

# **FUTURE OF FLEXIBILITY IN THE ELECTRICITY MARKET**

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**ACCENTURE-FEBEG CONFERENCE  
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# ADEQUACY VERSUS FLEXIBILITY

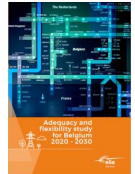
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**1** IF WE WANT THE NUCLEAR EXIT IN BELGIUM TO TAKE PLACE IN AN ORDERLY WAY, A REPLACEMENT CAPACITY OF AROUND 3.9 GW WILL BE NEEDED AS OF 2025.

**2** THE EARLY COAL PHASE OUT IN NEIGHBOURING COUNTRIES MEANS THAT WE WILL NEED UP TO >1 GW EXTRA IN ADDITIONAL CAPACITY IN THE PERIOD 2022-2025.

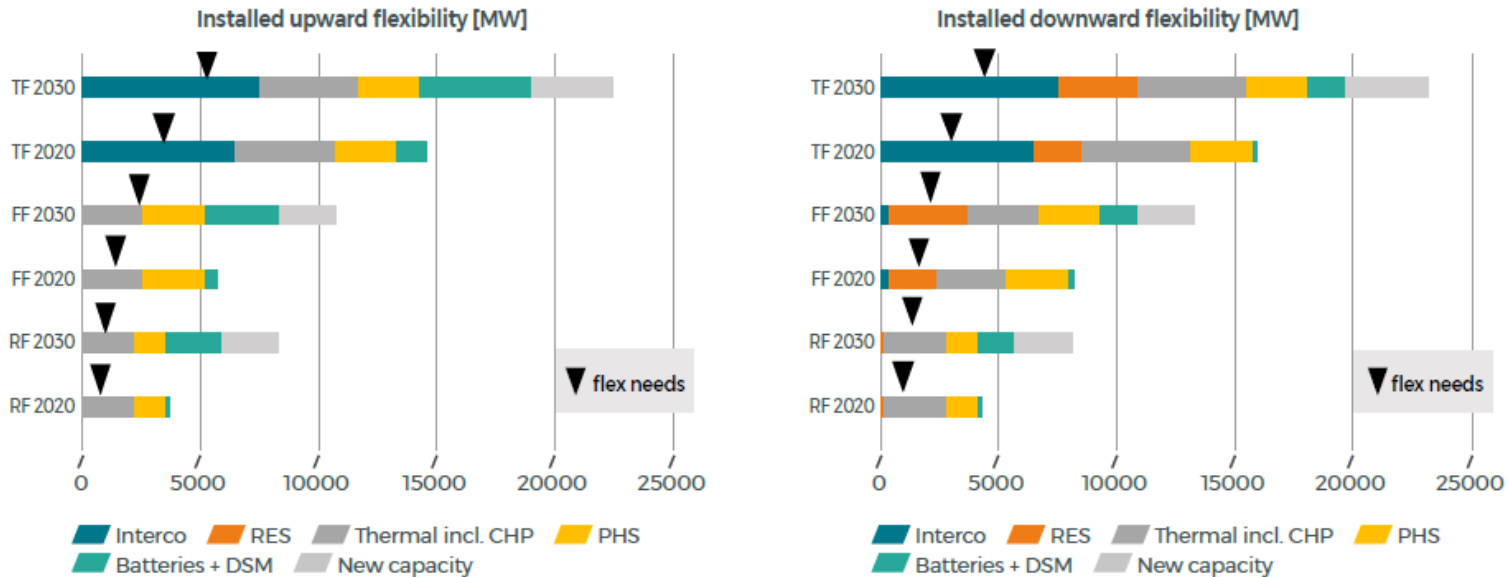
**3** FAILING ANY INTERVENTION (IN THE FORM OF A CRM), THERE WILL BE INSUFFICIENT INVESTMENT TO ENSURE THAT A FULL 3.9 GW OF NEW REPLACEMENT CAPACITY WILL BE AVAILABLE IN TIME TO COPE WITH THE NUCLEAR EXIT.

**4** IN THE YEARS LEADING UP TO 2030, THE AVAILABLE FLEXIBILITY RESOURCES WILL BE ABLE TO COPE WITH THE INCREASING VARIABILITY THAT RENEWABLE ENERGY PRODUCTION INTRODUCES INTO THE ELECTRICITY SYSTEM.



