AURORA ENERGY RESEARCH

eex group

Renewable PPAs in Hungary and Bulgaria – Market status and outlook

Jan 25th 2022

Agenda

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I. About Aurora

II. Policy overview and upcoming changes

III. Key market drivers

IV. Renewables outlook

V. The potential and risks for PPAs

VI. Power Exchange Central and the EEX Group

Aurora provides data-driven intelligence for the global energy transformation

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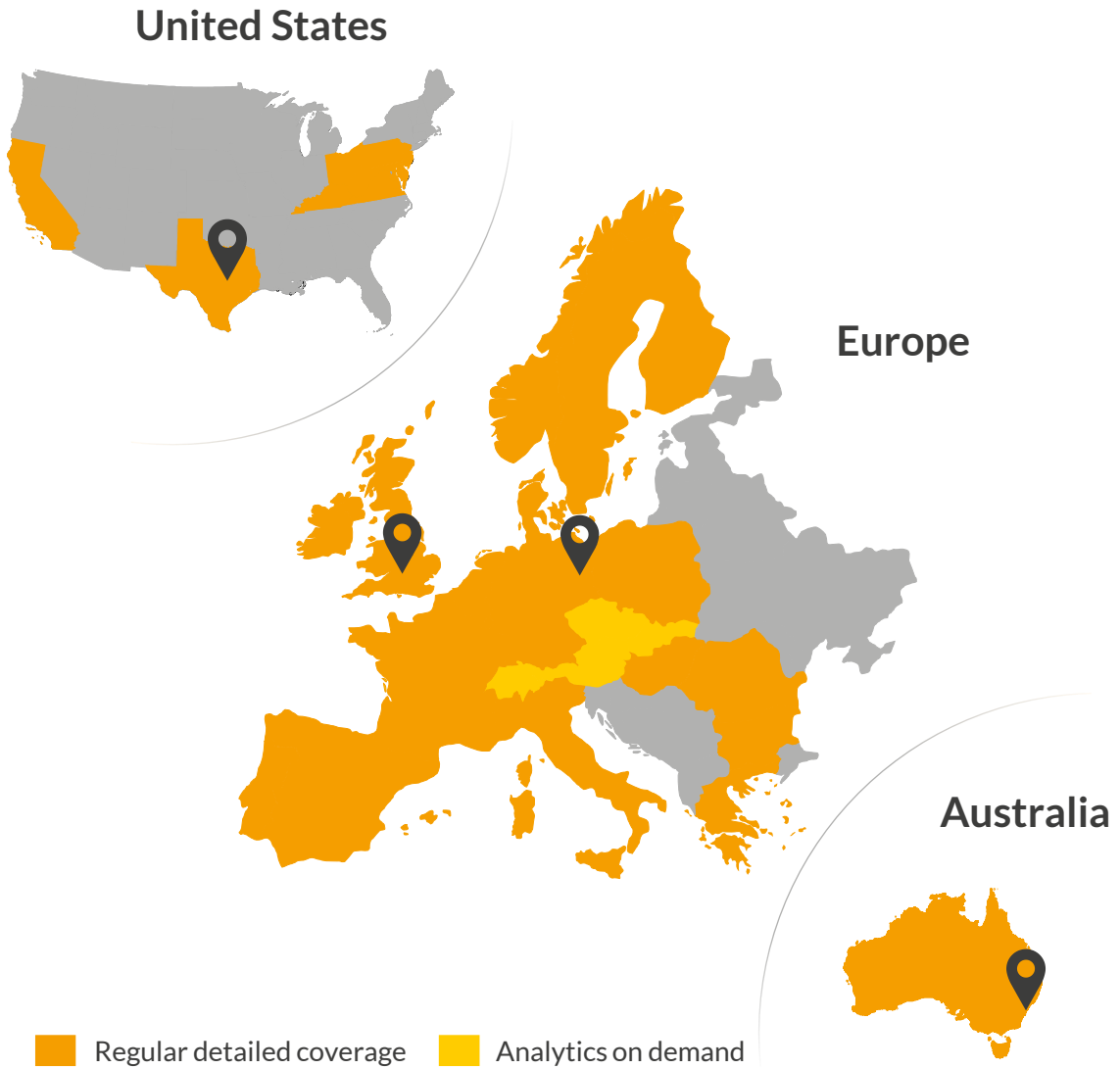
- Power markets
- Renewables
- Storage
- Electric vehicles
- Hydrogen H_2
- Carbon CO_2
- Natural gas



4 Offices
Oxford | Berlin | Sydney | Austin

210+
market experts

500+
subscribing companies

100+
transactions supported in 2021

Source: Aurora Energy Research

Aurora brings a sophisticated approach to the provision of analysis and insight to the energy industry

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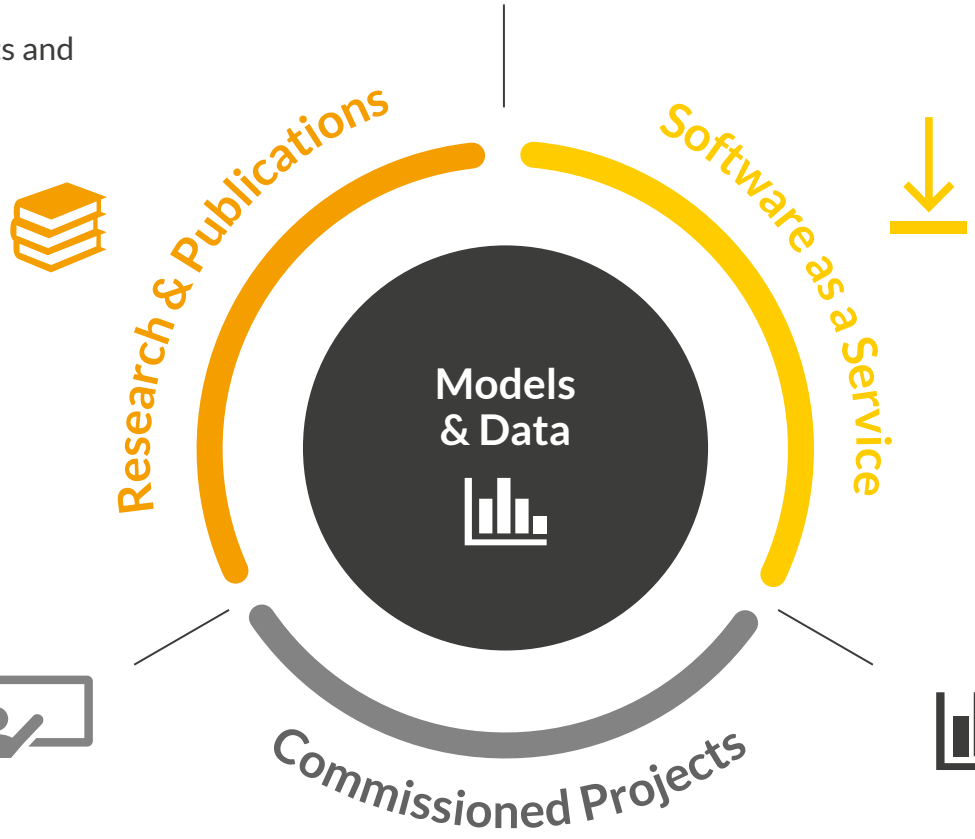
Research & Publications

- Industry-standard market outlook reports and bankable price forecasts for power, gas, carbon and hydrogen markets
- Strategic insights into major policy questions and new business models
- Read and constantly challenged by 500+ subscribers from all industry sectors



Software as a Service

- Out-of-the-box SaaS solutions, combining cutting-edge sophistication with unparalleled ease of use
- *Origin* provides cloud-based access to Aurora's market model, pre-populated with our data
- *Amun* automates asset-specific wind farm valuations for over 30 leading funds, developers and utilities

Commissioned Projects

- Bespoke analysis, drawing upon our models and data
- Trusted advice for all major market participants proven in 600+ projects: transaction support, valuations, strategy & policy engagement

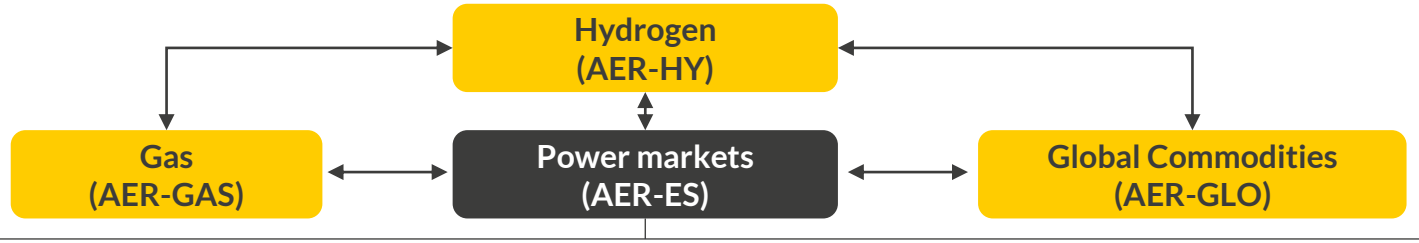
Models & Data

- Market-leading long-term models for power, gas, hydrogen carbon, oil and coal markets
- Continuous model improvements to reflect policy and market developments

Source: Aurora Energy Research

Unique, proprietary, in-house modelling capabilities underpin Aurora's superior analysis

4 Integrated Models



INPUTS

- Technology
- Policy
- Demand
- Commodity prices[1)]
- Weather patterns

Dispatch model

- ½ hourly or hourly
- Iterative modelling
- Dynamic dispatch of plant
- Endogenous interconnector flows

Continuous iteration until an equilibrium is reached

Investment decisions module

- Capacity market modelling
- Capacity build / exit / mothballing
- IRR / NPV driven
- Detailed technology assessments

OUTPUTS

- Capacity mix
- Generation mix
- Wholesale & imbalance prices
- Capacity market prices
- Profit / Loss and NPV
- Electric vehicle charging

Up to 70	c. 85k	~15k	30+
specifications modelled for each plant	investment hours on modelling capabilities	model runs per week	strength of modelling team globally

1) Gas, coal, oil and carbon prices fundamentally modelled in-house with fully integrated commodities and gas market model

Source: Aurora Energy Research

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Advantages of Aurora approach

- Aurora have invested heavily in developing our dispatch models since 2013 and believe they are the most sophisticated available
- Our models have been rigorously tested and refined in a wide range of client contexts
- Flexible and nimble because we own the code
- Transparent results
- State-of-the-art infrastructure
- Zero dependence on black-box third-party software (e.g. Plexos)
- Constantly up to date through subscription research
- Ability to model complex policy changes quickly

Hungarian Power & Renewables Market Service: Key market analyses and forecasts for all participants in the Hungarian market

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Key information on Aurora's Hungarian subscription service

- **Up-to-date report available (Nov 2021)**
- **Next update in May 2022**
- **Regular updates thereafter (Bi-annually)**
- **Introductory workshop,** with insights on market and policy status quo, policy and market outlook, price curves, market scenarios and PPA analysis
- **Subscriber webinar,** Aurora's experts will be organising a webinar for each bi-annual update where we highlight key market developments as well as their impact on our modelling

All intelligence for a successful business, based on bankable price forecasts

1 Bi-annual data and market reports to assess business models

- **Yearly forecasts of wholesale market prices along three scenarios** (High, Low, Central) until 2050
- **All the latest trends and forecasts,** recent market and policy developments
- **Price distributions**, capture spark spreads, peak prices
- **Capacity development**, generation mix, interconnector capacity, capacity buildout, exports
- **Capture prices** of key technologies (onshore, solar), load factors
- **Corporate PPA market analysis and valuation**, example of fair price valuation
- **Data in Excel,** all forecast data easily downloadable in Excel format
- **EU ETS carbon price & gas price** forecasts

2 Interaction through workshops and ongoing support

- **Bilateral workshops** at your offices to discuss specific issues on the Hungarian market
- **Ongoing availability** (calls, access to market experts, modellers) to address any questions across European power markets
- Discounted invitations to Aurora's annual **Spring Forum**

Optional add-ons

- **Imbalance cost analysis & forecast for wind and solar**
- **Granular data from our Power & Renewables Market Forecast report for Central, High & Low**
  - Hourly baseload prices
  - Monthly commodity prices

For more information, please contact:
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☎ **+49 (0)170 938 7408**

Bulgarian Power & Renewables Market Service: Key market analyses and forecasts for all participants in the Bulgarian market

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The Hungarian power market is fully unbundled and liberalised while the transmission and distribution networks are regulated

	Generation / Trading	Transmission/ Distribution	Retail
Market design	▪ Liberalised market: the market is cleared on a merit order basis ▪ Regulated segment: suppliers of electricity of last resort are appointed by the National Authority for Energy Regulation ▪ Day-ahead market, intra-day market, balancing market	▪ Regulated market by Public Utility Regulatory Authority ▪ MEKH calculates separately the distribution, transmission, and network access fees, to be charged by each licensed electricity distribution company	▪ Liberalised market, end-consumers have freedom to choose between power suppliers ▪ The supplier must ensure the labelling of the electricity, and must inform end-users about the structure, origin and environmental impact of the electricity supplied
Key players	▪ Market operators: MAVIR[1] ▪ >75 %: MVM , IFC zrt, MET Power, Uniper, Alpiq & EP energy	▪ TSO: MAVIR ▪ 6 DSOs by region: all of them are privately owned, 3 by E.ON and 2 majority owned by RWE and 1 by EDF	▪ 44 retailers (2021) ▪ Main 5: ELMU, EMASZ, EDF, E.ON
Key regulatory bodies	▪ Ministry of National Development State Secretariat for climate and energy policy ▪ MEKH[2] ▪ DG ENER (EU level)	▪ Mavir/MVM ▪ ENTSO-E (EU transmission grid agency)	▪ MEKH

1) Hungarian gas and electricity market operator. 2) Hungarian Energy and Public Utility Regulatory Authority

Sources: Aurora Energy Research, OMIE, IEA, CEE, REE, European commission

The Bulgarian power market is in the process of liberalisation while the transmission and distribution systems are regulated

