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<td>3 Renewable Technologies</td>
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<td>61</td>
</tr>
</tbody>
</table>
RWE Group
Power plant capacity by primary energy source (as of 31 Dec 2014, under IFRS)

- Hard coal: 11,071 MW, 22.6%
- Renewable energies: 10,455 MW, 21.3%
- Lignite: 10,610 MW, 21.8%
- Gas: 15,610 MW, 31.8%
- Renewable energies: 3,677 MW, 7.5%
- Nuclear: 4,197 MW, 8.6%
- Pumped storage, oil, other: 4,054 MW, 8.3%
- Nuclear: 405 MW, 8.3%

Electricity production by primary energy source (as of 31 Dec 2014, under IFRS)

- Hard coal: 77.2 TWh, 37.1%
- Renewable energies: 48.3 TWh, 23.2%
- Lignite: 38.3 TWh, 18.4%
- Gas: 31.7 TWh, 15.2%
- Pumped storage, oil, other: 10.1 TWh, 4.8%
- Nuclear: 2.7 TWh, 1.3%

1) Including electricity from power plants owned by RWE that we can deploy at our own discretion on the basis of long-term agreements. In fiscal 2014, it amounted to 15.9 TWh, of which 12.9 TWh were generated from hard coal and 0.7 TWh from Renewables.

Source: RWE AG Annual Report
Renewable energy in RWE Group today: A leading renewables generation position in Europe

RWE Group renewable energy capacity in operation by technology and country (Accounting view\(^1\)) + PPA, as of 31 Dec 2014

- **A total of 3,677 MW operational renewables assets** (December 2014) account for roughly
  - 7.5% of the Group’s **generation capacity** (as of 31 December 2014) and
  - 5% of **electricity generation** (in fiscal 2014).

- **Thereof, 3,112 MW is operated by RWE Innogy**, in which RWE pooled its renewable energy activities.

- **The difference of 565 MW** comprises biomass co-firing in the Netherlands (in total 183 MW) and several small, distributed biomass, PV, wind and run-of-river units owned by our German regional companies as well as RWE Energiedienstleistungen (mainly biomass) which are not operated by RWE Innogy.

---

1) Capacity with <50% RWE Innogy ownership is consolidated to 0 MW, capacity with 50% is consolidated to 50% of capacity, and capacity with >50% RWE Innogy ownership is consolidated to 100% of capacity.

2) Biomass generation is split between RWE Generation, RWE Innogy and RWE Energiedienstleistungen. While RWE Innogy and RWE Energiedienstleistungen are focused on smaller dedicated biomass plants RWE Generation runs mainly co-firing in some of its Dutch coal stations (mainly Amercentrale).

3) RWE Group renewables capacity, of which 3,112 MW are operated by RWE Innogy (December 2014).
Focus on core competences wind and hydro

RWE Innogy

Overview
> Established in February 2008
> Bundling renewables activities and competencies across RWE Group
  – Growth focus in onshore and offshore wind, hydro as strong operational backbone*
  – Research & Development and Venture Capital to drive the development of emerging technologies
> European focus
> Asset portfolio of 3.1 GW in operation and 0.6 GW under construction mainly located in United Kingdom, Germany, Spain, Netherlands, Poland and Italy (Accounting view + PPA as at Q4 2014)
> Project pipeline of 3.5 GW consisting mainly of wind and some hydro (Accounting view + PPA as at Q4 2014)

Business Area

<table>
<thead>
<tr>
<th>Business Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
</tr>
<tr>
<td>Wind offshore</td>
</tr>
<tr>
<td>Hydro</td>
</tr>
<tr>
<td>New technologies &amp; Venture Capital</td>
</tr>
</tbody>
</table>

Focus and Strategy

<table>
<thead>
<tr>
<th>Focus and Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key technology for capacity and service growth</td>
</tr>
<tr>
<td>Focus on organic growth</td>
</tr>
<tr>
<td>Focus markets include UK, Germany, Spain, Netherlands, Italy and Poland</td>
</tr>
<tr>
<td>Key technology for capacity and service growth</td>
</tr>
<tr>
<td>Organic growth strategy within partnerships</td>
</tr>
<tr>
<td>Focus markets include UK and Germany</td>
</tr>
<tr>
<td>Operational Excellence in hydro run-of-river</td>
</tr>
<tr>
<td>Selective development options</td>
</tr>
<tr>
<td>Driving innovative renewable technologies to commercial applications via</td>
</tr>
<tr>
<td>• Venture Capital</td>
</tr>
<tr>
<td>• Cross functional R&amp;D and demonstration plants</td>
</tr>
</tbody>
</table>

* Biomass is no longer a strategic business area for RWE Innogy (selected remaining activities including generation from recycled wood and pellet production, no growth), decentralized biomass bundled in RWE Energiedienstleistungen, large-scale biomass co-firing in RWE Generation
# RWE Innogy management team: experienced and well connected

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>Dr. Hans Bünting</th>
<th>Dirk Simons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEO</strong></td>
<td>Operations:</td>
<td><strong>CFO</strong></td>
</tr>
<tr>
<td></td>
<td>- Wind Onshore</td>
<td>&gt; Commercial</td>
</tr>
<tr>
<td></td>
<td>- Wind Offshore</td>
<td>&gt; Controlling</td>
</tr>
<tr>
<td></td>
<td>- Hydro &amp; New Tech.</td>
<td>&gt; Procurement</td>
</tr>
<tr>
<td></td>
<td>- Biomass</td>
<td>&gt; Tax, Accounts &amp; Treasury</td>
</tr>
<tr>
<td></td>
<td>Communications</td>
<td>&gt; M&amp;A and Corporate Development</td>
</tr>
<tr>
<td></td>
<td>Strategy &amp; Regulatory Affairs</td>
<td>&gt; Legal &amp; Compliance</td>
</tr>
<tr>
<td></td>
<td>Corporate HSE&amp;S*</td>
<td>&gt; Real Estate</td>
</tr>
<tr>
<td></td>
<td>Innogy Venture Capital GmbH**</td>
<td>&gt; Human Resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; Organisation &amp; Information Management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>&gt; Degree in business administration</th>
<th>&gt; Degree in economics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; Doctorate in business administration</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Career Milestones</th>
<th>&gt; 2008 – 12 RWE Innogy GmbH, CFO</th>
<th>&gt; 2011 – 12 RWE East, Head of Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; 2004 – 08 RWE AG, Head of risk management</td>
<td>&gt; 2007 – 12 RWE Transgas, Vice-Chairman of the Board, CFO</td>
</tr>
<tr>
<td></td>
<td>&gt; 2000 – 04 RWE Trading GmbH, various management positions in finance and risk controlling</td>
<td>&gt; 2006 – 07 RWE Key Account Contracting GmbH (today part of RWE Innogy GmbH), CFO</td>
</tr>
<tr>
<td></td>
<td>&gt; 1995 – 00 RWE Energie AG, various positions in finance and risk controlling</td>
<td>&gt; 2005 – 07 RWE Key Account GmbH (today part of RWE Supply &amp; Trading GmbH business), CFO</td>
</tr>
<tr>
<td></td>
<td>&gt; 1990 – 95 Ruhr University Bochum, research associate</td>
<td>&gt; 2003 – 05 RWE Energy AG, Head of Financial Analysis and Regulatory Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 1997 – 03 Diverse positions at RWE in finance and controlling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 1995 – 97 Main-Kraftwerke AG, Specialist Controlling</td>
</tr>
</tbody>
</table>

* Health, Safety, Environment & Security
**Independent company
## Strong European footprint with focus on wind and hydro

<table>
<thead>
<tr>
<th>Country</th>
<th>Onshore Wind</th>
<th>Hydro</th>
<th>Offshore Wind</th>
<th>Biomass</th>
<th>Biogas</th>
<th>Solar</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>539</td>
<td>375</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>924</td>
</tr>
<tr>
<td>UK</td>
<td>500</td>
<td>78</td>
<td>570</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>1194</td>
</tr>
<tr>
<td>Spain</td>
<td>447</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>459</td>
</tr>
<tr>
<td>Netherlands</td>
<td>210</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>210</td>
</tr>
<tr>
<td>Poland</td>
<td>197</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>197</td>
</tr>
<tr>
<td>Italy</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>67</td>
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<td>France</td>
<td>0</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Portugal</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Total RWE Innogy</td>
<td>1960</td>
<td>526</td>
<td>570</td>
<td>51</td>
<td>4</td>
<td>1</td>
<td>3,112</td>
</tr>
</tbody>
</table>

### Accounting view

1. Capacity with <50% RWEI ownership is consolidated to 0 MW, capacity with 50% is consolidated to 50% of capacity, and capacity with >50% RWEI ownership is consolidated to 100% of capacity.  
2. Including 196MW of Zephyr Onshore assets + 19MW of Green GECCO assets.  
3. 60MW offshore capacity is owned by Zephyr and is 100% contracted to RWE npower through a PPA.  
4. Electrical capacity of CHP plant Markinch can be extended up to 65 MW.  

### Pro rata view

1. Capacity equal to share of ownership.
Streamlined investments in renewables, concentrating on onshore and offshore wind farms

> The expansion of electricity generation from renewables continues to be a cornerstone of the strategy of the RWE Group.

> For financial as well as risk mitigation reasons, we will reduce our pace of growth and find new ways to finance our business. RWE Innogy is expected to invest a total of about €1 billion in the expansion of renewable energy from 2015 to 2017.

> By the end of 2014, RWE Innogy was operating generation facilities with a total net installed capacity of 3.1 GW (accounting + PPA view). This figure should rise to 3.6 GW during the current year.

