FLORENCE SCHOOL OF REGULATION

ROBERT SCHUMAN CENTRE

‘EU Electricity Market Design Reform”

IEA in Paris, 13 September 2023

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(with the support of Leonardo Meeus, Director FSR)

www.eui.eu

Overview

- (1) the EU electricity market design: the basics
- (2) Russian weaponization of gas supply: the transformative shock
- (3) The current reform of EU Electricity Market Design

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(1) the EU electricity market design: the basics

1- Existing EU EL M-D is "light handed"

¤*EU M-D does not operate central dispatch for individual plants. The Generators bid for all their "portfolio of plants" in a given zone of the market.*

¤*EU M-D does not do "nodal pricing", but "zonal pricing"; and costs of intra-zonal congestion are socialized.*

¤*EU Market sets a "marginal price" paid to all bidders needed to supply the load. EU Marginal Price = most expensive plant needed to supply.*

2- Europeanization of EU EL M-D too comes from rules:

¤*Europeanization is made by "Market Coupling": the basic units of pricing in EU are the "zones".*

¤*These many EU zones are 'coupled' by "available transmission capacity" guaranteed by the TSOs.*

¤*When & where TRSM capacity is said congested, EU zones "decouple" .*

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(1) the EU electricity market design: the basics

*3- **Investment in** "**R**enewables Capacity" is not built on EU Market Price*

¤*Most of the renewables investors receive a payment outside the EU Wholesale Market, which comes from national "Renewable Support Schemes".*

¤*The EU Wholesale Market does give economic incentives to select the marginal plant generating each ½ hour; but does not drive capacity and technology adequacy.*

4- Investment in "Reliability Adequacy" is not built on EU Market Price

¤*Renewables with low marginal costs are pushing out dispatchable technologies from Wholesale Market equilibrium*

¤*T. System Operators can find too little "dispatchable plants" in a given zone's portfolio, and create a "Capacity Remuneration Mechanism" to incentivize investors for such type of plant.*

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(1) the EU electricity market design: the basics

5- *EU Carbon Price links "Coal to Gas" in arbitrage via the Elec Wholesale Pricing*

¤*EU Carbon Price:*

EU sets a quantity of carbon emission permits, and a target of renewables generation.

EU Carbon Permit Traders anticipate a resulting carbon price.

¤*Plants generating with fossil fuels look at:*

**gas price vs coal price in the national fuels markets (fuel gas-coal cost margin)*

***current carbon price in the EU carbon market (carbon margin)*

**** and at Wholesale marginal prices*

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(1) the EU electricity market design: the basics

5- ***EU EL M-D is light***

¤*Based on "portfolio bidding" by zones of marginal prices*

¤*The many zones of prices in the EU are "coupled" or "decoupled" according to transmission capacity guaranteed by the many T. System Operators*

¤*The definition of these EU zones are controlled by national authorities (France, Germany 1 zone; Sweden 4 zones; Norway 6 zones)*

2- ***EU Wholesale pricing***

¤*is a powerful incentive to select each ½ hour the marginal plant among dispatchable plants*

¤*but does not control carbon price to arbitrage between coal and gas*

¤*but does not play the key role to finance renewables investors or reliability adequacy investors*

