Markets fit for renewables – what is needed?

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Market fit for renewables

- What is needed for Day-Ahead and Intraday markets to be ready for integration of renewables?
  - The flexibility challenge
  - Implementation of the Target Model
The trend

Moving towards a Low-Carbon Society

Increased penetration of non-programmable Renewable Sources

Adequacy Concerns and greater need for Flexibility of the Electricity System

Flexibility and Adequacy Markets in Electricity
The Change in the System

Market and system paradigm changes from centralised to decentralised

THE CHALLENGE

Power plant
Transmission
Distribution

Wind integration
PV integration

Energy storage
EV charging

Demand side participation

THE OPPORTUNITIES
Increased RES Penetration

Most of the new RES-based generation capacity is/will be connected to distribution grids.

Expected share of RES in electricity generation

- 2020: 34%
- 2030: ≈ 50%
The Need to Change

... to integrate renewables into DA and ID markets

- Implement the target model which is designed to enable RES integration
- RES generators should become balance responsible (with impacts to DA, ID and BAL scale)
- Imbalance prices should reflect all balancing costs
- Level of cooperation and coordination among TSOs and DSOs should increase
## Incentives in the future model (target)

<table>
<thead>
<tr>
<th>Today</th>
<th>Target model</th>
</tr>
</thead>
<tbody>
<tr>
<td>RES generators are NOT responsible for imbalances</td>
<td>Making RES balance responsible will reduce balancing needs/costs</td>
</tr>
<tr>
<td>Costs for reserves, and in some cases balancing energy, are socialised (no market)</td>
<td>Cost reflective imbalance charges will reduce balancing needs/costs.</td>
</tr>
<tr>
<td>Hourly products and imbalance settlement period (ISP)</td>
<td>Shorter (15’) products and ISP will reward flexibility in ID and BAL markets</td>
</tr>
</tbody>
</table>

Experience so far: ongoing pilot project XBID
Thank you for your attention

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## Electricity Target Models

... for forward, day-ahead, intraday and balancing timeframe

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Calculation</td>
<td>OPTIMAL BIDDING ZONES + FLOW-BASED to optimise the use of infrastructure</td>
</tr>
<tr>
<td>Forward</td>
<td>SINGLE EU RULES AND ALLOCATION PLATFORM to allocate transmission rights</td>
</tr>
<tr>
<td>Day-Ahead</td>
<td>SINGLE EU (AUCTION BASED) PRICE COUPLING to optimise XB capacities</td>
</tr>
<tr>
<td>Intraday</td>
<td>SINGLE EU (CONTINUOUS) PRICE COUPLING with the possibility of auctions</td>
</tr>
<tr>
<td>Balancing</td>
<td>SINGLE EU COMMON MERIT ORDER LIST for all balancing energy products</td>
</tr>
</tbody>
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# Electricity Target Models

## Implementation Status

| Capacity Calculation | - Pilot review of bidding zone  
|                      | - CWE Flow Based went live in May 2015  
|                      | - CEE Flow Based delayed due to loop flows |
| Forward               | - Single auction rules approval ongoing  
|                      | - Merger of CASC and CAO (75% of the EU borders with LT TRs) |
| Day-Ahead             | - Single Price Coupling covering 19 Member States since Feb 2015  
|                      | - 4MMC Price Coupling (CZ, HU, SK, RO) |
| Intraday              | - Significant delay in the development of single intraday platform  
|                      | - Signature of vendor contract in June 2015 |
| Balancing             | - Harmonisation of products and rules  
|                      | - Development of regions (CoBAs)  
|                      | - Several pilot projects ongoing |