

PowerPulse
Masterclass duurzame energie – energiemarkten

10 November 2026

PowerPulse – 3 integrated service delivery axes

PowerPulse

Founded in 2014

Team of 19 experts

Serving over 250 clients

Saving +100k tons/y of CO_2

We guide you through the energy transition

Energy management

- Define best energy contract framework for customer footprint & operations
- Implement purchasing and risk management strategy
- Provide reporting, control invoices, monitor budgets and track energy performance

Projects & Asset steering

- Technical: closed distribution systems (CDS), local energy communities
- Onsite renewable energy production, energy storage, EV-mobility
- Day-ahead and intraday algorithm-based optimization for energy assets (e.g. cogeneration unit heat/steam & power)

Pathway to a corporate climate strategy

- Initiate carbon accounting & set mid/long term climate strategy goals
- Assess & implement carbon reduction actions to reach goals
- Purchase renewable power (guarantees of origin, onsite, large offsite PPA)

PowerPulse company overview

PowerPulse

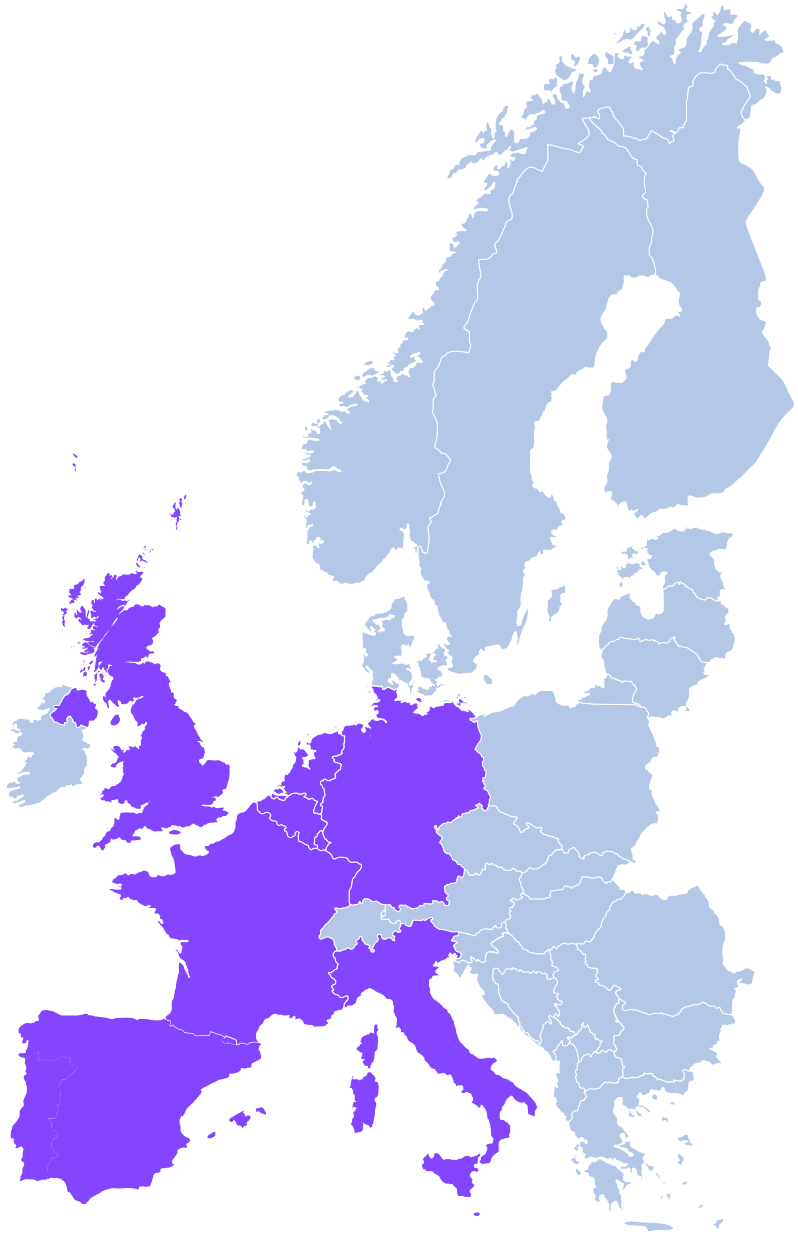
+20 TWh — Energy flows managed by PowerPulse

6,2 mln EUR — Annual energy costs saved for clients

516 MW — Flexible capacity optimized

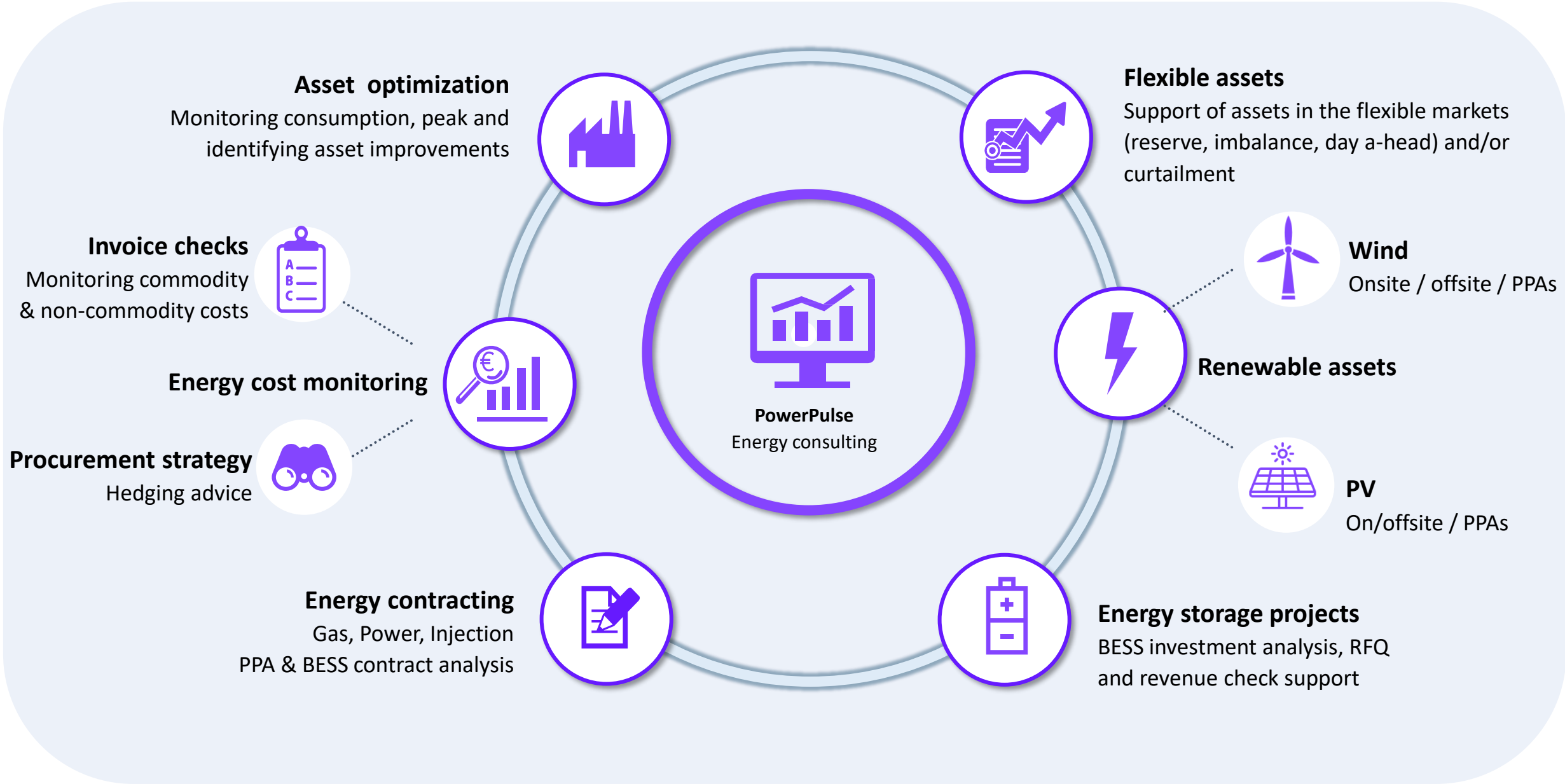
+100K tons CO_2 — Amount of CO_2 saved per year

19 FTE — Team of energy experts



PowerPulse expertise = holistic & customer centric

PowerPulse



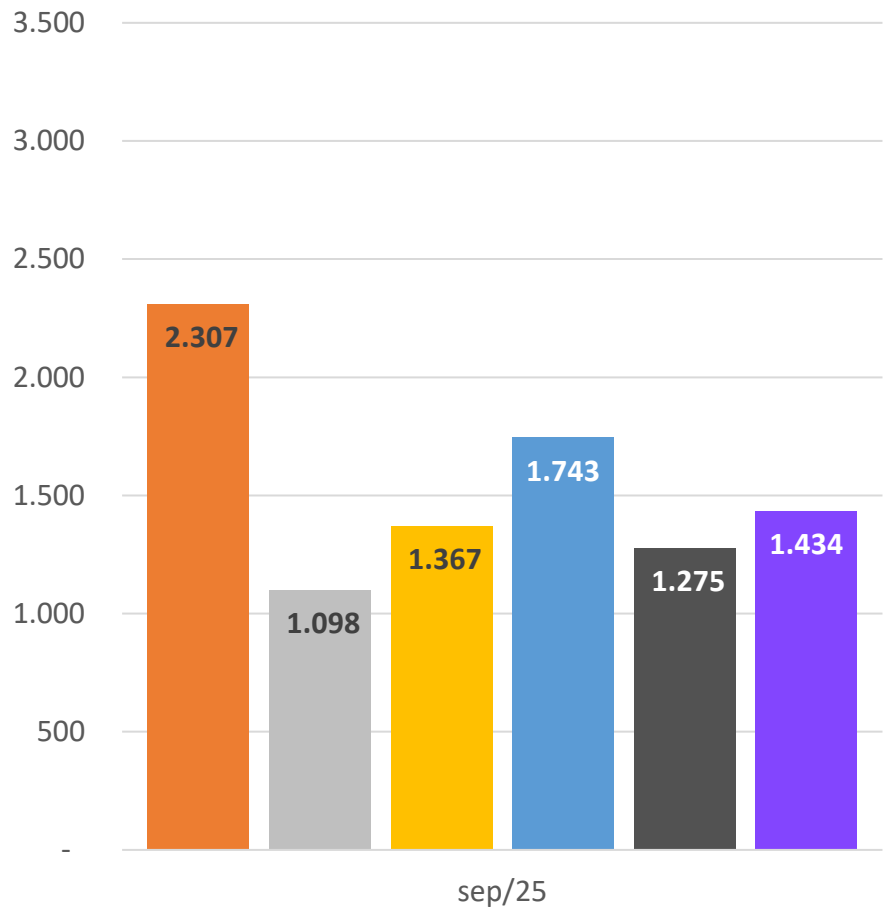
- **The current energy crisis**
- **Future expectations**
- **CO2 & ETS2**
- **Q&A**



