

Power market design and the EU energy crisis: don't shoot the messenger

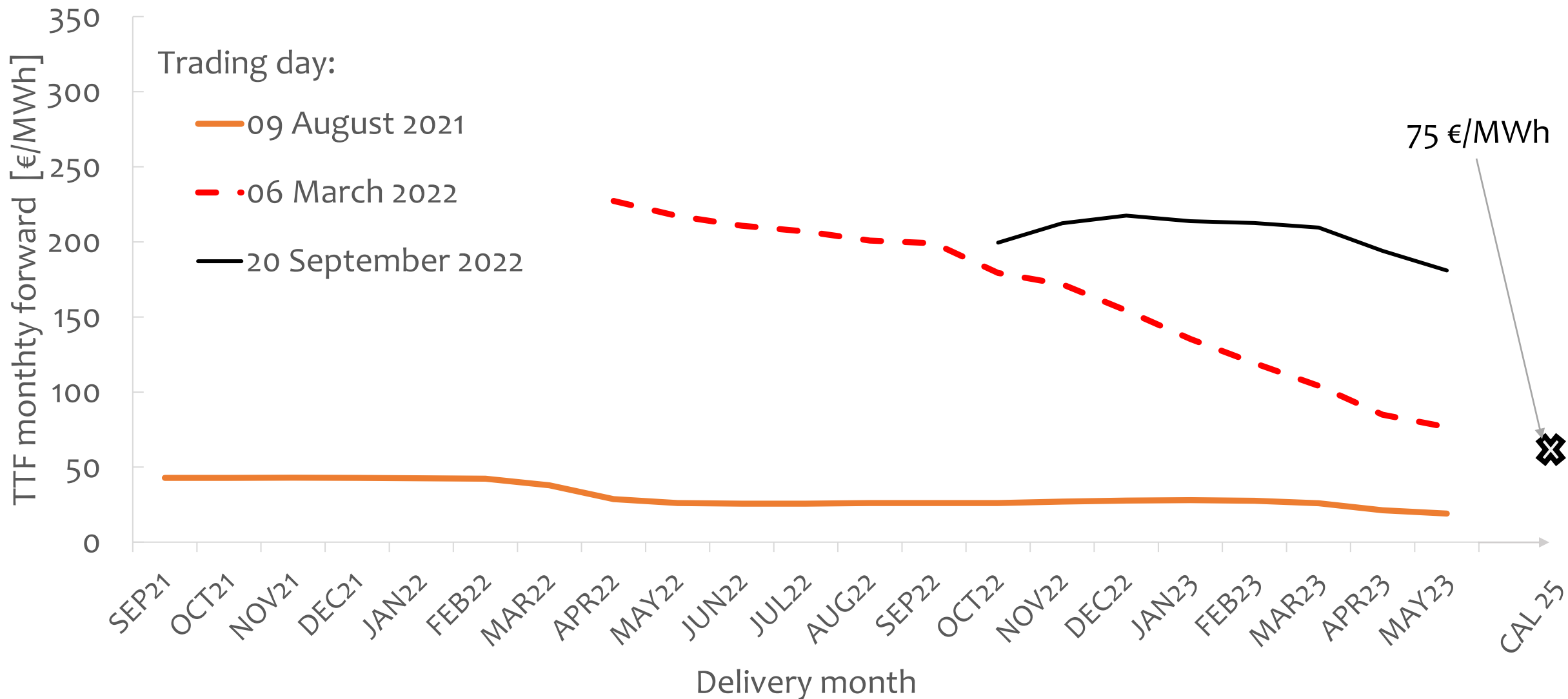
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MIT Energy Initiative & FSR