> Thanks to efficiency enhancements and new generation capacity, RWE Innogy’s earnings will improve. The operating result will be moderately higher year by year.
RWE Innogy delivers into RWE’s future picture, focusing on being the trusted partner for a sustainable energy system

**Vision**

“To be a trusted partner for competitive renewable energy.”

**Mission Statement**

**RWE Innogy** – we deliver value in renewable energies as a trusted and reliable partner to our stakeholders and society, leveraging capex light solutions through our highly knowledgeable and motivated employees.

**RWE Innogy is part of the solution**

- Providing sustainable energy to our customers and RWE’s portfolio
- Delivering services around sustainable energy in capex light models
- Creating local acceptance through Green Gecco and other local partnerships
- Supporting retail OpCos through delivering services to their partners
Germany plays an important role both in today's asset base and growth ambitions.

RWE Innogy activities in Germany

> RWE Innogy's headquarter located in Essen; offices in Hamburg and Hannover

> One of the leading German onshore wind farm operators

> First offshore wind park to be commissioned in 2015

> 46 run-of-river and storage plants along the rivers Mosel, Saar, Rhine and Ruhr

> Biomass and biogas plants in operation

<table>
<thead>
<tr>
<th>Capacity (MWₑ)¹</th>
<th>In operation</th>
<th>Under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
<td>539</td>
<td>12</td>
</tr>
<tr>
<td>Wind offshore</td>
<td></td>
<td>295</td>
</tr>
<tr>
<td>Biomass</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td>4²</td>
<td>3</td>
</tr>
<tr>
<td>Hydro</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

(Accounting view + PPA as at Q4 2014)

¹) Table shows electrical capacity respectively equivalent electrical capacity only.
²) Includes only biogas used directly in power generation.
RWE Innogy has a significant track record and a strong position in the UK

RWE Innogy activities in UK

> Operational wind and hydro power assets of RWE npower renewables and the company’s share of the Zephyr portfolio wind farm projects

> Pipeline of onshore wind, offshore wind and small scale hydro projects at various stages of development and construction

> Markinch biomass fully commissioned in 2014

> RWE Innogy UK headquarters based in Swindon

### RWE Innogy assets UK

**Wind onshore**
- 500 MW (excluding 196 MW of Zephyr assets and 19 MW of Green GECCO assets)
- 177 MW (including 60 MW owned by Zephyr and 100% contracted to RWE npower through a PPA)

**Wind offshore**
- 570 MW (including 60 MW owned by Zephyr and 100% contracted to RWE npower through a PPA)
- 177 MW (Gwynt y Môr to be fully commissioned in 2015)

**Biomass**
- 46 MW (electrical capacity of CHP plant Markinch can be extended up to 65 MW)

**Biogas**

**Hydro**
- 78 MW
- 3 MW

**Solar**

(Accounting view + PPA as at Q4 2014)

---

1) Including 196 MW of Zephyr assets and 19 MW of Green GECCO assets.
2) Including 60 MW owned by Zephyr and 100% contracted to RWE npower through a PPA.
3) Gwynt y Môr to be fully commissioned in 2015.
4) Electrical capacity of CHP plant Markinch can be extended up to 65 MW.
RWE Innogy is present on the Iberian Peninsula

RWE Innogy is present in Spain and Portugal through its subsidiaries:

- **RWE INNOGY AERSA (Spain)**
- **INVESTERG (Portugal)**

with onshore wind, hydro and solar technologies

### RWE Innogy assets Iberia

- Chomba de Plágano
- Vales
- Bulgueira
- Guilhado
- Covas do Barroso
- Bragado
- Agilde
- Ribadouro
- Sirigo
- Pinhel
- Cepeda
- La Mora
- Lanternoso
- Andasol 3 1)
- Siglos
- Bancal
- Rio Gállego
- Plana Maria
- Acampo Armijo
- Luna
- Urano
- Aldehuelas
- Juno
- Grisel I-II
- Muel
- Villalgordo
- Los Labrados
- Plana La Balsa
- Plana de Zaragoza
- Bosque Alto

### Capacity (MWel)

<table>
<thead>
<tr>
<th></th>
<th>In operation</th>
<th>Under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
<td>447</td>
<td></td>
</tr>
<tr>
<td>Wind offshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydro</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>6 1)</td>
<td></td>
</tr>
</tbody>
</table>

(Accounting view + PPA as at Q4 2014)

1) Pro-rata, 50 MW Andasol 3 Concentrated Solar Power. RWE Innogy and RheinEnergie jointly hold 25.1% of the shares via a holding company (RWE Innogy: 51%, RheinEnergie: 49%).

---

1) Pro-rata. 50 MW Andasol 3 Concentrated Solar Power. RWE Innogy and RheinEnergie jointly hold 25.1% of the shares via a holding company (RWE Innogy: 51%, RheinEnergie: 49%).
RWE Innogy is active in the wind energy field in the Netherlands for a quarter of a century

RWE Innogy activities in Netherlands

> Active in the onshore wind energy field for a quarter of a century
> Wind farm Westereems with a capacity of 156 MW was realised in 2008 and extended by 12 MW in 2012
> 90 MW extension of Wind Farm Westermeerdijk under construction
> The Dutch area management for onshore wind is located in Zwolle

<table>
<thead>
<tr>
<th>Capacity (MW&lt;sub&gt;e&lt;/sub&gt;)</th>
<th>In operation</th>
<th>Under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
<td>210</td>
<td>90</td>
</tr>
<tr>
<td>Wind offshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Accounting view + PPA as at Q4 2014)
RWE Renewables Polska is one of the leading wind farm operators in Poland

RWE Innogy activities in Poland

> RWE Innogy is present in Poland through its subsidiary RWE Renewables Polska with offices in Warsaw, Szczecin and Suwałki
> Focus on onshore wind
> RWE Renewables Polska is one of the top 3 investors in Poland (concerning installed capacity)*
> 45 MW to be commissioned in 2015
> Pipeline of onshore wind projects at various stages of development

<table>
<thead>
<tr>
<th>Capacity (MW&lt;sub&gt;e&lt;/sub&gt;)</th>
<th>In operation</th>
<th>Under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
<td>197</td>
<td>45</td>
</tr>
<tr>
<td>Wind offshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Accounting view + PPA as at Q4 2014)

RWE Innogy has entered the Italian market through a subsidiary since 2008

RWE Innogy activities in Italy
> RWE Innogy entered the Italian market in 2008
> First wind farm in operation during 2010
> Biomass plant in Sicily commissioned and sold on in 2014
> RWE Innogy Italia headquarters is located in Milan

<table>
<thead>
<tr>
<th>Capacity (MWₑ)</th>
<th>In operation</th>
<th>Under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind onshore</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Wind offshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Accounting view + PPA as at Q4 2014)
Renewable Technologies
## Overview of technologies in RWE Innogy’s main focus

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Wind Offshore</th>
<th>Wind Onshore</th>
<th>Hydro</th>
<th>Biomass*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maturity of technology</strong></td>
<td>Pioneer phase</td>
<td>Mature</td>
<td>Very mature</td>
<td>Mature</td>
</tr>
<tr>
<td><strong>Markets in focus</strong></td>
<td>UK, Germany: growing</td>
<td>UK, Netherlands, Germany, Poland, Spain, Italy</td>
<td>UK, D, F, E, P: mature markets with limited growth potential</td>
<td>Germany, UK, USA (upstream pellets)</td>
</tr>
<tr>
<td><strong>Specialities</strong></td>
<td>Partnerships to share risk and expertise</td>
<td>Partly fragmented markets</td>
<td>UK market for small hydro enjoys high support schemes and great political support</td>
<td>Market for fuel supply, Sustainability</td>
</tr>
<tr>
<td><strong>Size of projects (capacity)</strong></td>
<td>Large (500 – 1,000 MW)</td>
<td>Small to medium (20 – 200 MW)</td>
<td>Average size 1 to 10 MW and all types</td>
<td>Small to medium (5 – 65 MW), 100k – 750k ton/a pellet plant</td>
</tr>
<tr>
<td><strong>Approx. load factor</strong></td>
<td>35 – 40%</td>
<td>25 – 30%</td>
<td>50%</td>
<td>80-90%</td>
</tr>
</tbody>
</table>

* Biomass is no longer a core technology for RWE Innogy (selected remaining activities including generation from recycled wood and pellet production, no growth), decentralized biomass bundled in RWE Energiedienstleistungen, large-scale biomass co-firing in RWE Generation.
Wind Offshore
Europe clearly leading the pack in offshore wind energy

>At the end of 2014, there are 8,900 MW of offshore wind energy capacity installed world-wide. Thereof, 755 MW of the capacity is installed in China, mainly in shallow intertidal areas, and 56 MW in Japan, mostly near-shore.

>With 8,045 MW installed capacity, Europe by far is the world leader in offshore wind.

> In total 1,483 MW of offshore were commissioned in 2014, which is less than expected and 5% less than in 2013. Ongoing policy reforms in the main markets UK and Germany still brought uncertainty to the European offshore market. For 2015 and 2016 the completion of further 12 projects with about 2,900 MW is expected with rather low capacity additions in 2016. Most of the new capacity will go online in Germany and the UK, some capacity will be build in the Netherlands.

**Total offshore wind capacity in Europe year-end 2014 (in MW)**

- **UK**: 4,494 (56%)
- **Denmark**: 1,271 (16%)
- **Germany**: 1,049 (13%)
- **Belgium**: 712 (9%)
- **Sweden**: 212 (3%)
- **Netherlands**: 247 (3%)
- **Other**: 60 (1%)

**Sources:**
EWEA – The European offshore wind industry – key trends and statistics 2014
The offshore wind market in Europe will grow by 23% p.a. until 2020, then representing 14% of the overall wind market in Europe.