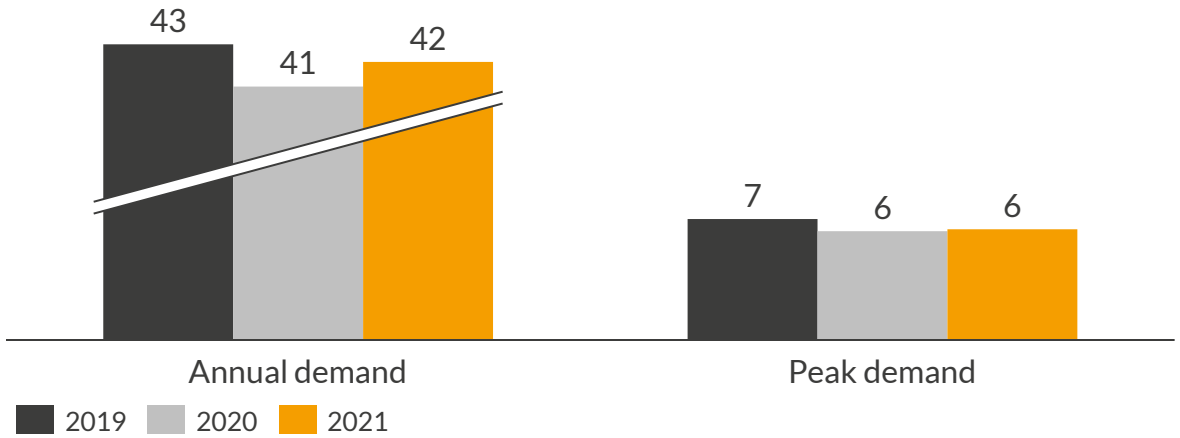
	Generation / Trading	Transmission/ Distribution	Retail
Market design	▪ Merit order sets the price in the free market segment, faces low liquidity and price volatility ▪ Energy prices on regulated market are fixed and formula based ▪ Regulated segment: Suppliers of electricity of last resort are appointed by the Energy and Water Regulatory Commission (EWRC) ▪ Day-ahead market, intra-day market	▪ Regulated market ▪ EWRC calculates separately the distribution tariffs to be charged by each licensed electricity distribution company	▪ The liberalisation of business consumers took place in 2020 and 2021 by introducing a grace period during which consumers needed to conclude a contract with an electricity trader, otherwise they were transferred to a "Supplier of Last Resort" which charges above market prices ▪ The goal is by 2025 to have all private individuals being able to buy their power from the free market and eliminate regulated tariffs
Key players	▪ Market operators: IBEX ▪ Bulgarian Energy Holding (>50% of installed capacity), Sigda OOD, Contour Global	▪ TSO: ESO ▪ 4 DSOs by territory: all of them being privately owned	▪ 45 retailers (2020) ▪ Main 5: EAD, Sigda OOD, Contour Global, EVN, AES
Key regulatory bodies	▪ Ministry of Economy and Energy ▪ Bulgarian State Energy and Water Regulatory Commission ▪ DG ENER (EU level)	▪ ESO (Electricity system operator) ▪ ENTSO-E (EU transmission grid agency)	▪ Bulgarian State Energy and Water Regulatory Commission

1) Bulgarian gas and electricity market operator.

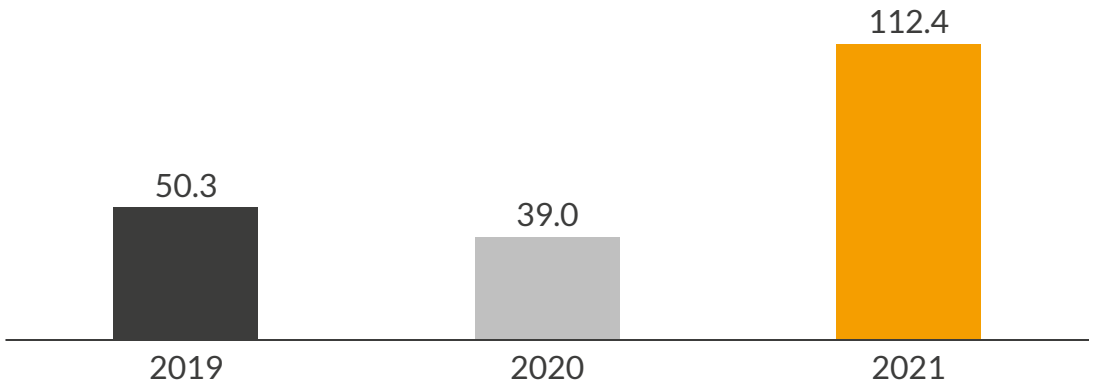
Sources: Aurora Energy Research, International Trade Administration, European Commission

2020 was dominated by the COVID-19 pandemic, but 2021 sees a recovery in demand and a massive increase of baseload prices

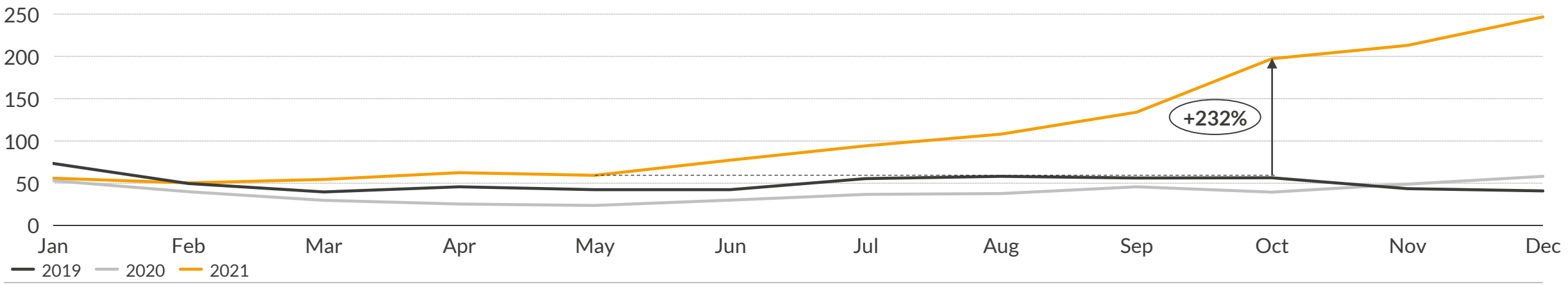
Annual demand and peak demand in 2020 and 2021[1]
TWh/GW



Annual average day-ahead prices
EUR/MWh (real 2020)



Monthly average day-ahead prices in 2021
EUR/MWh (real 2020)



1) Data until October 2021.

Sources: Aurora Energy Research, HungarianTSO, ENTSOE

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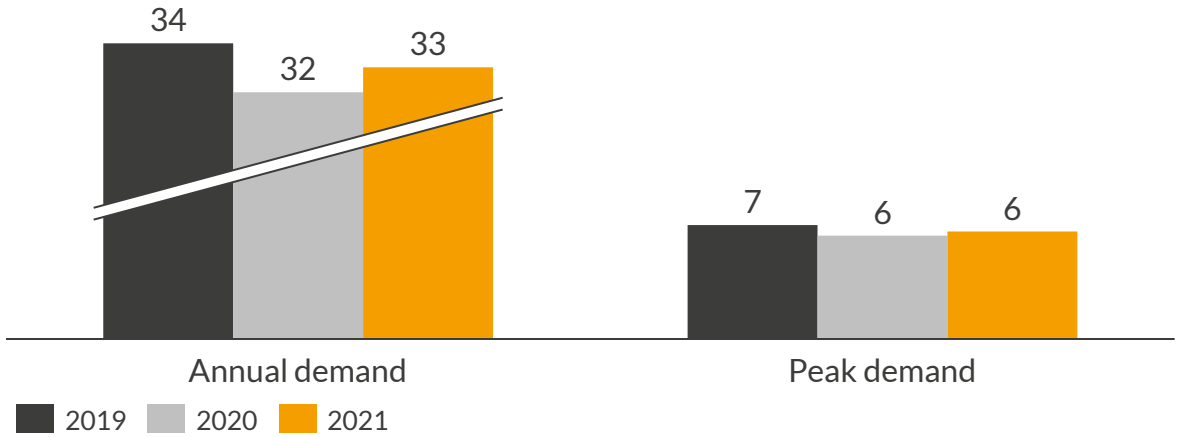

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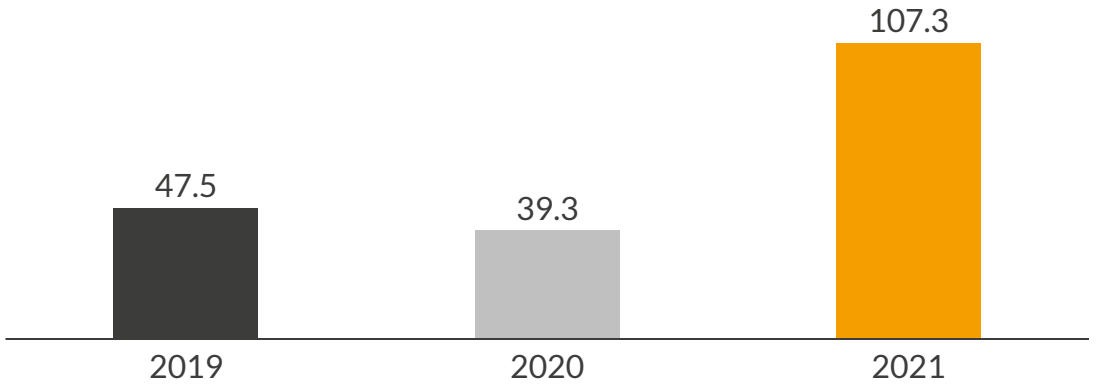
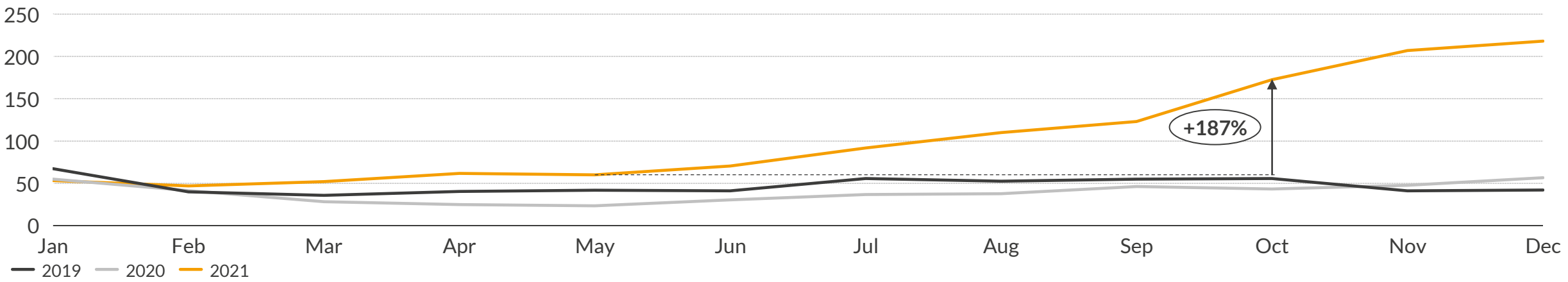


Monthly average day-ahead prices in 2021
EUR/MWh (real 2020)



1) Data until October 2021.

Sources: Aurora Energy Research, Bulgarian TSO, ENTSOE

The METAR auction system is the tool for reaching Hungary's ambitious 6.5 GW solar target by 2030

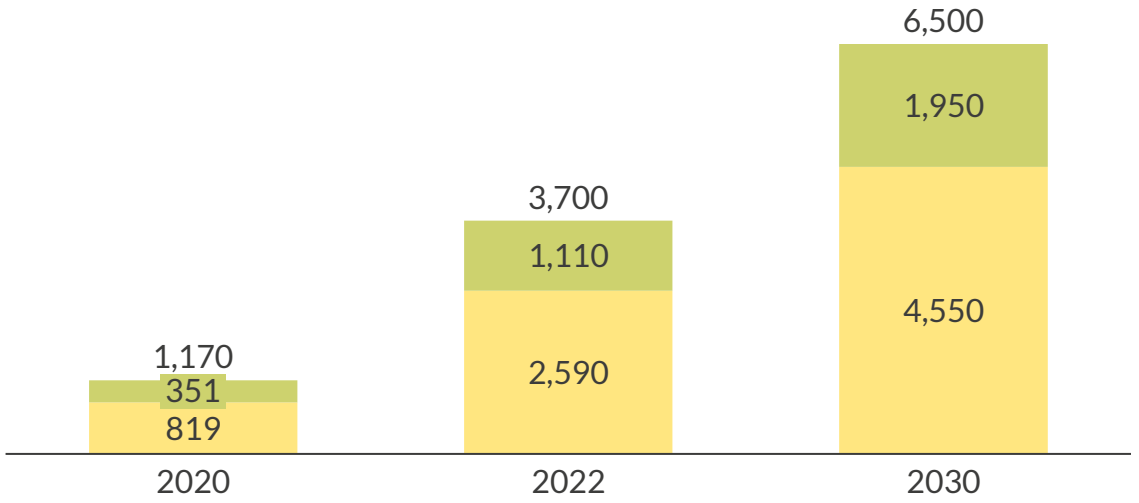
The first auction awarded 143 MW solar capacity; second auction is currently open

	2019	Oct 2020	Jul 2021	2022-2026
	Auction 1	*Auction 2*	*Auction 3*	**Bi-annual auctions planned**
Auctioned volumes GWh/MW	200/130	342/210	300/183	To be decided
Average price EUR/MWh	0.3 -1 MW: 63.5; >1 MW: 60.5	0.3 -1 MW: 62.9; >1 MW: 48.5	0.3 -1 MW: 60; >1 MW: 45	Budget of up to 1 billion HUF/year (~2.7 million EUR) until 2026

- The results of the third auction are expected in the next few months
- Overall, **the auction scheme is seen as successful,** although the outcome for developers depends on the HUF/EUR exchange rate (with equipment costs in EUR).
- The estimated support cost is much lower than the level previously predicted based on the administratively set feed-in tariff (which served as a ceiling price in the auction).[1]
- The resulting market revenue is supplemented by the premium support on a monthly basis. The monthly amount of the subsidy is calculated by MEKH on the basis of the daily average HUPX prices weighted for solar power generation for a given month
- **The annual budget of 1 billion HUF/year (~2.7 million EUR) until 2026 would suggest that with current subsidy costs, 2 auctions per year are viable and could deliver nearly 400 MW per year until 2026 or 1.6 GW**