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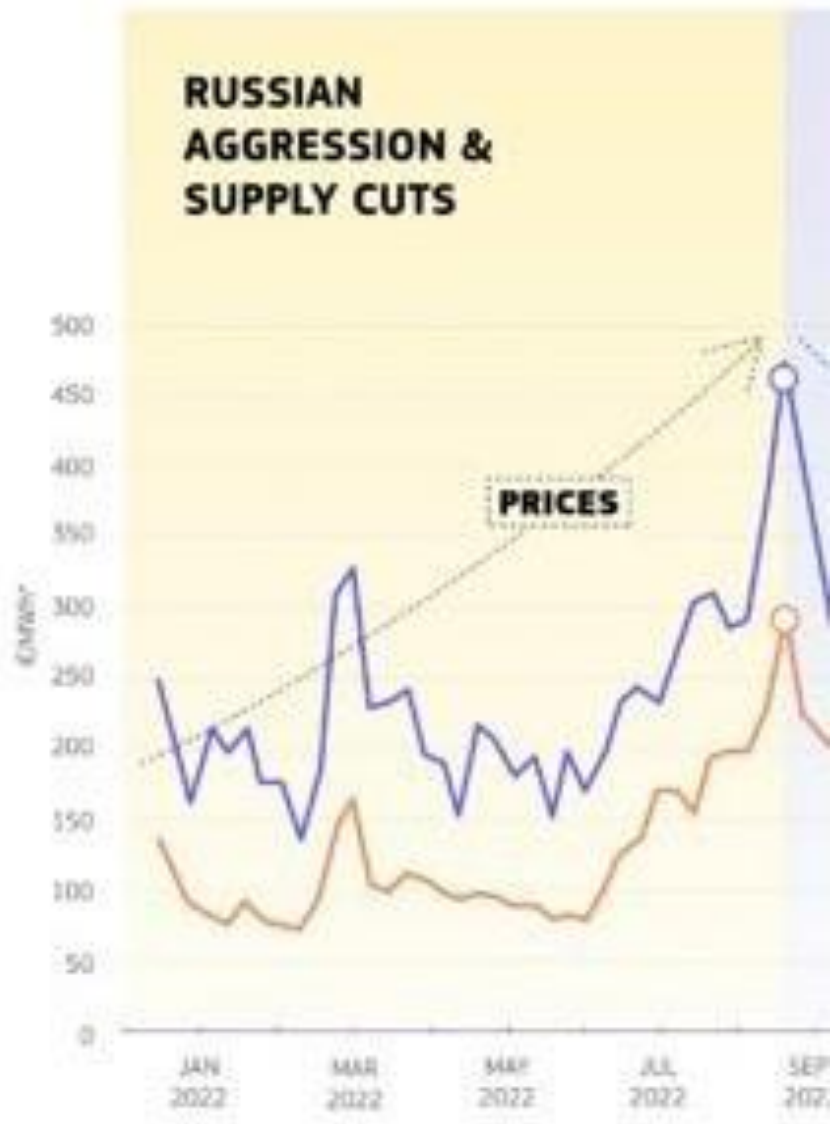
(2) Russian weaponization of gas supply: *a transformative price shock?*



Brown Weekly TTF gas spot price in Euro par MWh (2019 52W High was 25 Euro!)

Blue Weekly Day Ahead electricity price in leading EU markets

Russia was EU first energy supplier:
gas, oil, coal, uranium fuel

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(3) Current reform of EU EL Market Design: the beginning

*1- **EU Commission authorized quasi all types of exceptional emergency measures***

¤*Capping Wholesale Prices (Spain, Portugal halve the price of gas)*

¤*Capping Retail Prices (France blocked retail prices for Households & Small Businesses)*

¤*Giving direct subsidies to the consumers (Germany)*

¤*Storing price surge in a consumer debt (Denmark)*

¤*Taxing energy companies profits*

*-2- **EU Council asked EU Commission a permanent Market Design reform (end 2022)***

¤*EU Commission is not the "Head of State" of the European Union. The political Head is the European Council.*

¤*Commission issued a reform proposal the 14th of March 2023*

¤ *Still to be voted by both EU Parliament & Council of MS Ministers; + re-agreed by EC*

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3 axes in EU Commission Market proposals 14 March 2023

1- To protect consumers from fossil fuels' volatile prices
(4 key items)

2. To support stability and previsibility of energy prices and protect EU competititveness (4 key items)

3. To accelerate investments in renewable energy (4 key items)

= All 3 axes aim at changing the market outcomes by changing the rules being applied

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1- To protect consumers from fossil fuels' volatile prices

¤*1- Each consumer's right to fixed price contract, to dynamic price contract, and to multiple contracts*

¤*2- When an "EU electricity crisis" is identified* (*very high prices in wholesale electricity markets at least two and a half times the average price during the previous 5 years which is expected to continue for at least 6 months; ** sharp increases in electricity retail prices of at least 70% occur which are expected to continue for at least 6 months) *prices can be blocked or regulated*

¤*3- Energy Sharing: Right for prosumers (individual RES producers) to share their own generation with other consumers*

¤*4- Hedging is made mandatory for suppliers and last resort suppliers*

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2. To support stability, previsibility of energy prices; protect EU competititveness

¤*1- To support PPA, give them public guarantees against risks, to welcome them in Calls for Tenders*

¤*2- To use 2ways CfDs as basic support for new low carbon investments (renewables, nuclear, flexibility); to use their excess funds (if any) to the benefits of consumers, proportional to their consumption*

¤*3- To create regional virtual Hubs to increase the Long Term markets liquidity; permitting to book cross-border capacity > 1 year duration*

¤*4- To authorize T. System Operators to prepare "peak shaving" tools able to limit price spikes*

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3. To accelerate investments in renewable energy