> In Europe, the share of offshore is expected to reach 14% of the overall wind market in 2020 as onshore growth slows down.

> Growth in offshore is mainly driven by:

- Regulatory support (political targets & remuneration schemes)
- Strong pipeline of projects (26.4 GW already consented at the end of 2014)
- Technological developments addressing the still existing challenges and delivering cost reductions
The major growth markets in the EU for offshore wind are UK and Germany.
Turbines dominate costs of wind projects

For both on- and offshore projects, wind turbines dominate the capex split – appropriate turbine prices are thus crucial for an attractive return on investment.

Offshore investment split varies according to project details, e.g. water depth, distance to shore, grid connection works, etc.

Costs for grid connection depend on distance to coast, foundation also depends on depth of water – in contrast to the UK market, the grid operator in Germany is obliged to connect projects to the electricity grid and bear capital and finance costs.

Source: RWE Innogy.
Cost reductions to be expected for offshore wind

**Wind Turbines**
- Increasing turbine sizes (6 MW+) reduce costs per installed MW
- More intensive competition among turbine manufacturers reduces turbine prices
- Innovations and improvements in technology increase turbine reliability
- Increased turbine reliability reduces number of unplanned offshore service activities

**Foundations**
- Serial production of foundations leads to reduced prices and faster production
- Improved designs for various foundation types (monopiles, jackets, gravity foundations etc.) reduce prices (e.g. due to less steel requirements)
- Alignment of German industry regulations with international regulations would lead to significant reductions of foundation costs (e.g. due to less strict requirements regarding steel thicknesses)

**Operation & Maintenance**
- Increased in-house activities regarding O&M for offshore wind farms will partly or fully replace costly O&M contracts with turbine manufacturers
- Geographical clusters for offshore wind farms (e.g. off the coast of North Wales: North Hoyle, Rhyl Flats, Gwynt y Môr) create synergies for O&M activities
- Increased rated power of turbines means a reduced number of turbines to be maintained without reducing the capacity of the wind farm
Technology, supply chain and changes in turbine have an enormous cost reduction potential

> More than a half of the total cost reduction potentials can be attributed to investment costs
> The reduction of operation and maintenance costs as well as a decreased cost of capital offer the largest individual potentials

RWE Innogy focus:
Offshore wind is an engineering skill & scale game

European Market Features

- Maturing technology with high rate of innovation, but limited track record
- Main growth countries are Germany and the UK
- Few suppliers with proven technology
- Technology with relatively high generation cost per MWh but existing support mechanisms provide attractive remuneration
- Large scale projects often funded through partnerships models

Opportunities

- Wind resource significantly better than onshore
- Attractive growth opportunities & industrial scale projects
- Technology progress with significant cost reduction potential
- Strong political support reduces regulatory risks

Challenges

- Tight supply situation across the value chain
- Relative to onshore wind, high maintenance risks far out at sea: safety, costs, access, technology
- Limited best practice track record available make it a skill game
- Future government funding

RWE Innogy Strengths

- Secure key value chain technologies (e.g. turbines, vessels)
- Build large-scale power plants
- Strong in-house know-how
Offshore wind power:
RWE Innogy has strong starting position in the UK

Markets and operations
Technology & markets
> Growing market: 8.0 GW\(^2\) installed offshore wind capacity in EU-28 in 2014
> Technological challenges remain particularly from innovation which is having a positive impact on cost reduction
> Trends: technical hurdles overcome, allocation of attractive sites, development of projects, financing of projects

RWE Innogy’s assets
(Accounting view + PPA as at Q4 2014)
> UK: 570 MW\(^1\) offshore wind farms in operation (North Hoyle, Rhyl Flats\(^2\), Greater Gabbard\(^3\), 576 MW Gwynt y Môr\(^4\)) (to be fully commissioned in 2015)
> Germany: 295 MW; Nordsee Ost (to be fully commissioned in 2015)
> Belgium: 27% minority stake in Belgian offshore wind farm Thornton Bank (325 MW)
> In 2015, RWE Innogy sold one of its installation vessels to MPI Offshore, the other is leased to third party

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1) Of the offshore capacity of 402 MW, 342 MW is wholly owned by RWE Innogy. 60 MW offshore capacity is owned by Zephyr and is 100% contracted to RWE npower through a PPA.
2) Source: EWEA – The European offshore wind industry – key trends and statistics 2014
3) Total capacity 90 MW. 50.1% ownership RWE Innogy.
4) Total capacity 564 MW. 50% ownership RWE Innogy.
5) Total capacity 576 MW. 60% ownership RWE Innogy.
# Overview of RWE Innogy's offshore wind projects in Germany, UK, Belgium and the Netherlands

<table>
<thead>
<tr>
<th>In operation</th>
<th>Under construction</th>
<th>In development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North Hoyle</strong>&lt;sup&gt;1)&lt;/sup&gt;, UK, 60 MW: Completely commissioned 2004</td>
<td><strong>Nordsee Ost,</strong> GER, 295 MW To be completely commissioned 2015</td>
<td><strong>Nordsee One</strong>&lt;sup&gt;5)&lt;/sup&gt;, GER, 332 MW</td>
</tr>
<tr>
<td><strong>Rhyl Flats</strong>&lt;sup&gt;2)&lt;/sup&gt;, UK, 90 MW: Completely commissioned 2009</td>
<td><strong>Gwynt y Môr</strong>&lt;sup&gt;5)&lt;/sup&gt;, UK, 576 MW To be completely commissioned 2015</td>
<td><strong>Triton Knoll</strong>&lt;sup&gt;8)&lt;/sup&gt;, UK, 900 MW</td>
</tr>
<tr>
<td><strong>Thornton Bank I-III</strong>&lt;sup&gt;3)&lt;/sup&gt;, BE, 325 MW: Completely commissioned 2013</td>
<td></td>
<td><strong>Dogger Bank</strong>&lt;sup&gt;9)&lt;/sup&gt;, UK, 7200 MW</td>
</tr>
<tr>
<td><strong>Greater Gabbard</strong>&lt;sup&gt;4)&lt;/sup&gt;, UK, 504 MW: Completely commissioned 2012</td>
<td></td>
<td><strong>Nordsee 2,3</strong>&lt;sup&gt;6)&lt;/sup&gt;, GER, 664 MW</td>
</tr>
</tbody>
</table>

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<sup>1</sup>RWE Innogy (33%), owned by Zephyr Investments Ltd.,  <sup>2</sup>RWE Innogy (50.1%), Greencoat UK Wind PLC (24.95%), Green Investment Bank (24.95%),  <sup>3</sup>RWE Innogy: 27% share in C-Power consortium,  <sup>4</sup>RWE Innogy (60%), Stadtwerke Munich (30%), Siemens (10%),  <sup>5</sup>RWE Innogy (60%), Stadtwerke Munich (30%), Siemens (10%),  <sup>6</sup>RWE Innogy (15%), Northoland Power Inc (85%),  <sup>7</sup>New Partnership structure under investigation,  <sup>8</sup>RWE Innogy (50%), Statkraft (50%),  <sup>9</sup>RWE Innogy (25%), Scottish and Southern Energy (25%), Statoil (25%), Statkraft (25%).
Details of RWE Innogy’s offshore wind projects to be fully commissioned in 2015

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Wind Farm</th>
<th>Size</th>
<th>Distance to shore</th>
<th>Water depth</th>
<th>First generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gwynt y Môr 1)</td>
<td>160 x 3.6 MW Siemens turbines (576 MW), 124 km²</td>
<td>13 km off the coast of North Wales</td>
<td>12 – 28 m depth</td>
<td>First generation in 2013, full generation in 2015</td>
</tr>
<tr>
<td>2</td>
<td>Nordsee Ost</td>
<td>48 x 6.15 MW Senvion turbines (295 MW), 34 km²</td>
<td>32 – 45 km offshore</td>
<td>22 – 26 m depth</td>
<td>First generation in 2014, full generation in 2015</td>
</tr>
</tbody>
</table>

1) 60% ownership RWE Innogy, Stadtwerke Munich (30%), Siemens (10%).
Wind Onshore
The world market for wind energy

Installed global wind power capacity (in GW)

Top 10 with > 80% of newly installed capacity (in MW)

Top 10 with > 84% of total installed capacity (in MW)

European wind power continued strong growth in 2014 - still dominated by onshore wind

> In 2014, installed wind power capacity increased by 9.7% to 128,751 MW in EU-28

> New installations in EU-28 amounted to 11,791 MW in 2014
  – TOP 2 countries Germany (5,279 MW) and UK (1,736 MW) account for 59% of installations in 2014
  – In the wake of subsidy cuts new installations in Spain still on a very low level (28 MW)

> With 1.5 GW capacity connected to grid new offshore installations accounted for almost 13% of total EU wind power installations in 2014, but decreased slightly vs. 2013.

Onshore wind in Europe: Steady path for solid growth

> On average, installed wind onshore capacity in the EU has grown by **13.5% p.a.** since 2005, corresponding to an average of **8.9 GW** p.a. incremental capacity.

> In 2014, new installations in Germany rose to an all time high of 4.7 GW accounting alone for 46% of new installations in the EU. **75%** of all new EU installations were concentrated in four markets (Germany, Sweden, France and the UK).