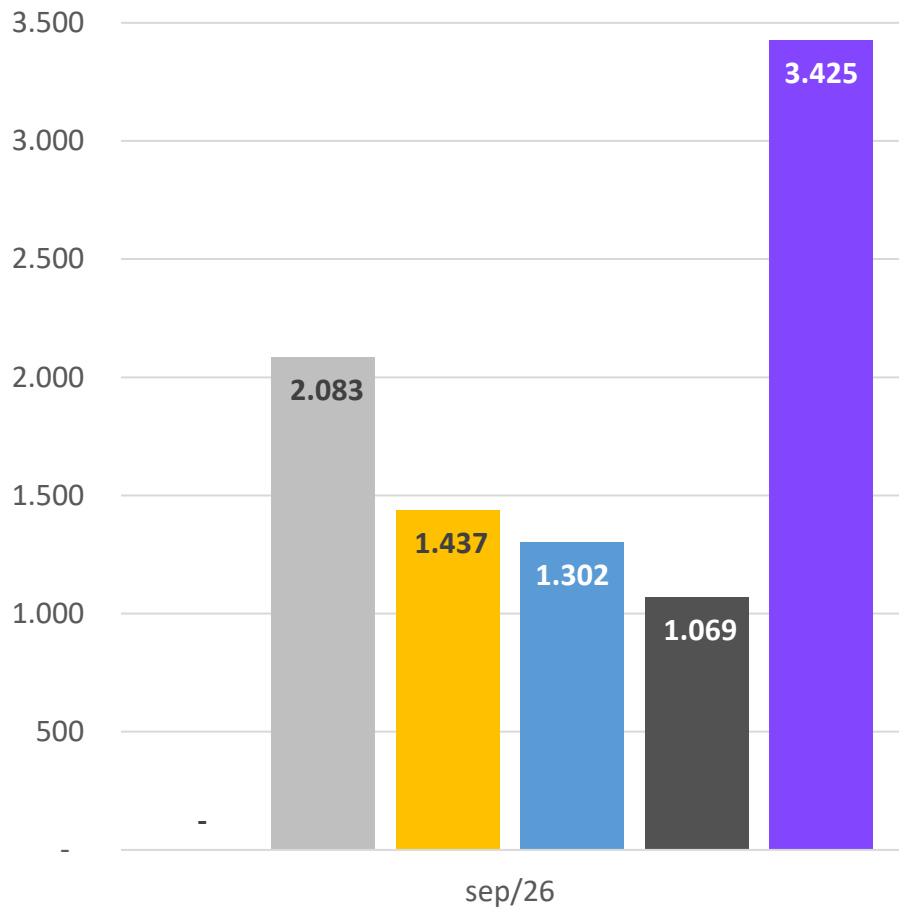
Average supply of electricity in Belgium

MW; Average generation output and net import flow per month for Belgium

September 2025



September 2026

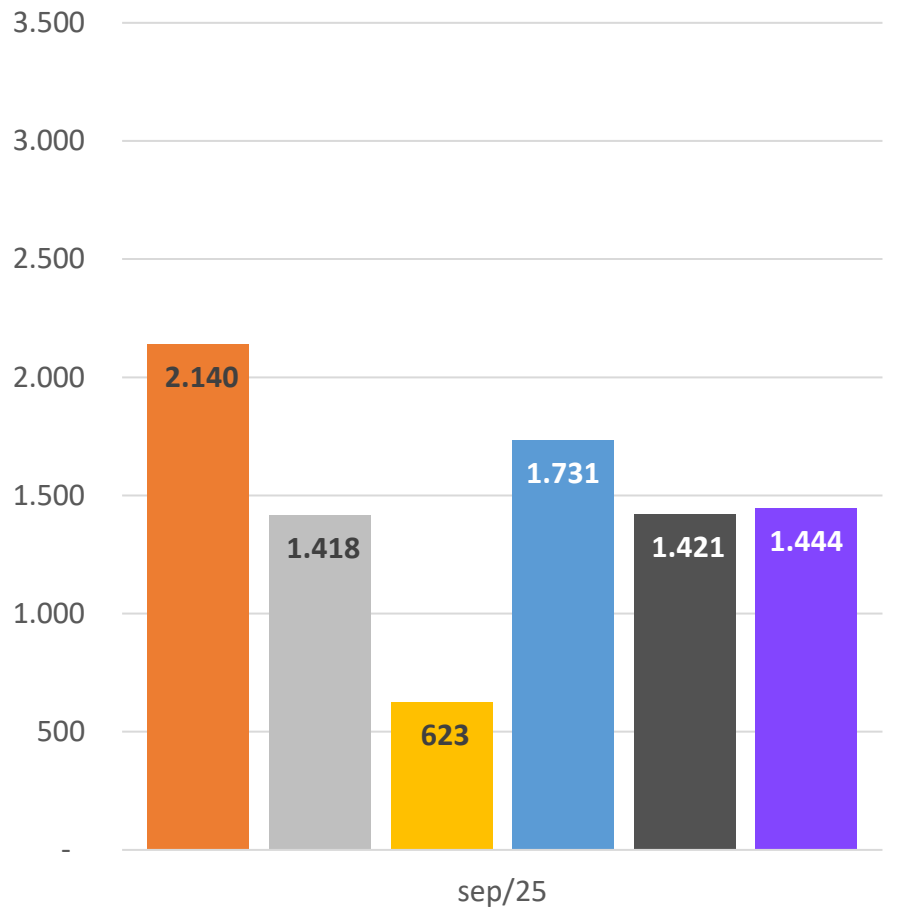


Nuclear | Natural gas | Solar | Wind | Others | Net import

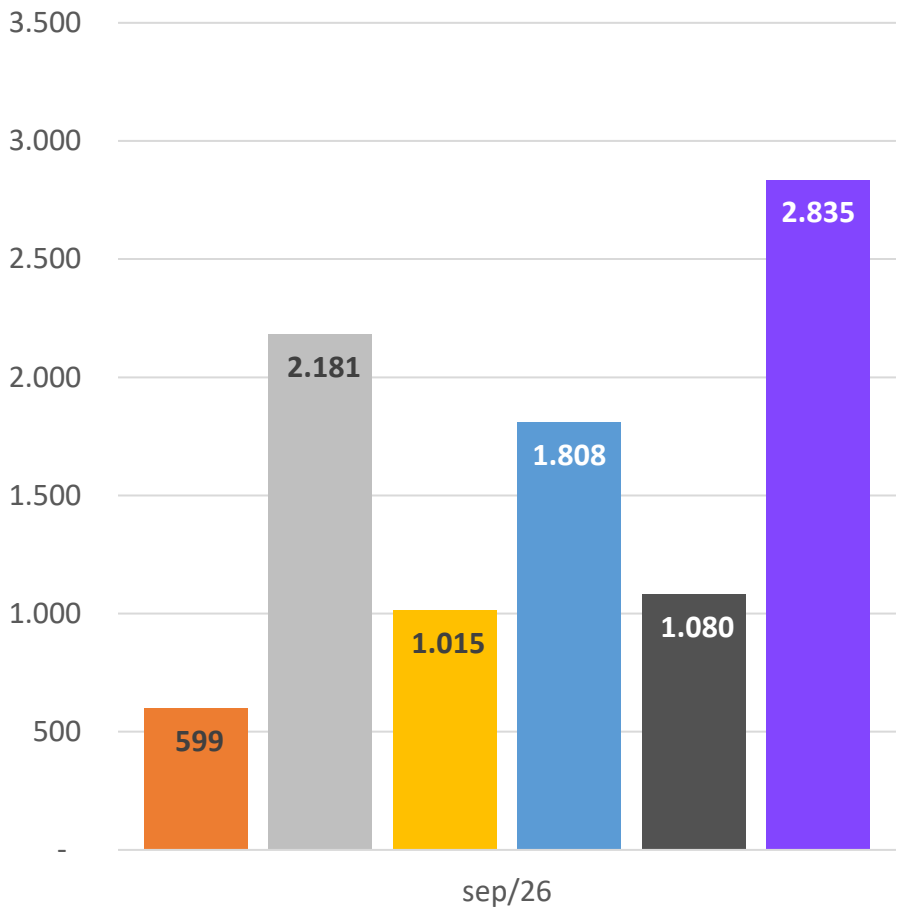
Average supply of electricity in Belgium

MW; Average generation output and net import flow per month for Belgium

October 2025



October 2026



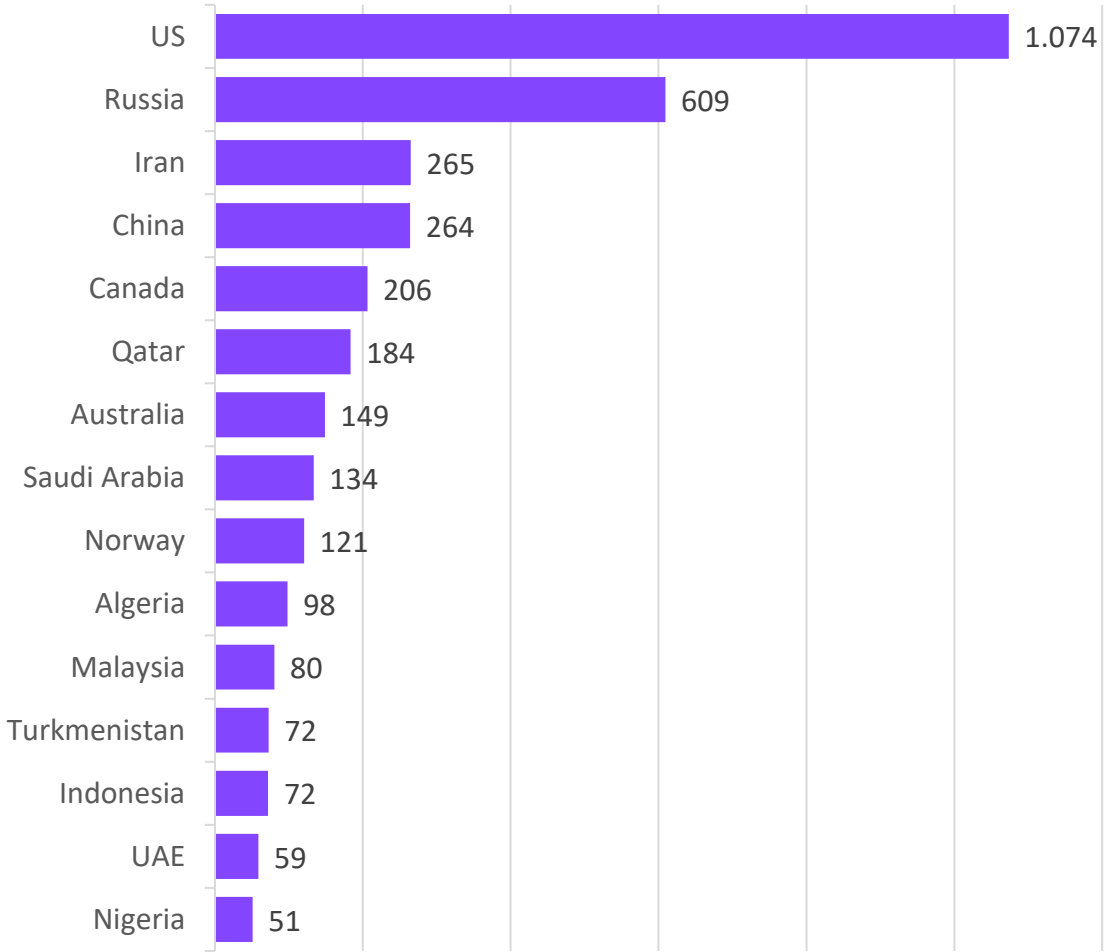
Nuclear | Natural gas | Solar | Wind | Others | Net import

