



# PILOT 2: FCR COOPERATION

## BSG MEETING

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# Content

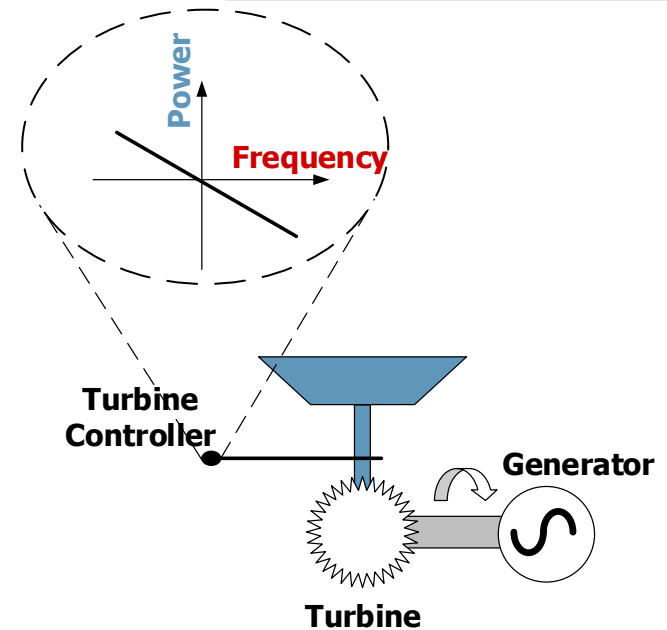
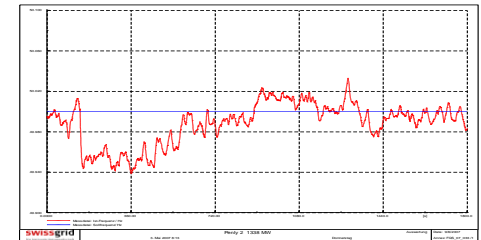
- Load-Frequency-Control and FCR
- Road to current FCR Cooperation
- System structure and operational responsibilities
- Experience from the market
- Market and cooperation characteristics
- Future development

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# Frequency containment reserves (FCR) - Primary Control

- Characteristics:
  - Stabilizing the frequency
  - Decentralized: Frequency measurements in the power plant
  - Automatic activation on the turbine controller
- Procurement:
  - 3'000 MW (Reference incident) in Continental Europe
  - Distribution to countries by ENTSOE
  - Obligation or market based
  - Cross border exchange of balancing capacity