> Steady path for solid growth in the EU
  - Installed onshore wind capacity expected to increase by **6.1% p.a.** until 2020 (8.6 GW average annual incremental capacity)
  - Focus moving to medium sized markets which will grow faster
  - Medium- to long-term growth is expected to slow down due to increased saturation of large markets and worsening of regulation

Major markets in EU based on size and wind resources

Wind onshore growth potential to reach NREAP targets

- Spain
- Germany
- United Kingdom
- France
- Italy
- Netherlands
- Greece
- Portugal
- Sweden
- Ireland
- Belgium
- Romania
- Finland

- Bubble size: total capacity in 2020 [MW]

DK: Installed capacity in 2010 exceeds NREAP 2020 targets
Source: RWE analysis based on National targets (NREAPs)

Natural onshore wind conditions (at 50 m height)

- Wind speed m/s:
  - > 7.5
  - 6.5 – 7.5
  - 5.5 – 6.5
  - 4.5 – 5.5
  - < 4.5

Source: European Wind Atlas, copyright by Risø National Laboratory
In mature markets such as Germany repowering can play a key role for growth

**Increased energy yield**
- Increased turbine size and improved technology leading to
  - Higher installed capacity on same area of land
  - Improved load factors (higher utilisation and larger rotor diameter)
  - Reduced operating costs
  - Improved power grid integration since modern turbines have variable speeds and voltage control

**Reduced environmental impact**
- Reduced number of wind turbines leading to enhancement of natural landscape
- Reduced flicker effect as larger turbines rotate at much lower speed

---

Note: Repowering of Simonsberg Wind Farm: number of turbines reduced from 11 to 3 – capacity increased from 5.5 MW to 15 MW – full load hours up from 2,545 h/a (29%) to 3,200 h/a (37%) – annual energy yield increased from 14 mn kWh to 48 mn kWh (Source: BWE).
RWE Innogy focus: Onshore wind is a must-have for fast growth

European Market Features

> Mature technology but still room for innovation
> Significant capacities installed in Western Europe still with attractive growth and repowering potential
> Trend towards M&A driven consolidation
> Many turbine suppliers available with long-term track record
> Turbine supply turning from supplier-driven market to customer-driven market

Opportunities

> Support schemes in most European countries still promote growth
> Low cost and fast construction of significant capacity

Challenges

> Intense competition for best wind sites
> Large project pipelines necessary due to regulatory risk associated with building consent
> Partly challenging regulatory environment

RWE Innogy Strengths

> Strong existing wind farm portfolio and significant track record in new build and operation
> Regional diversification to reduce country-specific regulatory risks
> Growth strategy with focus on organic projects
> Large realisable project pipeline
> Flexible partnering approach

1) In comparison to other renewable energy technologies.
Onshore wind power is a key element in RWE Innogy's growth strategy

Markets and operations

Technology & markets

> Relatively mature markets especially in Germany
> Growth in Spanish market collapsed in wake of subsidy cuts
> Nearly 121GW capacity installed in EU-28 as of 2014
  > High maturity of technology
  > Power generation costs competitive with conventional energy sources
> Still attractive growth rates & repowering potential in mature markets
> Trend: consolidation through M&A

RWE Innogy's assets

(Accounting view + PPA as at Q4 2014)

> 1,960 MW onshore wind farms in operation and 147 MW under construction

1) incl. 196 MW of Zephyr assets + 19 MW of Green GECCO assets.
RWE Innogy’s flag ship onshore wind projects in its core markets (1/2)

Wind farm **Bedburg „Königshovener Höhe“**

**Location**
- In the RWE lignite mining region (“Rheinisches Revier”), on a recultivated lignite mining area
  - 35 km west of Cologne, north of the City of Bedburg

**Technical data**
- Installed capacity: 67 MW
- 21 wind turbines Senvion, type 3.2M-114
- Rotor diameter: 114 m
- Tip height: approximately 200 m
- Start-up: Phase 1 (38 MW) 4th quarter 2014, Phase 2 (29 MW) 4th quarter 2015

**Partnership with Local Community**
The Wind farm is a cooperation project between RWE and the City of Bedburg. The City of Bedburg holds a project share of 49%.

Wind farm **Westereems**

**Location**
- In Eemshaven, Province of Groningen / NL

**Technical data**
- Installed capacity: 156 MW
- 52 wind turbines type E82 a 3 MW from Enercon
- Rotor diameter: 82 m
- Tip height: approximately 140 m
- Start-up: 1st quarter 2009
- In the middle of wind farm Westereems two wind turbines type 6M from Repower, each with a capacity of 6.15 MW
RWE Innogy’s flag ship onshore wind projects in its core markets (2/2)

Wind farm **Nowy Staw**
- **Location**
  - Located in the Province Pomerania in Poland, approx. 50 km southeast of the City of Gdansk (Danzig)
- **Technical data**
  - Installed capacity: 45 MW
  - 22 wind turbines type Senvion MM92 a 2,05 MW
  - Rotor diameter: 92 m
  - Tip height: approximately 150 m
  - Start-up: 3rd quarter 2013
- **Extension under construction**
  - Additional 14 turbines with a capacity of 28 MW
  - Start-up: 4th quarter 2015

Wind farm **Middlemoor**
- **Location**
  - Located near Alnwick in Northumberland (approx. 50 km north of Newcastle upon Tyne)
- **Technical data**
  - Installed capacity: 54 MW
  - 18 wind turbines Vestas V 90-3.0 MW
  - Rotor diameter: 90 m
  - Tip height: approximately 125 m
  - Start-up: 2nd quarter 2013
- **Financial Partnership**
  - 49% sold to Green Investment Fund Greencoat UK Wind plc

Wind farm **Las Planas**
- **Location**
  - Located 12 km in the south of Zaragoza/Spain on the plateau „Plana de Zaragoza“
  - 600 m above sea level
- **Technical data**
  - Installed capacity: 90 MW
  - 120 wind turbines a 750 kW
  - Hub height: 55 m
  - Rotor diameter: 48 m
  - Full load hours round about 2,600 h/a (load factor of 30%)
  - Start-up: February 2002
Hydro
Hydro: Mature technology with opportunities for small plants in Western and also larger plants in South-Eastern Europe

> More than 300 TWh/year of unused economical hydro power potential in Europe
> Almost two-thirds of the economical potential in South-Eastern Europe is not developed
> Some run-of-river opportunities (1 to 10 MW) in UK still unexploited

**EU-15 without Greece incl. Norway and Switzerland**

- Current production: 1,698 TWh/year
- Economically beneficial: 737 TWh/year
- Technically accessible: 595 TWh/year
- Theoretical potential: 430 TWh/year

**South-Eastern Europe**

- Current production: 763 TWh/year
- Economically beneficial: 380 TWh/year
- Technically accessible: 247 TWh/year
- Theoretical potential: 102 TWh/year

**Central Eastern Europe**

- Current production: 115 TWh/year
- Economically beneficial: 51 TWh/year
- Technically accessible: 31 TWh/year
- Theoretical potential: 25 TWh/year

1) Average values of the following sources: WEC, 2007 Survey of Energy Resources; EUROSTAT; UCTE; Europe’s hydropower potential today and in the future, CESR, University of Kassel; Hydropower & Dams World Atlas, 2007.
RWE Innogy focus:
Hydro power is cost competitive and sustainable

European Market Features

- Very mature technology
- Limited new build potential in Western European markets
- Relatively high utilisation, compared to other renewable technologies

Opportunities

- Advanced legal system and power trading
- Allows for load shaped generation
- UK: Currently very attractive FiT schemes and high acceptance of the technology by all stakeholders
- Attractive Hydro market in SEE and Turkey creates demand of technical services

Challenges

- UK: Support schemes expected to decrease in future
- Marketing of Technical Hydro Power Services

RWE Innogy Strengths

- Technology well covered by staff of RWE Innogy with over 100 years experience
- Proven economic excellence in sustainable operation
- Centralised asset management, decentralised operations and maintenance
- Full value chain can be covered in Europe
- Portfolio containing combination of peak and base load plants
- Regional partnerships established
- Ability to coordinate large amount of plants according to demand of international markets
- Well developed and maintained project pipeline
RWE Innogy focuses in hydro power on operational excellence, selected development of small schemes and technical services

### Markets and operations

#### Technology & markets

- Small hydro plants (< 10 MW) expected to have significant share in future capacity growth in Western Europe
- Most significant growth potential of several GW in South-Eastern Europe and Turkey triggers demand of technical services in the Hydro Power Sector

### RWE Innogy's assets

(Accounting view + PPA as at Q4 2014)
- Hydro power plants with 526 MW in operation
- 3 MW under construction

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1) Pro-rata: RWE Innogy's share is 355 MW in Germany.
Example: Hydro power plants in operation in Germany

Hydro power plant Albbruck-Dogern

> Albbruck-Dogern, Baden-Württemberg
> Kaplan Bulb Turbine
> 24 MW electrical generation capacity
> 180 GWh annual electricity generation
> 50,000 households will be supplied with CO$_2$-free electricity
> Start of operation in December 2009

Hydro power plant Heimbach

> Heimbach, North Rhine-Westphalia
> 2 Francis Turbines
> 16 MW electrical generation capacity
> 25 GWh annual electricity generation
> In operation since 1905, modernised in 1975
> Listed building
Example: Hydro power plants in operation in UK – long tradition and selected new build options

**Hydro power plant Maldie**

- Kylestrome, North West Scotland
- 2 Francis turbines
- 4 MW electrical generation capacity
- 15 GWh annual generation
- Operational from July 2013
- Reservoir stores 670 MWh of water
- Developed, built and under operation by RWE Innogy

**Hydro power plant Cwm Dyli**

- Capel Curig, North Wales
- 1 Francis turbine
- 10 MW electrical generation capacity
- 12 GWh annual generation
- Operational since 1907
- Reservoir stores 132 MWh of water
- Listed building
New Technologies and Research & Development

- Wind Offshore
- Wind Onshore
- Hydro
- Innogy Venture Capital GmbH
- Biomass
New Technologies and Research & Development

R&D improves conversion of already established renewable energies, opens up new business segments and assesses alternative technologies

