

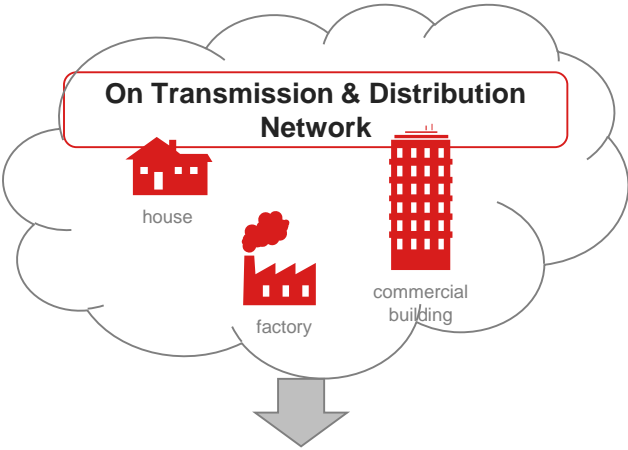


FLEXIBLE GENERATION, BUT NOT FOR ALL TECHNOLOGIES?

Febeliec

30 November 2015

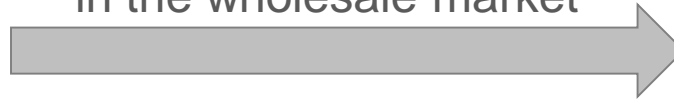
Previously, EDF Luminus was essentially acting as commodity provider for its customers...



Balancing our customer portfolio



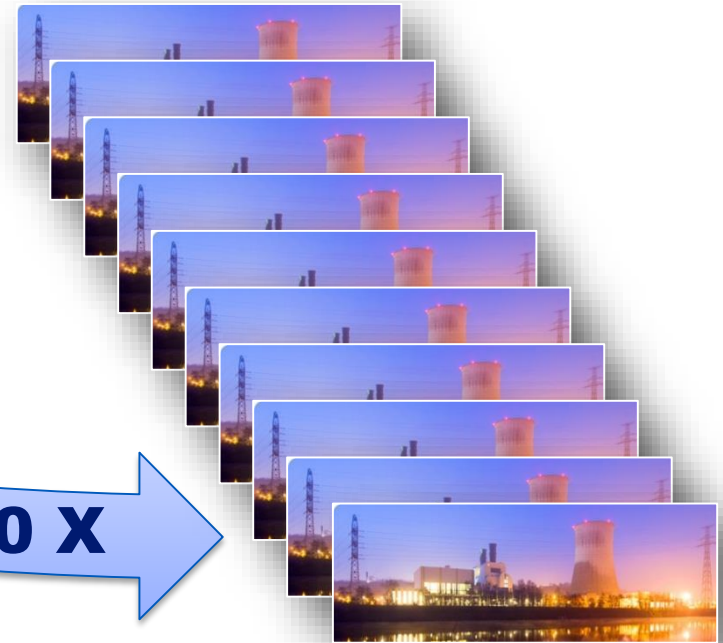
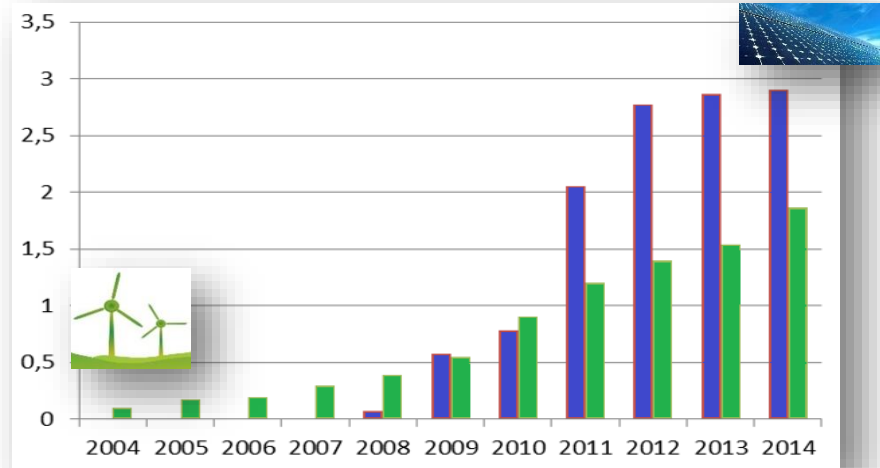
by optimizing our assets in the wholesale market



in order to ensure our balancing responsibility and ancillary services obligations

