RWE - Renewable Energy Strategy

Morgan Stanley
European Power & Utility Summit
18th September 2008

Kevin McCullough, COO RWE Innogy
Focus on wind, hydro and biomass while also supporting new technologies

**RWE Innogy**

**Overview**
- Established in February 2008
- Bundling renewables activities and competencies across RWE Group
  - Focus on capacity growth in commercially mature renewable technologies, i.e. wind, biomass and hydro
  - Research & Development and ventures to drive the development of emerging technologies, e.g. solar, geothermal, marine
- EU focus, international activities opportunistically
- Asset portfolio of 1.2 GW capacity in operation and 0.3 GW under construction mainly located in United Kingdom, Germany, Spain and France (as of June 2008)
- Project pipeline of 9.0 GW capacity strongly geared towards onshore (44%) and offshore wind (44%)

<table>
<thead>
<tr>
<th>Business Area</th>
<th>Wind onshore</th>
<th>Wind offshore</th>
<th>Hydro</th>
<th>Biomass</th>
<th>New technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus and Strategy</strong></td>
<td>Key technology for capacity growth</td>
<td>Key technology for capacity growth</td>
<td>Run-of-river projects</td>
<td>Development of biomass plants (&gt; 5 MW)</td>
<td>Ventures and R&amp;D Emerging technologies</td>
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<tr>
<td></td>
<td>Focus on organic growth</td>
<td>Organic growth strategy leveraging strong position in UK</td>
<td>Development of hydro power projects</td>
<td>Regional focus on RWE core markets and South-Eastern Europe</td>
<td>Carbon neutral generation</td>
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<td></td>
<td>Focus markets include UK, Spain, Germany, France, Italy, Central-Eastern Europe</td>
<td>Focus areas are Central- and South-Eastern Europe</td>
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<td></td>
<td>Efficient energy storage</td>
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</tbody>
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We plan to more than triple the installed generation capacity by 2012

Value oriented growth strategy

> RWE Innogy starting with strong diversified position in renewable energies as well as a significant realizable project pipeline

> Objective is **profitable growth** of renewables business

> We want to more than triple our installed capacity by 2012 and exceed 10 GW by 2020
  - Strong organic growth (incl. development of acquired pipeline) and strategic acquisitions
  - **Value creation** in line with RWE’s strict investment criteria

> Driving **innovation** in future renewable technologies
  - Investing in emerging and innovative companies
  - Development of pilot plants and demonstration projects

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1) RWE Innogy capacity by year-end 2007, composed of 1,100 MW capacity in operation and 211 MW under construction (pro rata).
Our regional focus is Europe

We are concentrating on markets
- offering attractive growth opportunities
- with stable frameworks for renewable energies
- providing synergy potential for other Group activities
- where RWE Innogy can open doors for other Group activities

We will be operating in markets we know – our focus is on Europe
We aim to invest an average of more than €1 bn p.a. over the mid-term

Focus will be on wind but also biomass and hydro.

Wind will account for approx. 70% of investments. Roughly half of this will be dedicated to onshore wind.

We will look for value adding acquisitions as well.

Expected market growth in Europe

- Onshore wind: >10% p.a.
- Offshore wind: >30% p.a.
- Biomass: >10% p.a.
- Hydro: >1% p.a. (mature market)

* Including geothermal and other renewables

Sources: RWE Innogy, Emerging Energy Research, Eurelectric, IEA, European Commission
RWE Innogy management team: experienced – well connected – international

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Prof. Dr. Fritz Vahrenholt</strong></td>
<td><strong>Dr. Hans Bünting</strong></td>
<td><strong>Kevin McCullough</strong></td>
</tr>
<tr>
<td>CEO</td>
<td>CFO</td>
<td>COO</td>
</tr>
<tr>
<td>&gt; Hydro</td>
<td>&gt; Finance</td>
<td>&gt; Wind onshore</td>
</tr>
<tr>
<td>&gt; Biomass</td>
<td>&gt; Legal</td>
<td>&gt; Wind offshore</td>
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<tr>
<td>&gt; Ventures</td>
<td>&gt; Tax</td>
<td>&gt; Technology &amp; procurement</td>
</tr>
<tr>
<td>&gt; HR</td>
<td>&gt; M&amp;A</td>
<td></td>
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<tr>
<td>&gt; Communication</td>
<td>&gt; IT</td>
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</tbody>
</table>

**Education**
- Degree in chemistry
- Doctorate in chemistry (both University of Münster)
- Degree in business administration
- Doctorate in business administration (both University of Bochum)
- Degree in mechanical and electrical engineering