**Comprehensive R&D drivers**

- Profitability for most renewable energies still based on the regulatory recognition of environmental impact of conventional energy sources
- Maturity of most conversion technologies not yet on equal level with conventional power plants
- Tapping of additional potential through new technologies

**R&D targets**

- Improve profitability of the core businesses by reducing costs and increasing availability
- Allow further growth and opening of new business segments
- Develop and sustain know-how
- Support the good reputation of the company
Example Solar Thermal Energy -
a fascinating way of generating power

CSP Power Plant Andasol 3

Markets and operations

Markets
> CSP is the solar technology with built-in storage and grid stability support (inertia)
> Worldwide new power plants are under construction
> MENA region promises to increase CSP plant technology by 60 GW

Technology
> Parabolic trough technology
> Capacity: 50 MW electrical power output
> Location: Southern Spain in the province of Granada
> RWE Innogy and RheinEnergie jointly hold 25.1% of the shares via a holding company (RWE Innogy: 51%, RheinEnergie: 49%)
> Construction started in March 2009, connection to the grid and first electricity production in autumn 2011
> Thermal storage using Molten Salt technology with a capacity of 1,010 MWh allows 8 further hours of electricity production even at night or in times the sun is not shining
> Contrary to PV a CSP plant with thermal storage is dispatchable and supports grid stability
Biogas substitutes fossil gas and can be stored

Biogas plant Güterglück (feed-in of biomethane)

- Güterglück, Saxony-Anhalt
- Gas treatment and feed-in into the gas grid
- 6.7 MW thermal capacity
- 52 GWh annual biomethane output, equivalent to 21 GWh$_{el}$
- CO$_2$-emission avoidance of 15,000 ton per year
- In operation since Q3 2009

**Markets and operations**

**Technology & markets**

- Use of alternative substrates to maize (manure, new energy crops)
- Biogas plant technology is adapted to the agriculture area
- Biogas upgrading and biomethane feed-in
- Digestate conditioning and fertilizer production
- Cooperation with farmers and strategic market players

**RWE Innogy’s assets**

(Accounting view + PPA as at Q4 2014)

- RWE Innogy GmbH bundles biogas competencies within RWE Group
- 0.7 MW$_{el}$ biogas CHP and 6.7 MW$_{th}$ biomethane feed-in into the gas grid in operation (in total 4 MW$_{el}$ CHP capacity)
- In 2013 the construction of biogas plant Bergheim Pfaffendorf started
Innogy Venture Capital GmbH
Innogy Venture Capital is finding and funding energy innovations

About Innogy Venture Capital

Innogy Venture Capital invests in European start-up companies that drive the energy transformation.

With a final closing size of EUR 115 million the currently managed "Innogy Renewables Technology Fund I" is a leading early stage investor in this segment in Europe.

The fund’s sponsors are RWE Innogy as the main investor and CEE Holding, an investment company of Lampe Bank Group focusing on renewable energy.

RWE and Innogy Venture Capital are ranked first in 2013 in the list of the most influential Corporate Venturing utility units. 

Global Corporate Venturing Magazine
Innogy Venture Capital created a diversified, European portfolio

Investments:
1. AIREC
2. CERAM HYD
3. enercast
4. GreenWatt
5. Heliatek
6. KIWIGRID
7. mantex
8. Topell Energy
9. quietrevolution
10. REVOLTECHNOLOGY
11. STIRLING
12. VOITH

Map of Europe showing the locations of investments.

Legend:
- Exit investment
- Innogy Venture Capital
- Active investment
Innogy Venture Capital pursues small investments with big impact

Renewable energy production forecasts for a better integration of renewables into the energy market

Drive the next PV revolution: organic, transparent and building integrated

Make distributed energy accessible in a secure way: always, anywhere, for anybody
Biomass is no longer in strategic focus of RWE Innogy, but will stay a viable option for “green capacity” for RWE Group

Biomass Activities RWE Innogy and RWE Group

Markinch (RWE Innogy)
65 MWel / 88 MWth
1)

Lynemouth (RWE Supply & Trading)
395 MW
2)

Amercentrale, Cuijk (RWE Generation)
183 MW

Siegen-Wittgenstein (RWE Innogy)
5 MWel / 25 MWth

Various Sites (mainly RWE Energiedienstleistungen)
67 MWel
3)

Waycross/USA
750,000 ton/a pellets

Markets and operations

Technology & markets

> Biomass is a viable option for “green” capacity as it can operate at high utilization rates, generate base load electricity and be utilized for CHP (combined heat and power), large scale potential from conversion of coal plants and co-firing
> Main challenges are the access to feedstock which accounts for 25-40% of production costs
> Biomass enjoys favorable regulatory support in most European countries and is expected to contribute significantly to the EU renewable energy targets, but feedstock sustainability criteria become increasingly important

RWE Innogy’s assets and RWE Group activities
(Accounting view + PPA as of Q4 2014)

> RWE Innogy focuses on asset optimization until planned disposals
> 65 MWel biomass-fired power station with combined heat and power technology at Markinch1) in Scotland commissioned in 2014
> 750 kt of industrial pellet production for co-firing and converted power plants in the USA, 100 kt per year of residential pellet capacity at Siegen-Wittgenstein site in Germany
> Biomass plant Enna, Sicily, has been sold on to partner in 2014
> German dedicated biomass operations transferred to RWE Energiedienstleistungen in 2013
> RWE Generation currently operates 183 MW co-firing capacity in Dutch coal plants and aims for a further increase with the new coal units in Eemshaven coming online
> RWE Supply and Trading has been awarded with a Contract for Difference for the biomass conversion of the 395 MW coal station in Lynemouth in 2014 (European state-aid approval pending)

1) Markinch has been operating since March 2014,
2) Planned Conversion of Coal Plant to Biomass
3) Including plants operated by RWE Deutschland AG regional divisions Süwag and EnviAM

RWE Innogy | Factbook Renewable Energy 23/04/2015 PAGE 56
Example: RWE Innogy operates the largest dedicated Biomass-fired plant in the UK located in Markinch/Scotland

Overview

Purpose of plant
> Provides all electricity and steam requirements of Tullis Russell, a premium paper and board manufacturer
> Excess electricity generation fed into the grid to supply around 45,000 homes.
> Reducing carbon dioxide emissions by around 250,000 tonnes per annum

Main components
> State-of-the-art boiler system by Valmet
> 213 t steam turbine

Technical details
> Electrical capacity of turbine: up to 65 MW_{el}
> Steam output: 88 MW_{th} (120 t/h)

Fuel input
> Appr. 400,000 t p. a. (90% recovered wood waste and approximately 10% virgin wood sourced from sustainably managed forests)

Status quo
> Operational
Green Energy Products
RWE Innogy sells Green Energy via different products

**Market for Green Energy in Germany**
- 2013: about 6 million customers
- Strong growth: CAGR 12/13: +16%
- Substantial added value – for new and old generation assets

**Principle of Green Energy Products**
- Delivery of electricity (commodity) together with Guarantees of Origin or certificates from a chartered accountant
- Green Certificates can also be sold separately

**Capabilities of RWE Innogy**
- Fully developed process over all time periods (forward, day-ahead, intraday, reserves)
- Close cooperation with RWE Supply&Trading
- Structuring of customized green products

**Creating additional value by**
- Combining assets to virtual power plants
- Delivering firm power and flexibility
- Direct marketing of own and customer’s EEG eligible plants

**German Hydro Power for Deutsche Bahn**

<table>
<thead>
<tr>
<th>Green Energy Products by RWE Innogy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; About 3,500 GWh sold via RWE retail and trading companies in 2014.</td>
</tr>
<tr>
<td>&gt; Proof by Guarantees of Origin and TÜV Süd Certification</td>
</tr>
<tr>
<td>&gt; Option of direct sales for EEG eligible plants in addition to Market Premium Model</td>
</tr>
<tr>
<td>&gt; Long term deal with DB AG: Single largest green energy contract in Germany</td>
</tr>
<tr>
<td>&gt; Delivery of green energy for e-mobility</td>
</tr>
<tr>
<td>&gt; Electricity disclosure: RWE Innogy is 100% green supplier</td>
</tr>
</tbody>
</table>
Virtual Power Plant generates additional asset value

1,200 Megawatt combined in Virtual Power Plant

- RWE Innogy switched almost all assets eligible for fixed feed-in-tariffs under German renewables act (EEG) to market based direct marketing scheme

- 1,200 Megawatt have already been combined in a Virtual Power Plant of RWE Innogy
  - About 850 Megawatt of wind, hydro and biomass plants under direct marketing
  - About 350 Megawatt of large hydro plants which are not eligible for feed-in tariff
  - Own consumption is covered directly
  - Additional income from sales of ancillary services

- Permanent technical optimisation increases value
  - Actual generation of plants is observed real-time
  - Remote control allows for utilisation of flexibilities to deliver control energy and to take make-or-buy decisions in case of extreme negative prices
  - Energy forecast optimisation using historical and real-time data minimizes balancing power requirement

- RWE Innogy incorporates also assets of subsidiaries, other companies within RWE group and external customers in the Virtual Power Plant

Example: Direct Marketing of Hydro Power

- RWE Innogy compiles short term power forecasts

- Energy is sold in day-ahead and intraday markets. TSO delivers final deviation as balancing energy

- DSO pays market premium which adds to net income from power sales

- Specific added value varies about time as it depends on forecast accuracy and spreads between power prices
Political Framework
With respect to gross final energy consumption the EU targets a renewable energy share of 20% by 2020 and 27% by 2030.