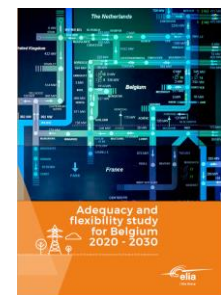
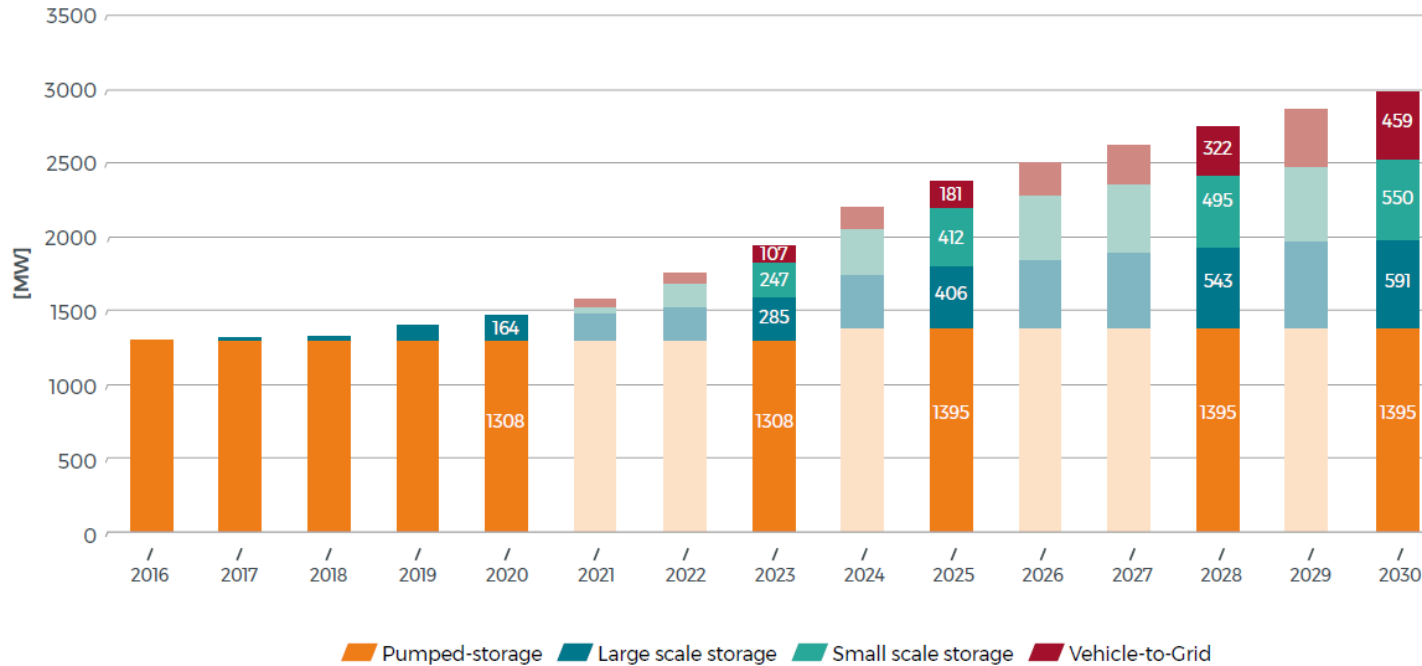
# ADEQUACY VERSUS FLEXIBILITY

INSTALLED AVAILABLE FLEXIBILITY MEANS FOR 2020 AND 2030 FOR THE 'CENTRAL' SCENARIO [FIGURE 4-32]



# FLEXIBILITY SOURCES

EVOLUTION OF INSTALLED CAPACITY OF 'OTHER STORAGE FACILITIES' IN THE CENTRAL SCENARIO [FIGURE 2-23]