**Career Milestones**
- **2001 – 08** CEO REpower Systems AG, Hamburg
- **1998 – 01** Member of the Board of Directors of Deutsche Shell AG
- **1991 – 97** Senator and Principal of the City of Hamburg Environmental Ministry
- **1984 – 90** Deputy Minister City of Hamburg Environmental Ministry
- **1981 – 84** Head of Department of Environmental Policy, Waste Management and Air Pollution Control at the Hessian Ministry of Regional Development, Environment, Agriculture and Forestry
- **2004 – 08** Head of risk management RWE AG
- **2000 – 04** RWE Trading GmbH, various management positions in finance and risk controlling
- **1995 – 00** RWE Energie AG, various positions in finance and risk controlling
- **1990 – 95** Ruhr-University Bochum, research associate
- **2004 – 08** Managing Director of npower renewables Ltd, RWE npower
- **2001 – 04** RWE npower (Retail) Head of Business Transformation
- **1998 – 01** National Power and Innogy plc, USA, various executive management positions
- **1984 – 98** National Power, UK, various power plant management & operations positions
### Asset footprint by technology & region
(as of June 2008)

**Capacity in MWₚₘ (pro rata)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Hydro</th>
<th>Onshore wind</th>
<th>Offshore wind</th>
<th>Biomass</th>
<th>Solar PV &amp; thermal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>339</td>
<td>11</td>
<td></td>
<td>92</td>
<td>1</td>
<td>444</td>
</tr>
<tr>
<td>UK</td>
<td>62</td>
<td>206⁽¹⁾</td>
<td>60⁽¹⁾</td>
<td></td>
<td></td>
<td>328</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[135⁽²⁾]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>10</td>
<td>320</td>
<td></td>
<td>1</td>
<td>&lt; 1</td>
<td>331</td>
</tr>
<tr>
<td>France</td>
<td>45</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>Portugal</td>
<td>17</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Switzerland</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Czech Republic</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>496</td>
<td>560</td>
<td>60</td>
<td>113⁽³⁾</td>
<td>2</td>
<td>1,230</td>
</tr>
</tbody>
</table>

⁽¹⁾ 206 MW = 10 MW Innogy wholly owned assets + 196 MW of Zephyr assets. RWE Innogy UK operated 401 MW, of this 391 MW (331 MW onshore/60 MW offshore) is owned by Zephyr Investments Ltd which is 1/3 owned by RWE Innogy UK. Of the 331 MW onshore, 196 MW is 100% contracted to RWE npower through PPAs (power purchase agreements). The remaining 10 MW is onshore and 100% owned by RWE Innogy UK and 100% contract to RWE npower through a PPA. The offshore capacity of 60 MW is 100% contracted to RWE npower through a PPA.

⁽²⁾ An additional capacity of 135 MW is contracted to the NFPA (Non-Fossil Fuel Purchasing Agency, est. 1989 to support renewables by offering long term PPAs and new projects were typically contracted in this way until the introduction of the Renewables Obligation in 2002).

⁽³⁾ Including 50 MW of biomass/fossil mix and 15 MW of fossil capacity; the thermal capacity of the plants in operation amounts to 517 MWₑ in Germany and 292 MWₑ in the Czech Republic.
9.0 GW pipeline strongly geared towards on- and offshore wind (pro rata, as of June 2008)

> RWE Innogy with 1,230 MW_{el} assets in operation and 280 MW_{el} under construction – focus of portfolio on wind (58%) and hydro (34%) as well as biomass (8%)

> Total pipeline with projects until 2020 amounts to 9.0 GW_{el} – strongly geared towards onshore (44%) and offshore wind (44%)

> Biomass capacity of 113 MW_{el} in operation corresponds to a thermal capacity of 809 MW_{th} – pipeline of 0.6 GW_{el} (1.6 GW_{th})

### Projects by technology

<table>
<thead>
<tr>
<th></th>
<th>Electricity generation capacity (GW_{el})</th>
<th>Heat generation capacity (GW_{th})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.2 In operation, 0.3 Under construction, 0.2 Pipeline status 1</td>
<td>5.3 Pipeline status 2, 3.6 Pipeline status 3, 9.0 Total pipeline</td>
</tr>
<tr>
<td></td>
<td>0.8 In operation, 1.6 Total pipeline</td>
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</table>

#### Note:
- Pipeline status 1 – Project consented, not yet under construction
- Pipeline status 2 – Prospects (not consented) – land agreements in place, environmental impact studies commenced
- Pipeline status 3 – Identified opportunities – sites identified, but no land agreements – initial discussion on agreements
Onshore wind power is the key element in RWE Innogy’s growth strategy