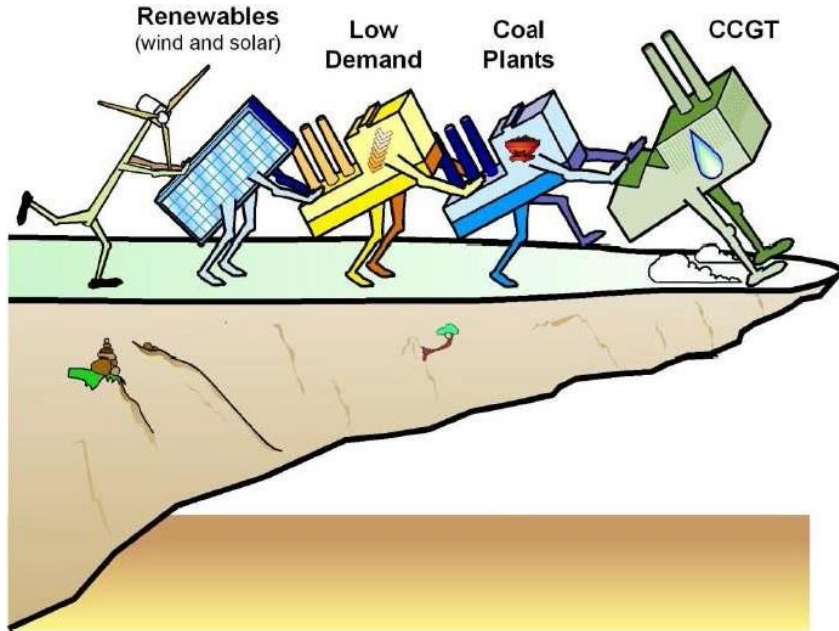
But in a changing Market context...

Wind & PV installed capacity in Belgium is 4.8GW, equivalent to 10 gas-fired power plants



= 10 X

But in a changing Market context...



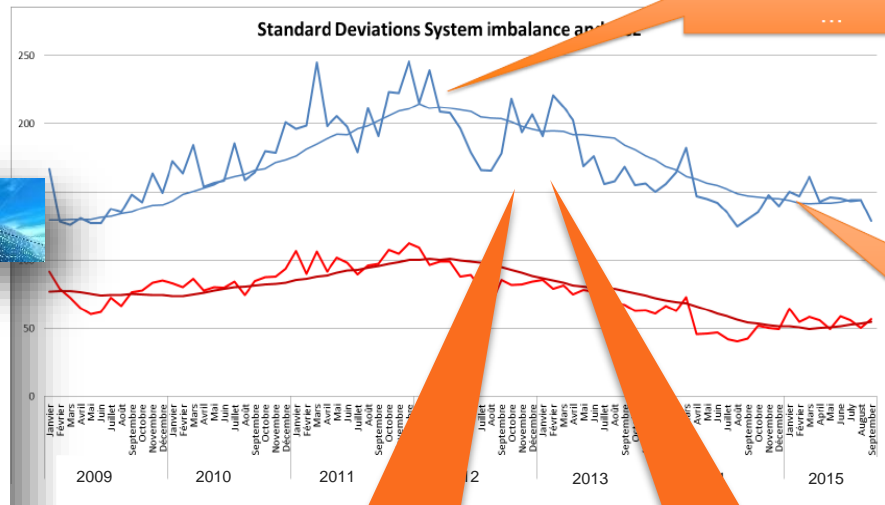
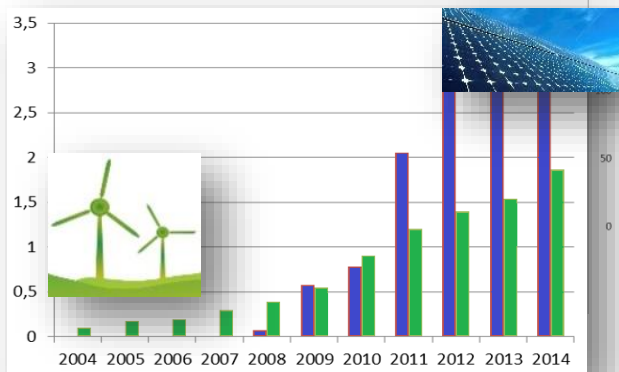
Les fermetures de centrales électriques vont se multiplier en 2015