>2020: Target of 20% share of renewables in gross final EU energy consumption by 2020, i.e. covering
- Power
- Heating/cooling
- Transport*

EU target broken down in binding country targets

>2030: Target of 27% share of renewables in gross final EU energy consumption by 2030, but no binding country targets enabling more transnational flexibility*

*At least 10% of gross final consumption of energy in transport in 2020 in each country

** However, member states may set themselves higher national targets for renewables and may subsidise them in compliance with the EU’s state-aid law and taking account of the internal energy market

Source: European Commission; Eurostat; Directive 2009/28/EC; National renewable energy action plans (NREAP)
EU guidelines on state aid urge Member States to shift from feed-in tariffs to direct marketing and auctioning of renewables

**From 2016**
- Aid granted as premium to market price, generators sell electricity directly in the market
- Beneficiaries generally subject to standard balancing responsibilities
- Measures to ensure generators have no incentive to generate electricity under negative prices
- Transitional phase (2015/2016): aid for at least 5% of planned new RES electricity capacity to be granted in a competitive bidding process on basis of clear, transparent, non-discriminatory criteria

**From 2017**
- In general, aid granted in competitive bidding process on basis of clear, transparent, non-discriminatory criteria,
- Exemption: demonstrated danger of tight market or strategic bidding
- Bidding process can be limited to specific technologies where process open to all generators would lead to suboptimal results which cannot be addressed in process design

> General shift from feed-in tariffs to an integration of electricity from RES into the market (nevertheless, no retroactive changes are envisaged).
> State aid schemes will be authorised in the future for a maximum of 10 years and will need to be re-notified if maintained
> Guidelines had already a clear design impact on the new German Renewable Energy Act (EEG 2014)
Mechanisms to support renewable energy generation in Europe – trend towards premiums and auctions

<table>
<thead>
<tr>
<th>Main types of support mechanism</th>
<th>Characteristics of mechanism:</th>
<th>Main Strength/Weakness:</th>
</tr>
</thead>
</table>
| Quota obligation & tradable certificates         | > Electricity suppliers are obliged to have a certain proportion of their electricity from renewable sources  
> Renewable Energy Certificate (per MWh) is a tradable commodity proving that certain electricity is generated using renewable energy sources. Certificates are traded to fulfil renewable obligations  
> Renewable power generators receive wholesale market price for generated power plus the value of the certificate | > Forces suppliers to take action to meet their obligation, market based system should drive costs down  
> Lack of revenue certainty, cost of administration, failure to support immature technologies |
| Feed-in tariff                                   | > Renewable energy producers are paid a fixed tariff instead of power price  
> Tariffs usually vary depending on technology, capacity and age of power plant and are typically limited in time | > Price and investment certainty  
> Tariff degression can provide incentives for technology improvements  
> Political risk, cost to consumers |
| Feed-in premium                                  | > Renewable energy producers are paid a tariff in addition to power price  
> A wide range of design of feed-in premiums  
> Tariffs can vary depending on technology, capacity and age of power plant and are typically limited in time | > Market based approach, suppliers are obliged to sell their electricity on the market  
> Suppliers are opposed to market risks  
> Upside potential through direct participation on the market |
| Auction/Tender                                   | > Fixed Tariffs, Premiums or Contracts for Difference are allocated and priced by an auction/tendering process | > Competitive, cost-efficient determination of support level  
> Risk to secure contract, potentially winners curse and speculative bidding |

Source: based on Ecofys: Experience with renewable electricity (RES-E) support schemes in Europe, April 2014  
Notes: 1) The patterned colours represent a combination of instruments, 2) Investment grants, tax exemptions and fiscal incentives are not included in this picture 3) Support scheme moratoria are not taken into account.
The renewables support framework in Germany will further develop from fixed feed-in tariffs to auctioning of market premiums until 2017

### Remuneration levels for selected technologies (in €/MWh)

**Existing regime EEG August 2014**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Remuneration range (€/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onshore Wind</td>
<td>100-200</td>
</tr>
<tr>
<td>Offshore Wind</td>
<td>50-150</td>
</tr>
<tr>
<td>Hydro</td>
<td>0-20</td>
</tr>
<tr>
<td>Geothermal</td>
<td>50-150</td>
</tr>
<tr>
<td>Biomass/Biogas</td>
<td>50-150</td>
</tr>
<tr>
<td>Solar PV</td>
<td>10-30</td>
</tr>
</tbody>
</table>

Remuneration range for different types and sizes and apply for direct marketing with market premium (fixed tariff level reduced by 0.2-0.4 €/MWh depending on technology)

### Renewables support in Germany

**Legal framework**
> Feed-in tariff/market premium system described in the Renewable Energy Act (Erneuerbare-Energien-Gesetz EEG)

**Price mechanism**
> For new installations <500 kW (<100 kW from 1st January 2016) guaranteed feed-in tariff or variable market premium
> For all other new installation variable market premium (compulsory direct marketing)
> Regression of tariffs and premiums: onshore wind, PV quarterly regression depending on capacity extension (fixed once installation is commissioned)

**Length of mechanism**
> Tariffs/Premiums guaranteed mainly up to 20 years

**Value of mechanism**
> Fixed tariff: depending on technology, capacity and location
> Variable premium tariff: reference market price is topped up to the respective level of fixed tariff

**Other earnings captured**
> None

**Legislation**
> EEG 01/08/2014

**Regulatory outlook**
> 2014 pilot auctions for ground mounted PV. Investigation of future auctioning designs for other technologies.

---

Source: RWE on the basis of EEG 2014

1) The depicted ranges apply only for installations which are commissioned or extended after 31th July 2014 without tariff regression, existing installations keep their original tariffs, installations commissioned until 31th December 2014 which had been already consented until 23rd of January 2014 could opt for former or new tariff.

2) Increased starting tariff of 89 €/MWh for a period depending on energy yield (min. 5 years), then base tariff 49.5 €/MWh; 3) Increased starting tariff of 154 €/MWh for first 12 years or 194 €/MWh for first 8 years for installations prior to January 2020, prolongation of increased tariff depending on distance from shore and water depth, then decreasing to 39 €/MWh; 4) uniform tariff of 252 €/MWh; 5) Remuneration of biomass plants ranging from 58,5 €/MWh to 136,6 €/MWh depending on capacity, remuneration of biogas ranges from 133,8 €/MWh to 237,3 €/MWh depending on capacity and input, both remunerations subject to further regulatory requirements and specifications. 6) Remuneration ranging from 92.3 €/MWh (up to 10 MW) to 131.5 €/MWh (below 10 kW) for on-roof installations and 92,3 €/MWh for ground mounted installation (from September 2015 auctioning is compulsory for ground mounted installations).
Germany:
Wind power support mechanism in transition to auctioning

**Onshore**
- Targeted Annual capacity growth corridor 2,400 MW – 2,600 MW
- Base tariff of 4.95 ct/kWh\(^1\)) for a maximum of 20 years plus year of commissioning
- Increased tariff of 8.90 ct/kWh\(^1\)) at least for first 5 years, period is extended depending on asset energy yield vs. reference yield\(^2\)),
- For installations with fixed tariff both base tariff and increased starting tariff are reduced by 0.4 ct/kWh to reflect missing direct marketing expenses
- From 1\(^{st}\) Jan. 2016, tariff levels are reduced by 0.4% per quarter if growth is within targeted corridor, regression is less if growth falls below corridor and vice versa
- Switch to auctioning from 2017 (auction details not yet clear)

**Offshore**
- Base tariff of 3.90 ct/kWh\(^1\))
- Increased tariff of 15.40 ct/kWh for 12 years or 19.40 ct/kWh for 8 years if installation commissioned before January 1, 2020 ("acceleration model")
- This period is prolonged by 0.5 months for every nautical mile increase beyond 12 nautical miles and it is further prolonged by 1.7 months for every metre in water depth in excess of 20 metres
- Tariff levels are reduced by 0.5 ct/kWh in 2018, 1.0 ct/kWh in 2020 (in case of acceleration model only one step regression by 1.0 ct/kWh in 2018)
- Switch to auctioning from 2017 (auction details not yet clear)

---

1) For assets commissioned in 2014.
2) The period of increased tariffs is extended by one month for every 0.36% of yield below 130% of the calculated reference yield and in addition by one month for every 0.48% below 100% of the calculated reference yield. Example: An asset yielding only 90% of the reference yield will get the increased tariff for an extended period of \((130-90)/0.36 = 111\) month plus \((100-90)/0.48 = 21\) month (i.e. 16 years in total). The reference yield is a yield generated by the reference installation. It is a wind energy converter of a specific type for which a yield at the target installation can be compared on the basis of a P-V curve (power-wind speed curve), measured by an authorised institution (Fördergesellschaft Windenergie e.V.).
UK: The support framework based on renewable obligations will gradually expire with transition period having started in 2014

Renewables Obligation support system in the UK

<table>
<thead>
<tr>
<th>Legal framework</th>
<th>&gt; Renewables Obligation (RO) for projects &gt;5MW (&lt; 5MW receive Feed-in tariff)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price mechanism</td>
<td>&gt; Certificate-based, indirect variable subsidy</td>
</tr>
<tr>
<td>Length of mechanism</td>
<td>&gt; Annual Compliance Periods (CPs), legislation from 2002 until 2037</td>
</tr>
<tr>
<td>Value of mechanism</td>
<td>&gt; Renewables Obligation Certificate (ROC) outturn value for 2013/14 was £42.72/MWh*</td>
</tr>
<tr>
<td>Other earnings captured</td>
<td>&gt; Power price (which includes Carbon Price Support tax on fossil fuel generation)</td>
</tr>
<tr>
<td></td>
<td>&gt; CCL Levy Exemption Certificates</td>
</tr>
<tr>
<td>Regulatory changes</td>
<td>&gt; RO closed to solar projects from 31st March 2015</td>
</tr>
<tr>
<td></td>
<td>&gt; RO will close to all new projects 31st March 2017</td>
</tr>
<tr>
<td></td>
<td>&gt; Contract for Difference supersedes the RO as the primary support mechanism for low carbon investments (see p. 69 for details)</td>
</tr>
<tr>
<td></td>
<td>&gt; Grace Periods of 12 months are available to qualifying projects and those that fail to meet the RO closure deadline of 31st March 2017 due to grid or aviation delays</td>
</tr>
<tr>
<td></td>
<td>&gt; From 2027 ROCs to be replaced by Fixed price Certificates, of equal value and with equal eligibility criteria.</td>
</tr>
</tbody>
</table>

