Integration of the Spanish electricity market into the new European market

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Market Advisor REE
1. The Spanish Electrical system
2. The MIBEL market
3. Integration of MIBEL into the IEM
4. Transparency and information management
5. Conclusions
REE as Spanish Transmission System Operator

- REE established in 1985 as the first company in the world exclusively dedicated to transmission and system operation
- Footprint: Spanish mainland, Canary and Balearic Islands, Ceuta and Melilla
- Assets: nearly 39,000km of HV transmission lines, 4,600 busbar connections and 73,000 MVA of transformer capacity
- Control Centres: two for System Operation and one for Renewables
- Share capital: 80% free float, rest public

Peak of demand in Spain
17/12/2007 45,450 MW
## Generation mix and installed capacity in Spain

**May 2011**

### Technology

<table>
<thead>
<tr>
<th>Technology</th>
<th>MW</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro-power</td>
<td>16,657</td>
<td>17,4</td>
</tr>
<tr>
<td>Nuclear</td>
<td>7,455</td>
<td>7,8</td>
</tr>
<tr>
<td>Coal</td>
<td>10,789</td>
<td>11,3</td>
</tr>
<tr>
<td>Fuel-Gas</td>
<td>1,849</td>
<td>1,9</td>
</tr>
<tr>
<td>Combined cycles</td>
<td>24,720</td>
<td>25,8</td>
</tr>
<tr>
<td><strong>Total (ordinary regime)</strong></td>
<td>61,470</td>
<td>64,0</td>
</tr>
<tr>
<td>Wind power generation</td>
<td>20,243</td>
<td>21,1</td>
</tr>
<tr>
<td>Solar PV</td>
<td>3,734</td>
<td>3,9</td>
</tr>
<tr>
<td>Solar CSP</td>
<td>780</td>
<td>0,8</td>
</tr>
<tr>
<td>Biomass</td>
<td>684</td>
<td>0,7</td>
</tr>
<tr>
<td>Special regime hydro</td>
<td>1,965</td>
<td>2,0</td>
</tr>
<tr>
<td>Cogeneration</td>
<td>5,946</td>
<td>6,2</td>
</tr>
<tr>
<td>Waste treatment</td>
<td>1,204</td>
<td>1,3</td>
</tr>
<tr>
<td><strong>Total (special regime)</strong></td>
<td>34,556</td>
<td>36,0</td>
</tr>
</tbody>
</table>

**Total** 96,026
Evolution of installed capacity in the Spanish System

Installed Wind power generation evolution 1996-2011

Installed solar photovoltaic power generation evolution 2006-2011

Installed solar thermoelectric power generation evolution 2006-2011

Foreseen evolution of the generation mix
Spanish electrical system organization
System Operation challenges

- Variety of generation technologies
  - Energy mix more intermittent and less manageable
- Insufficient cross-border capacity of the Iberian peninsula
- Spanish load demand:
  - Depending on:
    - Meteorology
    - Labour-day/Holiday
    - Week day
    - Year time
  - Still increasing and continuously changing

- CECRE (REE Control Centre for Renewable) and RESCC (companies’) facilitate the integration of special regime generation and in particular RES in the System Operation

[Graph showing hourly demand peak with labels: Accumulated increment 1996-2010 = 74%, Increment period 2000-2010 = 33%]
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Since July 2007, MIBEL is a single electricity market between Spain and Portugal that manages day ahead and intraday markets:

- One Power Exchange (OMIE), one Derivatives Exchange (OMIP), two TSOs (REE & REN) and a single Council of Regulators
- Market Splitting if congestion occurs at Portuguese-Spanish border → two price zones
- 79% of the hours with single price in the DA market (average value in 2010)
The MIBEL in Europe

- **2011 outlook** of regional markets coupled in the **day-ahead timeframe**

### Regional Markets coupled in DA

<table>
<thead>
<tr>
<th>Region</th>
<th>Coupling Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordic countries + Estonia</td>
<td>Market splitting</td>
</tr>
<tr>
<td>CWE</td>
<td>Price coupling</td>
</tr>
<tr>
<td>EMCC</td>
<td>Tight Volume coupling</td>
</tr>
<tr>
<td>MIBEL</td>
<td>Market splitting</td>
</tr>
<tr>
<td>Czech Republic + Slovakia</td>
<td>Price coupling</td>
</tr>
<tr>
<td>Italy + Slovenia</td>
<td>Market splitting (several price zones)</td>
</tr>
</tbody>
</table>

**Import exchange capacity vs. Installed generation capacity (%)**

Source: EU-Directorate General for Energy and Transport

**10% target (national) fixed by the EU**

**Need to increase the NTC in the France-Spain interconnection (interconnection MIBEL – rest of Europe)**
Interconnection development within MIBEL

NTC Evolution 2014-2015

“the connection and evacuation of renewable sources, mainly wind, hydro and solar in the Iberian Peninsula, is one of the most important investment needs in the South-Western and Center-South region of Europe”

2010 entsoe TYNDP

Midterm (2014 - 2015) investments in SWE region up to 6-7 bn€ according to TYNDP
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Congestion management mechanisms within MIBEL