BELGA Publié le vendredi 09 janvier 2015 à 06h32 - Mis à jour le vendredi 09 janvier 2015 à 06h36



But in a changing Market context...

Evolution of System Imbalance and ACE



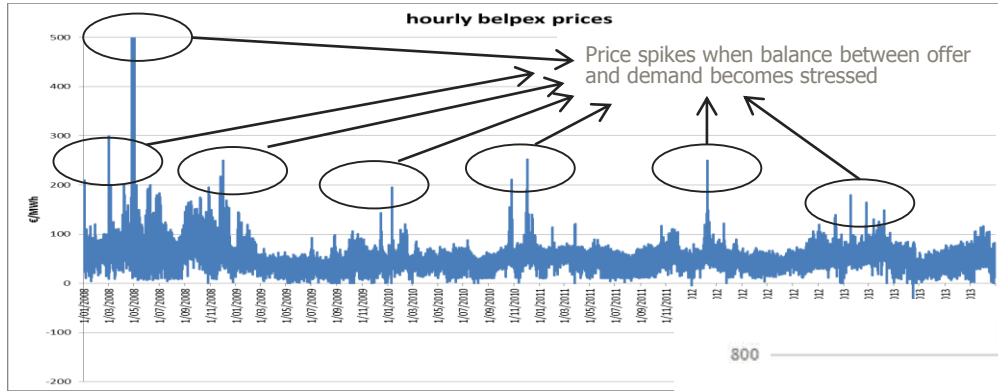
Single marginal pricing
Publications improvement

Stabilisation of the system imbalance? Quid future with increase of REN and closure of production units?

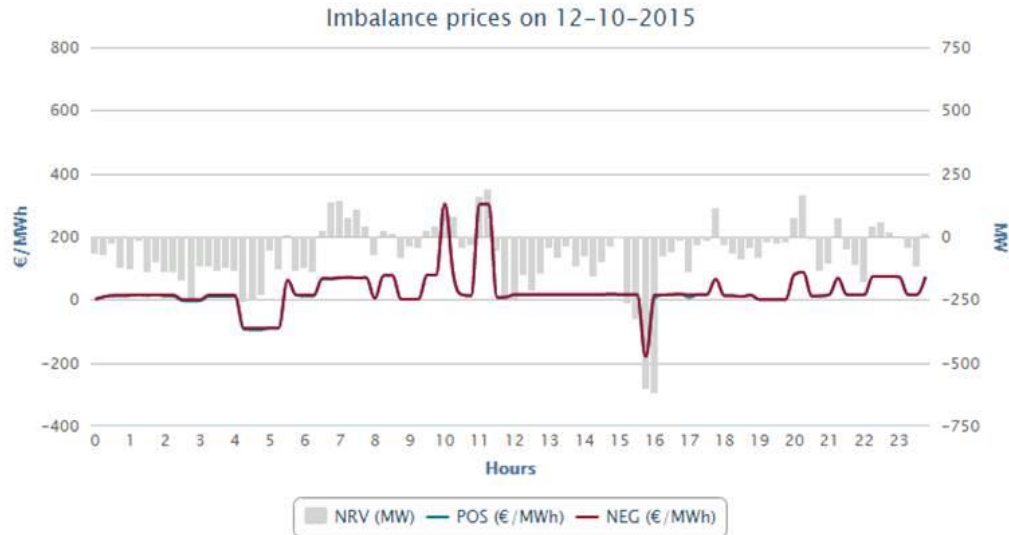
Auto-regulation of the Balancing mechanism
More actors playing on...

Better renewables forecasts

But in a changing Market context...