Electricity market evolution of revolution?
FSR online event, September 21, 2022

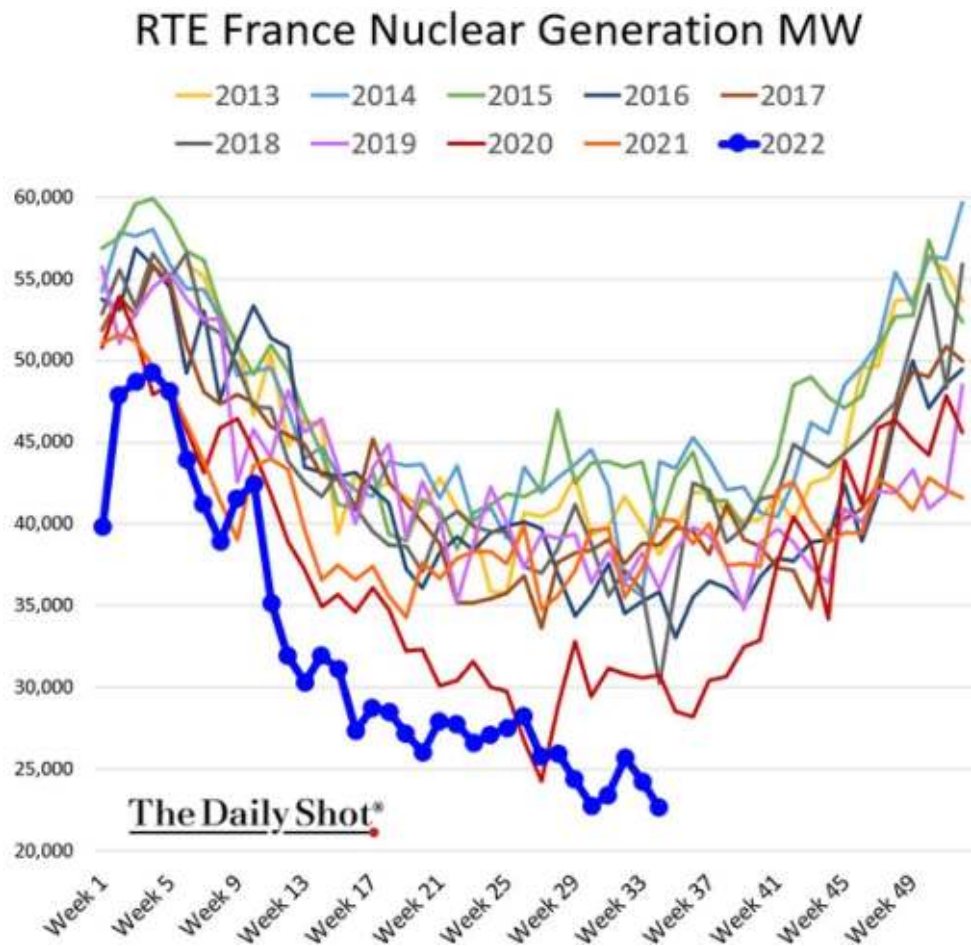
Spoiler: five key Q&A

- What is going on?
 - The perfect storm
- What is the issue?
 - Affordability due to scarcity
- What works and what does not work?
 - Spot market have worked well enough*, long-term markets never did
- What are the lessons for the future?
 - Competitive bidding for long-term contracts for new entrants
 - Consumer protection needed
- What to do and what not do to survive now?
 - Don't shoot the messenger

A brief story of TTF forward curves



The perfect storm



FINANCIAL TIMES

Climate Capital Carbon trading + Add to myFT

EU carbon price hits record as gas shortages force return to coal

Traders anticipate more demand for dirty fuel in power generation after 'perfect storm' in energy markets

Bloomberg UK

Europe Braces for Extreme Heat as Power Infrastructure Wobbles

- Soaring temperatures boost cooling demand amid energy crisis
- Parts of Rhine already at risk of closing due to water level

By Priscila Azevedo Rocha
8 August 2022 at 10:00 BST

Bloomberg UK

Norway Crisis Plan to Curb Power Flows Scolded by Neighbors

- Nordic nation plans to protect reservoir levels over output
- Finland has warned of electricity shortages this winter

By Lars Paulsson, Rafaela Lindeberg, and Leo Laikola
24 August 2022 at 12:04 BST Updated on 24 August 2022 at 13:30 BST

INVESTING | NEWS | VIDEO | ETFS | REITS

BNN Bloomberg

Aug 23, 2022

European Power Prices Surge to Records Yet Again on Wind Dearth

William Mathis, Bloomberg News

What is the issue?

What is the issue? Affordability due to scarcity

 **Jean-Michel Glachant**
@JMGlachant

New UK energy Price Cap for October 1st: 3,549£ a year

> Administratively, UK energy poverty will start at 35,490£ net yearly revenues

>> Median household disposable income in the UK was £29,400 in the financial year ending 2019

>>> Are all median UK households energy poor? *

 **Ofgem**  @ofgem · 11h

 The energy #PriceCap is changing and this could affect you

Record high global gas prices mean on Saturday 1 October the energy price cap will rise to an average of £3549 per year

Tap for more 

11:57 AM · Aug 26, 2022 · Twitter for iPhone

 **Javier Blas** 
@JavierBlas

While lots of EU / UK government officials are on vacation, the region's energy-intensive industry is shutting down before our very eyes.


A day doesn't go without a new metal smelter, a glass company, a fertilizer producer, a chemical group announcing output cuts or closures.

