_____ ت___ ت___ Moving Forward





هيئة تنظيم الخدمات العامــة Authority for Public Services Regulation



Capture Rates for Solar and Re-thinking Support Schemes

SESSION VI: CAPTURE RATES FOR SOLAR AND RE-THINKING SUPPORT SCHEMES **Ardian Berisha Managing Partner Optima Energy Consulting**

#ERRAConference2025



THE RISE OF SOLAR AND RETHINKING **OF THE SUPPORT SCHEMES**

Ardian Berisha Managing Partner, Optima Energy Consulting

6 May 2025



هیئة تنظیم الخدمات العامــــة Authority for Public Services Regulation







CONTENTS









INCREASE IN VRE PENETRATION



Share of total global electricity generation (%) – Net Zero by 2050

Source: International Energy Agency (2021), Net Zero by 2050, IEA, Paris

ة تنظيم الخدمات العامـــة Authority for Public Services Regulation

VRES – IMPACT ON THE DAM

- RES have high fixed costs but low or zero variable costs
- As a result they rank first in the merit-order curve
- More renewables push the MC –based supply curve to the right, reducing prices
- Increased volatility in the markets due to higher RES participation

Day-Ahead Market Prices, 27 April 2025 14:00-15:00 (Nordpool)

هیئة تنظیم الخدمات العامـــة Authority for Public Services Regulation

INCREASED PREVALENCE OF NEGATIVE ELECTRICITY PRICES

	2020					2024
Finland	4					829
Spain	0.0					784
Portugal	0.0				72	3
France	45			549)	
Netherlands	44			526		
Germany		179		497		
Belgium	56			454		
Czech Republic	71		361			
Austria	62		350			
Hungary	10		306			
Slovenia	16		269			
Croatia	16		241			
Latvia	0.0		212			
Lithuania	0.0		212			
Estonia	-0-1		212			
Poland	0.0		197			
Romania	9		80			
Bulgaria	0.0	138				
Greece	15 📔 29					
	0	20	0 400	60	0	800

هیئة تنظیم الخدمات العامـــa Authority for Public Services Regulation

The number of hours with negative electricity prices in he day ahead market ncreased significantly from 2020 to 2024.

he data for 2024 only ncludes hours up to lovember 2024.

The problem is getting worse: according to recent data there are already more than 900 hours of negative prices in Finland

INCREASED RES CURTAILMENT

36.1% 0% Didding

RES curtailment

5%

4%

3%

2%

1%

Zone	2025	2027	2030
DE00	0	1	6
DEKF	2	10	36
DKE1	0	1	10
DKKF	1	4	34
DKW1	6	10	16
ES00	1	2	4
IE00	1	1	10
ITCA	8	7	4
ITSI	6	10	4
LT00	0	0	12
NL00	1	4	8
NOM1	1	4	15
NON1	4	2	5
NOS0	1	2	6
PT00	1	4	6
UK00	1	2	7
UKNI	6	8	34

Only Bidding Zones with RES curtailment larger than 1% on average are shown.

Source: ENTSO-E, European Resource Adequacy Assessment

0%

<u>ه يئة تنظيم الخدمات العام ة</u> Authority for Public Services Regulation

Aggregated for all explicitly modeled bidding zones

4.51%

REDUCED SOLAR CAPTURE RATES

- Solar capture rate = ratio of solar • capture price relative to the average price of the DAM
- Solar capture price = weighted • average price of solar (weighted by production levels)
- Main factors:
 - High RES availability during favorable weather conditions
 - Low demand in times of high RES availability
 - Support schemes mitigating market exposure
 - Grid congestion

Figure: Break-even estimates for 10year PPAs starting 2026

Portugal			Spai	in
	Æ	45	<u>∰</u>	
	4	70	1	

Source: S&P Global Commodity Insights

هيئة تنظيم الخدمات العامــة Authority for Public Services Regulation

OPPORTUNITIES FOR FLEXIBILITY

Share of technologies providing system flexibility in the Penta countries for daily, weekly and seasonal timeframes.