Overview of world's largest natural gas producers and consumers

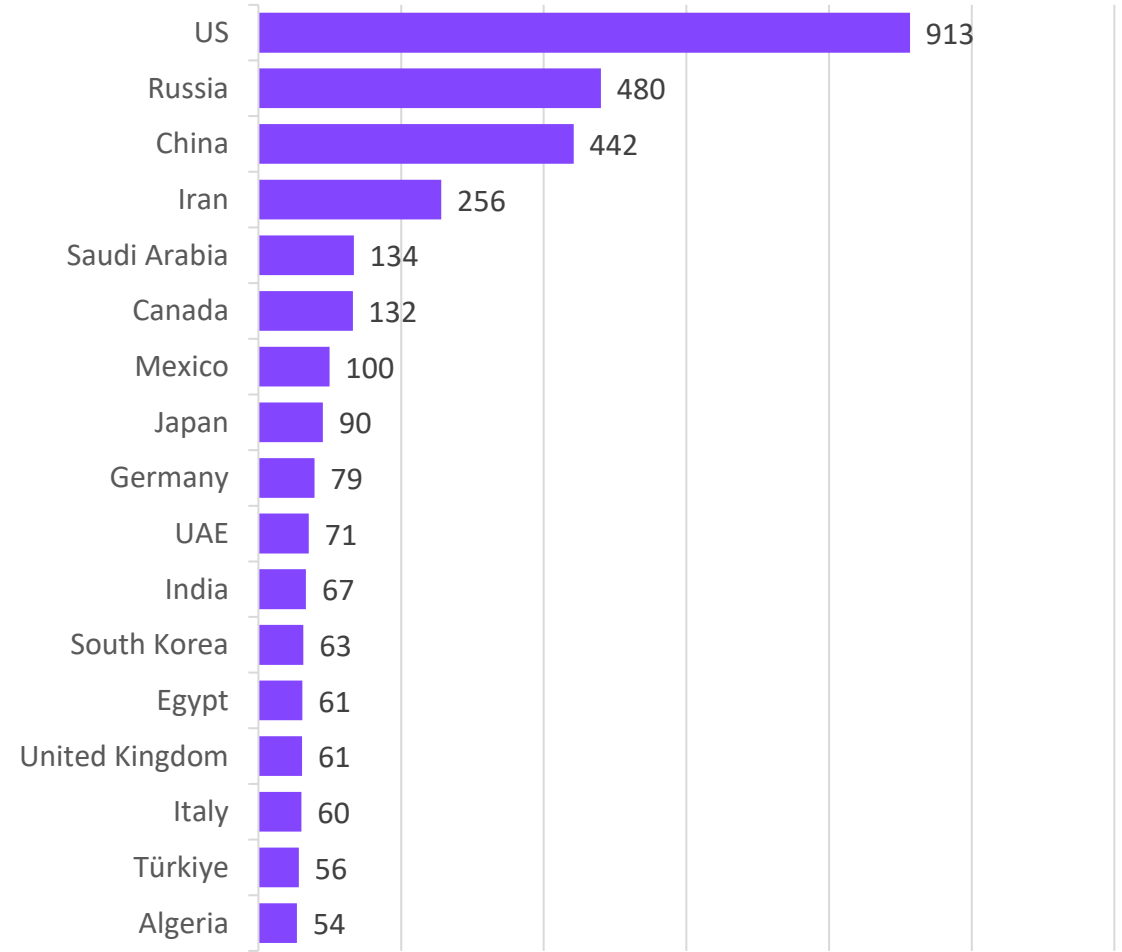
PowerPulse

BCM; 2025 data; Largest countries producing and consuming natural gas; Includes all countries with at least 50 BCM consumption or production of natural gas

Largest gas producers



Largest gas consumers

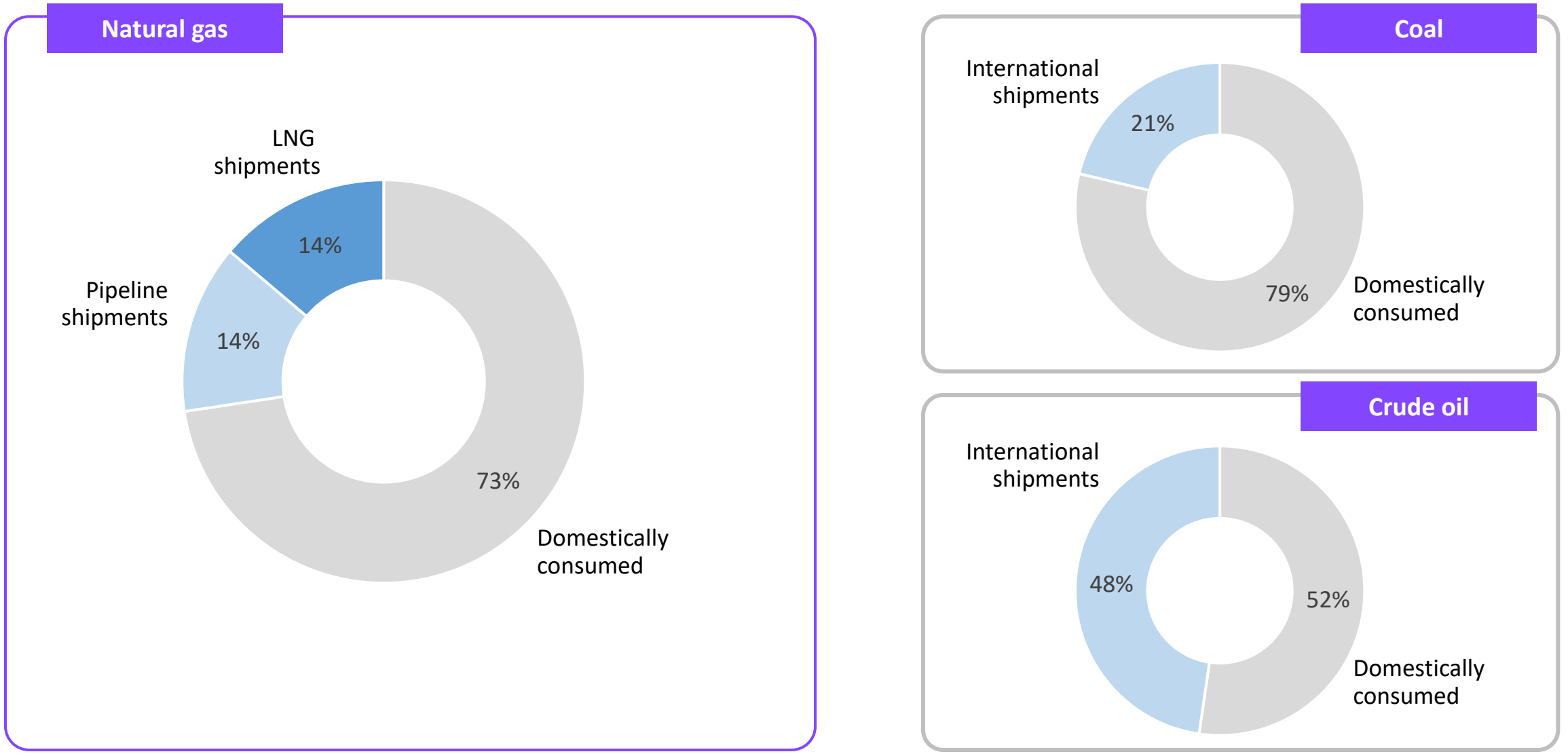


Source: Energy Institute data

About one third of natural gas production is shipped internationally

PowerPulse

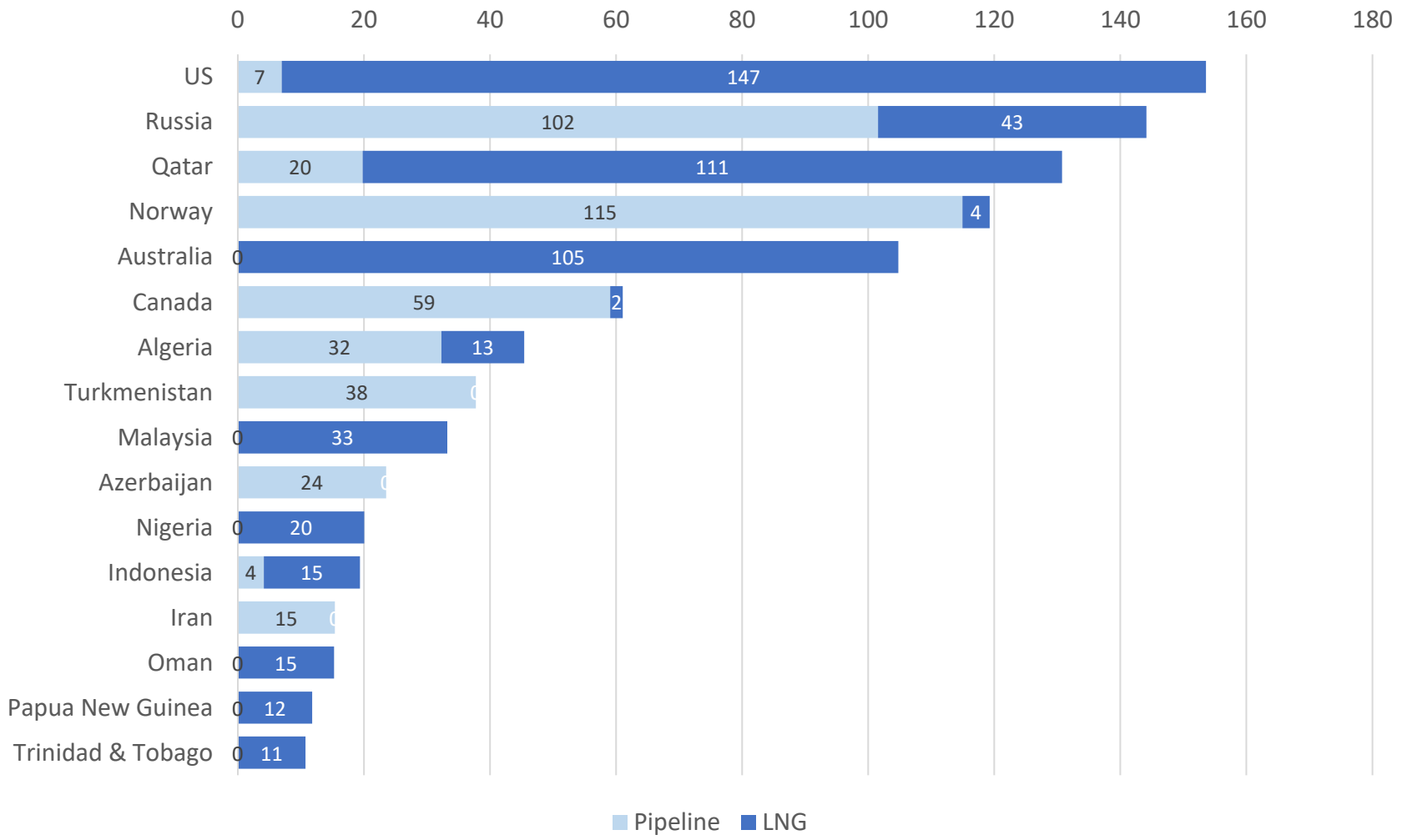
Share of domestic consumption vs international shipments for different fossil fuels in 2025



