What risks are posed by EU energy policies for European power supplies?

Graham Weale - Chief Economist, RWE AG
Chatham House Conference, 4th November 2013
Forward Looking Statement

This presentation contains certain forward-looking statements within the meaning of the US federal securities laws. Especially all of the following statements

- Projections of revenues, income, earnings per share, capital expenditures, dividends, capital structure or other financial items,
- Statements of plans or objectives for future operations or of future competitive position,
- Expectations of future economic performance; and
- Statements of assumptions underlying several of the foregoing types of statements are **forward-looking statements**.

Also words such as “anticipate”, “believe”, “estimate”, “intend”, “may”, “will”, “expect”, “plan”, “project” “should” and similar expressions are intended to identify forward-looking statements.

The forward-looking statements reflect the judgment of RWE’s management based on factors currently known to it. No assurances can be given that these forward-looking statements will prove accurate and correct, or that anticipated, projected future results will be achieved. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Such risks and uncertainties include, but are not limited to, changes in general economic and social environment, business, political and legal conditions, fluctuating currency exchange rates and interest rates, price and sales risks associated with a market environment in the throes of deregulation and subject to intense competition, changes in the price and availability of raw materials, risks associated with energy trading (e.g. risks of loss in the case of unexpected, extreme market price fluctuations and credit risks resulting in the event that trading partners do not meet their contractual obligations), actions by competitors, application of new or changed accounting standards or other government agency regulations, changes in, or the failure to comply with, laws or regulations, particularly those affecting the environment and water quality (e.g. introduction of a price regulation system for the use of power grid, creating a regulation agency for electricity and gas or introduction of trading in greenhouse gas emissions), changing governmental policies and regulatory actions with respect to the acquisition, disposal, depreciation and amortisation of assets and facilities, operation and construction of plant facilities, production disruption or interruption due to accidents or other unforeseen events, delays in the construction of facilities, the inability to obtain or to obtain on acceptable terms necessary regulatory approvals regarding future transactions, the inability to integrate successfully new companies within the RWE Group to realise synergies from such integration and finally potential liability for remedial actions under existing or future environmental regulations and potential liability resulting from pending or future litigation. Any forward-looking statement speaks only as of the date on which it is made. RWE neither intends to nor assumes any obligation to update these forward-looking statements. For additional information regarding risks, investors are referred to RWE’s latest annual report and to other most recent reports filed with Frankfurt Stock Exchange and to all additional information published on RWE’s Internet Web site.
RWE today: a leading European utility

RWE has leading positions in two of Europe’s largest markets as well as in fast growing SEE/CEE markets and own a large upstream position in both Europe and North Africa.

1 Market positions of the RWE Group in terms of sales.
Three serious risks resulting from current energy policies in certain countries

- **Internal power market**
  - Major power market distortions
  - Large profits for investors and wealth transfers
  - Rising capital employed and mounting costs to cover

- **RES support**
  - Rapid build-up of RES
  - Recession
  - Low CO₂ Price
  - Nuclear closures
  - Reduced margins & weakened balance sheets for producers
  - Utilities poorly placed to invest in decarbonisation!

- **EU Emission Trading Scheme**
  - Guarantees EU 2020 CO₂ targets will be met
  - Determines the necessary CO₂ Price
  - Incentive for required fuel-switching Level
  - Lower margins for power plants – closures / mothballing
  - Tighter capacity margins
  - Supply security endangered!
1. Policies leading to a high capacity, capital-intensive, low margin, low utilisation system

![Germany - Installed capacity (GW) and Capital Employed (indicative)]

![Gross margins (spreads) €/MWh and Average fleet utilisation (%)]
…with new coal plants not earning a return on capital
... altogether putting the European (F)utilities in a critical financial position…

Utilities: EdF, GdF-Suez, RWE, E.On, Vattenfall, Iberdrola, Enel

* Source IHS-CERA Study – The Energy Investment Imperative
... although by 2050 > 50% of EU power will come from utility-scale plants with ~ 300 GW to be built EU

### Alternative EU decarbonisation scenarios

<table>
<thead>
<tr>
<th>Fuel shares (%)</th>
<th>Capacity (GW) to be built</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
</tr>
<tr>
<td>High nuclear/CCS</td>
<td></td>
</tr>
<tr>
<td>High RES</td>
<td></td>
</tr>
</tbody>
</table>

- **Solar:**
- **Other RES:**
- **CHP**
- **Wind onshore**
- **Wind offshore**
- **CCGT**
- **CCS**
- **Coal/Lignite**
- **Nuclear**
- **Hydro**
- **Other non-RES**

Source: Pöyry – Future Market Design Study 2013
2. Reduced affordability – prices rising fastest in countries with strongest renewables programmes

Power prices for households
(2.5-5 MWh) €ct/kWh incl. all taxes

Power prices for industrial consumers
(20-70 GWh) €ct/kWh excl. VAT

Source: BMWi Energiedaten 21.05.2013
3. Low margins leading to closures / mothballing; with nuclear closures - tight capacity/supply risks

- DE: low/ negative cash margins are causing both coal and gas plants (including new ones) to be mothballed or closed
  - interventions from TSOs have become much more frequent since Jan. 2011
  - HT grid has been in critical situations on several occasions
  - quality of supply (voltage and frequency) critical for high-tech industry has deteriorated

- UK: substantial plant closures from the LCPD may lead to a tight situation in the late 2010's

- A market mechanism is missing to ensure adequate supply quality
  - the value of reliability is many times what the market pays!
Return to a market approach and apply three specific solutions to address the three risks

1. ETS as primary tool – cap sets CO₂ reduction path
   - Allows industry to find the lowest cost path
   - Decarbonisation becomes more affordable

2. Develop RES at measured pace - market-mechanisms
   - Utility balance sheets need rebuilding
   - Utilities put in position to invest in decarbonisation

3. Phase in a tech-neutral capacity market on EU-basis
   - New sources of capital required
   - Supply security ensured

- A high burden for customers / economy!
- Utilities poorly placed to invest in decarbonisation!
- Supply security endangered!

Return to a market approach!
- Allow market to solve excess capacity
- Recognise the value of capacity and allow price discovery
Return to market-approach will maximise share of market-based revenue

Share of power production driven by market signals in alternative approaches

- Business as usual: Energy-only Market will be depressed by renewables and CHP support
- Return to markets: Energy-Only Market, EU-wide

EU Market Basis
Regulated Basis

EU Market for renewables
EU Capacity Market

2015 2020 2030 2040 2050
Time to decide – market principles or regulation. Continuing hybrid is worst of all options!
THANK YOU VERY MUCH FOR YOUR ATTENTION.

Graham.Weale@RWE.com