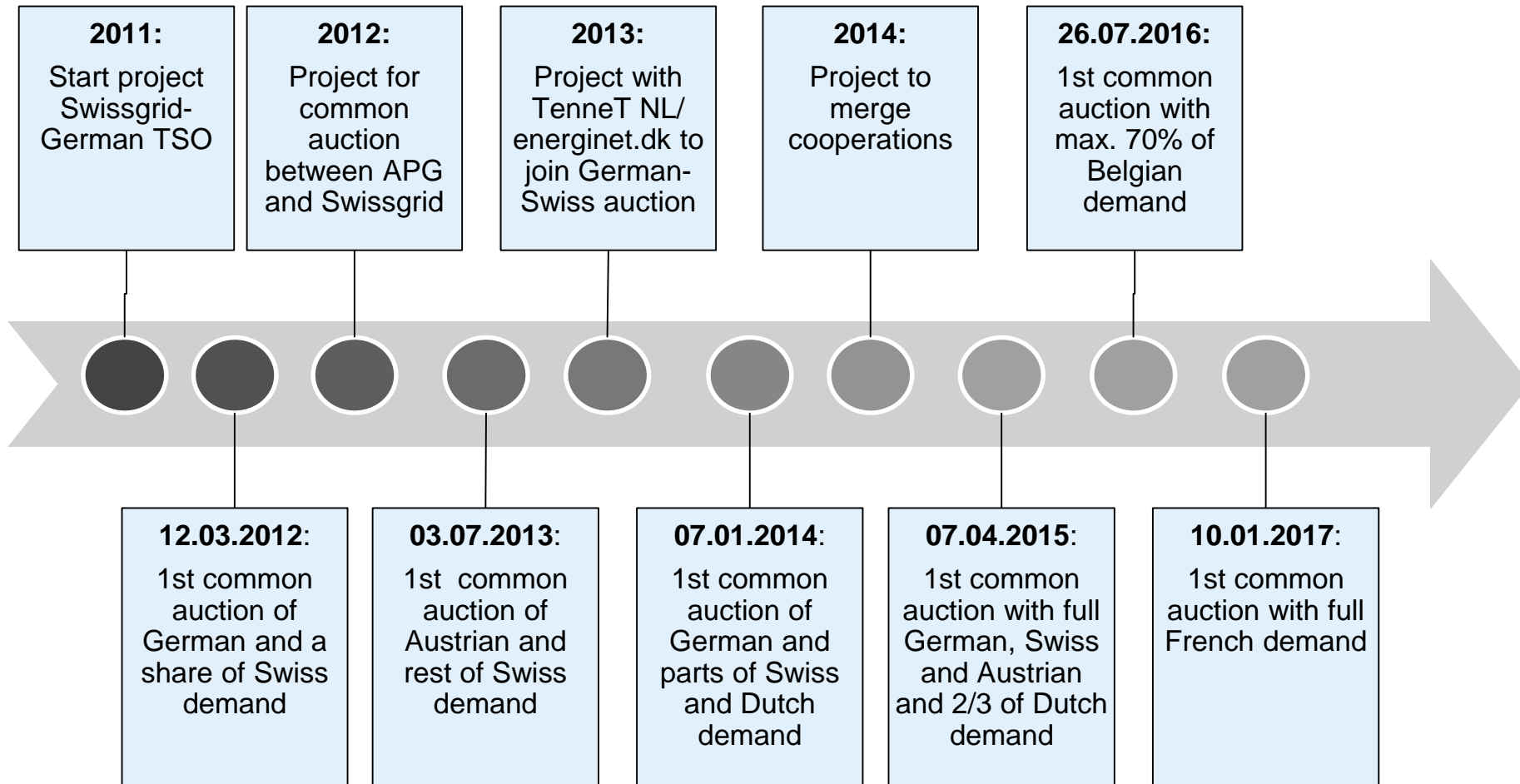


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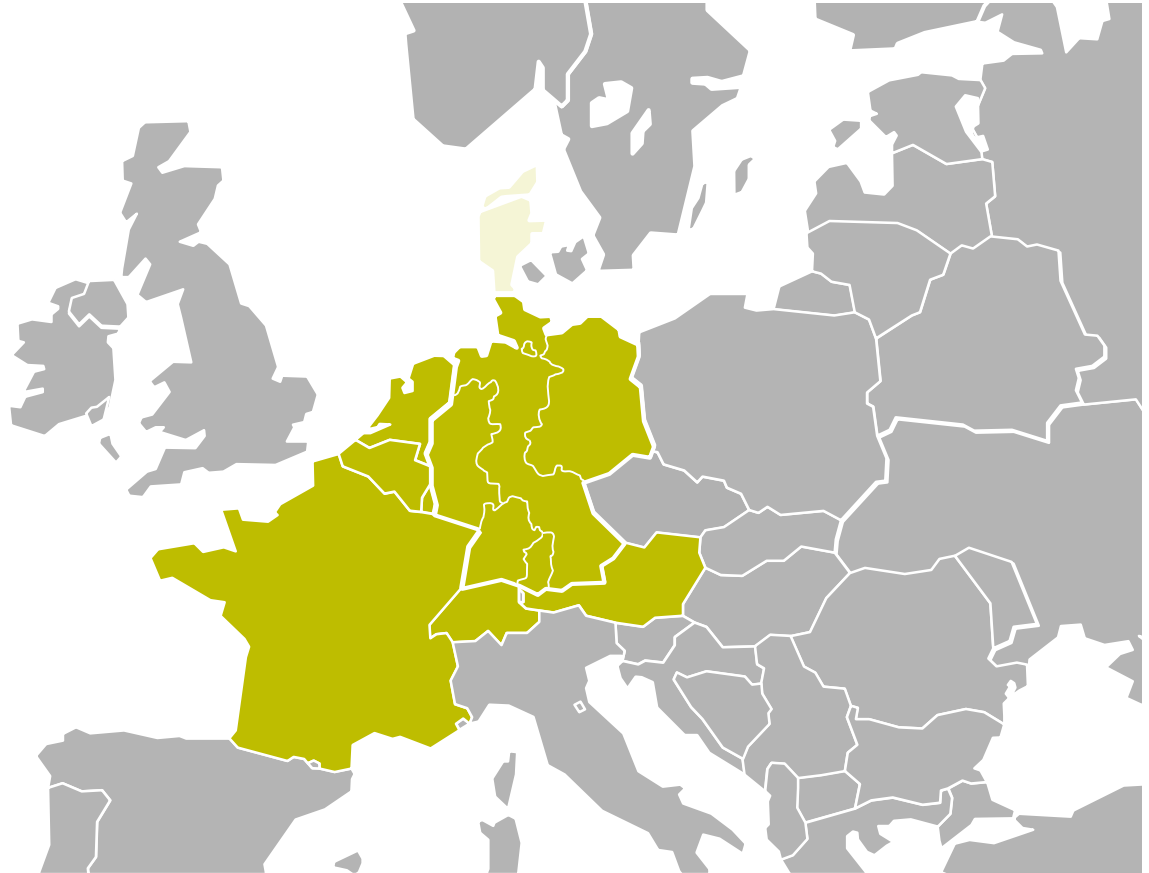
# Road to current FCR Cooperation