Source: Energy Institute data, PowerPulse calculations

Largest net exporters of natural gas in 2025

BCM net exports by pipeline and LNG in 2025



Source: Energy Institute data

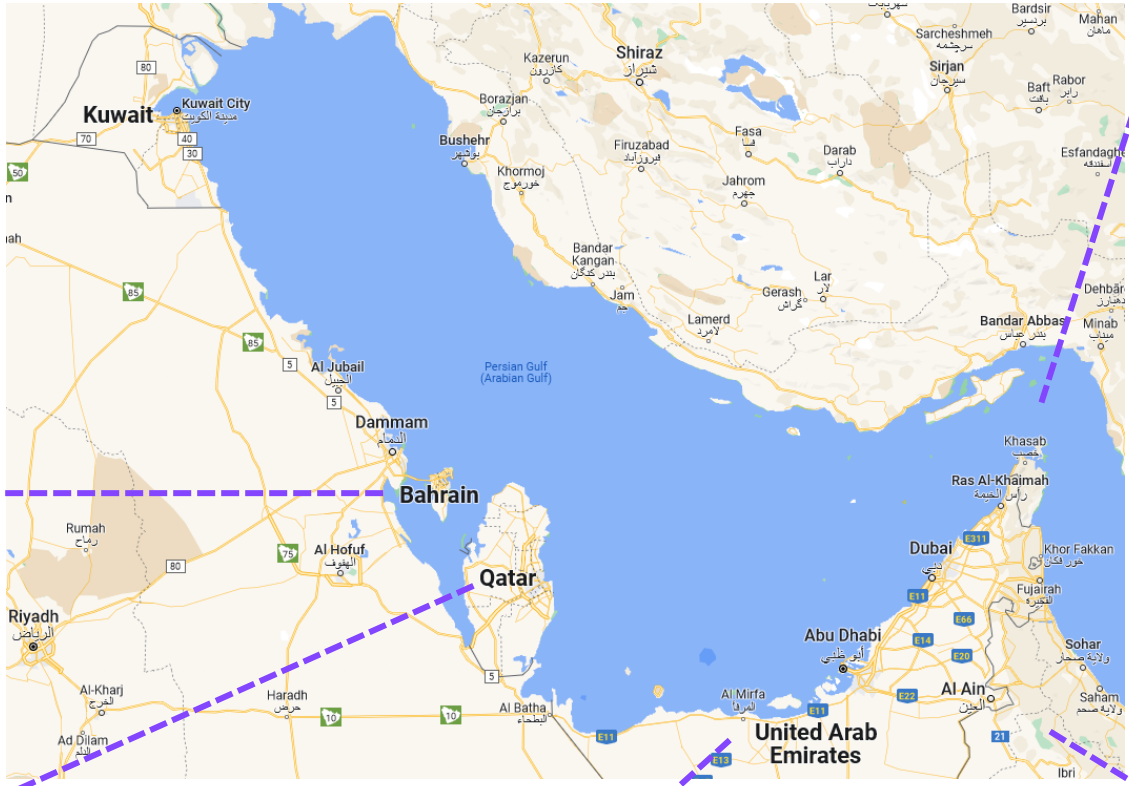
US-Iran conflict: 20% of the world's 2025 LNG and oil exports were being shipped via the Strait of Hormuz

PowerPulse

US - Iran:

US launched attacks on **28th of February** to bring down the Iranian regime

Map of the Persian Gulf area:



Strait of Hormuz:

- Narrow sea passage between **Iran** (North) and the tip of **Oman** (South)
- Accounts for **20% of global LNG flows** and **~20% of global crude oil production**

Bahrain: Basis of US Navy's Fifth Fleet, plays crucial role in maintaining security in the area (US moved second aircraft carrier to Middle East in June 2025)

Qatar LNG export facility **(111 BCM in 2025)**)

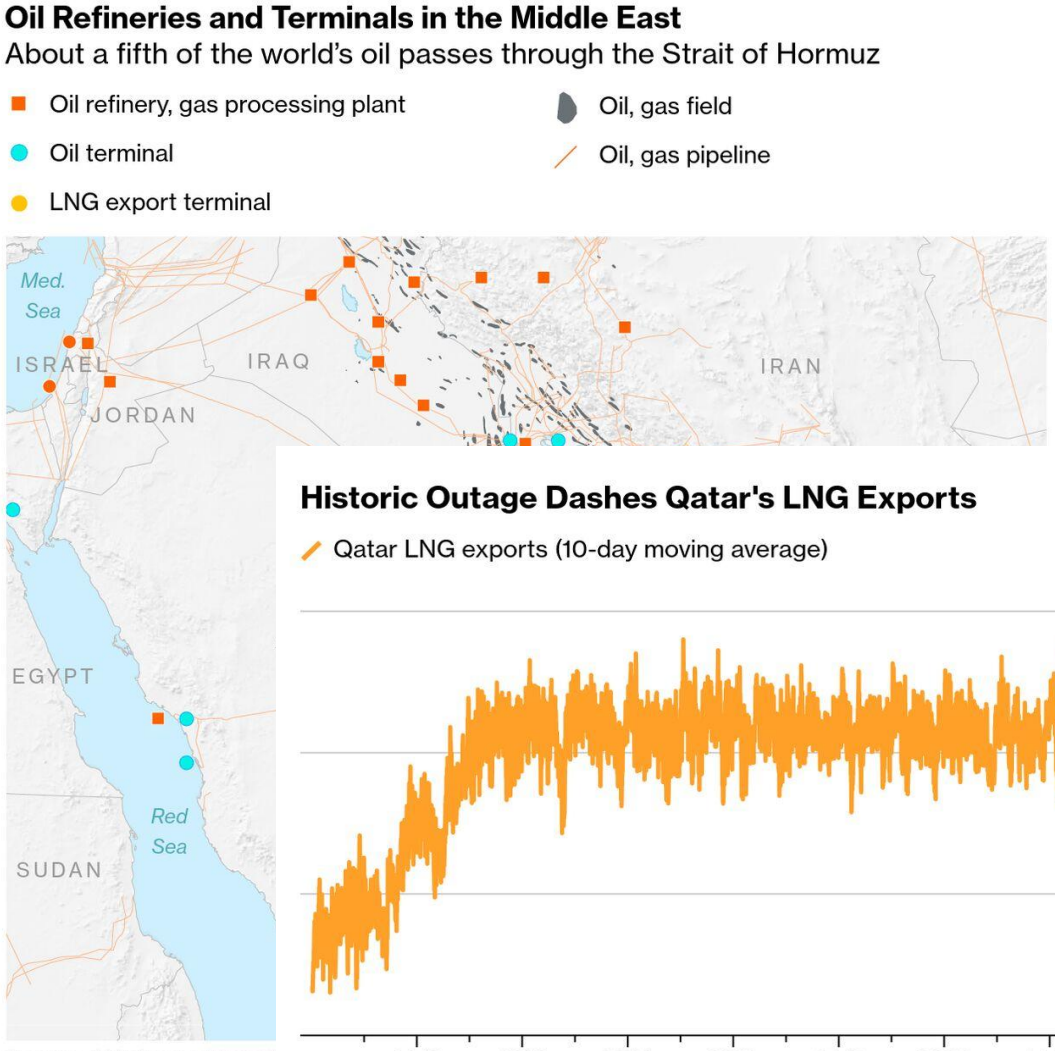
UAE LNG export facility (**7 BCM in 2025**)

Oman's LNG export facility (**15 BCM in 2025**)

Sources: Statistical review of World Energy Data, Google Maps, Bloomberg, Forbes

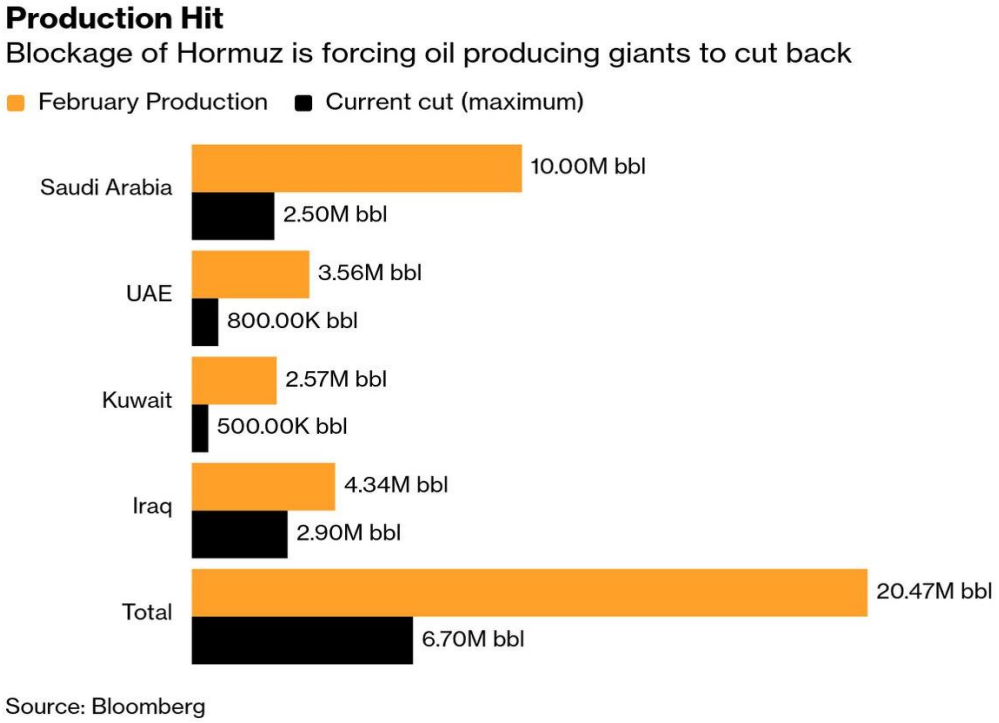
Strategic facilities were targeted adding pressure

PowerPulse



- **Qatar** shut down LNG production at the world's largest export facility after it was targeted in an Iranian drone attack. QatarEnergy's **Ras Laffan plant covers about a 20% of global LNG supply** and the unprecedented halt now threatens energy security worldwide.
- **Aramco** also halted operations at **Saudi Arabia's** largest **oil refinery** at **Ras Tanura** on the Persian Gulf coast after a drone strike in the area.