Solar targets as depicted in the NECP

Solar installed capacity
MW



1) Using the HUF/EUR exchange rate from end of 2019, when the auction happened. Since then, the HUF / EUR exchange rate has significantly increased; 2) Assuming 30% share of rooftop

Sources: Aurora Energy Research, AURES

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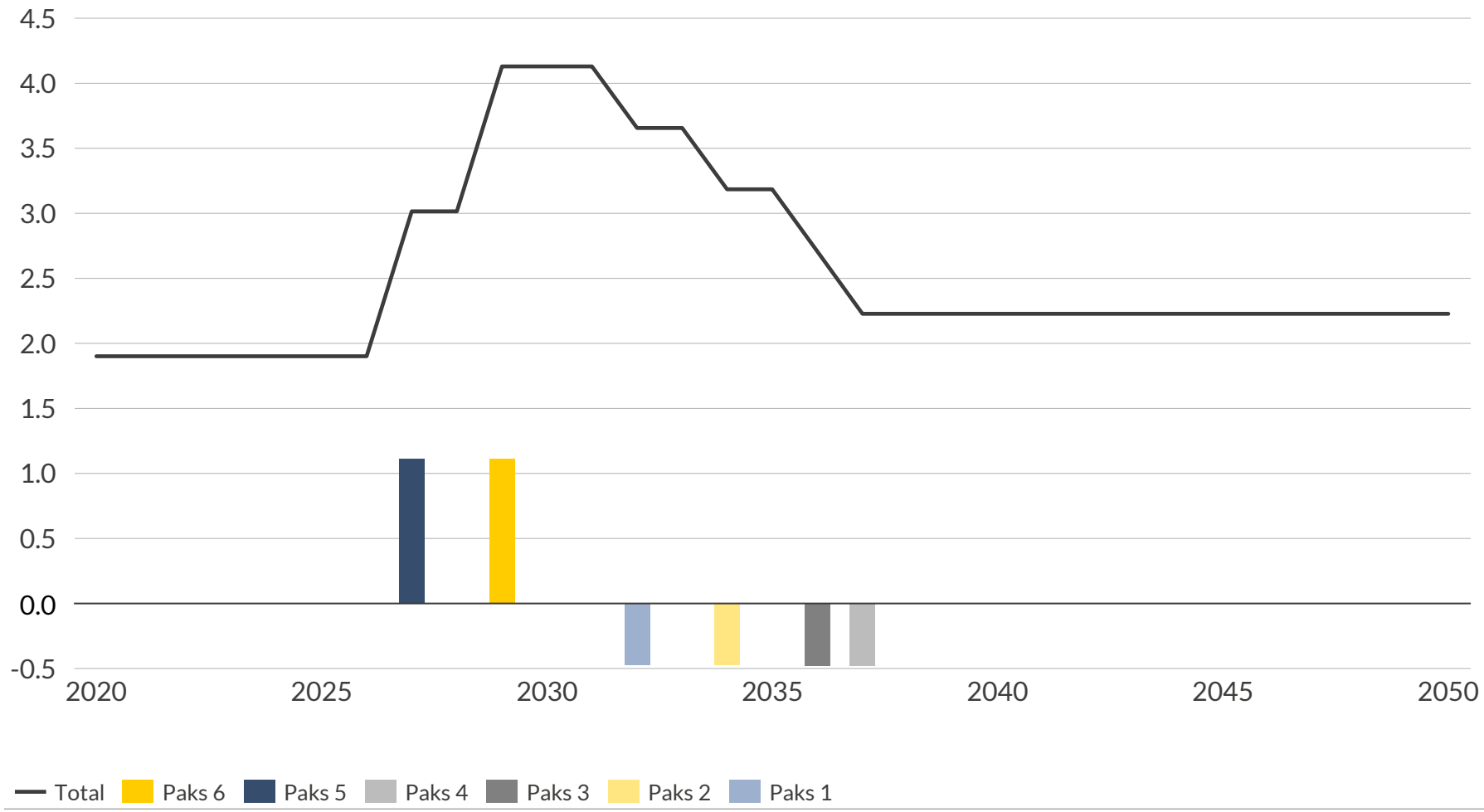
With additional blocks to be added, Paks nuclear power plant remains the core of electricity production

Nuclear capacity
GW



1) As announced in the National Energy and Climate Plan of Hungary; 2) Dates according to Regional Centre for Energy Policy Research (REKK)

Sources: Aurora Energy Research, MVM, MEKH, REKK

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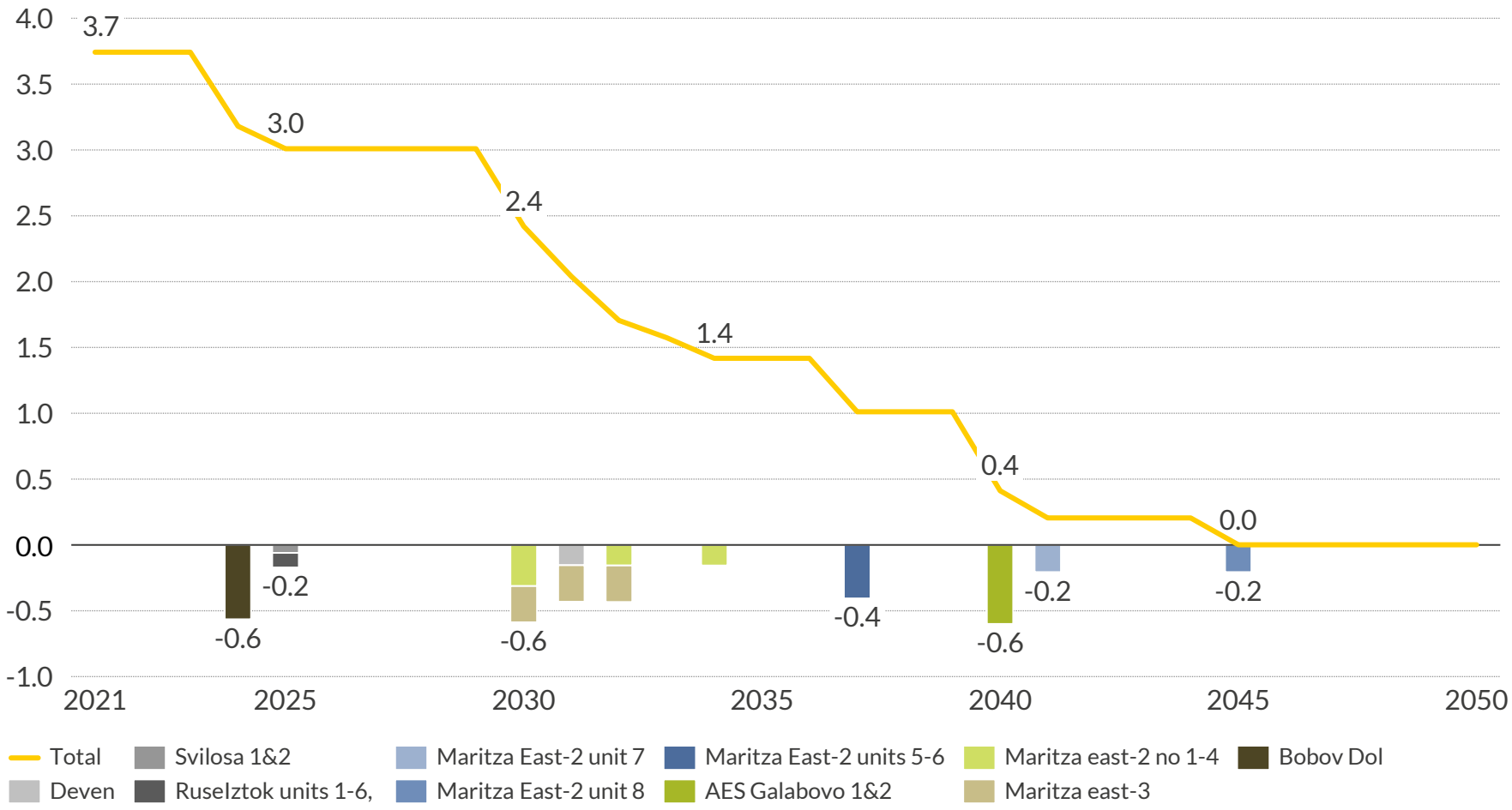
- Current net capacity: 4 x ~475 MW (Paks 1-4), blocks which are licensed until 2032 to 2037 depending on the unit1
- Planned expansion: 2 x 1,114 MW net capacity for new units planned to be online in 2027 and 2029 respectively[2]
- EU Commission approved the expansion plans
- Construction works start in 2021 facing strong domestic opposition, with details and schedule being encrypted until 2030

Bulgaria's coal fleet is expected to halve by the early 2030s while only a few plants could make it to 2040

Installed coal capacity
GW



Source: Aurora Energy Research, NECP, Eurostat

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Comments

- Bulgaria's coal power stations have an average commissioning date of 1980
- This means that by 2040 almost all plants will have reached retirement age, even those with refurbishments
- The retirement rate is accelerating in the early 2030s and over 2GW of coal capacity could retire over the decade
- Bulgaria has not announced any coal exit legislation. However, lifetime, CO_2 prices, and unfavorable plant economics are expected to drive coal power stations out of the system

After recovery from COVID-19 crisis, Aurora projects a 13% demand increase from 2022 until 2030

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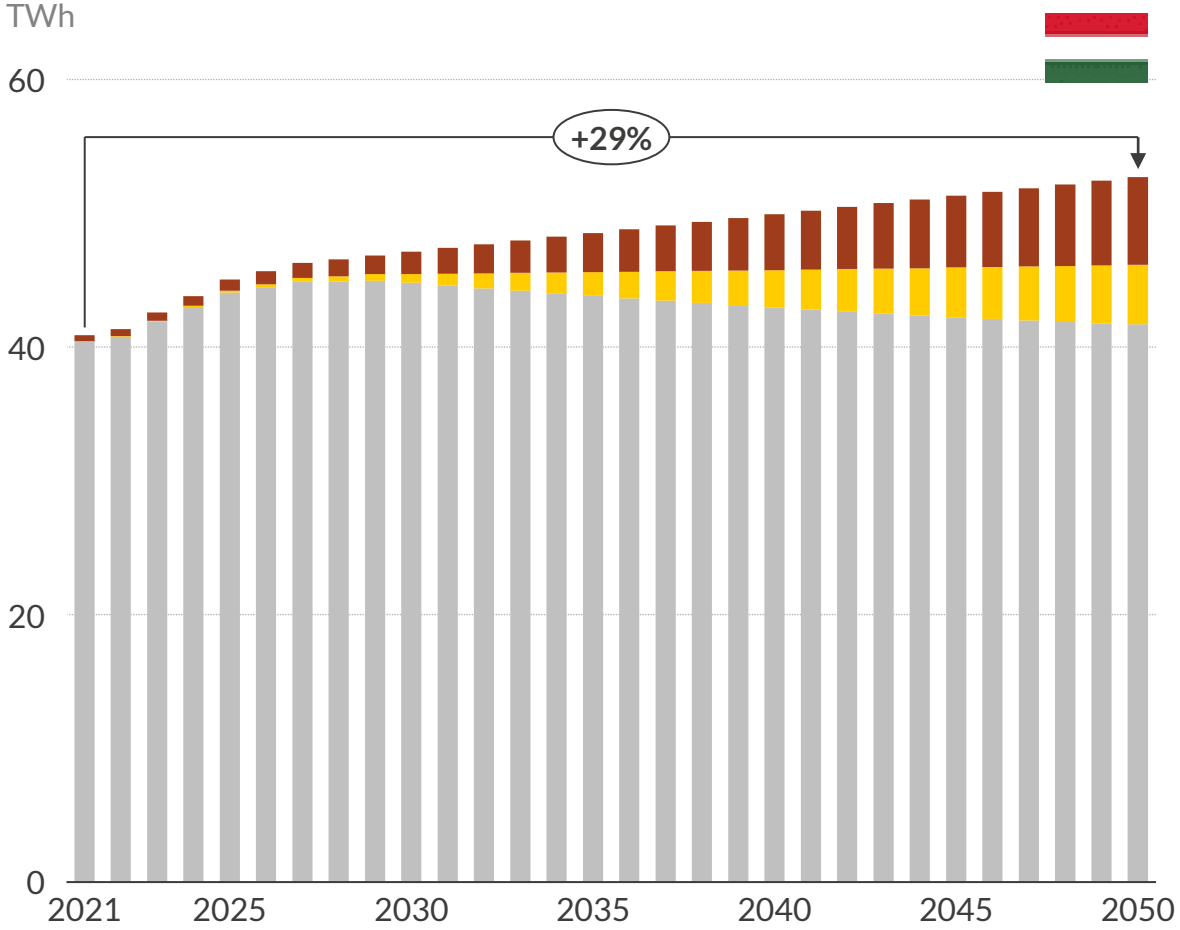
Annual demand in Hungary by technology (Central)