## History of the projects



# Overview of the FCR Cooperation

- 10 TSOs from 7 countries current member of the cooperation
- Common demand of 1.4 GW for 2017 in common auction (almost half of the ENTSOE wide demand)
- Further coupling of Denmark planned



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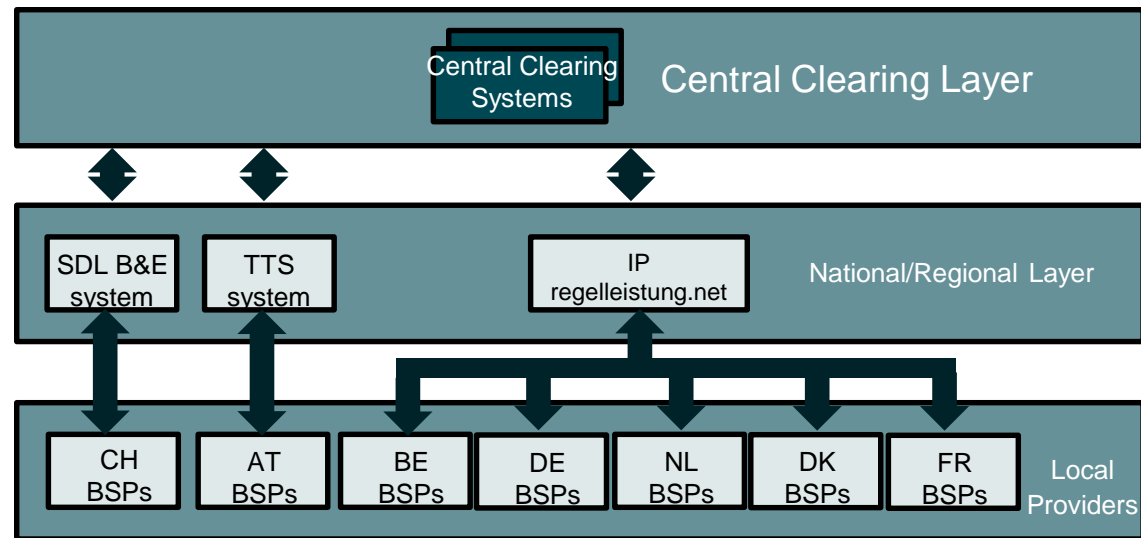
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# System layout

- Systems / Layer according to functionality:

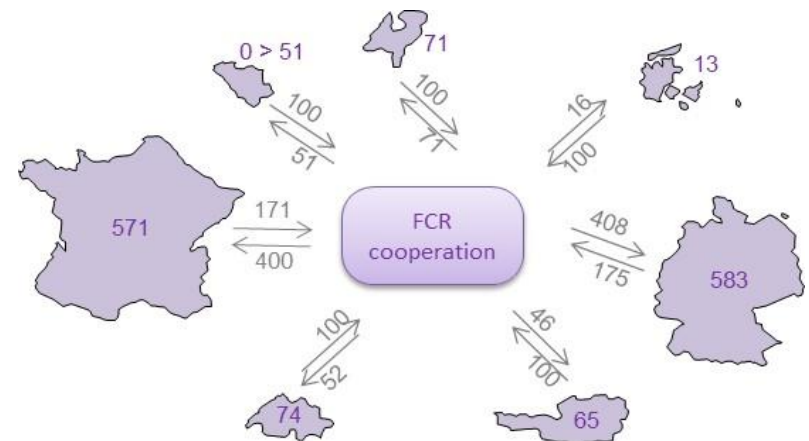
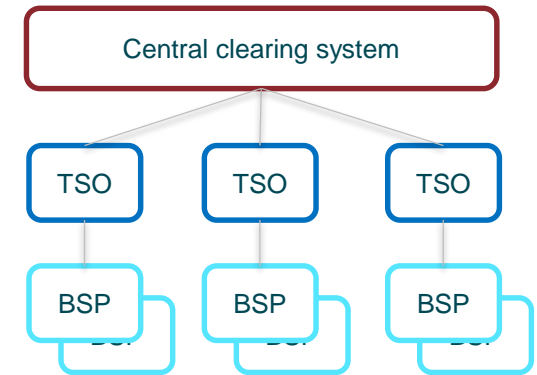
- Central clearing system (CCS)
- Bidding on national/regional auction systems
- Interface from TSOs to suppliers unchanged



- The CCS is a separate module with full flexibility
- Easy adaption of principles and extension
- No dependencies from interfaces with market participants

# Operational responsibilities

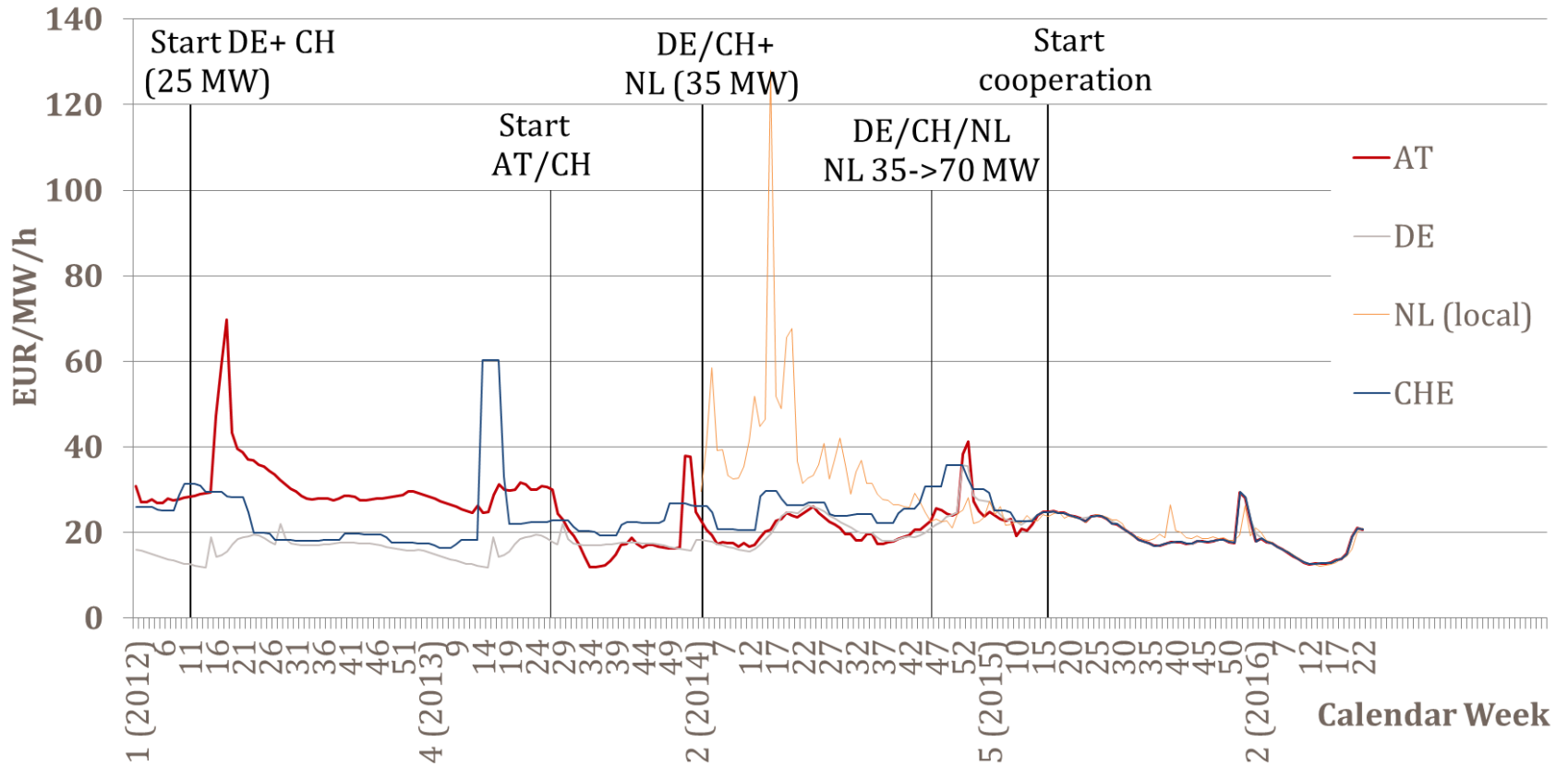
- Cooperation according to TSO-TSO Model
- TSOs operate their national/regional auction systems
- Sole responsibilities for BSPs (contracting, controlling and settlement) in its Control Area by the respective connecting TSO
- Each TSO sends its demand to the its national/regional central clearing system
- Overall demand = sum of TSO demand
- Bids selected through a common algorithm