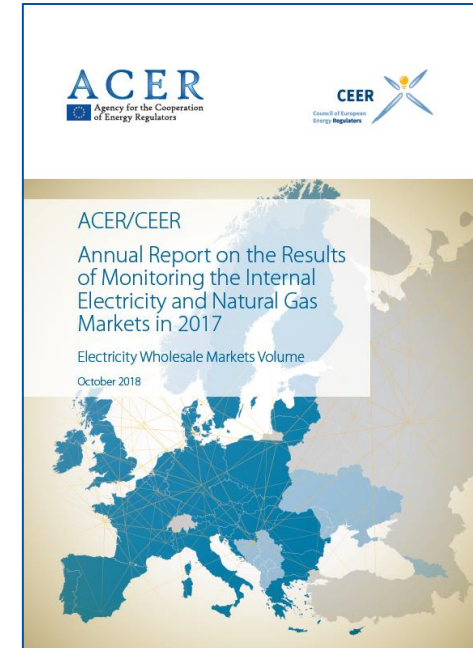
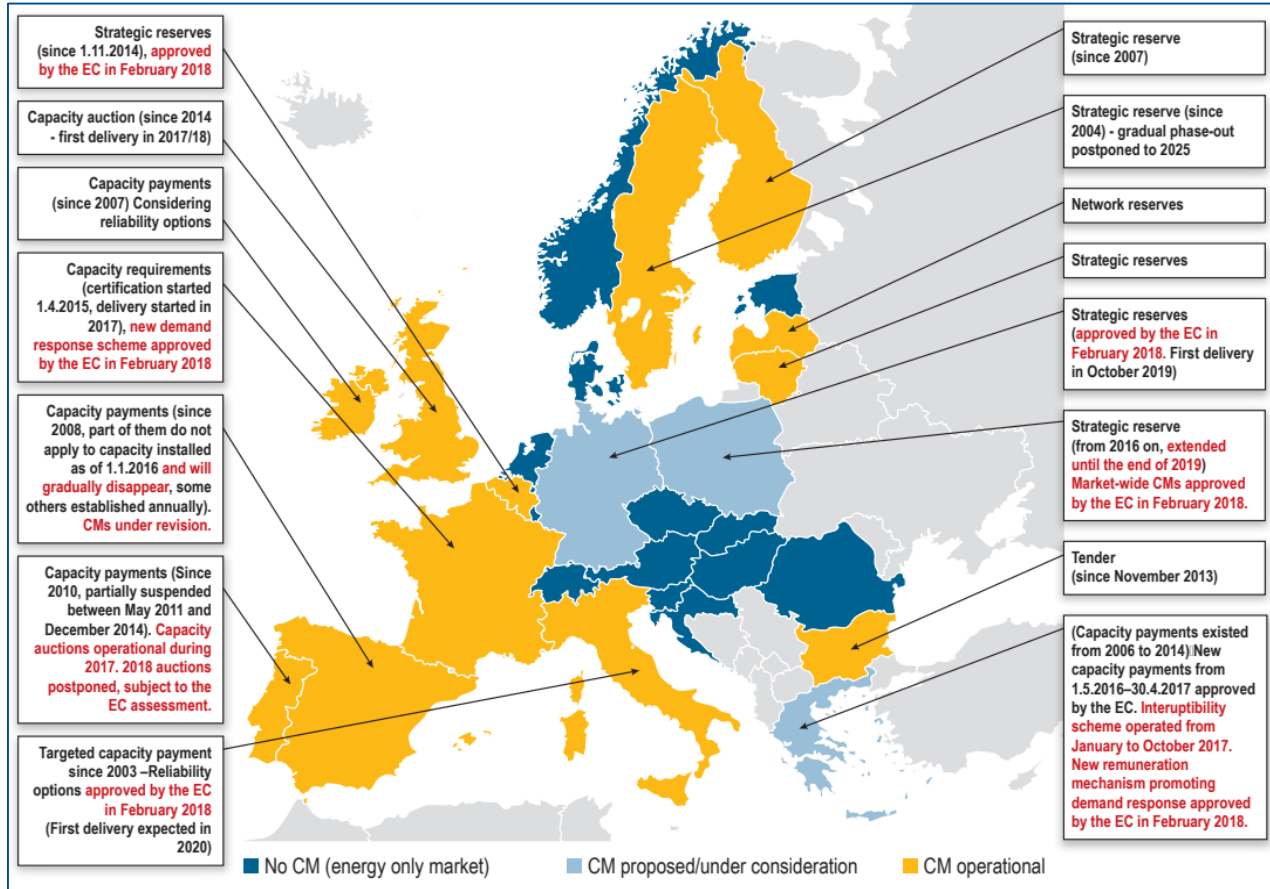