¤*1- To ease the financing of renewable investments with appropriate LT contracts (as PPAs and CfDs)*

¤*2- To create adequate "Capacity Mechanisms" to increase "low-Carbon" flexibility, and to create new support schemes if needed*

¤*3- To undertake "national flexibility needs" assessment with indicative targets & to include them into National Energy & Climate Plans NECPS*

¤*4- To increase transparency about the actual grid connection capacity for new renewable investments*

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To be voted by both EU Parliament & Council of Ministers, and re-agreed by EU Commission

¤ Parliament voted 19 July and Tuesday 12 of September at midnight > ready or not to negotiate with Council
¤ Council has not formalized yet all its will

¤¤ Both Chambers have to meet EU Commission for a final Trilogue.
¤¤ Usually the “rotating Presidency plays a role): Spain, till end Dec 2022 – Belgium from Jan 2023

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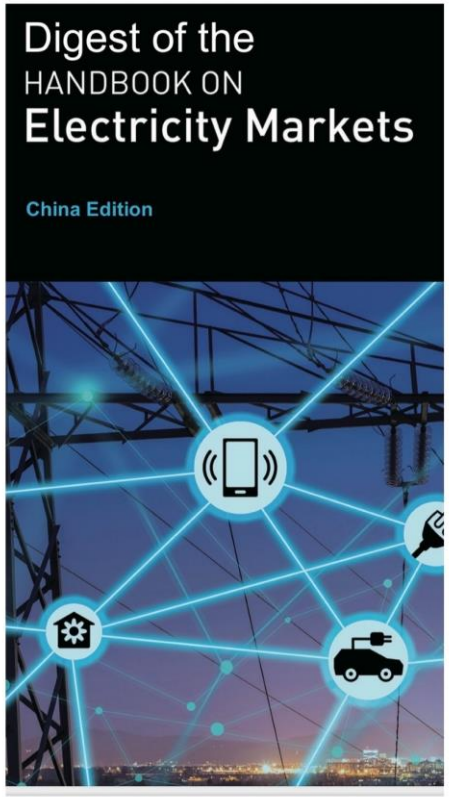
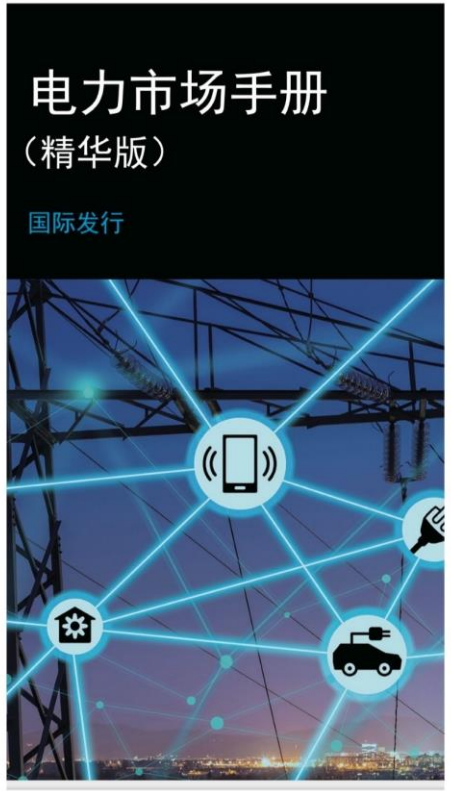
My *Handbook on Electricity Market*, with Paul Joskow (MIT) and Michael Pollitt (Calmbridge U.), last edition Jan 2023, reduced from 650 pages in a Digest of 60 pages in FREE ACCESS at ECECP.EU PDF, Kindle, e-book in English and Chinese

[Digest of the Handbook on Electricity Markets NEW | EU-China Energy Cooperation Platform (ececp.eu)]