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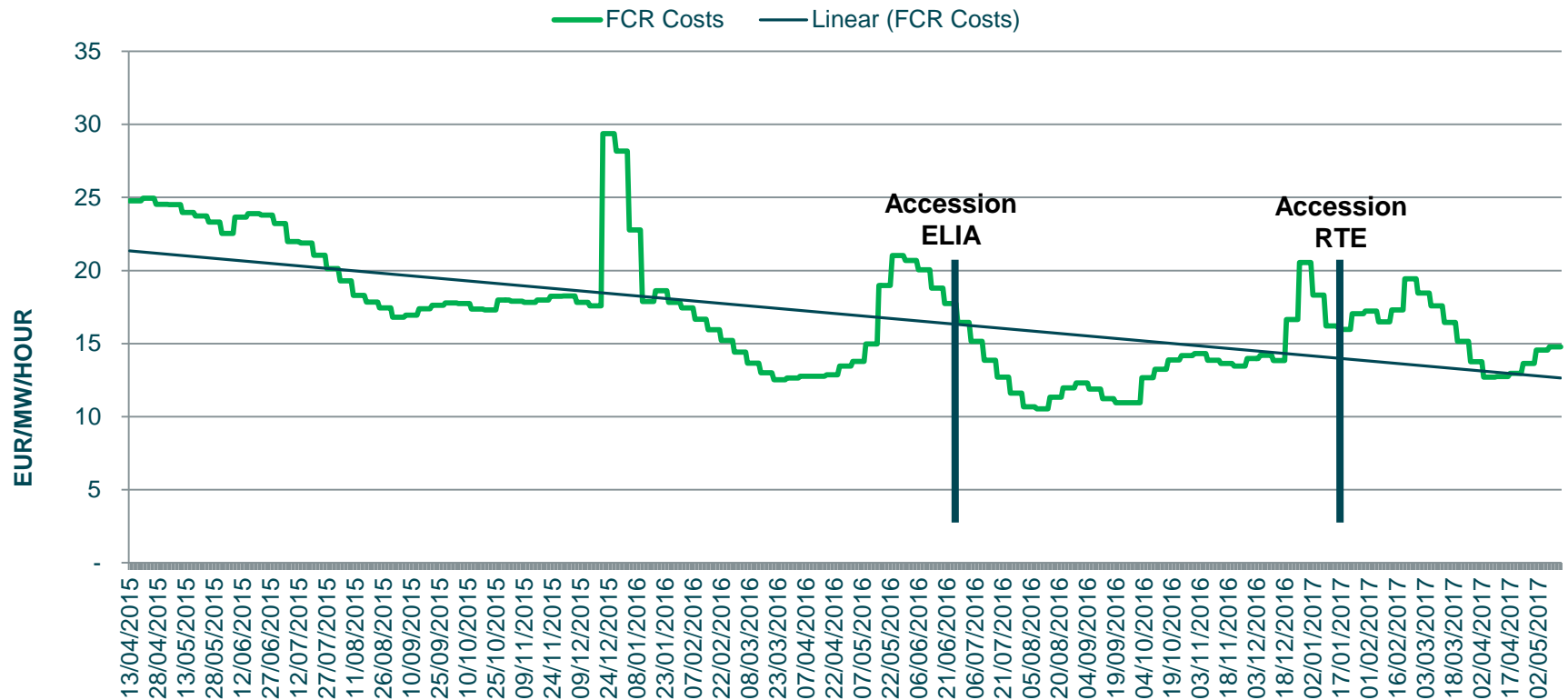
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# FCR price development of participating countries