- **The UAE** halted production at **its Ruwais oil refinery** as a precautionary measure after a drone strike.



LNG exports via Hormuz reached a wartime high in September, but remain ~75% below pre-war levels

PowerPulse

LNG cargoes transiting the Strait of Hormuz per month, 2026 (Kpler)

Pre-war	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
~90	~0	<10	<10	15	<15	~0	21	10
≈3 cargoes per day	Strait effectively closed	4 LNG carrier transits	8 LNG carrier transits	Ceasefire rebound	Very limited crossings after 11 July	No visible Qatar-linked crossings	Wartime high	Rebound stalled

Conclusions

- **21 LNG cargoes** in September: the highest monthly total since the war began on 28 February
- Still **~75% below** the pre-war run-rate of ~90 cargoes per month
- **October rebound has stalled**: attacks hit a wartime high and Kpler expects Qatar's October exports to roughly halve from September[1]
- Recovery is **fragile**: the June rebound reversed in July–August after renewed escalation
- Qatar exported only **18 cargoes** in the first six months of the war vs 509 a year earlier (ICIS)

Interpretation of the numbers

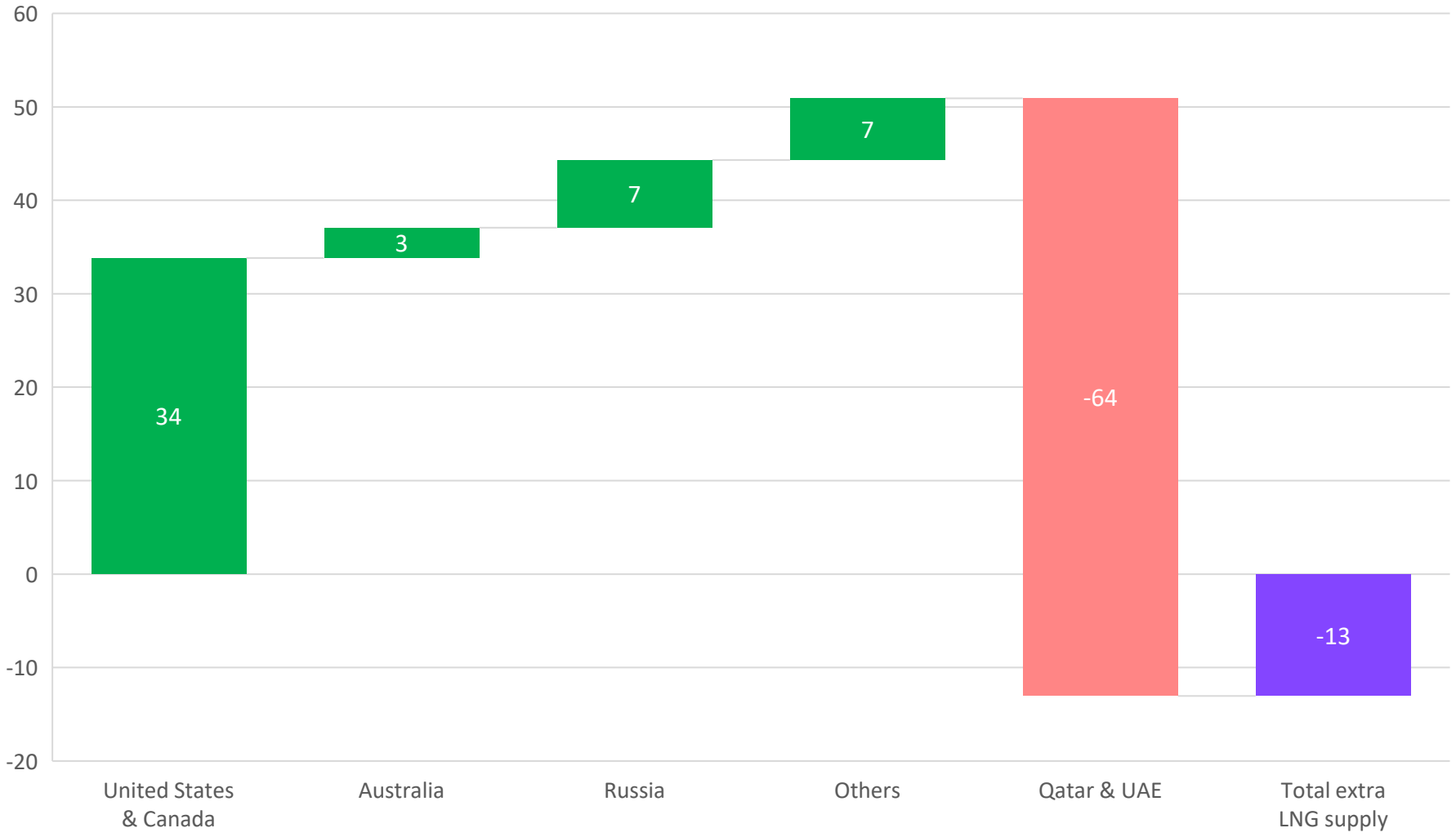
- **Cargoes ≠ transits**: Kpler's 20 September carrier transits count vessels in both directions, including empty ships
- Trackers differ for September: **Kpler 21, S&P Global 19, Bloomberg ~17**
- **Dark transits** (AIS switched off) make all counts approximate
- For Apr–May and Jul–Aug **no exact monthly figures** are published

1. Kpler projection of Qatar's October LNG exports, reported by Modern Diplomacy (12 Oct 2026)

Source: Kpler via Reuters, Bloomberg, LSEG and Modern Diplomacy (Jul–Oct 2026); ETI (3 Oct 2026); S&P Global; ICIS; Montel; PowerPulse analysis

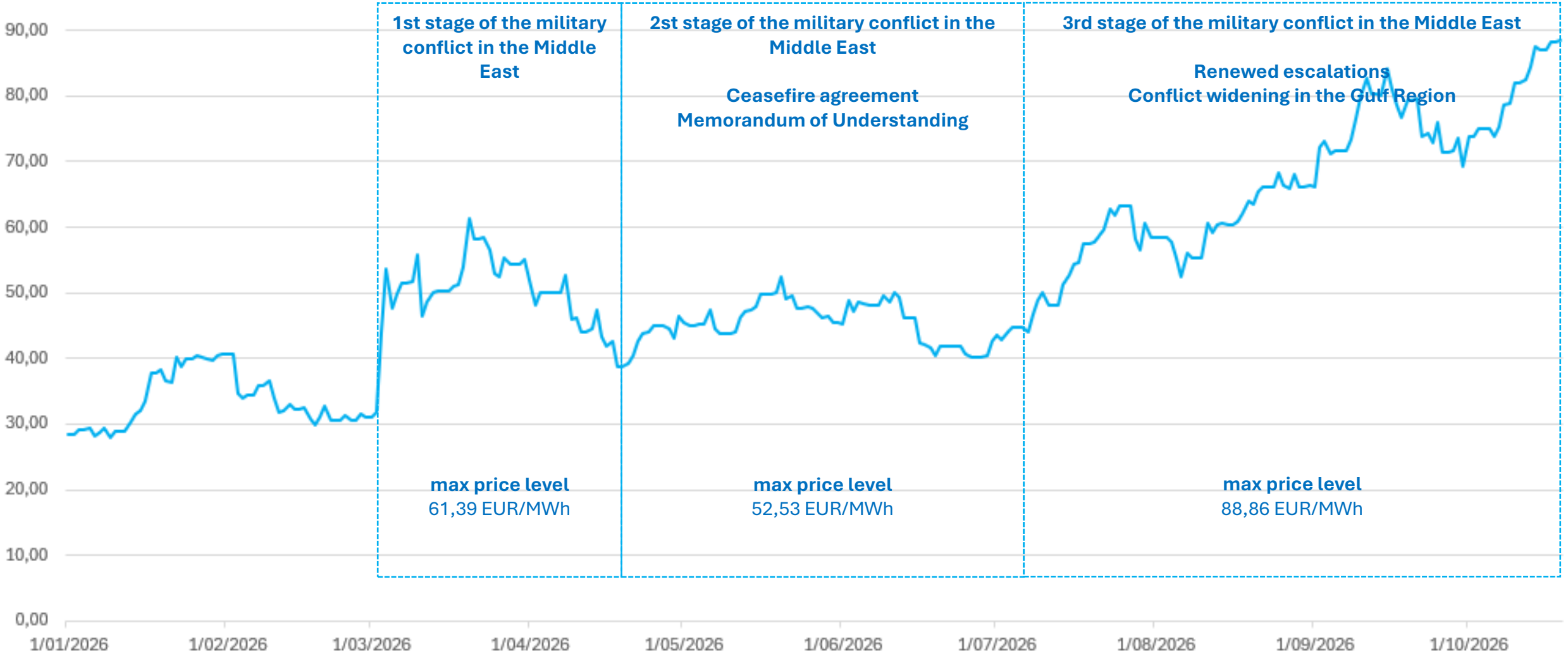
Additional LNG supply in YTD 2026 vs 2025