# THE ELECTRICITY MARKET

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- Capacity market
- Wholesale/retail market
- Balancing market
- Flexibility market

# CAPACITY MARKET – DIFFERENT OPTIONS



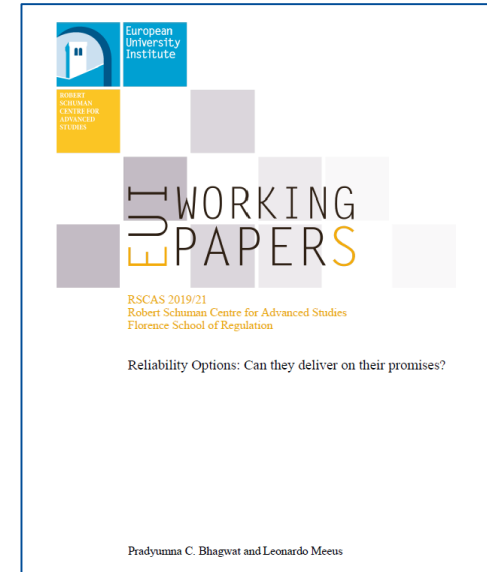
# CAPACITY MARKET – BELGIUM

## ■ Implementation of reliability options?

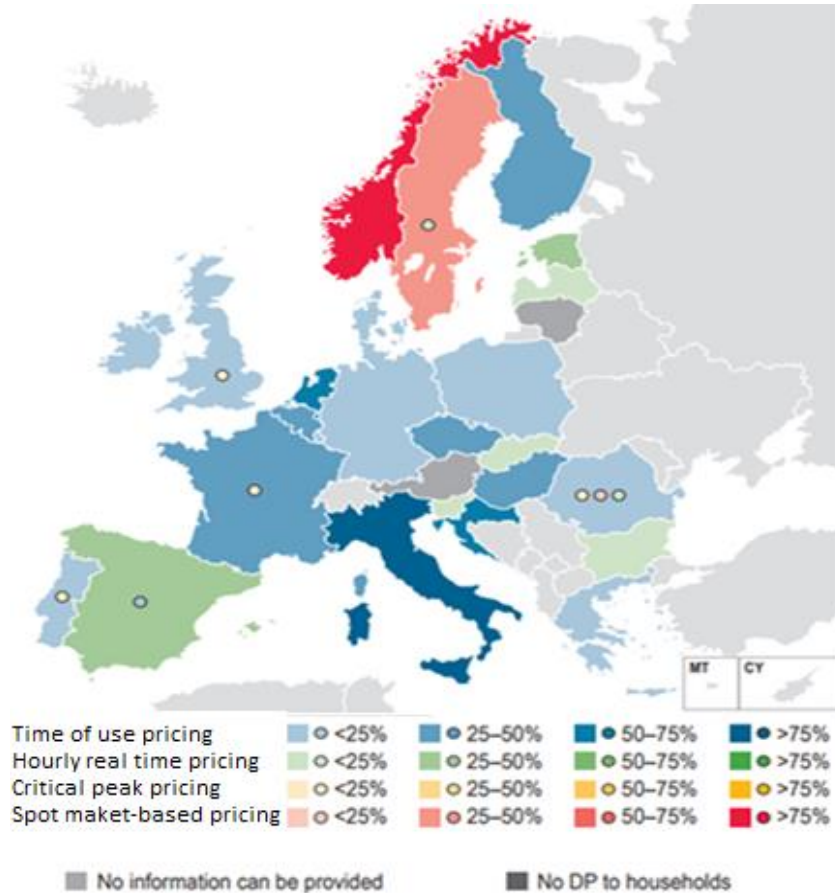
Technology	Ireland	Italy
Gas turbine / Thermal	85.3-92%	80%
Hydro	74.5 – 86.4%	40-60%
Solar	10.9%	5-10%
Wind	8.9%	10-15%

Source for Ireland: Capacity Market - Initial Auction Information Pack IAIP2223T-4

Source for Italy: State Aid SA.42011 (2017/N) – Italy – Italian Capacity Mechanism