ROC bands by technology (effective from April 2013)

<table>
<thead>
<tr>
<th>Technology</th>
<th>ROCs/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onshore Wind</td>
<td>0.9</td>
</tr>
<tr>
<td>Offshore Wind</td>
<td>2 in 2013 - 15; 1.9 in 2015/16; 1.8 in 2016/17</td>
</tr>
<tr>
<td>Hydro</td>
<td>0.7</td>
</tr>
<tr>
<td>Dedicated biomass with CHP</td>
<td>1.5 until 31 March 2016; 1.4 from 1 April 2016</td>
</tr>
<tr>
<td>Dedicated biomass</td>
<td>1.5 until 31 March 2016; 1.4 from 1 April 2016</td>
</tr>
<tr>
<td>Biomass conversion</td>
<td>1</td>
</tr>
<tr>
<td>Co-firing of biomass (enhanced)</td>
<td>Mid-range (50-85%) 0.6; High-range (&gt;85%): 0.7 in 2013/14 &amp; 0.9 from 2014/15</td>
</tr>
</tbody>
</table>

UK: Revenues from renewable energy combine market price, ROC purchase and tax incentives

**Support mechanism**

- **Buy-out price** sets the rate suppliers need to pay if they don't present sufficient ROCs (£44.33/ROC for April '15 to March '16).

- The proceeds of the buy-out fund are paid back on a pro-rated basis to suppliers that have presented ROCs (recycling mechanism).

- **Wholesale baseload power price** (variable) + **Buy-out price** (fix) + **Recycle price** (variable) + **Levy exemption certificates** (LECs, fix) = **Total Support**

**Renewables Obligation Certificates (ROC)**

> A ROC is the green certificate issued for electricity from eligible renewable source, which is both generated and consumed within the UK.

> Generators are issued ROCs (which they can then sell on) for each MWh of eligible electricity generated.

**Renewables Obligation (RO)**

> Electricity suppliers are obliged to redeem ROCs or pay the buy-out price for a proportion of their supply (29.0% in 2015/16 for England, Scotland and Wales and 11.9% for Northern Ireland). A buy-out fee is payable for any shortfall.

> Most suppliers purchase ROCs from their generation assets or enter into long-term purchase agreements with independent generators.

> In 2010, new RO legislation created a minimum fixed headroom of 10% between ROC generation and suppliers' MWh obligation.

---

1) Buy-out price is updated each year by Ofgem to reflect changes in Retail Prices Index (RPI).

2) Since the size of the buy-out fund is dependent on the volume in MWh for which suppliers fail to redeem ROCs, this value depends upon the obligation target being greater than the available renewables obligation certificates (in 2013/14 the compliance ratio by ROCs amounted to 98% of the total obligation target).
UK: Contracts for Difference replace the RO System from 2017, (first contracts available for output from April 2015 onwards).

Contract for Difference Framework

- Budget for CfD payments is part of an overall Levy Control Framework (£7.6Bn by 2020/21)
- Separate Budgets and auctions for technology groups
  - Group 1 - Established: Onshore wind, Solar, Energy from Waste with CHP, Hydro, Landfill gas and Sewage gas
  - Group 2 - Less established: esp. Offshore wind, Marine, Dedicated biomass with CHP
  - Group 3 – Established: Biomass conversion
- Regulator sets max. price cap per technology and period, e.g. £95/MWh for onshore wind in 2015/16
- “Pay as cleared” design: auction clearing price is set by the marginal project per budget year
- CfD difference payment is calculated as the difference between the (tech/project specific) clearing/strike price and the reference market price.
- Projects with awarded CfD have to meet certain timeline & delivery obligations to avoid penalty

1st Allocation Round (Oct ‘14)

- Budget for Established = £65m, less established = £155-235m, Biomass conversion = £zero
- First round results (Feb ’15) indicate a reduction of subsidy levels of around 10% versus the RO
- First payments in April 2015

---

1) Buy-out price is updated each year by Ofgem to reflect changes in Retail Prices Index (RPI).
2) Adjustments according to development of Consumer Price Index (CPI).
3) Strike price equals the respective clearing price from the auction.
The renewables support framework in Poland

### Renewables support in Poland

<table>
<thead>
<tr>
<th>Legal framework</th>
<th>Green Certificates (GC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price mechanism</td>
<td>Certificate-based, indirect variable subsidy</td>
</tr>
<tr>
<td>Length of mechanism</td>
<td>Not specified</td>
</tr>
<tr>
<td>Value of mechanism</td>
<td>Green Certificate (GC)</td>
</tr>
<tr>
<td></td>
<td>Average certificate price in 2014 (exchange market): PLN 186.53 (€ 44.62)</td>
</tr>
<tr>
<td></td>
<td>Substitution fee in 2015: PLN 300.03 (€ 71.78)</td>
</tr>
<tr>
<td>Other earnings captured</td>
<td>Power price</td>
</tr>
<tr>
<td>Future changes in legislation</td>
<td>A new Polish Renewable Energy Act introduces a renewable electricity auction design gradually phasing out the current renewables support scheme based on a persistently oversupplied green certificate market.</td>
</tr>
<tr>
<td></td>
<td>The new support scheme based on auctions will enter into force on 1 Jan. 2016 and first auctions will take place during 2016.</td>
</tr>
</tbody>
</table>

### Detailed provisions on the promotion of renewables (Order of 18/10/2012)

**Coefficient (GC/MWh) | Technologies**
---|---
1.0 | All eligible technologies

In Poland producers of renewable power are granted one certificate per MWh. There is no differentiation between renewable technology concerning the number of certificates issued per MWh.

**Eligible technologies**

- Hydro (including large hydro)
- Wind
- Biomass (including co-firing)
- Solar
- Biogas
- Geothermal
**Poland: Revenues from renewable energy combine market price and green certificate value**

**Green Certificates**

> Distributors report the production data of the renewable plants to the Energy System Authority (Urząd Regulacji Energetyki – URE).

> URE issues Green Certificates (GCs) for each MWh of eligible electricity generated.

> The sale of the certificates can be performed either directly to another company (agreed price) or via the green certificates market place at the Polish Power-Exchange (Towarowa Giełda Energii – TGE).

> The demand for certificates is generated through an obligation for purchase for power distribution companies set out until 2021 in decree issued by the Ministry of Economy.

> The distribution companies can pay the substitution fee instead of green certificates at a price of 300.03 in 2015 (indexed with inflation yearly).

---

**Support mechanism TGE (stock exchange) – VAT excluded**

<table>
<thead>
<tr>
<th>Volume weighted average exchange price for certificates 2014 registered by the TGE</th>
<th>TGE average volume weighted GC price for 2014</th>
<th>PLN/MWh 186.53</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>€/MWh 44.62</td>
</tr>
</tbody>
</table>
Spanish Government has further developed the new renewables support framework

Renewables support in Spain

<table>
<thead>
<tr>
<th>Legal framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Royal Decree-Law (RD-L) 9/2013 of 12/07/2013, adopting urgent measures to guarantee the financial stability of the electricity system</td>
</tr>
<tr>
<td>&gt; Law 24/2013, of 26/12/2014, that regulates the electricity sector in Spain</td>
</tr>
<tr>
<td>&gt; The new system provides incentives on installed capacity and operations, but only if the plant meets certain standard conditions</td>
</tr>
<tr>
<td>&gt; RD-L 9/2013 repeals the previous regime for renewables1)</td>
</tr>
<tr>
<td>&gt; The parameters of the new system have been defined in the Ministerial Order IET/1045/2014 of 16/06/2014.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; The parameters of the new system have been defined for each operating plant according to commissioning date, installed capacity, average pool price, number of operating hours per year, etc. In principle, operating plants receive two types of incentives above the pool price earned in the market:</td>
</tr>
<tr>
<td>• Incentive on the standard value of the initial investment</td>
</tr>
<tr>
<td>• Incentive on the standard operating cost [Opex] (only when the standard costs are above the average pool price)</td>
</tr>
<tr>
<td>&gt; Wind assets have not been awarded incentives on the standard operating cost. The incentives on the investment for wind assets are determined by the commissioning year and installed capacity of the plant.</td>
</tr>
<tr>
<td>&gt; The new remuneration scheme does not compensate the production of energy, but just the investment by reference to a standard model. The reasonable return is fixed at 7.39% in relation to the whole regulatory life of a plant and any return obtained before the entry into force of the New Regime is also taken into account to determine if the cap has been exceeded.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Until the end of the asset’s regulatory life cycle, which is pre-defined for each standard technology. However, if according to the principles of the system the equivalent standard plant has already achieved the reasonable return, the incentives will not be applicable.</td>
</tr>
<tr>
<td>&gt; Wind plants commissioned before 2004 do not receive any additional compensation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value of mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; “Reasonable“ pre-tax profitability for renewable energy assets set at 7.39%2)</td>
</tr>
<tr>
<td>&gt; Major revisions of the incentives by the Government scheduled every 6 years (regulatory period), minor revisions every 3 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Future changes in legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; New builds could be registered and awarded the specific remuneration regime based on standard parameters</td>
</tr>
<tr>
<td>&gt; Auction mechanisms for new renewable capacity under scrutiny.</td>
</tr>
</tbody>
</table>

---

2) Before taxes (approx, 5.4% after taxes) according to 10-years Spanish treasury bonds plus 300 basic points.
Overview of remuneration options in Spain

Remuneration options in Spain

- The revenue is given by the sum of the pool price and the incentives (on the initial investment and Opex, respectively) that is defined for each operating plant on the basis of a sample installation.