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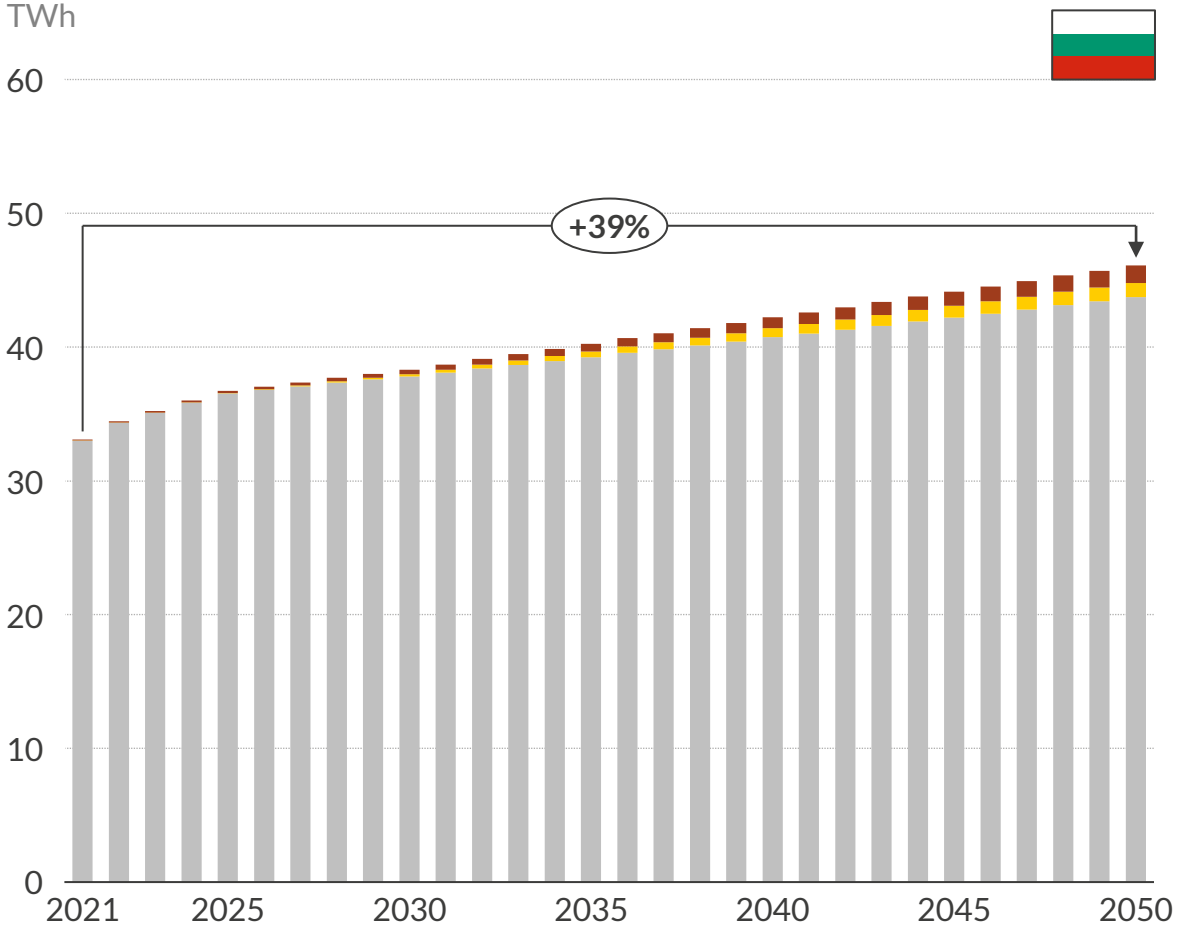


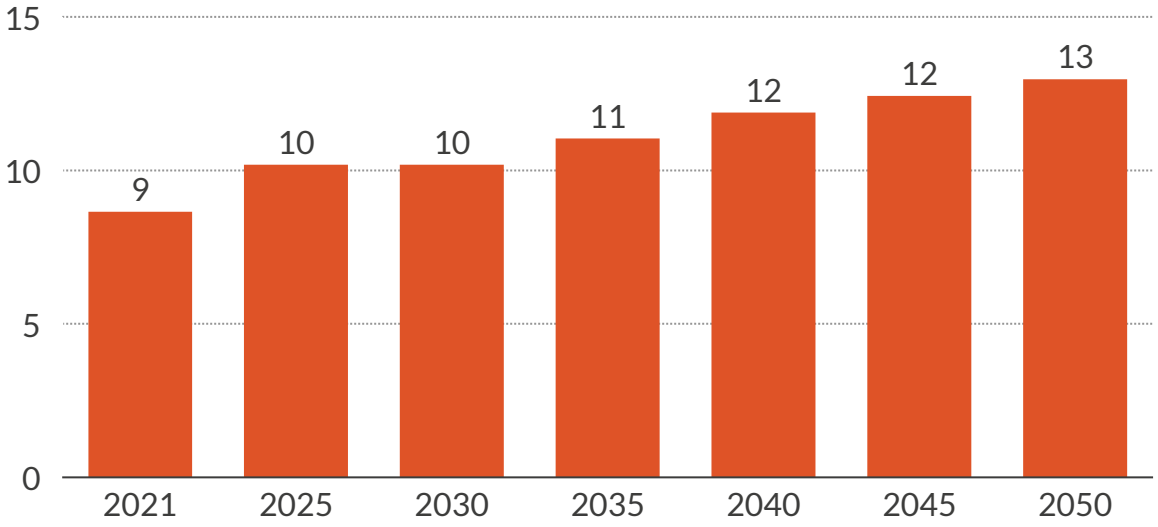
Power EVs Heat

Source: Aurora Energy Research

Hungary is strongly dependent on interconnectors for meeting its demand while Bulgaria has traditionally been a net exporter

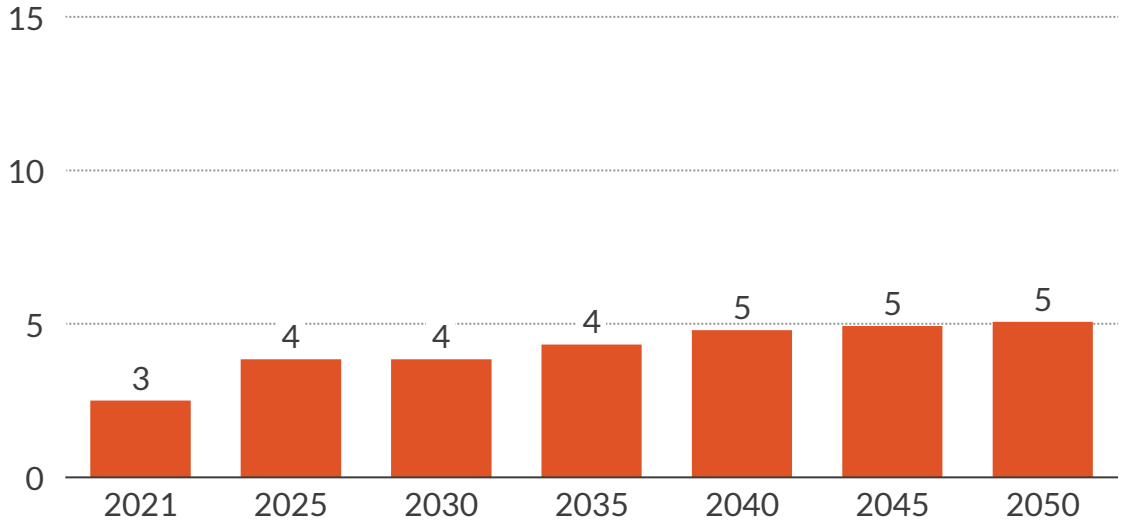
Interconnection capacity in Hungary

GW



Interconnection capacity in Bulgaria

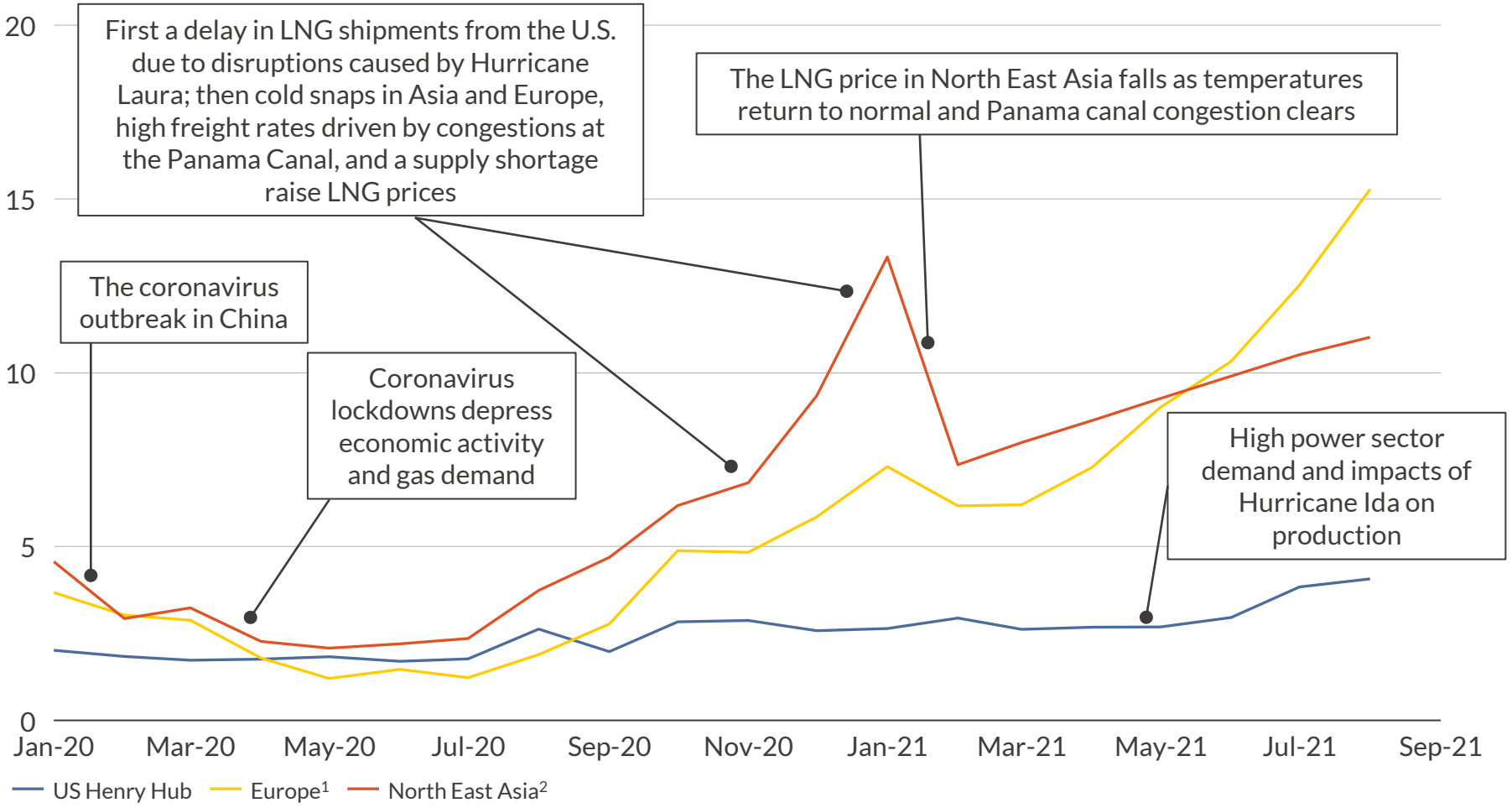
GW



Sources: Aurora Energy Research, ENTSOe

Gas prices in Europe and Asia have increased significantly since Feb-21 due to economic recovery amid tight pipeline and LNG supply

Traded average monthly gas prices
$/MMBtu



1) The reference hub is TTF in the Netherlands. 2) The reference country is Japan.

Sources: Aurora Energy Research EOS, EIKON

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- European and Asia gas prices have been on the rise since Feb-21. North East Asia gas price reached $11/MMBtu in Aug-21, growing by 49.8% in six months. TTF averaged $15.3/MMBtu in Aug-21, increasing 19.8% m-o-m on average since Mar-21, surpassing Asian price levels in May-21
- The surge in European gas prices was driven by a combination of
  1. High demand as Europe emerges from lockdown
  2. Asian demand driving a tight LNG market
  3. Fall in indigenous production
  4. Flat Russian pipeline supply
  5. Low inventories following colder-than-normal weather

Uncertainty about long-term prices is driven largely by underlying commodity price risks

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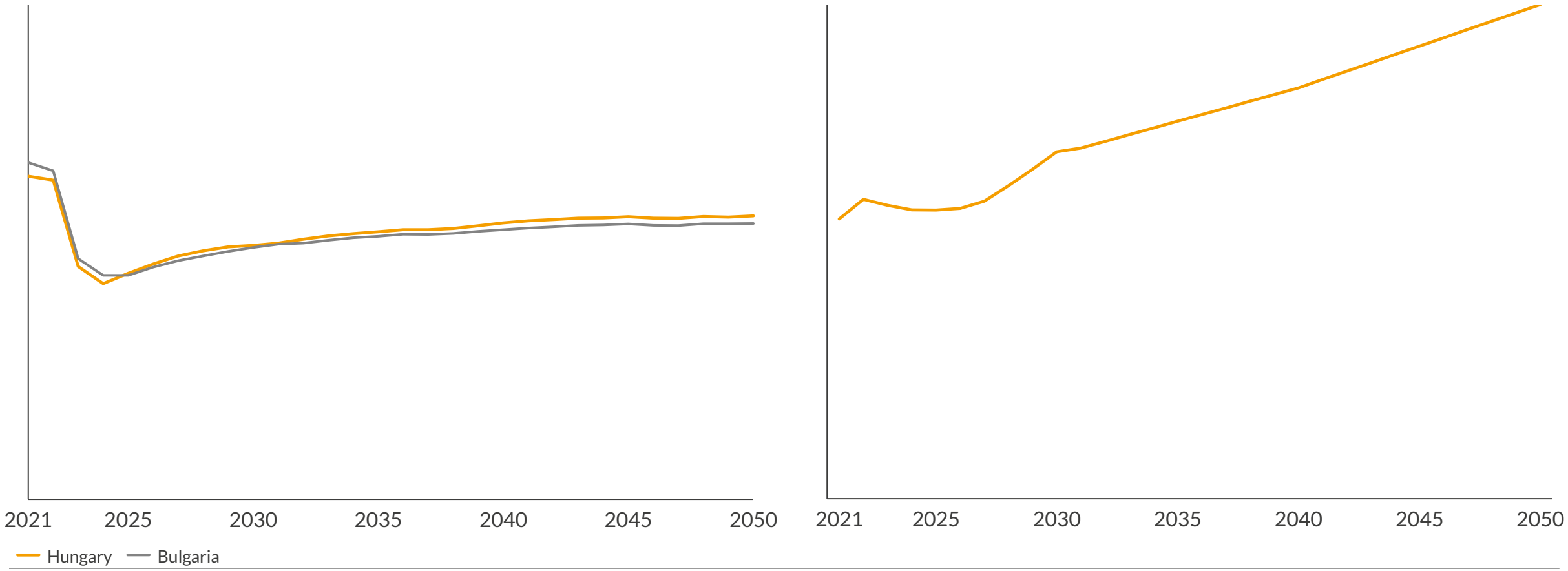
Natural gas prices
EUR/MWh (real 2020)