Markets and operations
Technology & markets
> Relatively mature markets especially in Germany and Spain
> 55.5 GW capacity installed in EU as of 2007,
  – High maturity of technology
  – Power generation costs competitive with conventional energy sources
> Still attractive growth rates & repowering potential in mature markets
> In the foreseeable future positive and stable financial support systems (e.g. fixed feed-in tariffs/obligations)
> Trend: Consolidation through M&A

RWE Innogy’s assets & pipeline
> 560 MW onshore wind farms in operation (of which Zephyr UK 196 MW under economic control of RWE Innogy) and 160 MW under construction
> Onshore wind pipeline of 4.0 GW

1) 206 MW = 10 MW RWE Innogy wholly owned assets + 196 MW of Zephyr assets. Please refer to footnote on page 9 for further explanation.
Offshore wind power: RWE Innogy has strong starting position in the UK

Markets and operations

Technology & markets

> Immature market: 1.1 GW installed offshore wind capacity in EU-27 in 2007,
  - Immature technology (in particular O&M, size of turbines)
> Strong market growth in medium to long term
  - Time horizon depends on technical progress and development of approval procedures
> Significant technological challenges remain especially in offshore foundations and structures
> Trends: Technical hurdles overcome, allocation of attractive sites, development of projects, M&A of projects

RWE Innogy's assets & pipeline

> 60 MW offshore wind farm (North Hoyle) in operation and 90 MW (Rhyl Flats) under construction
> Offshore wind pipeline of 3.9 GW (Gwynt y Môr 0.75 GW and Triton Knoll 1.2 GW in UK as well as 2.0 GW in Netherlands)

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1) Owned by Zephyr Investments Ltd which is 1/3 owned by RWE Innogy UK. The 60 MW capacity is 100% contracted to RWE npower through PPAs (power purchase agreements).
Biomass CHP: focused on development of projects opportunities larger than 5 MW

Markets and operations

Technology & markets

> Biomass enjoys favourable regulatory support in most European countries
> Expected to contribute significantly to the EU renewables targets
> Solid biomass plant technology is mature and mainly used for distributed power generation
> Economic feasibility of projects strongly depends on access to feedstock which accounts for 25 – 40% of production costs
> Utilization of CHP (combined heat and power) generation elevates efficiency and profitability (critical in some markets)

RWE Innogy’s assets & pipeline

> RWE Innogy Cogen bundling biomass competencies within RWE Group
> 113 MW_{el} (809 MW_{th}) biomass/CHP capacity in operation and 8 MW_{el} under construction
> Biomass pipeline of 579 MW_{el} (1,590 MW_{th})
> Joint venture "WBGI" with Austrian Kelag for developing biomass projects in South-Eastern Europe

Biomass capacity

- Germany
  - 92 MW_{el} \(^1\)
  - 517 MW_{th}
- Czech Republic
  - 20 MW_{el} \(^2\)
  - 292 MW_{th}

\(^1\) Includes 47 MW_{el} dedicated biomass, 30 MW_{el} mixed fossil/biomass and 15 MW_{el} fossil capacity.
\(^2\) Includes 20 MW_{el} mixed fossil/biomass capacity (co-firing – combustion of biomass partly substituting fossil fuels).
Hydro power mature, but still offers an area of growth for RWE Innogy

Hydro capacity

- United Kingdom 62 MW
- Germany 339 MW
- Switzerland 23 MW
- France 45 MW
- Spain 10 MW
- Portugal 17 MW

Markets and operations

Technology & markets

- Overall mature market in Western Europe with low growth
- Small hydro plants (< 10 MW) expected to have significant share in future capacity growth
- Most significant growth potential in South-Eastern Europe, Turkey and Russia, but
  - Uncertain license approval processes
  - Grid accessibility for specific site locations not ensured
- Good relationship/strategic partnerships helpful

RWE Innogy's assets & pipeline

- Hydro power plants with 496 MW in operation
- 23 MW under construction
- Current hydro pipeline of about 500 MW
And last but no means least RWE Innogy’s venture unit – an incubator for new technologies and cultural change.

- Will drive the development of selected emerging renewable technologies
- Will invest in emerging and innovative companies, e.g. a 25% share in a company that converts biomass into bio-coal pellets: Topell
- Will be fast, entrepreneurial, creative & motivated
- Will be focused on profit
Our vision for RWE Innogy in 2020

RWE Innogy aims to ...

- be among the top 5 companies in the European renewable energy sector
- contribute to the Group’s growth strategy
- provide sustainable value added to the RWE Group
- be a key element in RWE’s CO₂ reduction programme
- stand for state of the art operation of renewable technology
- be a leading player in developing new renewable technologies
THANK YOU VERY MUCH FOR YOUR ATTENTION