# WHOLESALE/RETAIL MARKET





# BALANCING MARKET

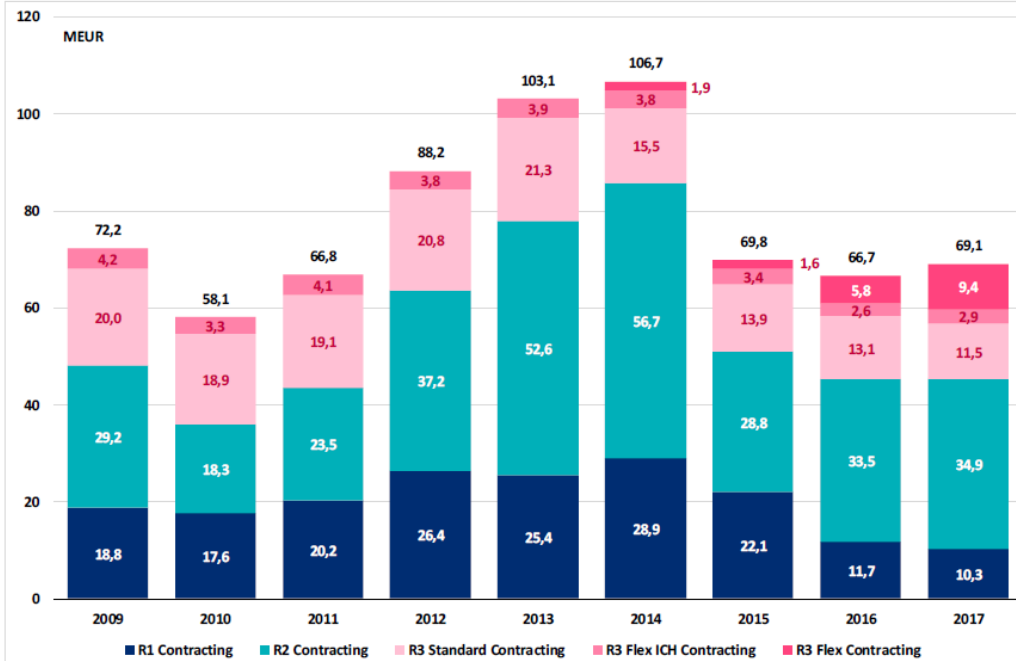


Figure 76 – Cost of contracting reserves, per year of contracting, per type of reserve. The red-shaded bars together form the reservation cost for tertiary reserves (mFRR).  
Source: CREG based on data provided by Elia

Commission de Régulation  
de l'Électricité et du Gaz

— CREG —

## Study

(F)1734  
7 June 2018

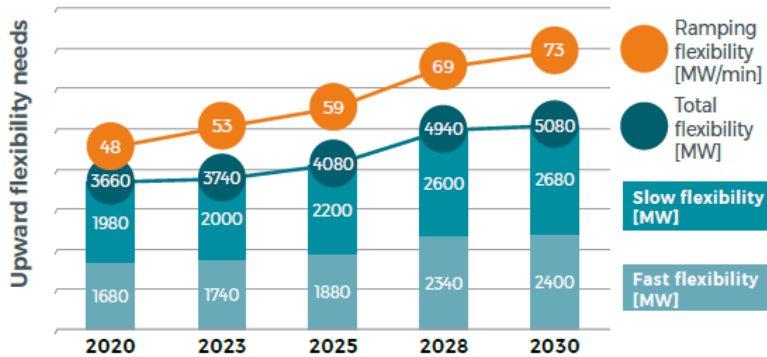
Study on the functioning and price evolution of the Belgian wholesale electricity market – monitoring report 2017

drawn up pursuant to article 25, § 2, second paragraph, 2° and 19°, of the law of 29 April 1999 on the organisation of the electricity market.