Carbon prices
EUR/tonne CO_2 (real 2020)



Source: Aurora Energy Research

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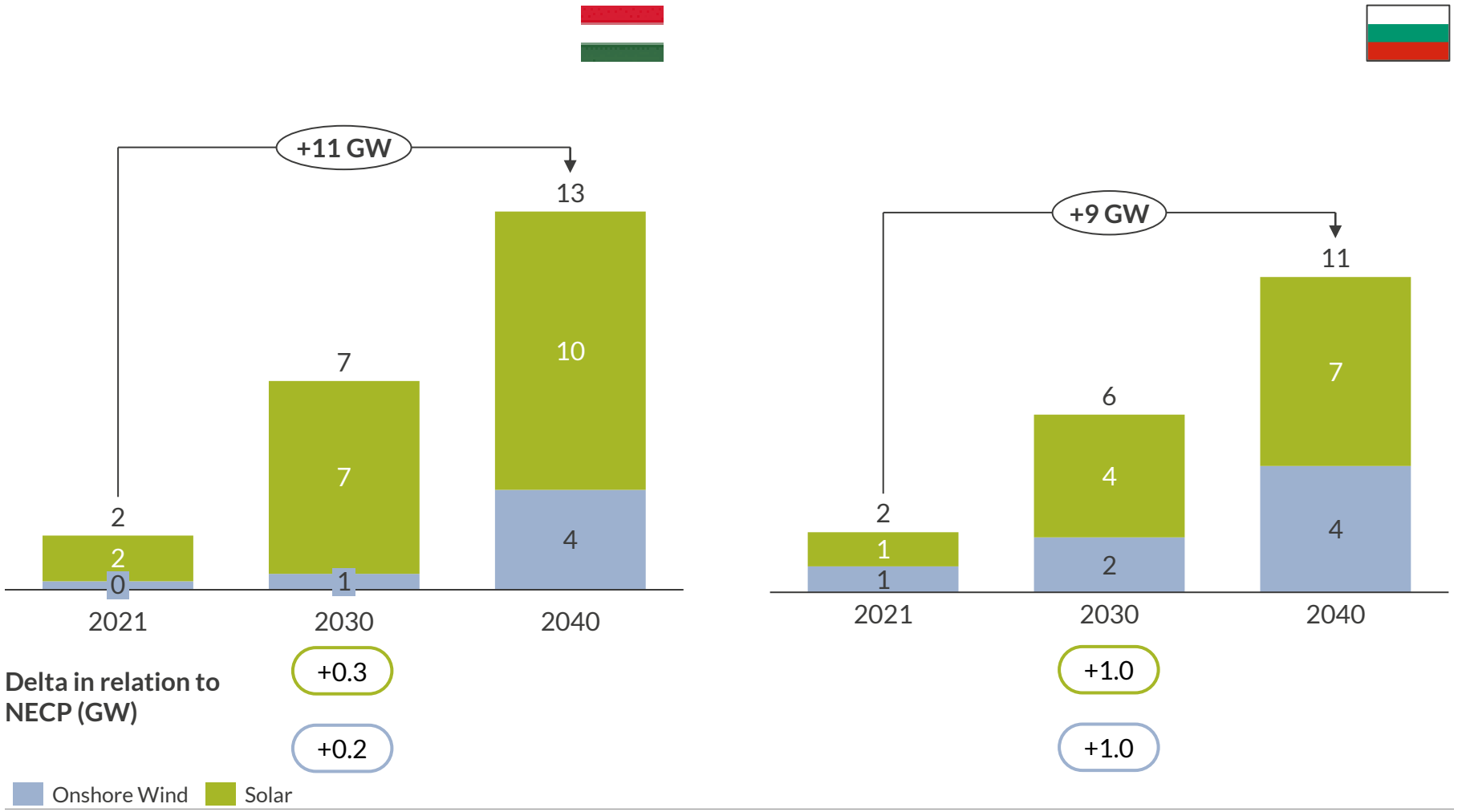
Hungary and Bulgaria have both the potential for wide-scale renewables development by 2040; 20 GW of new capacity in total

Installed capacity
GW



Sources: Aurora Energy Research, NECP

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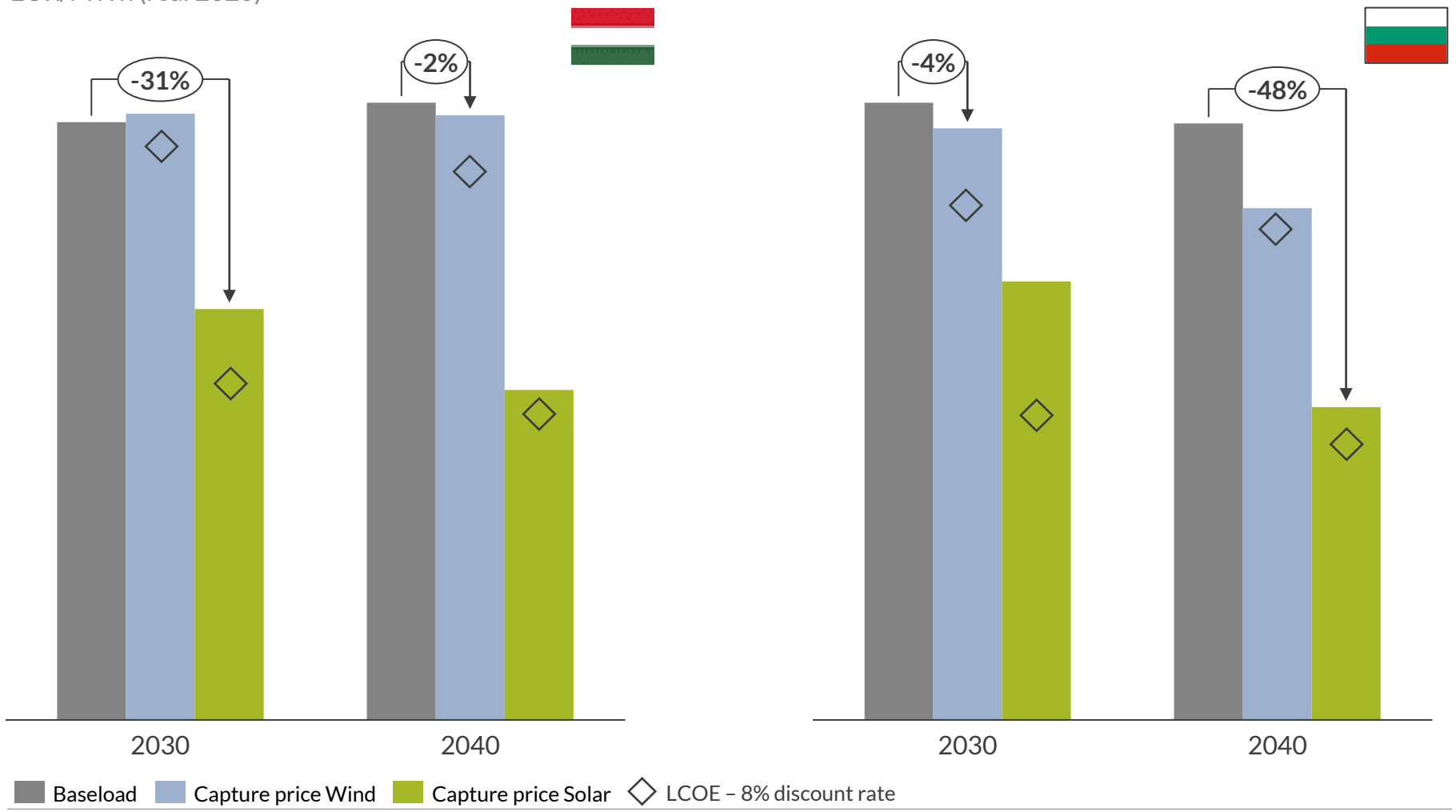
Comments

- Hungary's NECP targets for 2030 exclude wind and foresee no new wind farm development within the decade however in Aurora central we expect to see wind development continuing post 2030
- Hungary has set an ambitious 6.5 GW target for solar by 2030 which according to Aurora's forecasts could be reached and even slightly overpassed depending on the success of merchant projects
- Bulgaria's NECP target for wind are similarly conservative and without subsidy support, merchant wind is expected to break-even in the late 2020s and in the 2030s
- The lack of subsidy support is not expected to halt the solar PV growth as merchant projects are expected to deliver over 3 GW by 2030

Capture prices for solar & wind appear attractive in comparison to the LCOE; Hungary's wind growth is politically driven though

Baseload and uncurtailed capture prices[1]
EUR/MWh (real 2020)



1) Average capture price for each MWh produced of theoretical generation.

Source: Aurora Energy Research

Comments

- Hungary's wind capture prices appear elevated compared to neighbouring countries mainly because of the limited wind penetration and thus lower effect of cannibalisation on capture prices
- Solar capture prices are expected to remain well below the LCOE (under a 8% discount rate) especially from 2021 to 2030 suggesting a solid ground for merchant deployment
- The margins between capture prices and LCOEs drop by 2040 as the effect of cannibalisation becomes more prominent, however both wind and solar remain profitable on a merchant basis

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Hungary's market is expected to be undersupplied while Bulgaria's oversupplied mainly because there are no subsidised projects

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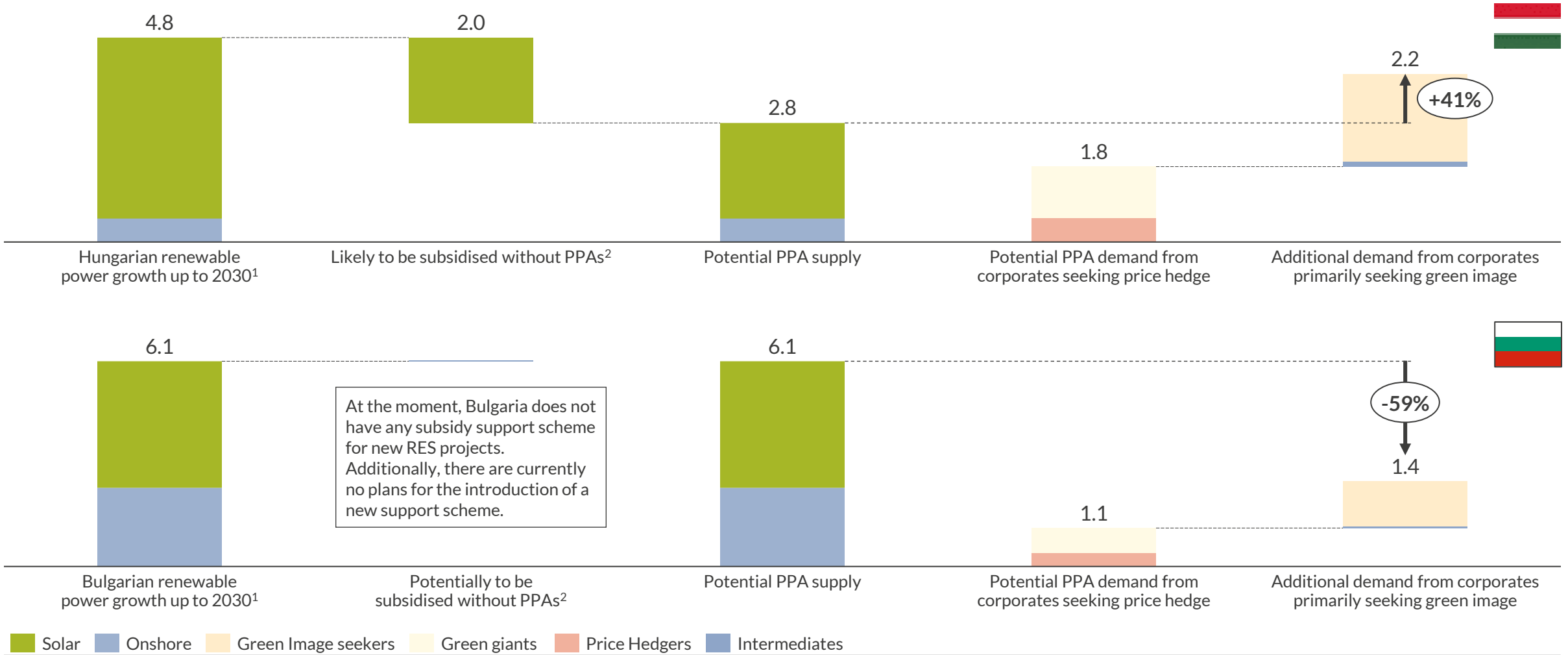
Cumulative total PPA potential supply and corporate demand up to 2030

TWh



1) Under Aurora Central, lists only renewable power generation added between 2021 and 2030. 2) Subsidised generation is based on 1.6 GW of subsidies planned by the METAR scheme from 2022 to 2025.