Unpredictability of renewables remains.....



The future = flexibility

Own
assets

Decentralised
production

Customers

We improved the flexibility of our own assets

On Transmission Network

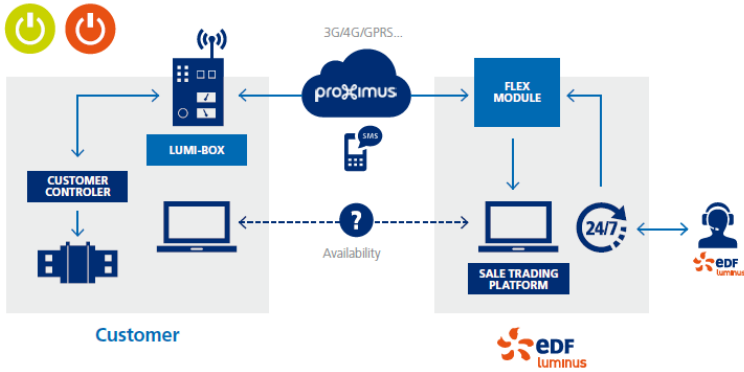


Less & less in the money

Technical improvements

- Conversion of CCGT into GT in order to fulfill R3 technical constraints (Start in 15') and be able to participate in imbalance markets
- Increase the Pmin-Pmax operational range of our power plants
- Increase the R1/R2 capabilities of our power plants
- Supply Side Management creation (Automated flexibility created from emergency diesels)
- Shutdown of our windmills when negative prices
- But unfortunately also mothballing and closure announcements

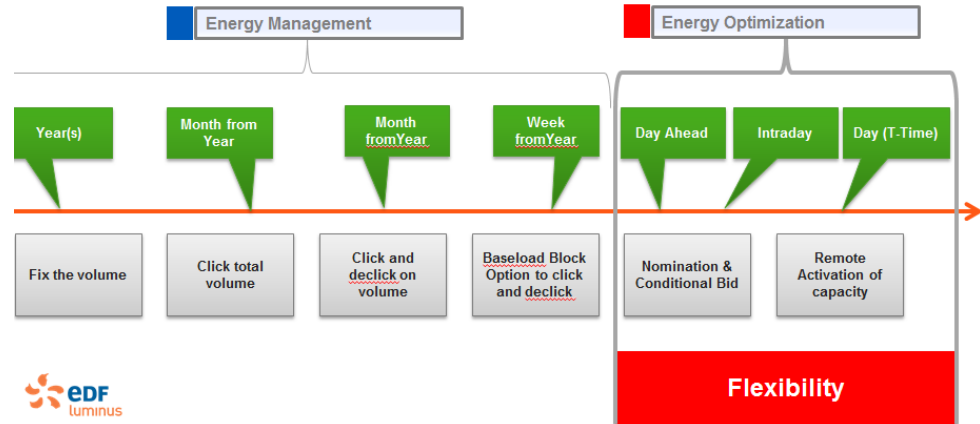
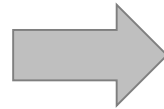
and created innovative products for flexibility from decentralised production and our customers