- Average pool price is indirectly protected by a cap and floor system but this will only be applicable for the calculation of future incentives every 6 years (i.e., if the annual average pool price in a regulatory period has been above or below the cap and floor values, the new incentives will consider the latter values as references for the re-calculation of future incentives; therefore, it is not a direct protection of revenues).

- If the plant operator refuses the specific remuneration regime for a plant or once switches to pool price, the plant will not be eligible to go back to the specific remuneration regime.

* Wind assets do not receive any incentive on operating cost.
The renewables support framework in the Netherlands is financed out of a budget which is allocated on a first-come-first-serve basis

<table>
<thead>
<tr>
<th>Renewables support in the Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Mechanism</strong></td>
</tr>
<tr>
<td>&gt; The SDE+ is a feed in premium system</td>
</tr>
<tr>
<td>&gt; An estimate of the cost price (&quot;base price&quot;) is made per technology on an annual basis</td>
</tr>
<tr>
<td>&gt; The difference between this cost price and the conventional electricity price (&quot;correction price&quot;) is subsidized (SDE+ contribution = base price – correction price). Thus, the level of the SDE contribution is dependent on energy-price developments. In addition, a price floor is defined for the correction price, i.e. the maximum SDE+ contribution is reached when the correction price falls to the defined price floor</td>
</tr>
<tr>
<td><strong>Length of mechanism</strong></td>
</tr>
<tr>
<td>&gt; Period of 5 to 15 years depending on technology (e.g. wind onshore 15 years)</td>
</tr>
<tr>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td>&gt; A single subsidy budget is set annually (€3.5bn in 2015)</td>
</tr>
<tr>
<td>&gt; In 2015, subsidies are allocated in nine stages for specific technologies</td>
</tr>
<tr>
<td>&gt; The technologies compete on a first come first serve basis</td>
</tr>
<tr>
<td><strong>Other earnings captured</strong></td>
</tr>
<tr>
<td>&gt; It is possible for renewable technologies to also receive Guarantees of Origin per MWh of generation</td>
</tr>
</tbody>
</table>
Netherlands: Government replaced SDE by a new support scheme SDE+

**Cost prices for SDE+ stages from 31st March 2015 to 17th December 2015**: total budget of € 3.5 bn

<table>
<thead>
<tr>
<th>Technology</th>
<th>Stage 1 31st March</th>
<th>Stage 2 20th April</th>
<th>Stage 3 11th May</th>
<th>Stage 4 1st June</th>
<th>Stage 5 22nd June</th>
<th>Stage 6 31st August</th>
<th>Stage 7 21st Sept.</th>
<th>Stage 8 12th October</th>
<th>Stage 9 9th Nov.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Onshore 2)</td>
<td>53-70 €/MWh</td>
<td>53-80 €/MWh</td>
<td>53-90 €/MWh</td>
<td>53-100 €/MWh</td>
<td>53-110 €/MWh</td>
<td>53-114 €/MWh</td>
<td>53-114 €/MWh</td>
<td>53-114 €/MWh</td>
<td>53-114 €/MWh</td>
</tr>
<tr>
<td>Wind Offshore</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass 3)</td>
<td>34-70 €/MWh</td>
<td>34-80 €/MWh</td>
<td>34-90 €/MWh</td>
<td>34-100 €/MWh</td>
<td>34-110 €/MWh</td>
<td>34-120 €/MWh</td>
<td>34-130 €/MWh</td>
<td>34-140 €/MWh</td>
<td>34-144 €/MWh</td>
</tr>
<tr>
<td>PV (&gt;15kWp)</td>
<td>70 €/MWh</td>
<td>80 €/MWh</td>
<td>90 €/MWh</td>
<td>100 €/MWh</td>
<td>110 €/MWh</td>
<td>120 €/MWh</td>
<td>130 €/MWh</td>
<td>140 €/MWh</td>
<td>141 €/MWh</td>
</tr>
</tbody>
</table>

1) Support is paid for maximum number of full-load hours defined for each technology (not shown in table). Hydro and Geothermal not included in table.
2) Cost prices depending on site quality (wind speed categories), own categories for wind installations on dykes, in lakes and repowering. Finally, advanced projects can opt for transitional arrangements (not included in the shown price range), estimated correction price for wind onshore in 2015 is 39 €/MWh.
3) Includes CHP, biogas and co-firing in coal stations. Subsidy is paid for heat and electricity output.
Large Scale Renewables in Italy have to bid for feed-in-tariffs

Renewables support in Italy

| Legal framework | > Feed-in tariff determined through a Dutch auction system (Decree 159/2012 from 9 July 2012)  
|                 | > RWE Innogy’s existing plants still run under the former green certificate system (see next slide) |
| Price mechanism | > Plants above a certain capacity (e.g., 5 MW for wind onshore) have to bid for feed-in tariffs\(^1\)  
|                 | > The bid has to be provided during the auction period  
|                 | > There is an auction for each technology (excl. PV) with a max. incentivized quota per annum (500 MW for wind onshore in 2015) |
| Length of mechanism | > Depending on technology (20 years for wind onshore) |
| Value of mechanism | > Plants which win the auction achieve a feed-in equal to the highest value between its bid and the minimum guaranteed value defined by the Energy System Authority GSE  
|                 | > The feed-in is fixed for the incentivized period and equal to the sum of the hourly energy price and the incentive |
| Other earnings captured | > Guarantees of origin |
| Future changes in legislation | > The quota and feed-in tariff for the period 2016-2018 will be defined through a Decree expected during 2015 |

Support amount by technology

<table>
<thead>
<tr>
<th>Reference feed-in tariff for tenders (€/MWh)(^2)</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>127</td>
<td>Onshore wind</td>
</tr>
<tr>
<td>165</td>
<td>Offshore wind</td>
</tr>
<tr>
<td>96 (storage)</td>
<td>Hydro</td>
</tr>
<tr>
<td>119 (run-of-river)</td>
<td>Geothermal plants</td>
</tr>
<tr>
<td>85-99</td>
<td>Waves and tidal</td>
</tr>
<tr>
<td>85-145</td>
<td>Biodegradable waste and biomass (other than the one indicated in the following point)</td>
</tr>
<tr>
<td></td>
<td>Biomass and biogases obtained from agriculture, animal husbandry and forestry on a short supply-line basis</td>
</tr>
<tr>
<td></td>
<td>Landfill gas, sewage treatment plant gas and biogases (other than the ones indicated in the previous point)</td>
</tr>
<tr>
<td></td>
<td>Photovoltaic power</td>
</tr>
</tbody>
</table>

\(^1\) Plants below 5 MW are eligible for direct feed-in tariff through a specific register  
\(^2\) Reference values are base tariffs in the respective category. Operators have to bid on a per cent reduction from the base tariff. Base tariff can be increased by special “premiums”.  
\(^3\) “Conto Energia” expired in July 2013. New PV plants are not eligible for any incentivized system.
Italy: Revenues from renewable energy combine market price and green certificate value

Green certificates system – Main characteristics

- Distributors report the production data of each renewable plant to the Energy System Authority (GSE - Gestore dei Servizi Energetici).
- GSE issues Green Certificates (GCs) for each MWh of eligible electricity generated.
- The sale of the certificates can be performed either directly to another company (agreed price) or via the green certificates market place at the Italian energy exchange managed by GME (Gestore dei Mercati Energetici), whereas the price is determined by supply and demand.
- In addition, GSE is obliged to take back GCs in excess on the market. The GC Pay Back Price is defined by the formula $0.78 \times (180 - \text{"average sale price"})$. The "average sale price" is the average value of the zonal prices and the production poles. The Italian Energy Authority (AEEG) calculates it each year within the end of January for the year ahead.
- Plants are eligible for 15 years after entered in Commercial Operation.

Support mechanism GME (stock exchange) and GSE – VAT excluded

<table>
<thead>
<tr>
<th>Average weighted exchange price for certificates 2013 (VAT excluded) registered by the GME.</th>
<th>GSE guarantees a take back of GC's.</th>
<th>GSE Value of GC for 2014</th>
<th>GME average weighted GC price for 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>96.50 €/MWh²)</td>
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<tr>
<td></td>
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<tr>
<td>Calculation:</td>
<td>GSE Value of GC for 2014</td>
<td>GME average</td>
<td></td>
</tr>
<tr>
<td>$= 0.78 \times (180 - \text{&quot;average sale price&quot;})$</td>
<td>97.42 €/MWh</td>
<td>weighted GC price</td>
<td>96.50 €/MWh²)</td>
</tr>
<tr>
<td>Calculation of value for 2014</td>
<td></td>
<td>price for 2014</td>
<td></td>
</tr>
<tr>
<td>$= 0.78 \times (180 - 55.103)$</td>
<td></td>
<td>96.50 €/MWh²)</td>
<td></td>
</tr>
<tr>
<td>$= 97.42 €/MWh$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) All RWEI assets operate under the green certificate system.
2) Average price of Q1-Q2-Q3-Q4 2014 GCs as of 9th April 2015 (published on the website of GME). Market price was below GCs take back price defined by the GSE.
3) Defined by Italian Energy Authority (AEEG) with Delibera 22/2015/R/efr of 29th January 2015.