Sources: Aurora Energy Research, Eurostat

Commercial contract clauses determine the risk distribution and the fair value of the PPA

Commercial clause		Description	Who holds the risk? Offtaker ... Developer
Price clauses			
Fixed price		Fixed long-term price, offtaker takes on full price risk	
Collared		Price follows capture price, contract guarantees a max/min price	
Floating/Indexed price		Price linked to baseload index, offtaker only takes on capture price cannibalisation risk	
Tenor clauses			
Short term (<=5 years)		Not suitable for price hedging as futures liquid, suitable if no debt financing required. E.g. Onshore / solar > 20 yrs COD (out of EEG)	
Medium term (6 - 9 years)		Allows debt financing for smaller new build projects. E.g. solar and onshore merchant	
Long term (>9 years)		Allows for highly debt-leveraged finance required for high risk projects, e.g. offshore wind (zero bids)	
Volume clauses			
As produced		Offtaker receives asset generation profile	
Monthly % of P90		Asset(s) guarantees minimum pattern	
Fixed pattern/ baseload		Asset delivers power at a pre-agreed fixed pattern	

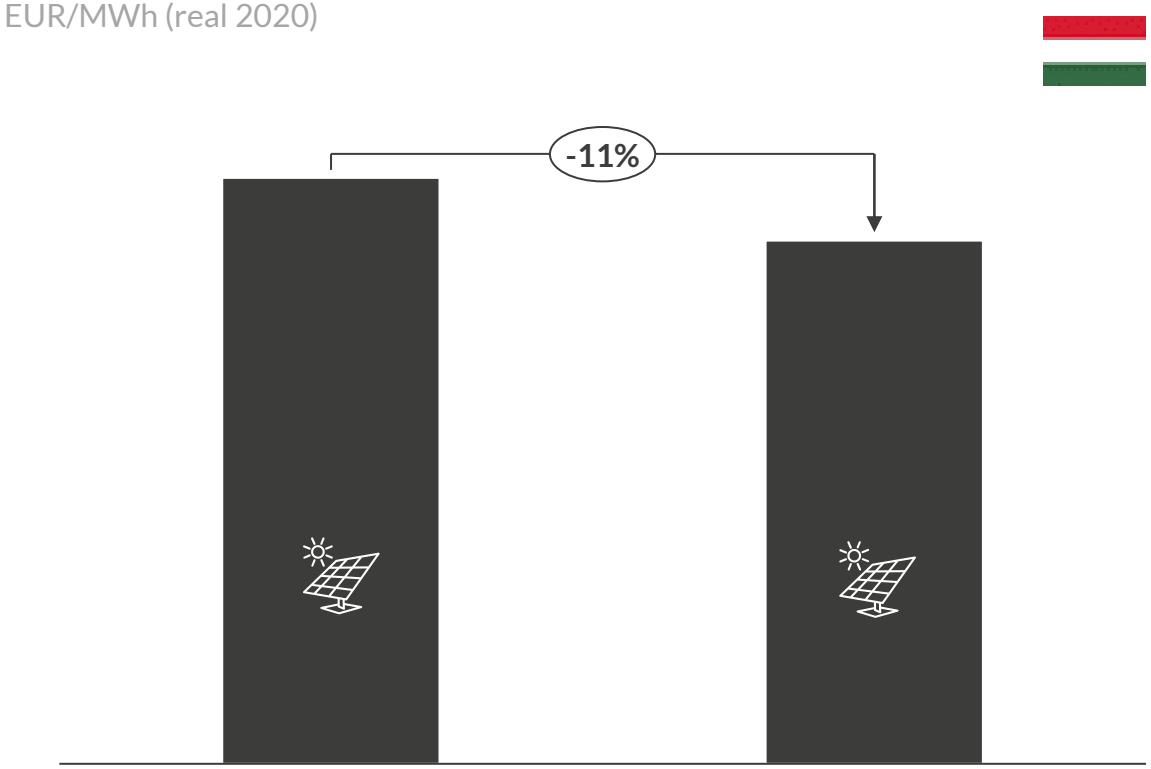
Common Few cases Uncommon

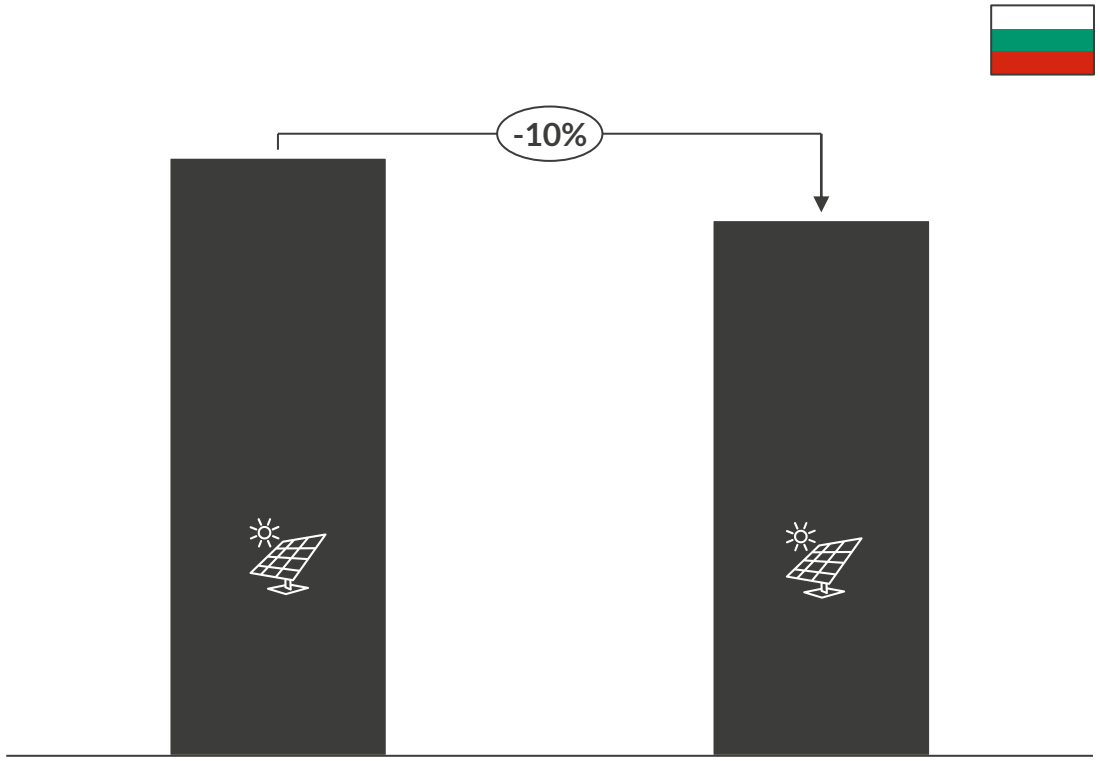
Source: Aurora Energy Research

Hungary and Bulgaria see similar fair value prices for solar PV PPAs for both 7 and 12 year tenors;

AURORA

Fair value of solar PV PPAs[1]
EUR/MWh (real 2020)





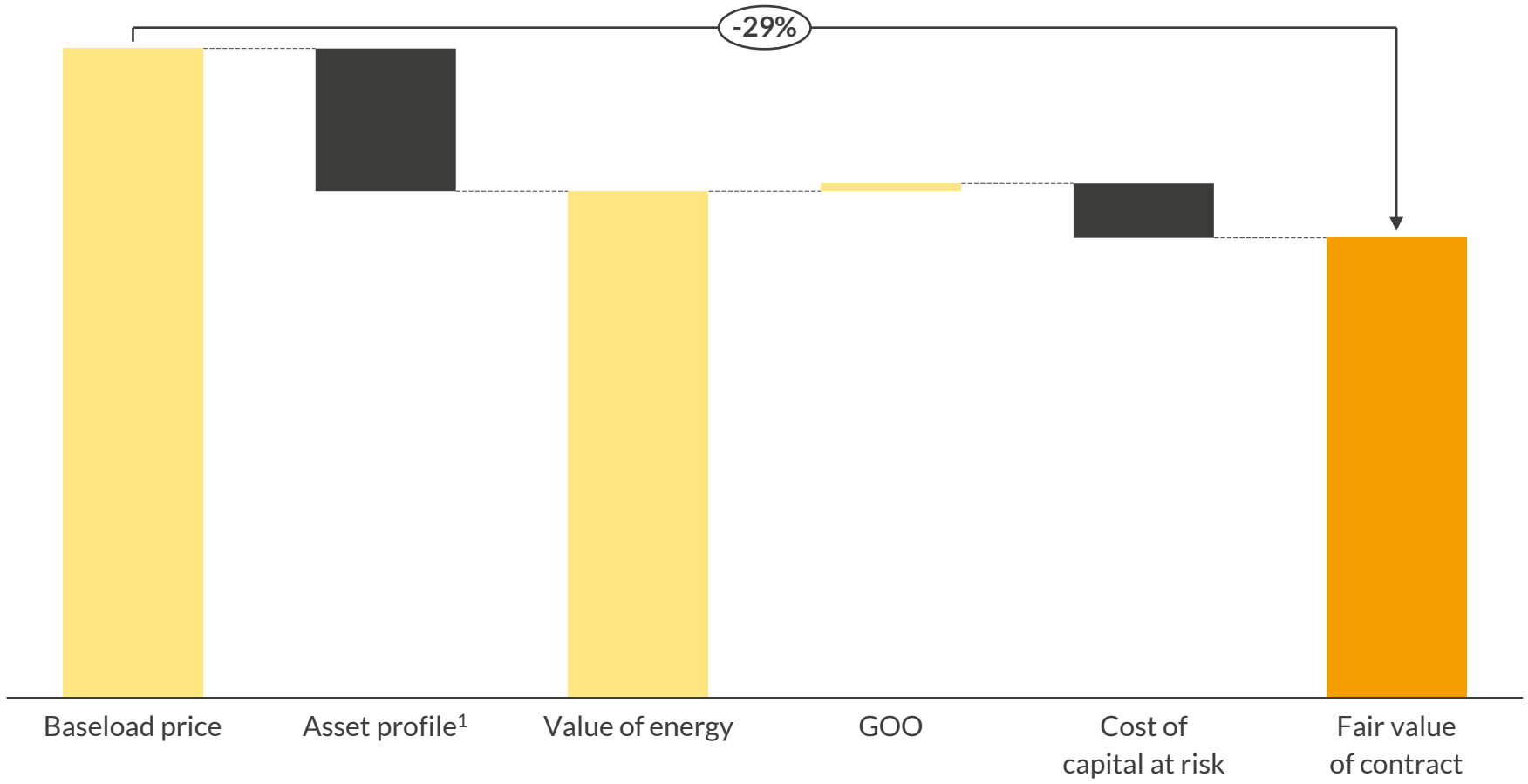
Tenor in years	7	12	7	12
Start year	2023	2023	2023	2023

1) The fair value is calculated assuming as forecasted volume clause and fixed price clause.

Sources: Aurora Energy Research, Eurostat

The fair market value of a solar PV fixed price 12-year PPA starting in 2023 is in the low 50s EUR/MWh for volume as forecasted

Decomposition of price components for a 12-year solar PV PPA with as forecasted volume clause and fixed price clause
EUR/MWh (real 2020)



1) Asset profile is calculated based on the technology-specific capture price and includes interannual variability.

Source: Aurora Energy Research

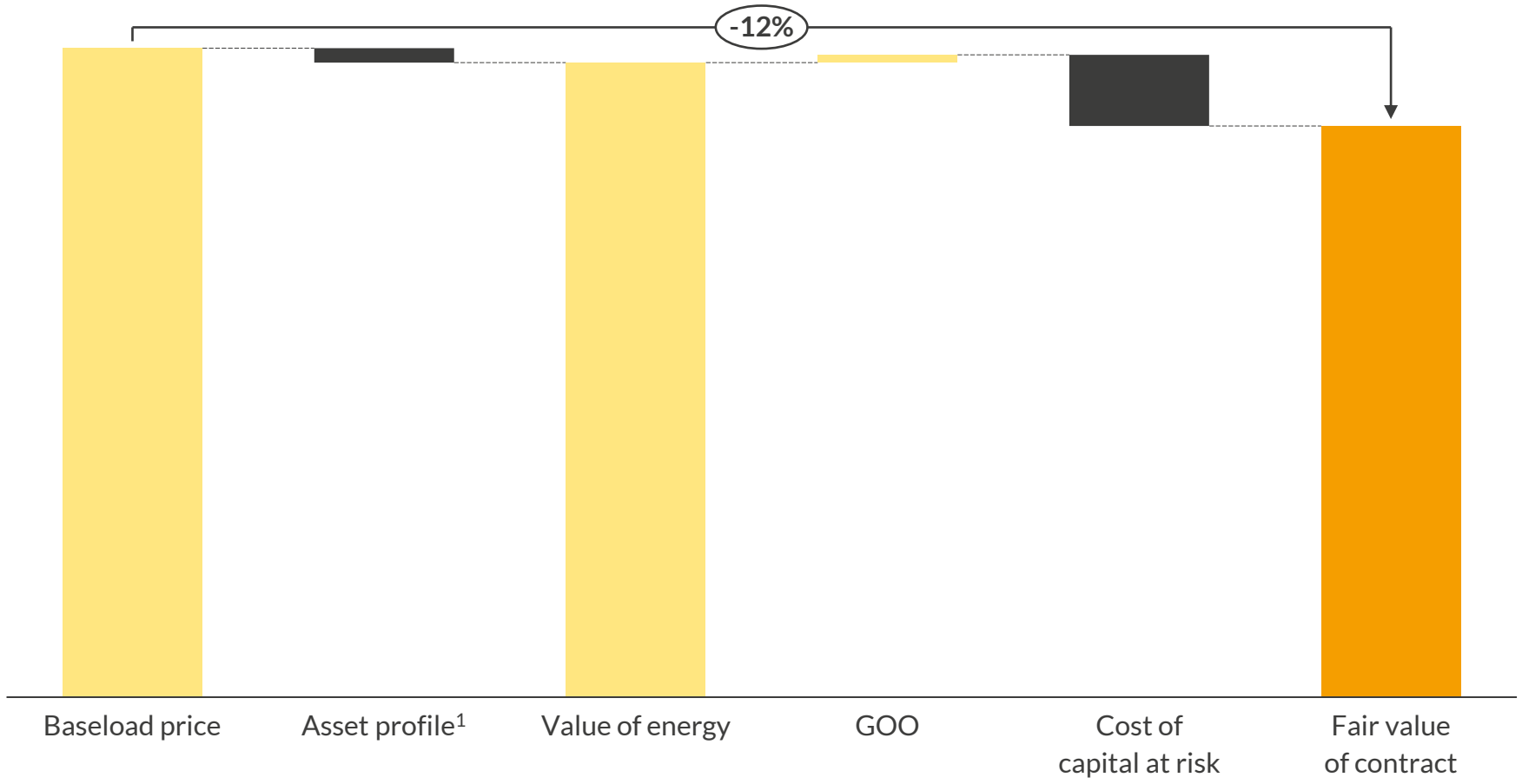
AURORA

Fair value of a 12-year solar PV PPA in Hungary

- Between 2023 and 2035, the average value of energy from solar PV generation in Hungary is in the mid 50s EUR/MWh, given the price projections in our Central scenario

The fair market value of an onshore wind fixed price 12-year PPA starting in 2023 is in the low 60s EUR/MWh for volume as forecasted

Decomposition of price components for a 12-year onshore wind PPA with as forecasted volume clause and fixed price clause
EUR/MWh (real 2020)



1) Asset profile is calculated based on the technology-specific capture price and includes interannual variability.