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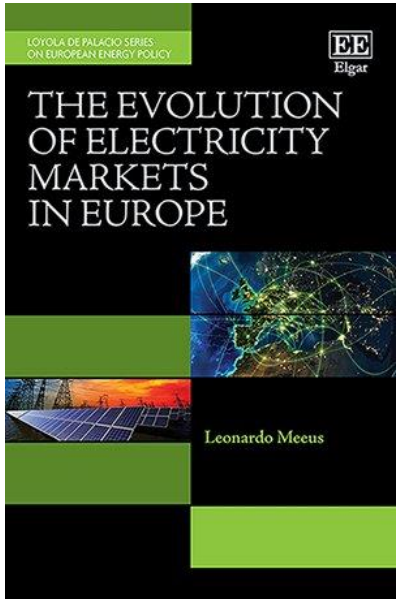
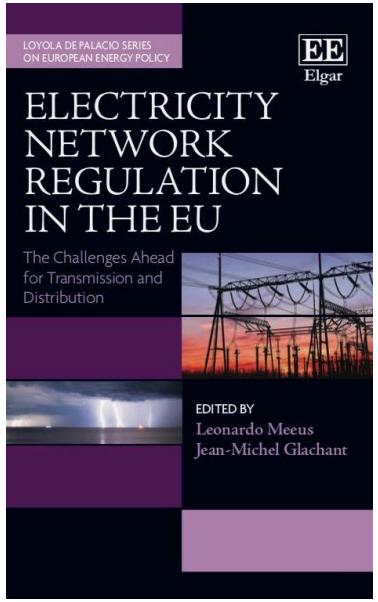
The two reference books on EU electricity market and regulation

**Electricity Network Regulation in the EU*
***The Evolution of Electricity Markets in Europe*

Both published by Edward Elgar





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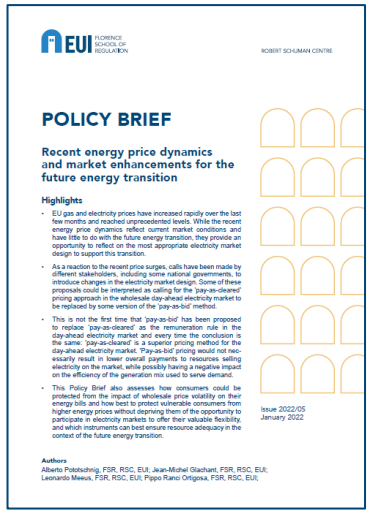
POLICY BRIEF

Recent energy price dynamics and market enhancements for the future energy transition

Highlights

- EU gas and electricity prices have increased rapidly over the last few months and reached unprecedented levels. While the recent energy price dynamics reflect current market conditions and have little to do with the future energy transition, they provide an opportunity to reflect on the most appropriate electricity market design to support this transition.
- As a reaction to the recent price surges, calls have been made by different stakeholders, including some national governments, to introduce changes in the electricity market design. Some of these proposals could be interpreted as calling for the 'pay-as-cleared' pricing approach in the wholesale day-ahead electricity market to be replaced by some version of the 'pay-as-bid' method.
- This is not the first time that 'pay-as-bid' has been proposed to replace 'pay-as-cleared' as the remuneration rule in the day-ahead electricity market and every time the conclusion is the same: 'pay-as-cleared' is a superior pricing method for the day-ahead electricity market. 'Pay-as-bid' pricing would not necessarily result in lower overall payments to resources selling electricity on the market, while possibly having a negative impact on the efficiency of the generation mix used to serve demand.
- This Policy Brief also assesses how consumers could be protected from the impact of wholesale price volatility on their energy bills and how best to protect vulnerable consumers from higher energy prices without depriving them of the opportunity to participate in electricity markets to offer their valuable flexibility, and which instruments can best ensure resource adequacy in the context of the future energy transition.

Issue 2022/05
January 2022

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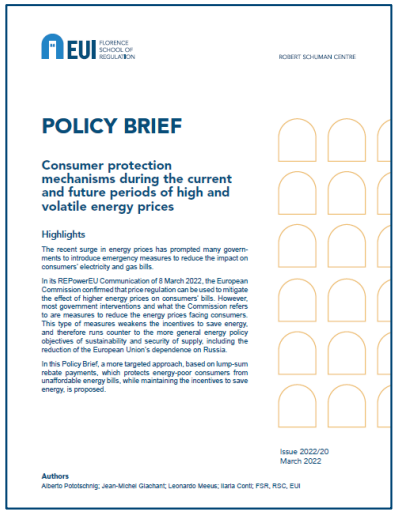
POLICY BRIEF

Consumer protection mechanisms during the current and future periods of high and volatile energy prices

Highlights

The recent surge in energy prices has prompted many governments to introduce emergency measures to reduce the impact on consumers' electricity and gas bills.

In its REPowerEU Communication of 8 March 2022, the European Commission confirmed that price regulation can be used to mitigate the effect of higher energy prices on consumers' bills. However, most government interventions and what the Commission refers to are measures to reduce the energy prices facing consumers. This type of measures weakens the incentives to save energy, and therefore runs counter to the more general energy policy objectives of sustainability and security of supply, including the reduction of the European Union's dependence on Russia.