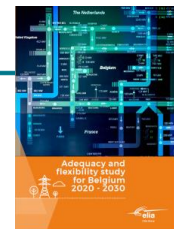
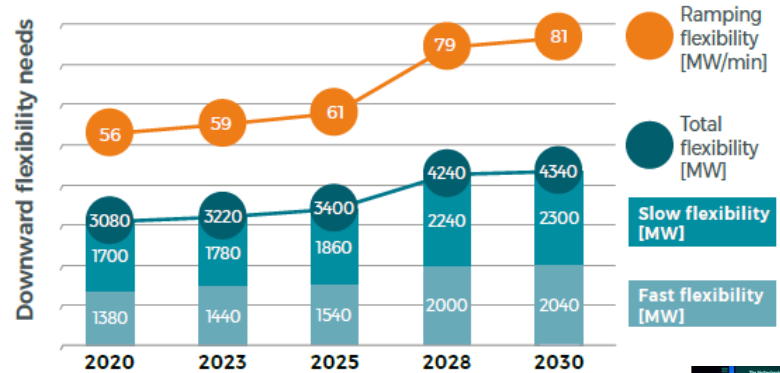
CREG – Nieuwoudstuyven 26-28, 1050 Brussel, België  
T +32 2 289 78 11 – F +32 2 289 78 09 – info@creg.be – www.creg.be

# BALANCING MARKET

UPWARD FLEXIBILITY NEEDS BETWEEN 2020 AND 2030 IN THE CENTRAL SCENARIO [FIGURE 4-20]



DOWNWARD FLEXIBILITY NEEDS BETWEEN 2020 AND 2030 IN THE CENTRAL SCENARIO [FIGURE 4-21]



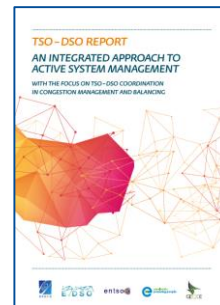
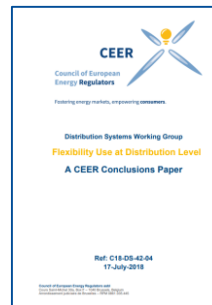
# FLEXIBILITY MARKET

## CEER

- Network tariffs
- Connection agreements
- Market-based procurement
- Rules-based approach

## EDSO

- Tariff solutions
- Connection agreement solutions
- Market-based solutions
- Rule-based solutions
- Technical solutions using grid assets