Source: Aurora Energy Research

AURORA

Fair value of a 12-year onshore wind PPA in Bulgaria

- Wind experiences less cannibalisation than solar which leads to a much smaller price reduction due to the asset's profile, keeping the value of energy higher
- The delta between our Central and Low scenario increases over the years. Consequently, the longer contract period of 12 years leads to an increased cost of capital at risk

Agenda

AURORA

I. About Aurora

II. Policy overview and upcoming changes

III. Key market drivers

IV. Renewables outlook

V. The potential and risks for PPAs

VI. Power Exchange Central and the EEX Group

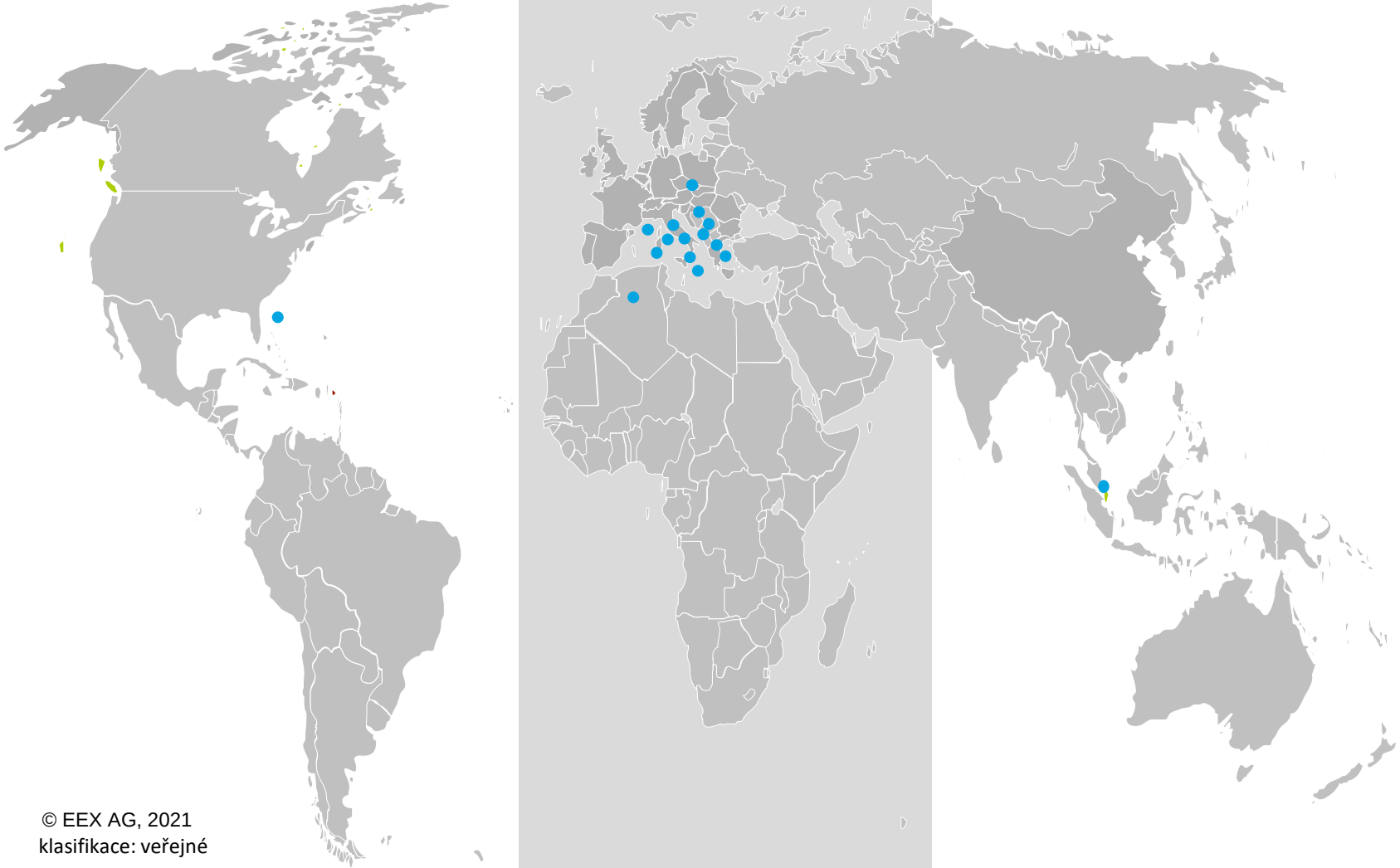
PPAs – Hungary and Bulgaria

Webinar, January 25, 2022

Introduction EEX Group

A Global Commodity Exchange

US	Europe	Asia	#GoingGlobal

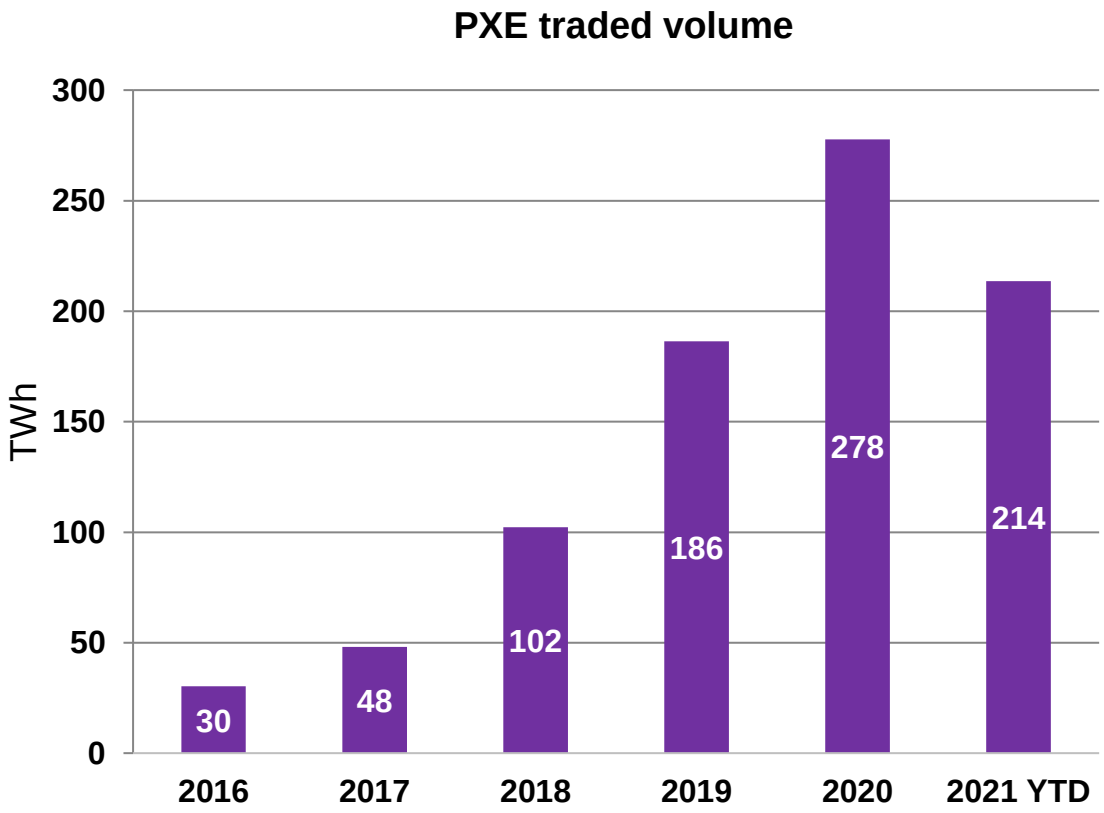


1
in Power Trading Worldwide

More than
750
Trading participants
from 40 countries

17 locations worldwide

PXE as part of EEX Group



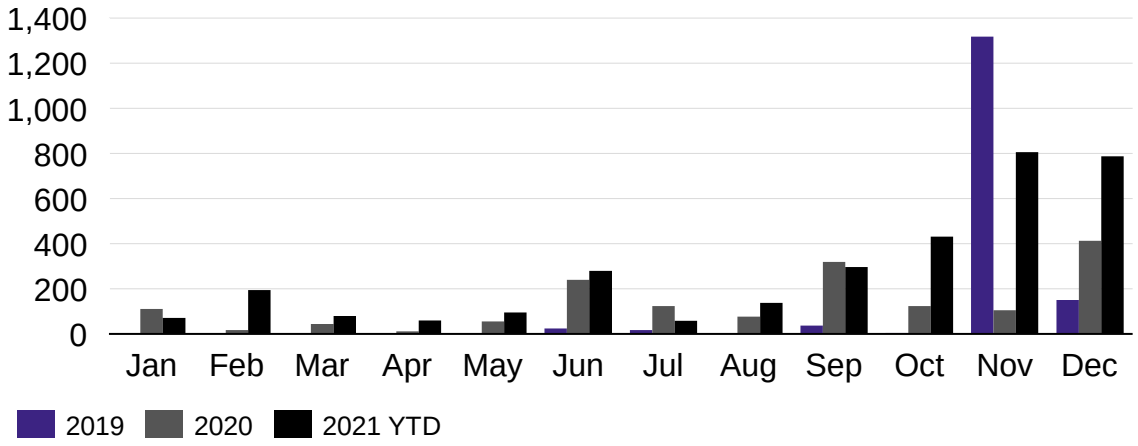
PXE role:

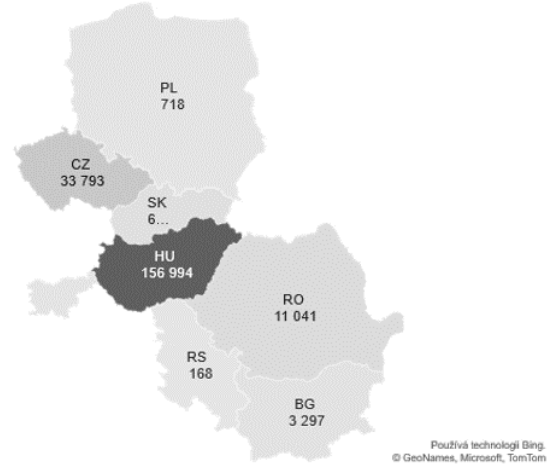
- PXE became an integral part of EEX in June 2017
- PXE is responsible for CEE/SEE markets
- PXE acts as a local help to clients in the region
- PXE is responsible for CEE/SEE products

GWh	CZ	SK	HU	RO	PL	SI*	BG*	RS*	Total
2017	17 358	5 455	20 265	5 035	0	0	0	0	48 112
2018	26 410	7 530	53 407	14 849	18	0	0	0	102 213
2019	31 511	11 766	124 719	15 107	289	1 618	1 552	7	186 570
2020	27 063	8 913	220 142	17 525	33	2 231	1 640	261	277 808
2021	33 793	6 661	156 994	11 041	718	916	3 297	168	213 587

- **Bulgaria Power Futures**

GWh





*) Launched in June 2019

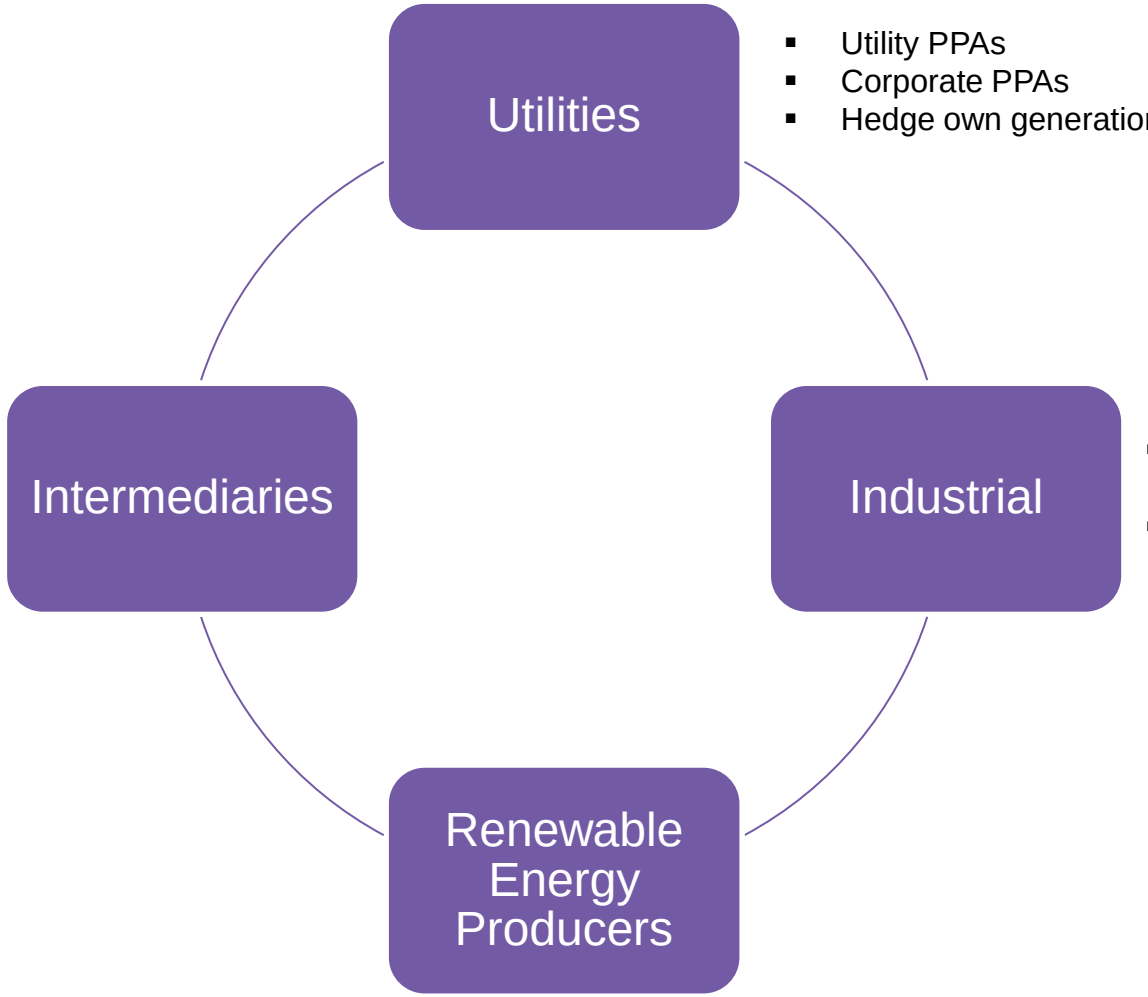
How do EEX Power Derivatives help to mitigate Renewable Energy Price Risk (PPAs)

- Market participants who enter into long-term PPAs can **register a strip of cash-settled calendar futures out to Cal+6 (+10)** for clearing with EEX.
- This means that **sellers can lock in a secure cash flow for up to 6 (10) years**, for the sale of electricity in the respective market area
- Buyers lock in a **guaranteed price of purchase** for up to 6 (10) years, providing **certainty** on their future electricity price and **protecting against upswings**
- Therefore the purchase or sale of electricity derivatives provides **long-term price risk hedging** together with **counterparty risk mitigation** through the ECC clearing house.