In this Policy Brief, a more targeted approach, based on lump-sum rebate payments, which protects energy-poor consumers from unaffordable energy bills, while maintaining the incentives to save energy, is proposed.

Issue 2022/20
March 2022

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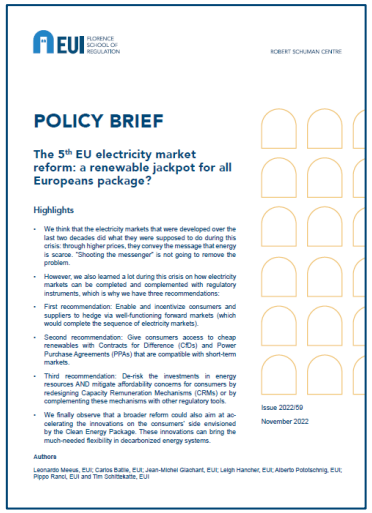
POLICY BRIEF

The 5th EU electricity market reform: a renewable jackpot for all Europeans package?

Highlights

- We think that the electricity markets that were developed over the last two decades did what they were supposed to do during this crisis: through higher prices, they convey the message that energy is scarce. "Shooting the messenger" is not going to remove the problem.
- However, we also learned a lot during this crisis on how electricity markets can be completed and complemented with regulatory instruments, which is why we have three recommendations:
- First recommendation: Enable and incentivize consumers and suppliers to hedge via well-functioning forward markets (which would complete the sequence of electricity markets).
- Second recommendation: Give consumers access to cheap renewables with Contracts for Difference (CfDs) and Power Purchase Agreements (PPAs) that are compatible with short-term markets.
- Third recommendation: De-risk the investments in energy resources AND mitigate affordability concerns for consumers by redesigning Capacity Remuneration Mechanisms (CRMs) or by complementing these mechanisms with other regulatory tools.
- We finally observe that a broader reform could also aim at accelerating the innovations on the consumers' side envisioned by the Clean Energy Package. These innovations can bring the much-needed flexibility in decarbonized energy systems.

Issue 2022/59
November 2022

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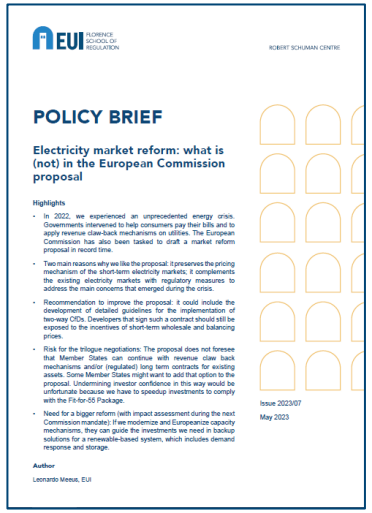
POLICY BRIEF

Electricity market reform: what is (not) in the European Commission proposal

Highlights

- In 2022, we experienced an unprecedented energy crisis. Governments intervened to help consumers pay their bills and to apply revenue claw-back mechanisms on utilities. The European Commission has also been tasked to draft a market reform proposal in record time.
- Two main reasons why we like the proposal: it preserves the pricing mechanism of the short-term electricity markets; it complements the existing electricity markets with regulatory measures to address the main concerns that emerged during the crisis.
- Recommendation to improve the proposal: it could include the development of detailed guidelines for the implementation of two-way CfDs. Developers that sign such a contract should still be exposed to the incentives of short-term wholesale and balancing prices.
- Risk for the trilogue negotiations: The proposal does not foresee that Member States can continue with revenue claw back mechanisms and/or (regulated) long term contracts for existing assets. Some Member States might want to add that option to the proposal. Undermining investor confidence in this way would be unfortunate because we have to speedup investments to comply with the Fit-for-55 Package.
- Need for a bigger reform (with impact assessment during the next Commission mandate): If we modernize and Europeanize capacity mechanisms, they can guide the investments we need in backup solutions for a renewable-based system, which includes demand response and storage.

Issue 2023/07
May 2023

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Reforming the EU internal electricity market will not suffice to deliver EU aims

26 July 2023 **BY:** Jean-Michel Glachant

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* DISTRIBUTED ENERGY RESOURCES AND ELECTRICITY BALANCING : VISIONS FOR FUTURE ORGANISATION

25 February 2022 **BY:**Tim Schittekatte,Alberto Pototschnig

The EU clean energy package (ed. 2020)

17 November 2020 By: Athir Nouicer,Leigh Hancher,Leonardo Meeus

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International Association for Energy Economics

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