**Common market leads to converging prices for all cooperation partners**

# Joining of Elia and RTE



- ✓ Price volatility reduced
- ✓ Slight price decrease
- ✓ Higher liquidity

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# Market characteristics

- Week base product Monday to Sunday (168 hours)
- Market design allows difference in products and procedures between TSOs
- Symmetric, divisible and indivisible offers
- Minimum 1MW, resolution 1MW
- Weekly auction with Gate closing time (GCT) on Tuesday W-1 @15h
- Market Clearing is based on cost minimization considering:
  - Limit of maximum import / export for each country
  - Individual products

# Cooperation characteristics

- Fair governance
- Hybrid properties – divisible bids, block and conditional bids
- Own “in-house” development, flexible system and SW architecture, processes and market clearing algorithm
- The payment to market participants is pay-as-bid
- No need for the cross-border capacity allocation
- No balancing energy involved



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# Potential for future market development

- FCR cooperation indicates following benefits:
  - socio economic benefit for the participating countries
  - increased robustness of supply
  - positive influence on security of supply
- TSOs and NRAs of the countries involved have identified a set of priorities regarding cooperation evolutions
- An improved market design could
  - Ease the access for smaller market players
  - Improve the investment signals
  - Strengthen the international market integration
  - Increase socioeconomic benefits

# Relevant articles from EB GL for FCR proposal

## Relevant articles from EB GL for FCR proposal

- Article 33.1: TSOs have to develop a proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of FCR within the FCR cooperation.
- Article 65: This proposal shall be submitted to NRAs at the entry into force of GLEB.
- Article 10.4: This proposal shall be subject to regional consultation.
- Article 5.3.b: The proposal is subject to approval by all concerned NRAs.
- Article 5.6: NRAs have 6 months to reach a common decision to approve or not to approve the proposal.
- Article 1.1: The scope for FCR concerns common rules procurement and settlement of FCR.
- Article 6.1: 2 months for amended TSO proposal and 2 months for NRA decision

# Public consultation

- After the public consultation in February TSOs have worked on the conclusions that were published on the 1. of June
- NRAs informed the TSOs that the approval process will be done on the legal basis of GLEB. A second public consultation on the detailed proposal will therefore be carried out in September 2017, based on the TSOs conclusions regarding the evolution of FCR cooperation market design:
  - Package A consists in introducing indivisible bids in all countries, removing exclusive bids in Switzerland and changing the TSO-BSP settlement to marginal pricing. It can be implemented end of 2018 at earliest
  - Package B consists in implementing daily auction with 4h products. It can be implemented end of 2019 at earliest

Thank you for your attention

**07.06.2017,**  
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# YEARLY IMPORTS AND EXPORTS



	2015		2016		2017	
	Import	Export	Import	Export	Import	Export
DE	20	7	12	27	16	29
CH	5	27	4	8	11	6
AT	1	23	2.3	30	2	22
NL	31	0	34	2	40	0
BE			15	0	32	0
FR					4	47

# EXCHANGE PER COUNTRY

