German power plants do not recover their own costs for fossil fuels and CO2 allowances. RWE explains: “We cannot run power plants that are not profitable. We check our power plant portfolio regularly and in the case that power plants are cash-negative we will react.” The firm has already decided to shut down several power plants in Germany and the Netherlands. Since the beginning of 2013 RWE has turned off 12GW (or in stand-by modus) of power plant capacity in Germany.

In January 2014 Peter Terium said: “Throughout Europe, gas and hard coal-fired power stations in particular are under substantial economic pressure.” He added that RWE was cutting costs at its power plants “in order to increase our earning power.” He pointed out: “We cannot handle the situation for a long-time. Time is pressing. Immediate action must be taken.”

In 2012 RWE still had an 8% (4 GW) share of nuclear power in its portfolio, which must be shut down by 2022. Who has to bear the costs of nuclear power plant dismantling in Germany is still unclear. This critical discussion is going on in the German government. As a safeguard, RWE and the other three big energy incumbents have built up €37bn of capital provisions, which shall compensate the dismantling and the storage of nuclear waste. But the government and the power providers are unsure if the reserves will be enough to cover the costs.

Peter Terium sees the government to compensate energy companies for the additional costs: „We will have to carry the responsibility. But it is not our responsibility alone. The energy industry was pushed into nuclear power by politics. Sure the industry endorsed this step because it wanted to earn money. However, the money was first needed to pay off the investment costs and second to build up reserves for dismantling and disposal.” At the moment the government sees the responsibility lies with the electricity providers. The final arrangement for compensation of additional costs remains unclear, nonetheless there is a high chance that the nuclear phase out will create an additional burden to RWE’s future financial performance.

Following the bad financial performance in 2013, RWE is planning to significantly scale back its spending on renewable energies. The company announced it would be halving the group’s overall clean-tech spending planned for 2014 from €1bn to €500m, although they only make up a small amount of RWE’s energy production capacity. Furthermore, RWE expects to sell off wind farms and a major biomass plant in the UK. They expect to sell half of their 700MW onshore wind development pipeline in the next few years and they are considering an option to sell a £200m biomass plant in Scotland. This is the largest biomass combined heat and power plant in the UK. RWE has already undertaken trials in Germany to sell stakes in the Jüchen onshore wind project, located in North Rhine-Westphalia, to its own staff and local authorities.

Peter Terium explains: “Of course we would like to invest more in renewable energy, but we can’t spend more money than we earn. Last year our bottom line took a hit of €1.3bn, because the federal government decided to phase out nuclear energy. That money is gone. In addition, the rating agencies are demanding a lower debt-to-capital ratio. Our scope for investment is limited.” Nevertheless, he sees the need for radical strategic shift.
Exhibit 1: RWE’s key financial figures 2013

- Operating result: €3.9 billion
- Net income: €2.8 billion
- Recurrent net income: €2.3 billion
- Dividend proposal: €1 per share
- Cash flows from operating activities: €5.8 billion
- Leverage factor: 3.5 (unchanged)

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<td>External gas sales volume (million kWh)</td>
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<td>Earnings per share (€)</td>
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<td>-</td>
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<td>Recurrent net income per share (€)</td>
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<td>4.00</td>
<td>-6.0</td>
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<td>Dividend per share (€)</td>
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<td>Weighted average cost of capital (WACC) before tax (%)</td>
<td>8.8</td>
<td>8.9</td>
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1. Dividend proposal for RWE AG’s 2013 fiscal year, subject to the passing of a resolution by the 14 April 2014 Annual General Meeting.
2. Converted to full-time positions.

Source: RWE, Annual Report 2013

Exhibit 2: RWE on the capital market 2009 – 2013

RWE share indicators:
- RWE’s statutory capital stock amounts to €1,574 million. It is divided into 575.7 million common shares and 39.0 preference shares.
- Our shares are no-par stock. They represent a calculated share of the capital stock in the amount of €2.56.

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<td>50%</td>
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<td>Dividend yield on common shares3</td>
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<td>19.1</td>
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</table>

1. Based on the average number of shares outstanding.
2. Ratio of the dividend payment to recurrent net income.
3. Ratio of the dividend per share to the share price at the end of the fiscal year.

Source: RWE, RWE at a glance, 2014
Exhibit 3: RWE power plant capacity and electricity production by primary energy source 2013

Source: RWE, Fact Book RWE Innogy GmbH, 2014

Exhibit 4: RWE Innogy key figures 2012

Source: RWE, Facts and Figures, 2013
Exhibit 5: Price development of the EEG funding in ct/kWh

![Price development graph]


Exhibit 6: EU ETS CO₂ allowance price in € per metric ton of CO₂

![EU ETS graph]

Source: Thomson Reuters Datastream
Exhibit 7: Overview of WWF’s ranking – Europe’s Dirty 30

<table>
<thead>
<tr>
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<td>1080</td>
<td>hard coal</td>
<td>1975</td>
<td>6.68</td>
</tr>
</tbody>
</table>

Source: EU ETS Database, Platts, Bundesnetzagentur, utilities reports. * the dates indicate start of operation of original and added power blocks. Mtonnes = Megatonnes of CO₂ equivalent.
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