BCM; YTD Jan-Oct, partially preliminary data from customs



Gas price: Day Ahead Spot Overview

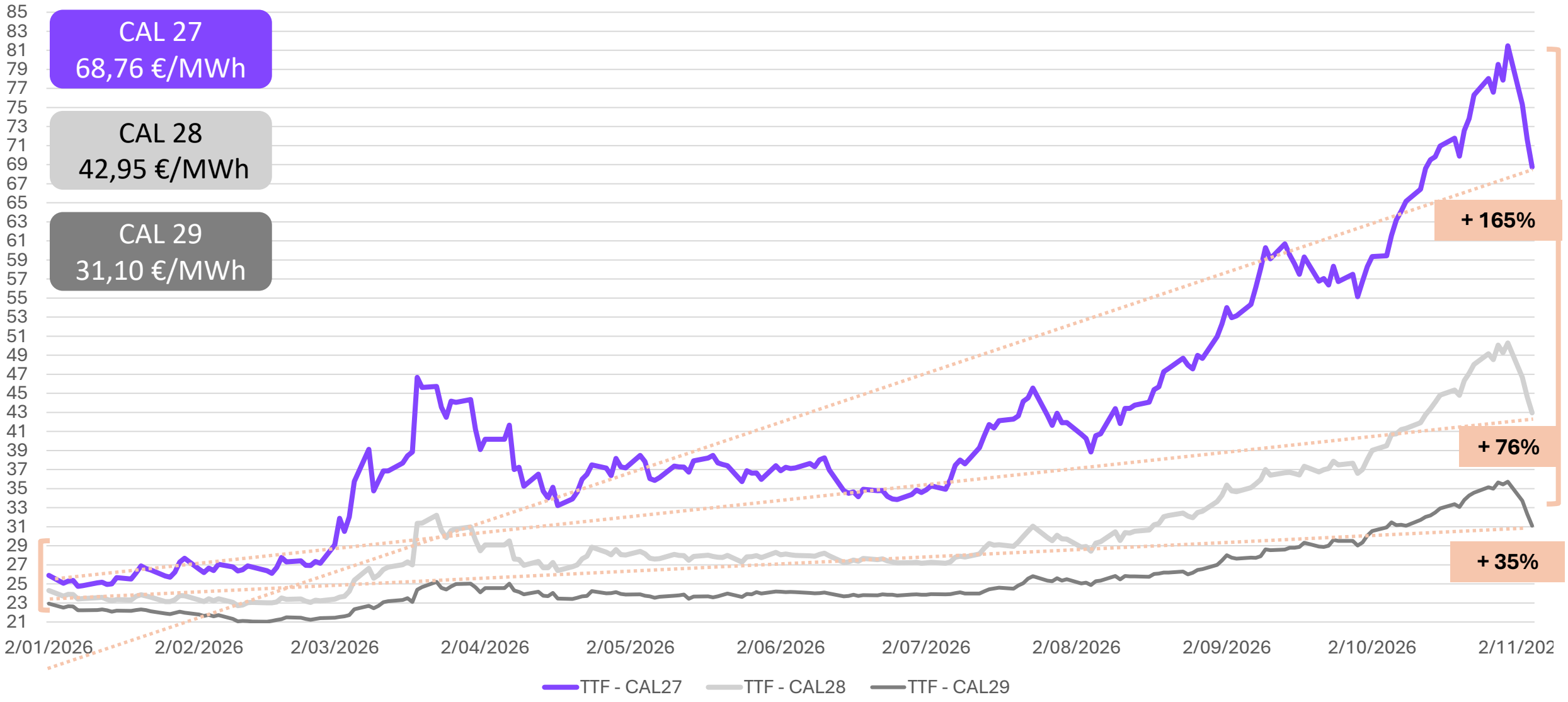
EUR/MWh; Daily TTF natural gas spot prices



Forward TTF Natural gas prices

PowerPulse

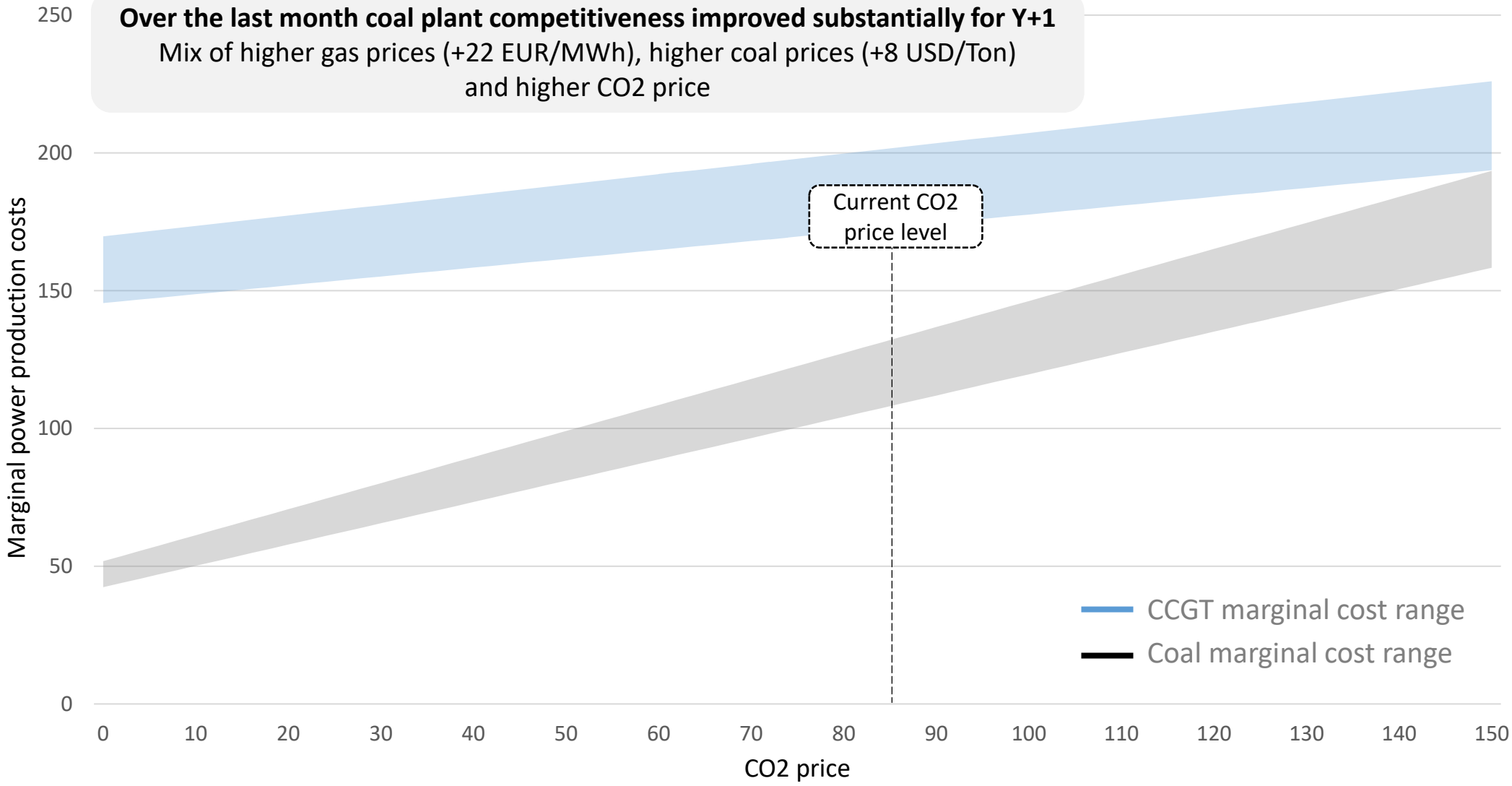
Forward TTF natural gas publication prices in EUR/MWh – 16/10/2026



CAL 27 - Coal to gas switching trajectories

EUR/MWh marginal power producing costs at different efficiency levels; Gas price of 81 EUR/MWh and coal price of 145 USD/Ton (as of 30/10/2026)

Over the last month coal plant competitiveness improved substantially for Y+1
Mix of higher gas prices (+22 EUR/MWh), higher coal prices (+8 USD/Ton) and higher CO2 price



Note: Efficiencies applied in HHV: 48%-56% for CCGT generation, 36%-44% for coal generation; This range includes most coal and gas CCGT power plants in Western Europe

European LNG import levels in recent years

7-day moving average; BCM per week of natural gas; EU and UK; Send-out volumes of European LNG terminals on weekly basis; Data from ALSI



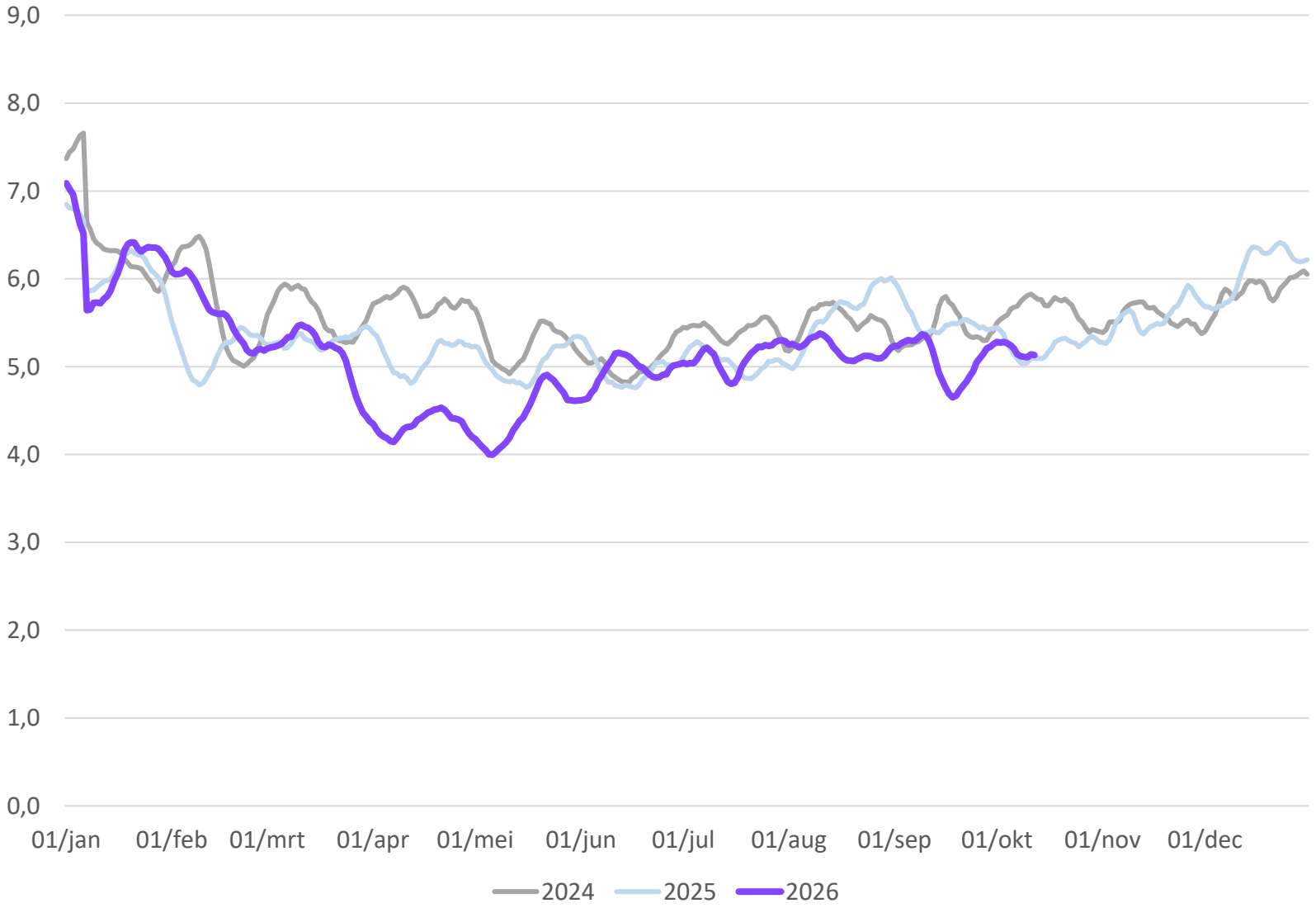
Conclusions:

- Imports totaled 10,9 BCM in September, this is 1,8 BCM lower than in 2025 (-14%)
- Europe attracted more LNG than last month (+0,8 BCM) as spot prices were elevated
- LNG imports were volatile in October: Low in the beginning of the month, but increasing strongly towards the end of the month
- YTD 2026 LNG import volumes are 5,1 BCM lower than in 2025 (-4%)
- Total LNG import levels into Europe and UK in 2025 were 149 BCM