Production is sold at the Spot market, offtaker procures via wholesale market, no physical delivery via balancing accounts

Long term hedge: multiple OTC trades of sequential expiry => these trades mimic the profile of the PPA and mitigate the price risk exposure

Who are the PPA Hedgers on EEX?



- Utility PPAs
- Corporate PPAs
- Hedge own generation

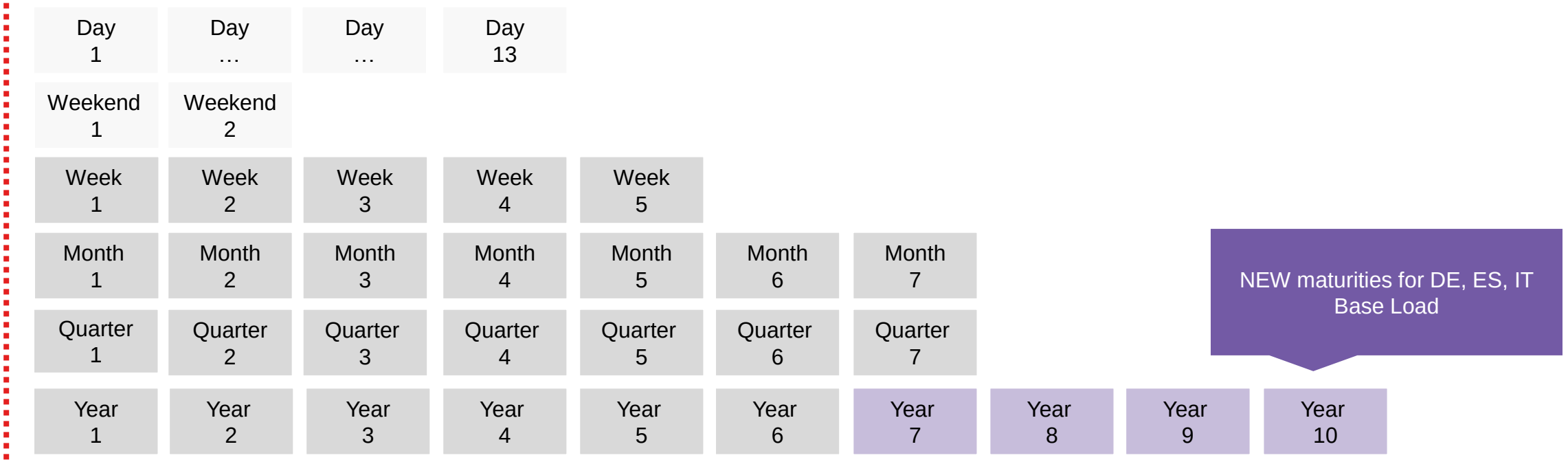
- Oil companies pivoting to renewables
- Offtakers of RE to power industrial sites

- Solar IPP hedging PPAs

- Banks providing access to market for Renewable Energy developers
- Market players offering hedging services

EEX Power Derivatives Markets and Cal+10

- EEX **extended Base Load Yearly Futures to Cal+10** on 27 September 2021 in markets with high potential of PPA activity: **Spain, Germany and Italy**, to facilitate long-term hedging and more PPA development.
- This extends the standard Power product setup of EEX.*
- Each product has as its underlying the Spot index for the respective market (ie. for Romanian power, the day-ahead price published by OPCOM).



*The full list of markets and products can be found on the EEX website.

CSEE Power Products Portfolio

- **Baseload & Peakload**

Market Area	Expiries	Settlement Type	Code	Trayport ID *Base Peak*
Czechia	Days, Weekends, Weeks, Months, Quarters, Years	Financial	FX	10001996 10001998
Slovakia	Months, Quarters, Years	Financial	FY	10011072 10011073
Poland	Months, Quarters, Years	Financial	FP	10012621 10012623
Hungary	Days, Weekends, Weeks, Months, Quarters, Years	Financial	F9	10011036 10011038
Romania	Weeks, Months, Quarters, Years	Financial	FH,FR[1]	10012526 10012619
Serbia[2]	Weeks, Months, Quarters, Years	Financial	FZ	10644024
Slovenia[2]	Weeks, Months, Quarters, Years	Financial	FV	10644022
Bulgaria[2]	Weeks, Months, Quarters, Years	Financial	FK	10644020

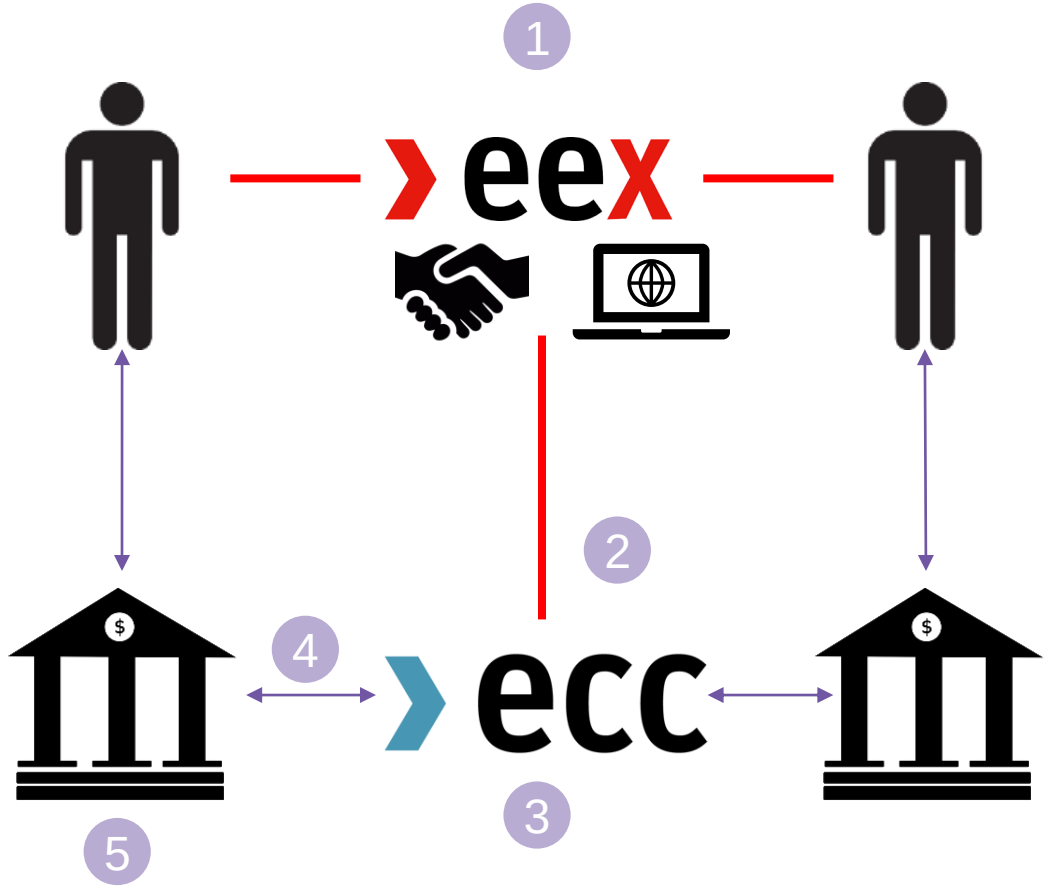
1) Code for Romanian Peakload; 2) Only baseload

EEX Power Derivatives Markets

Transaction lifecycle

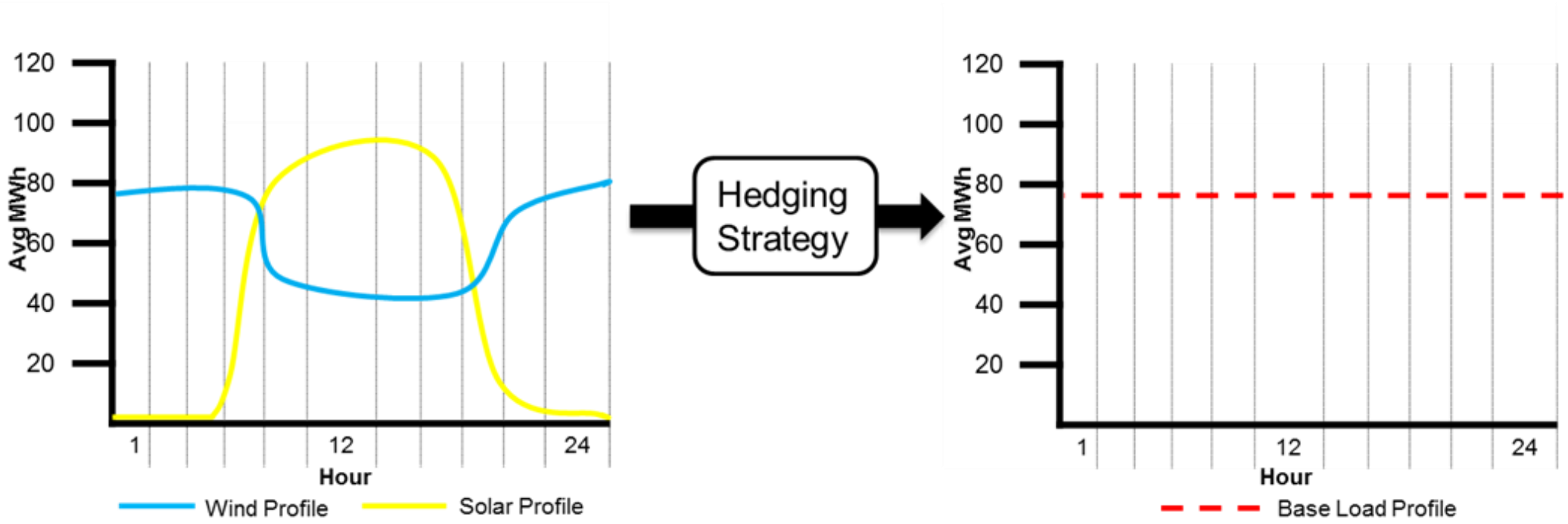
1. Transaction concluded between two counterparties via order book or trade registration.
2. Transaction is submitted for clearing to ECC.
3. Once cleared at ECC the counterparty risk is removed.
4. ECC collects collateral and margins from the Clearing Member, and settles the contract in cash at expiry on behalf of its client.

   The Clearing House performs daily settlement (mark-to-market) of all open positions, netting between related positions, and guarantees settlement in case a counterparty defaults.
5. The Clearing Member manages the cash flows and collateral required by trading participants.



When a contract is cleared, ECC becomes the counterparty to both trading participants

Managing Renewable Energy Price Risk with Base Futures requires a Hedging Strategy



- Base Futures are a **best-fit product** and attract the most liquidity, creating a **strong price signal** and opportunities for trading at fair market prices
- To use the Base Futures to manage the risk of a wind or solar profile, a **Hedging Strategy needs to be designed** to translate the variable generation profile into a constant Base load profile
- Different Hedging Strategies can be employed, such as a **value-neutral hedge**

Example: Long-term hedge on Polish Power

Trade Date	Product	Expiry Year	Expiry Month	Type	Trade Price	Initial Margin per Contract	Lots (in MW)	Initial Margin (in EUR)	Trade Volume (in M Wh)	Notional Value
03.02.2021	Polish Power base year	2022	12	TOB	58,50 €	40 033,20 €	5	200 166,00 €	43 800	2 562 300,00 €
04.02.2021	Polish Power base year	2022	12	OTC	58,80 €	40 033,20 €	20	800 664,00 €	175 200	10 301 760,00 €
05.02.2021	Polish Power base year	2022	12	TOB	59,10 €	40 033,20 €	10	400 332,00 €	87 600	5 177 160,00 €
05.02.2021	Polish Power base year	2023	12	TOB	58,30 €	29 083,20 €	10	290 832,00 €	87 600	5 107 080,00 €
08.02.2021	Polish Power base year	2024	12	TOB	58,75 €	23 277,60 €	5	116 388,00 €	43 920	2 580 300,00 €
SUM						**172 460,40 €**	**50**	**1 808 382,00 €**	**438 120**	**25 728 600,00 €**

- 50 MW of long-term products were traded on Polish Power market in the beginning of 2021, with an **initial margin requirement of 1 808 382 EUR**
- The **Initial Margin percentage** of the notional value of the trades was 7%

EEX Power Futures and Renewable Energy

Role of the Exchange in the PPA Market

Price Transparency

- EEX's market prices provide reliable price references.
- Project developers and buyers of PPAs can assess their valuations against EEX wholesale prices.

Price Risk Management

- Manage power price risk for renewable energy assets.
- Reduce the overall risk exposure for the largest risk element in RE portfolios.

Counterparty Risk Management

- Trading and hedging on EEX alleviates counterparty risk for trading participants.
- This is especially important for long-term risk management.

Enabler of Renewable Energy Growth

- **Price and counterparty risk is offloaded** onto the clearing house, freeing internal risk capacity within trading participants.
- This enables them to take on more PPAs and facilitate growth of renewable energy capacity in Europe.

Thank you for your attention

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lasova@pxe.cz

AURORA ENERGY RESEARCH

Discussion - Q&A


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