8:39 AM · Aug 25, 2022 · Twitter Web App

First aid: “rebalancing” income and bills

Attempts to capture inframarginal rents and redistribute them




MITeⁱ
MIT Energy Initiative

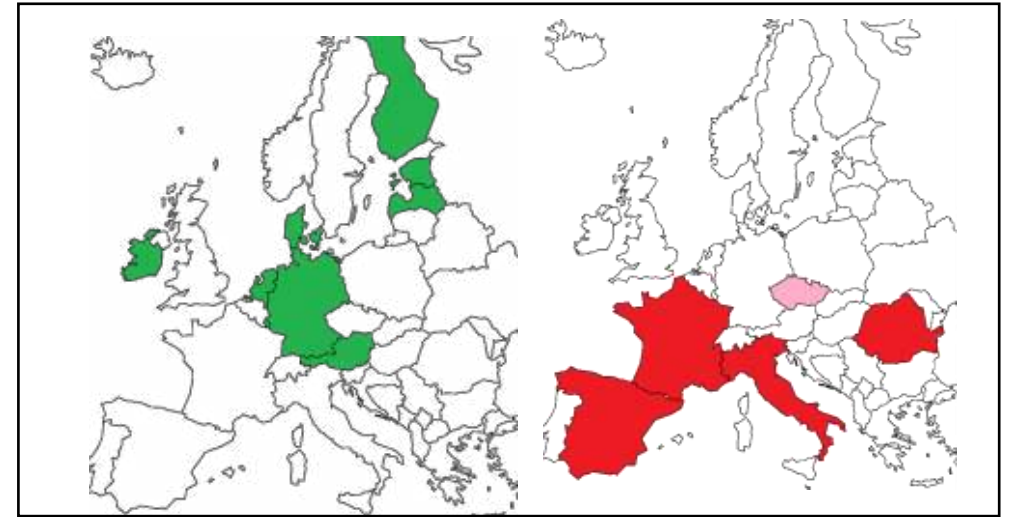
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WORKING PAPERS

Power price crisis in the EU: Unveiling current policy responses and proposing a balanced regulatory remedy

FEBRUARY 2022

| | | | | | |
|---|---|---|---|--|---|
|  | CARLOS BATLLE Research Scholar MIT Energy Initiative |  | TIM SCHITTEKATTE Postdoctoral Associate Sloan School of Management |  | CHRISTOPHER KNITTEL Professor Sloan School of Management |
|---|---|---|---|--|---|



June 10: Brussels completes the U-turn



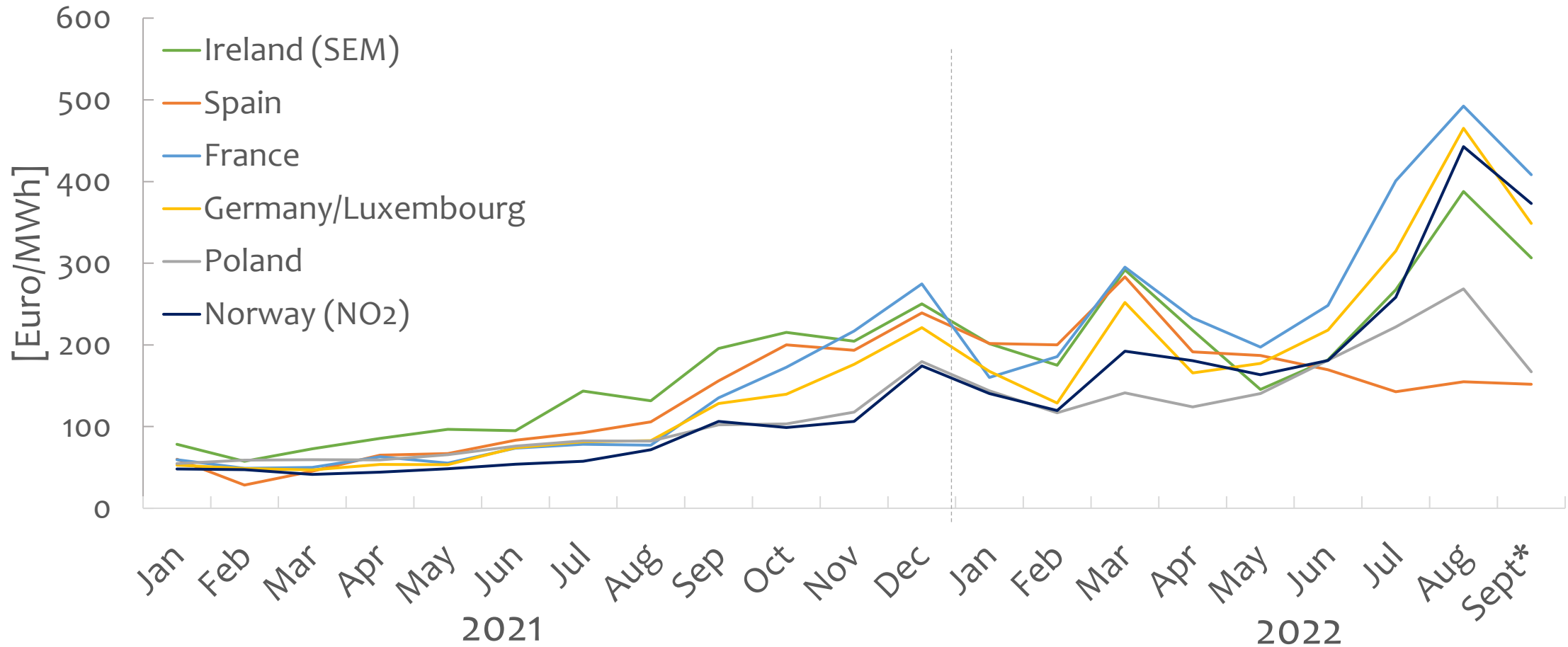
“This [capturing of windfall profits] is a short-term relief [..] what is the problem is the structure of the market”