Trinomics, Artelys - Power System Flexibility in the Penta region (2023) Power-System-Flexibility-Penta-region---Current-State-and-Challenges-for-a-Future-Decarbonised-Energy-System.pdf

هيئة تنظيم الخدمات العامــة Authority for Public Services Regulation

ther	thermal

Hydro, biomass and other RES

Pentalateral energy forum

countries:

Austria

Belgium

France

Germany

Luxembourg

Switzerland

The Netherlands

UNLOCKING THE TARIFF POTENTIAL

- **Fixed** tariffs do not provide price signals to end-users; thus end-users have no incentive to shift their load, or provide demand response.
- **Static ToU** tariffs provide consumers with • incentives to permanently shift demand from peak to off-peak hours, however they do not allow following of daily peak trends, or hourly incentives.
- **Dynamic ToU** provide consumers with real-time price signals, to align their consumption with market supply and demand balances, but also with grid congestion pricing.
 - Requires smart-meters, energy management software, correct price signals and client communication

هیئة تنظیم الخدمات العامــــة Authority for Public Services Regulation

Dynamic ToU

24

REVIEWING SUPPORT SCHEMES

"Produce-and-forget" - current support schemes such as the Fixed Feed-in Tariff, Fixed Feed-in Premium and Two Sided CfD, do not provide price signals to Renewable Energy producers to shift production, or to curtail when prices are negative.

Smart CfD contracts based on price signals can offer solutions (volume-share, capability-based or profile-based CfDs, for instance)*

Net Metering: Excess solar energy sent to the grid offsets consumption on a 1:1 basis, reducing the electricity bill.

Net Billing: Excess solar energy is sold to the grid at a predetermined rate, usually lower than the retail electricity price.

This creates a business case for load shifting and residential storage

*See 2024 Eurelectric publication on two-way CfDs for more insights

هیئة تنظیم الخدمات العامـــة Authority for Public Services Regulation

AN OVERVIEW OF MEASURES

2022 Climate, Energy and Environmental Aid Guidelines (CEEAG) State Aid **Guidelines**:

(Article 123) ... "The aid must be designed to prevent any undue distortion to the efficient functioning of markets and"... "

"In particular... beneficiaries should not be incentivized to offer their output below their marginal costs and must not receive aid for production in any periods in which the market value of that production is negative"

Curtailing support on negative prices: Cutting support to RES production if prices are zero or negative for two consecutive hours (GR) or six consecutive hours (IT)

Phasing out support: Phasing out support through lump-sum payments regardless of the price (EE) or completely phasing out support for new assets during negative time periods after 2027 (DE)

Eurelectric: Understanding Ultra Low and negative power prices; causes, impacts and improvements (2024) https://www.eurelectric.org/wpcontent/uploads/2024/11/Eurelectric-explainer-on-negative-prices.pdf

ئةتنظيمالخدمات العامــة

Net-metering adjustments: Adjusting netmetering sell-back rates downwards to encourage self-consumption (California)

DISCUSSION FORMAT

11:20		Rise of Solar, Falling Capture Rates and Policy Considerations for
		Mr. Ardian Berisha
		Managing Partner
		Optima Energy Consulting
		Analysis of Negative Price Occurrences and Recommendations to
11:30		Mr. Ivan Faucheux
		Commissioner
		Energy Regulatory Commission, France
		Impact of High Prices on Renewables and New Framework of the
11:45		Dr. Nadia Horstmann
		Head of Section, International Relations
		Bundesnetzagentur, Germany; Council of European Energy Regul
		Energy Sharing - New Possibilities for PV
12:00		Dr. Harald Proidl
		Director, Renewables and Energy Efficiency
		E-control, Austria

12:15*-*12:45

Moderated Panel Discussion

هیئة تنظیم الخدمات العامــة Authority for Public Services Regulation

r RES Support Schemes

to Adapt French Renewable Support Schemes

e Energy Market Design

lators

SOME QUESTIONS TO DISCUSS

- How does the current situation impact the investments required to drive the energy 1. transition?
- 2. Are negative prices on the DAM an issue regulators must address, and what tools are available to manage them?
- 3. How might increased exposure to market prices influence strike prices and investment incentives?
- How can we unlock the system's full flexibility potential? 4.
- What does an enabling regulatory environment for short and long-term storage look 5. like? Are price spreads alone sufficient to incentivize flexibility investments? How does the expectation of narrowing price spreads influence investment decisions?

بِئْة تَنْظَيْم الْحُدْمات الْع rity for Public Services Regulat

رۇلىة **غىم**

نتقدم **بثقة** Moving Forward with Confidence

THANK YOU

Ardian Berisha Managing Partner Optima Energy Consulting www.optima-ec.com oberisha@optima-ec.com

#ERRAConference2025