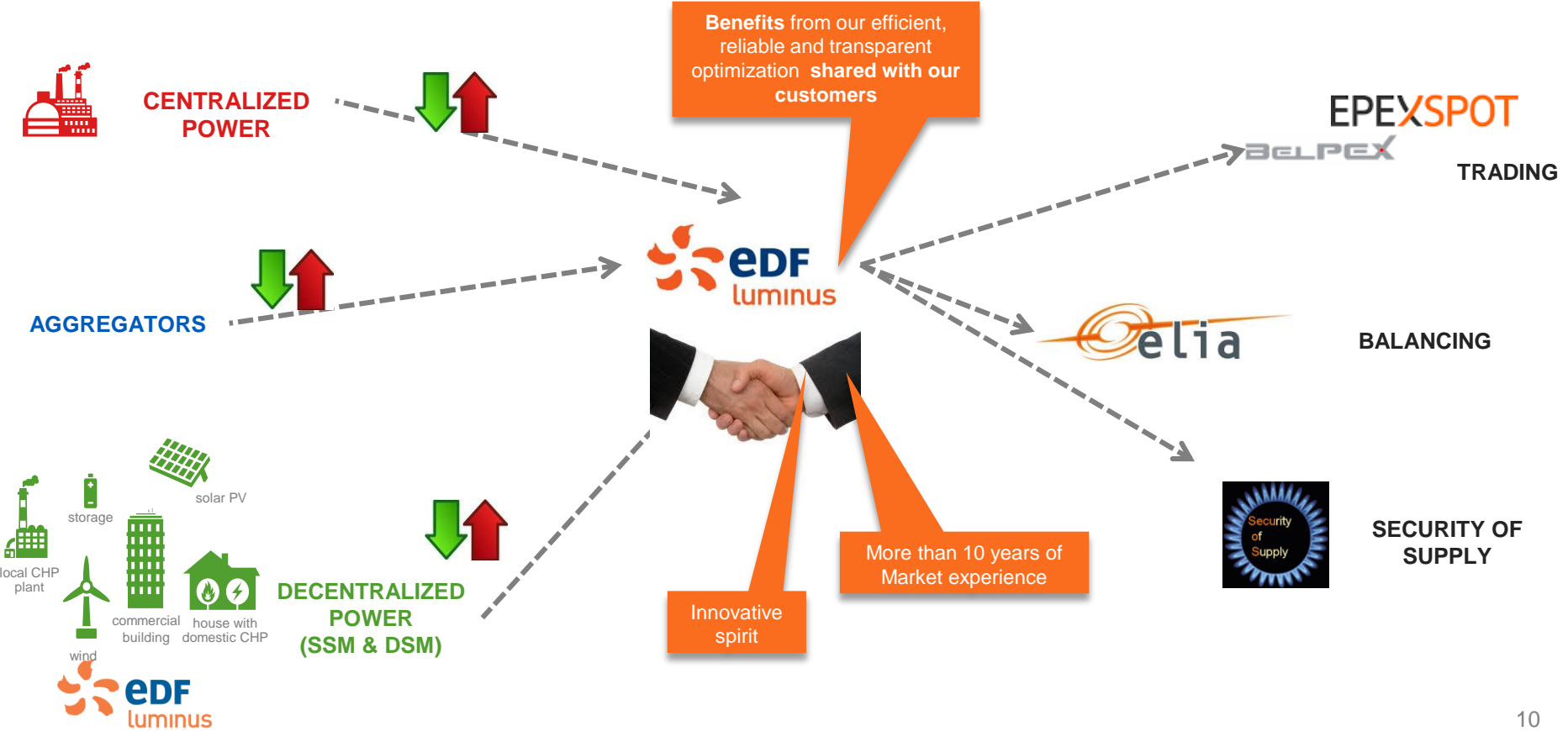
→ Real time connection
 - - - - - Asynchrone connection

Sales Trading Platform:
 web based tool to
 communicate with our
 customers

Providing a “window to the market” for our customers allowing them to capture value in the energy and flexibility markets



So that EDF Luminus is the ideal partner to valorize flexibility



THE FLEXIBILITY MARKET SHOULD BE FURTHER DEVELOPED BUT BEWARE FOR OVERREGULATION

- **EDF Luminus offers flexibility products and incites its customers to actively participate in the market within the existing legal and regulatory context**
 - Integrated in its responsibilities as supplier, BRP and BSP
 - Adding value for its customers by avoiding transaction costs, fees and administrative overhead
 - Tailor-made for each individual customer within the limits of his grid connection
- **EED-Directive art 15: New regulation should promote participation of flexibility in balancing, reserve and other system services markets and hurdles should be removed**
- **New regulation should be carefully assessed with regard to the limitations, additional transaction costs, loss of opportunities and market distortion they might cause**
 - Bilateral contractual models in which parties maximize and share the benefits of their cooperation, should be fostered
 - DGO imposed certification procedures are causing additional costs and rather limit participation of flexibility
 - Sub-metering solutions are part of the commercial offering
 - Centralized settlement models at regulated prices hold a risk of expropriation and arbitrage/gaming

THANK YOU FOR YOUR ATTENTION!