“This market system does not work anymore. We have to reform it. We have to adapt it to the new realities of dominant renewables”

What works and what does not work?

What works? The spot markets

Monthly averaged day-ahead power prices



What does not work? Market incompleteness

- Past ~ investment issue in new generation
- Today ~ affordability issue for end users



— Products and Units —

EEX GERMAN POWER FUTURE ▼

2022-01-21 Day Weekend Week Month Quarter Year

Baseload

| Name | Last Price | Last Volume | Settlement Price | Volume Exchange | Volume Trade Registration | Open Interest |
|--------|------------|-------------|------------------|-----------------|---------------------------|---------------|
| Cal-23 | 124.00 | 8,760 | 122.63 | 2,592,960 | 2,540,400 | 45,897 |
| Cal-24 | 92.30 | 8,784 | 92.13 | 597,312 | 1,168,272 | 11,410 |
| Cal-25 | 87.95 | 17,520 | 87.00 | 70,080 | 271,560 | 2,505 |
| Cal-26 | - | - | 84.38 | - | 35,040 | 198 |
| Cal-27 | - | - | 83.09 | - | - | 96 |
| Cal-28 | - | - | 81.87 | - | - | 30 |
| Cal-29 | - | - | 81.40 | - | - | - |
| Cal-30 | - | - | 80.59 | - | - | - |
| Cal-31 | - | - | 79.73 | - | - | - |

EEX FRENCH POWER FUTURES ▼

2022-01-21 Day Weekend Week Month Quarter Year

Baseload

| Name | Last Price | Last Volume | Settlement Price | Volume Exchange | Volume Trade Registration | Open Interest |
|--------|------------|-------------|------------------|-----------------|---------------------------|---------------|
| Cal-23 | 131.35 | 8,760 | 131.34 | 8,760 | 122,640 | 5,908 |
| Cal-24 | - | - | 95.54 | - | - | 599 |
| Cal-25 | - | - | 91.43 | - | - | 92 |
| Cal-26 | - | - | - | - | - | - |
| Cal-27 | - | - | 86.08 | - | - | 1 |
| Cal-28 | - | - | - | - | - | - |

**What are the lessons for the future?
[Longer-term “permanent”
improvements in power market design]**

What to do with new access to the network?

| | <i>Choices</i> | |
|-----------------------------------|-----------------------------------|-----------------------------|
| <i>Connection</i> | First come first serve | Auction for access |
| <i>Exposure to the price risk</i> | Merchant | Auction for long-term hedge |

FINANCIAL TIMES

Renewables projects face 10-year wait to connect to electricity grid

UK's net zero targets at risk due to delays caused by poor planning and investment in infrastructure