# FLEXIBILITY MARKET

**pico<sup>®</sup> Flex** 

**enera** 



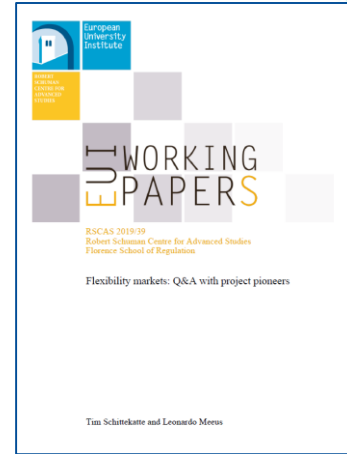
  









**GOPACS** 

**NØDES**  

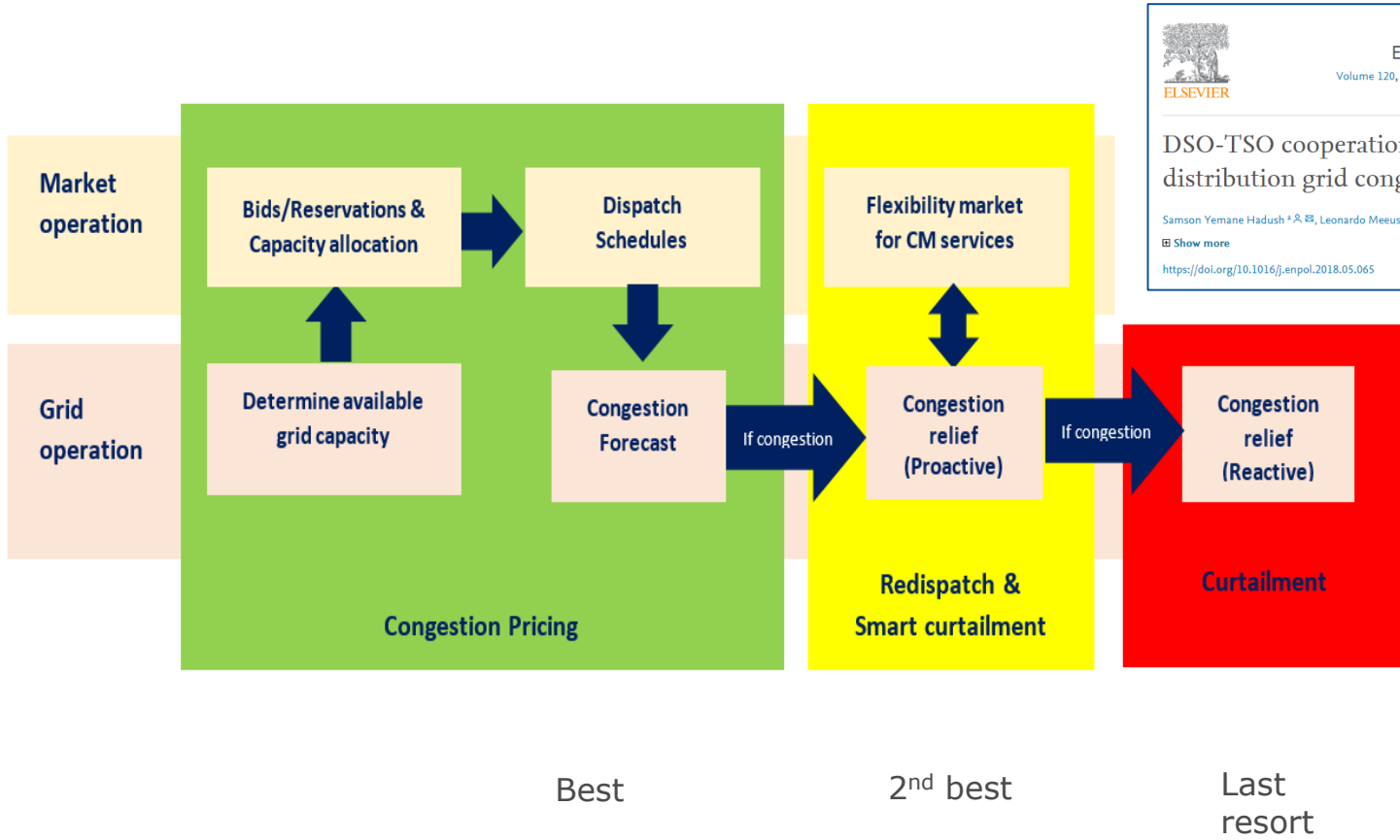







# FLEXIBILITY MARKET



Energy Policy  
Volume 120, September 2018, Pages 610-621

DSO-TSO cooperation issues and solutions for distribution grid congestion management

Samson Yemane Hadush <sup>1, 2, 3</sup>, Leonardo Meeus <sup>4, 5</sup>

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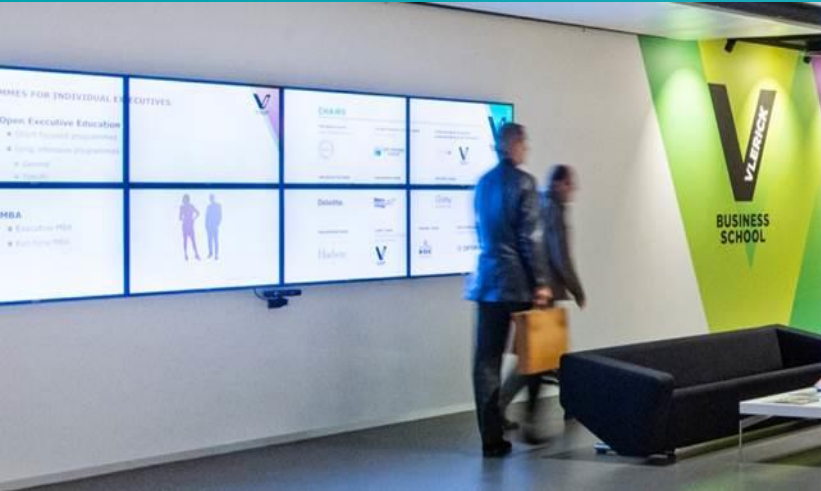
<https://doi.org/10.1016/j.enpol.2018.05.065>

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- Leonardo Meeus, Athir Nouicer, 2018. The EU Clean Energy Package. Technical report published by European University Institute. <https://doi.org/10.2870/013463>



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