Current situation

Long term (Y-1, M-1)

Day-ahead (D-1)

Intraday (D-1, D)

Balancing (D)

Portugal-Spain (IPE)

CfDs ES→PT (OMIE) *

Market Splitting

6 Implicit auctions

No XB mechanism yet

France-Spain (IFE)

PTR Explicit auctions (REE-RTE)

PTR Explicit auctions (RTE)

2 PTR Explicit auctions (REE)

No XB mechanism yet

* 50% NTC
Implementation of the IEM target model in the SWE region

2014 outlook

ACER FWGL on CACM *

Future Balancing Guidelines **

NCs

Target Model PCG

Long term (Y-1, M-1)

Day-ahead (D-1)

Intraday (D-1, D)

Balancing (D)

IPE & IFE

PTR/FTR Explicit auctions in a supraregional platform *

Price coupling MIBEL–NWE *

Continuous trading + Implicit auctions *

Cross-border balancing exchanges among TSOs **
Implementation of the IEM target model in the SWE region

→ Harmonization of long-term mechanisms

- Ongoing projects:
  - **IFE**: RTE and REE are working for the transfer of the long-term auctions (yearly and monthly) on the French-Spanish border to a common cross-regional/european platform.
  - **IPE**: A coordinated mechanism is still pending. Whether the final product is PTR/FTR and can be auctioned by a European platform is subject to a coming regulatory decision.

 PTR Explicit auctions (IFE)

 PTR/FTR Explicit auctions in a regional/european platform, searching for European coordination

CfDs ES→PT (OMIE) (IPE)
MIBEL is willing to coupling NWE (mid-2013 is foreseen in AESAG roadmaps):

- TSOs and OMIE have the compromise of changing the MIBEL DA GCT to 12:00h CET by mid 2012
- Implementation of PCR algorithm in MIBEL is foreseen by mid 2012 too
- Collaboration between SWE and NWE regions for the preparation of governance arrangements will be needed to couple both regions
- IFE Explicit daily auction to disappear
Implementation of the IEM target model in the SWE region

→ Intraday

- A consensus on the implementation of FWGL on CACM target model on ID is still pending on SWE region (compatibility of existing implicit auctions and continuous trading under study)

Next steps:

- **IFE**: Replacement of 2 ID Explicit auctions by implicit continuous allocation through the pan-European intraday platform
- **IPE**: Access to the continuous EU platform should be granted
- **MIBEL**: Compatibility of continuous trading and implicit auctions as a second layer has to be guaranteed
Implementation of the IEM target model in the SWE region

→ Cross-border balancing

- On top of national balancing markets, the three TSOs of the region (RTE, REE and REN) are working for the implementation of cross-border balancing exchanges among TSOs

- A two-step approach is foreseen:
  - Interim bilateral solutions RTE-REE and REE-REN: The implementation work of both interim solutions is coordinated (common work plan, same legal and operational structure) and the target date is Q3 2012
  - Enduring solution: RTE, REE and REN are analyzing the design of a multi-TSO enduring solution within SWE region, extendable to other regions in Europe, to be implemented in a second step once the regulation on balancing (FWGL & NC) is in place
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Next developments regarding Transparency

- The Comitology Guidelines on Fundamental Electricity Data Transparency (still under public consultation) will establish the framework for open publication of electricity data referred to Load, Transmission Network, Generation and Balancing

- Entsoe.net will be the common transparency platform where the detailed information will be published according to the Guidelines on FEDT

- Already existing regional or local platforms will continue publishing the same or more information

Source: www.entsoe.net
TRANSPARENCY IN REE

- **REE supports the maximum level of transparency and it is recognized in Europe for its high degree of transparency (2008 ERGEG Transparency Report)**

- **High transparency standards, according to Spanish Regulation (Operational Procedure 9), are already published in our public website [www.esios.ree.es](http://www.esios.ree.es)**
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Conclusions

- The creation of the IEM is a challenging process that requires from the collaboration of all the parties (Regulatory Bodies, TSOs, PXs and MPs) and regions involved and needs clear regulatory guidance.

- REE has a wide experience in Market Integration (MIBEL) and has a leading role in Europe integrating renewable energy in the Operational System.

- It is of the utmost importance to count on robust meshed interconnected network. For that purpose, Spanish Electrical System has an ambitious network development plan for the coming years and is reinforcing the links with neighbouring countries.

- From the perspective of an outlying country like Spain, it is of the utmost importance to be active both in the elaboration of the EU regulation (FWGLs & NCs) and central European projects monitoring and collaboration.

- From the IEM creation process perspective, REE is actively working in close collaboration with neighbouring TSOs towards the harmonization of LT mechanisms in the region and their integration into regional/european platforms, facilitating the market coupling MIBEL-NWE, following the implementation of ID solutions and developing cross-border balancing mechanism among TSOs.

- In the coming years the continuous need of integration and control of renewable (20-20-20 objectives) and demand management (flexible consumers, smart grids, electric cars, pumping…) will become more challenging issues.