Gill Plimmer MAY 8 2022

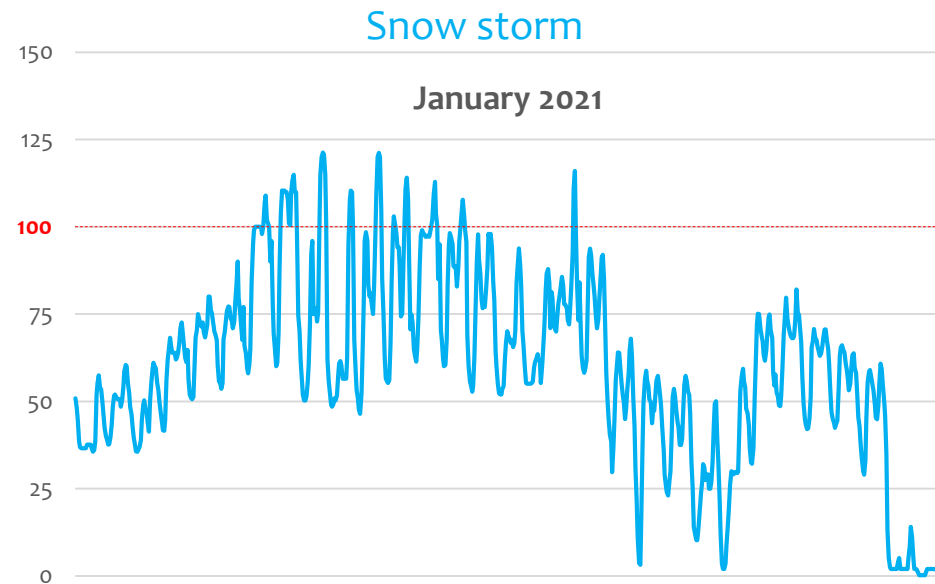


Developers say they are being told that they will have to wait up to a decade to connect to the regional distribution networks because of constraints on National Grid's network © Bloomberg

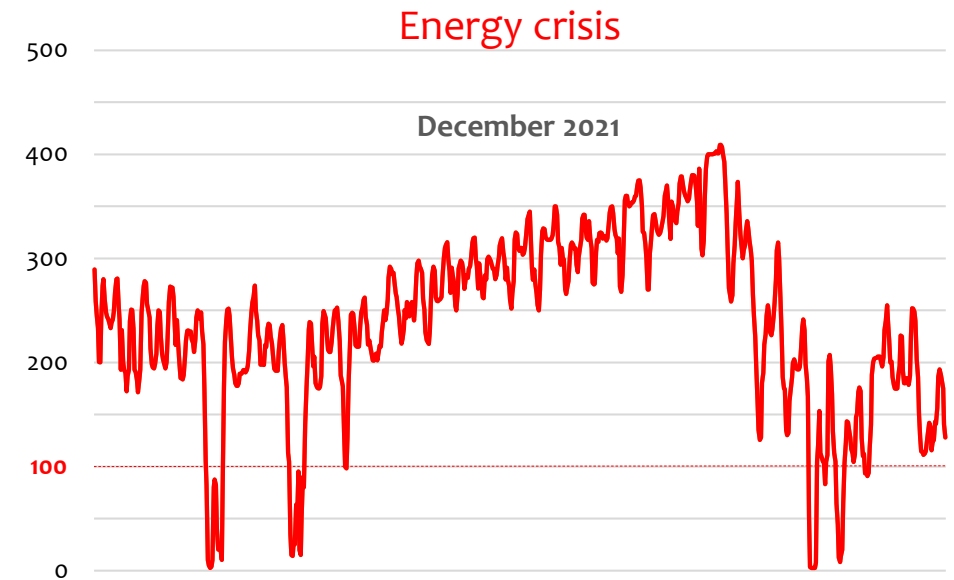
Affordability options



- Market-based “rebalancing” covering existing and new generation



51 hours with prices above 100€/MWh,
January average price 60€/MWh,
Affordability option not exercised



December average price 239€/MWh
Affordability option in the money
Pay out of 139€/MWh for protected consumers

**What to do and what not do to
survive now?**

[Short-term “temporary” measures]

What to do now to survive?

- **Is there another way to solve the affordability issue other than capturing “unexpected” income?**
 - It does not look like
- **The largest profits are in the gas market**
 - Big issue: a large share of the “unexpected” income is made outside Europe
 - Only way to capture: intervention in the gas market
- **Potential interventions in the gas market:**
 1. Intervene in prices pipeline gas
 2. Uniform gas price cap
- **How to allocate the scarce gas?**
 - Not a new problem



Source: Natureneedsmore.org

Why not to implicitly or explicitly regulate the electricity prices?



- **Harmful secondary effects, how to deal with:**
 - Optimal dispatch? Cross-border trade?
 - Unbalanced electricity and gas consumption? Find a way to reduce reduce demand



Perfect storm calms down

Merely more expensive gas

Perfect storm holds on

Less gas for priority uses

Conclusions

Conclusions: five key Q&A

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