Source: Gas infrastructure Europe

Rolling weekly LNG imports into main Asian markets

7-day moving average; BCM per week of natural gas; LNG imports into China, Japan, South Korea, India and Taiwan



Conclusions:

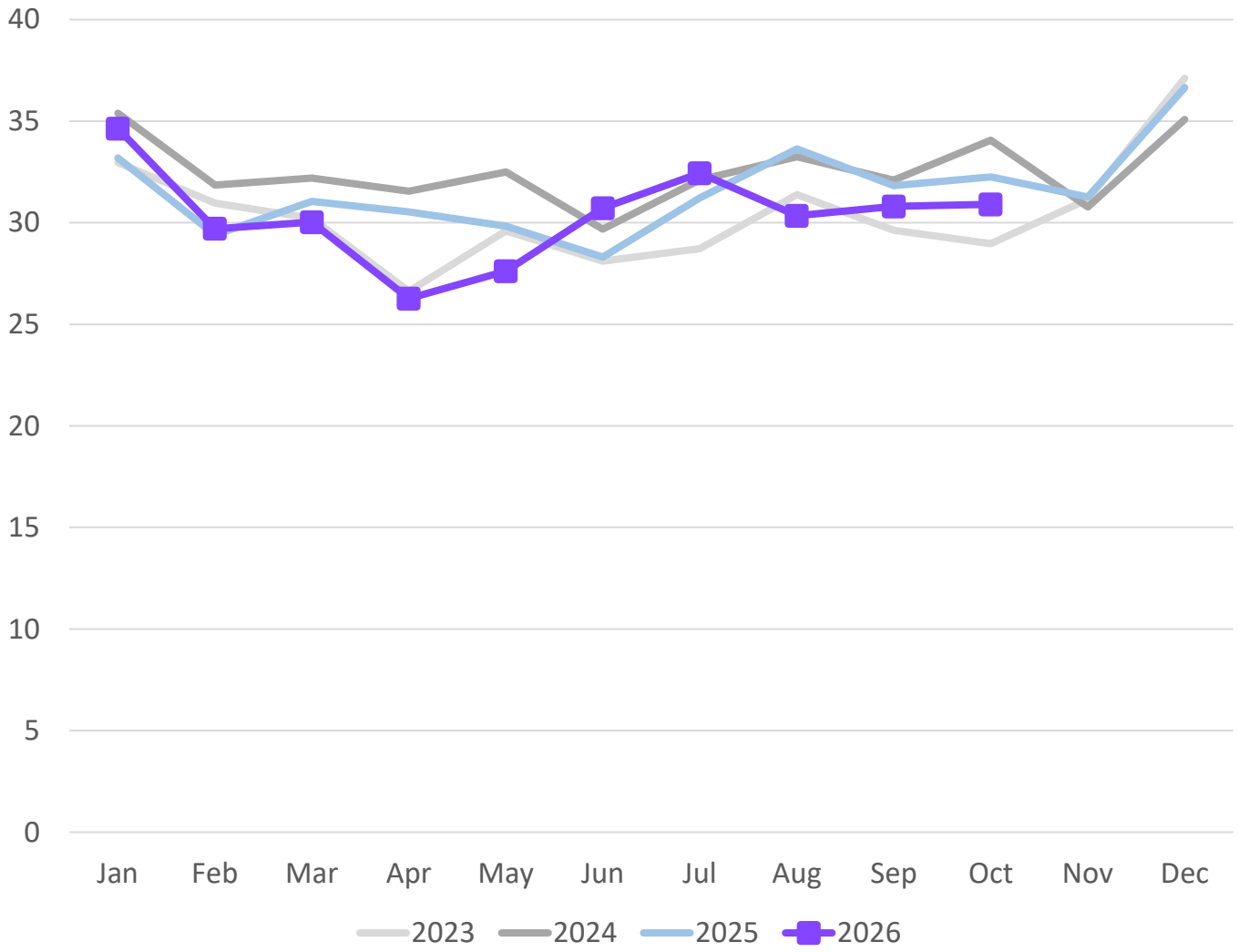
- Current import levels are similar last year
- However, during mid-September LNG imports into main Asian markets was 10% below 2025 levels
- Competition with Europe remains strong, currently Asian buyers are attracting the marginal LNG volumes

Source: Customs data

Total Asian LNG demand

BCM gas import per month; Final historical figures until Sep 2026, preliminary figures for Oct 2026 (published in Nov 2026 by different customs departments)

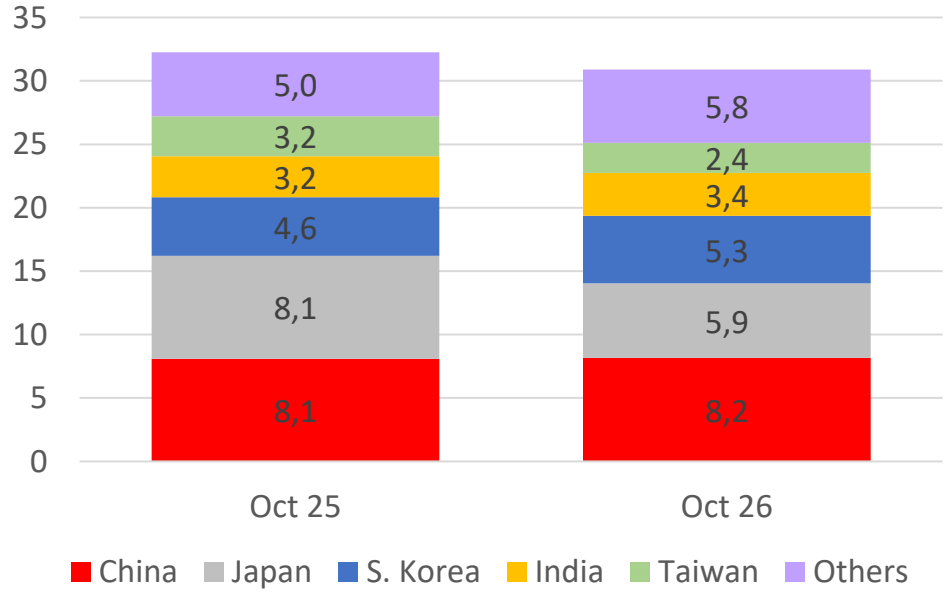
Total Asian LNG demand (2023-2026)



Conclusions

- Asian LNG demand in October 2026 was **slightly below last year** and flat compared with September
- Year to date, demand is **around 3% below 2025**
- **Japan drove the decline**, while China held steady and South Korea grew
- Taiwan also fell, but **smaller importers increased**, partly offsetting the drop

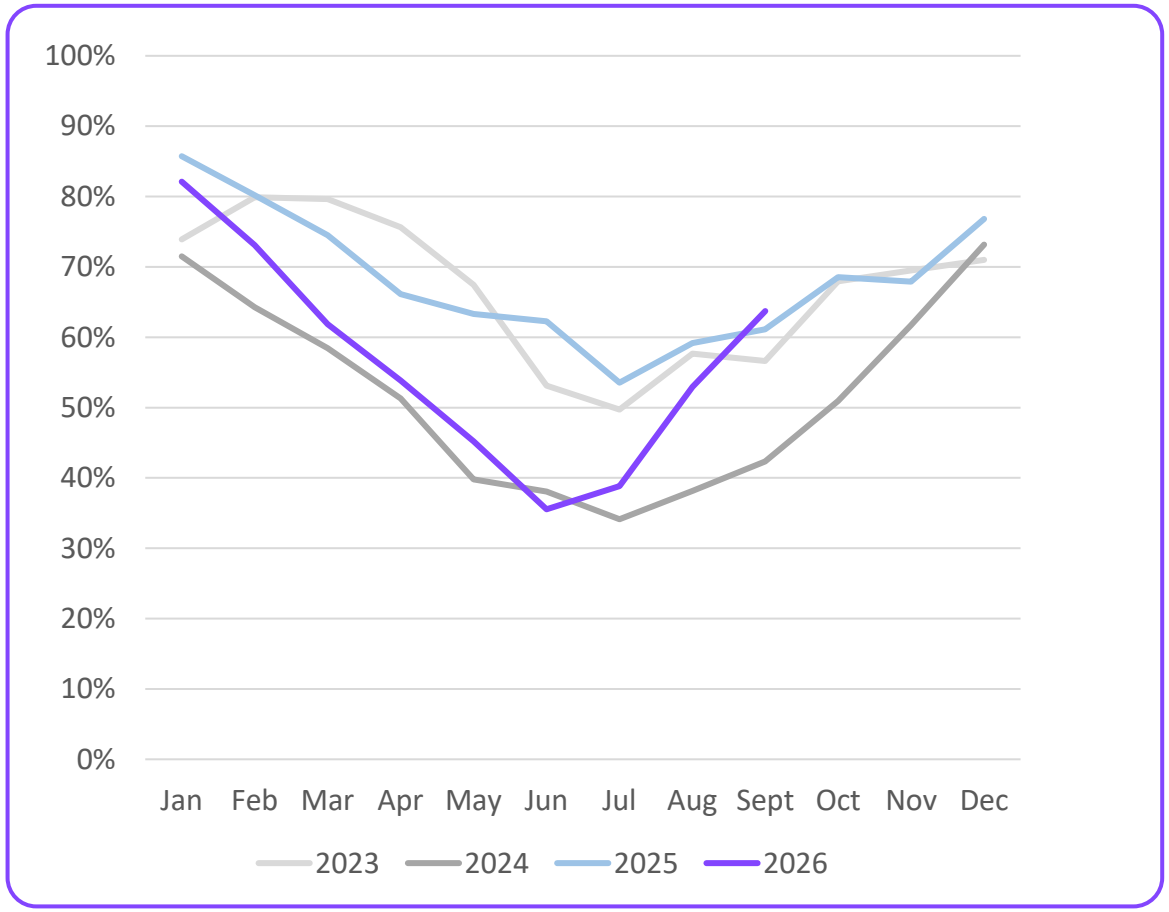
Breakdown by importer (most recent month)



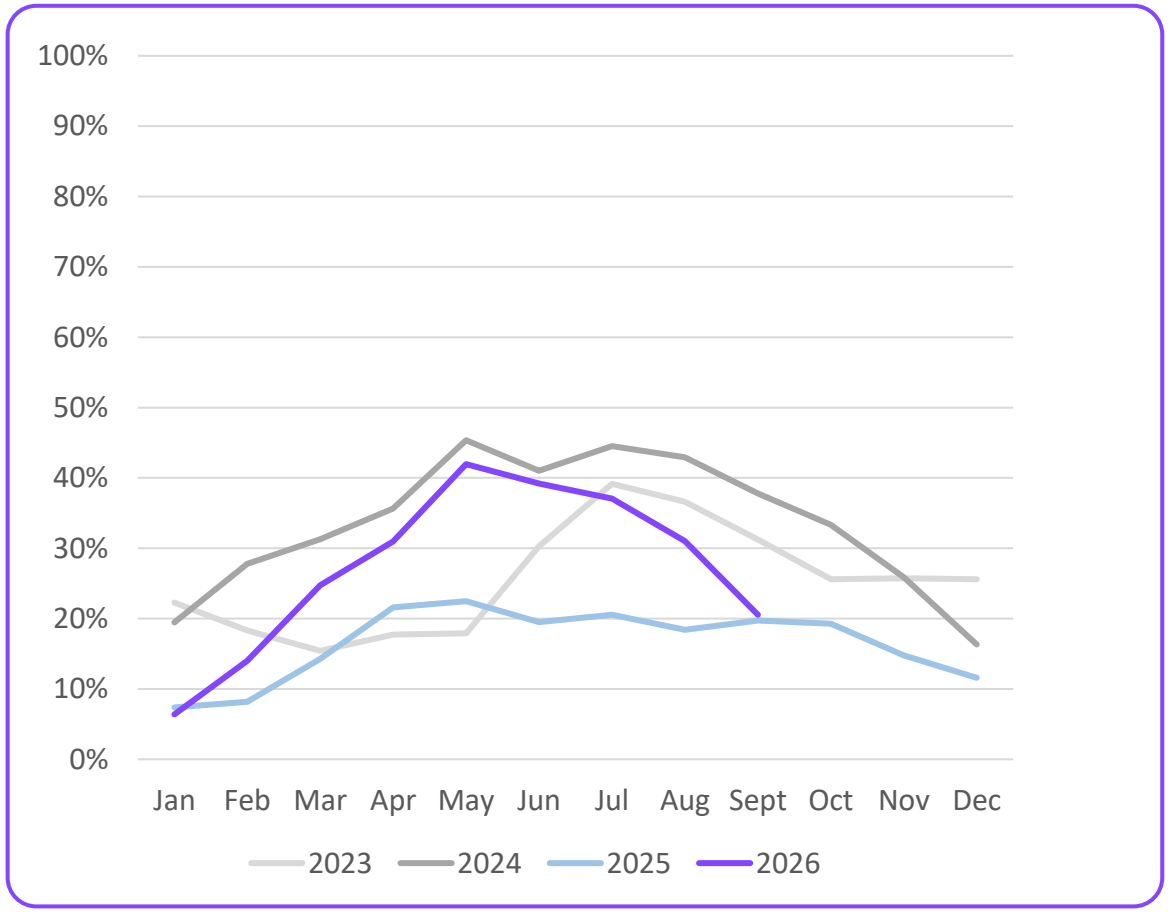
Destination of US LNG exports

PowerPulse

Share of LNG flows from the USA to Europe (incl UK and Turkey)



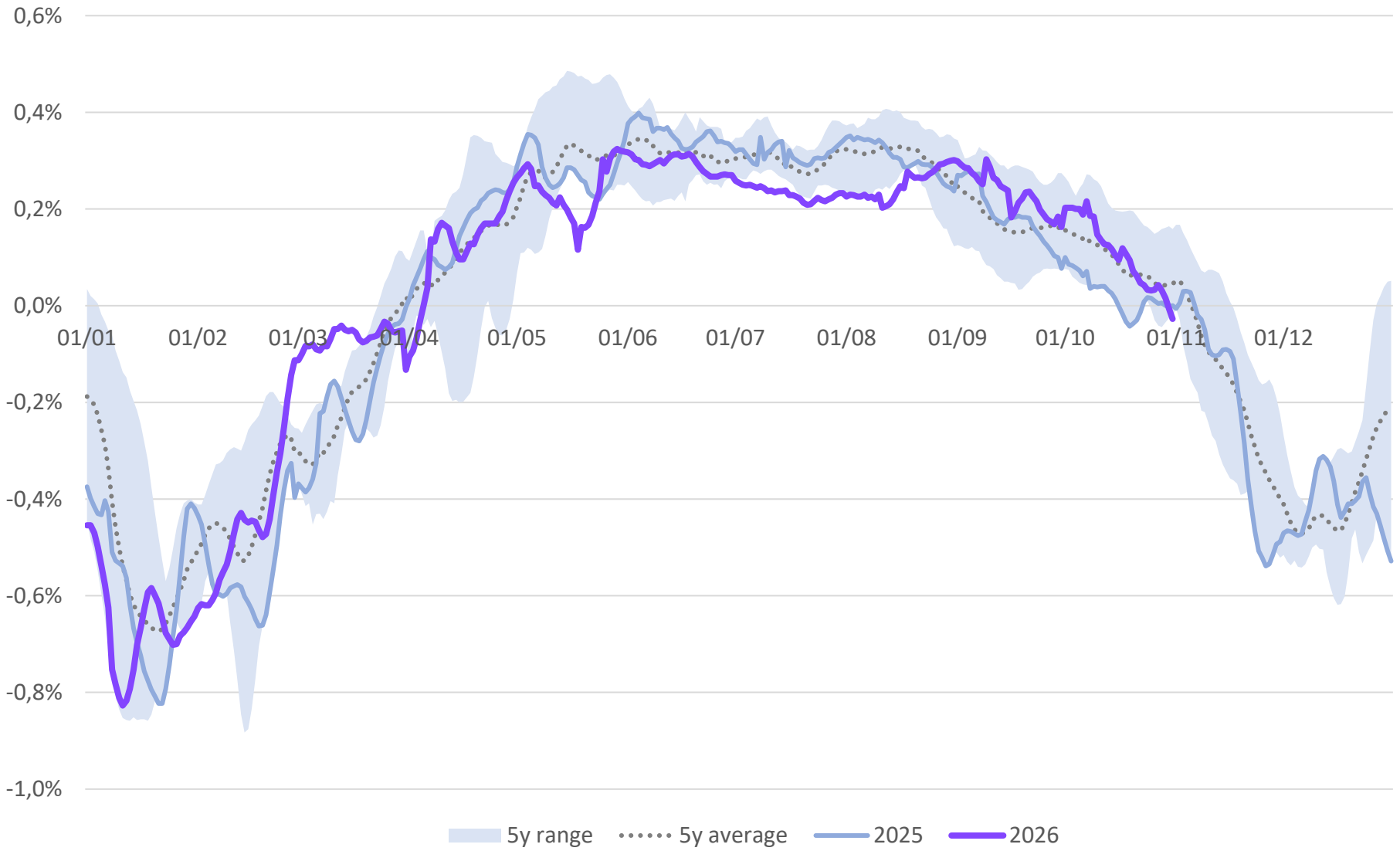
Share of LNG flows from the USA to Asian markets



- Due to higher margins in Asian delivery points, **US is sending a higher share of its LNG to Asia in 2026**
- Big difference compared to 2025 when US LNG was primarily sent to European markets
- **Strong seasonal effect:** In **winter** period US LNG flows tend to come for **+70% to Europe**, while in **summer destination is more volatile**

Daily EU gas storage withdrawal/injection rates

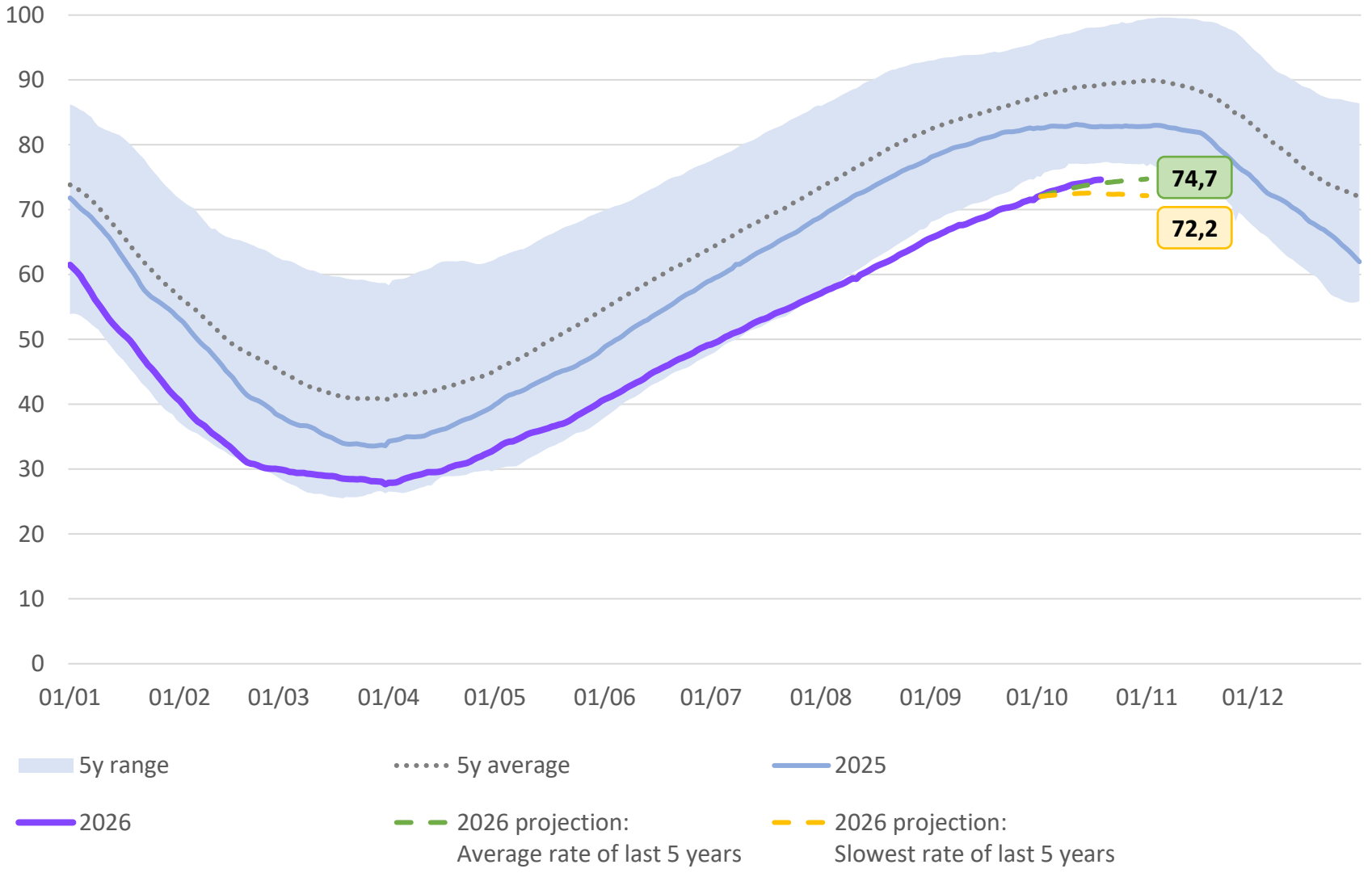
%; 7-day Moving Average of daily gas storage withdrawal rates; Withdrawal rates expressed as % of total EU gas storages



Source: GIE AGSI data

European gas storage rates – Projections towards 1 November

%; Storage filled up as % of maximum storage level in Europe; Projections based on historical injection rates, not intended as a firm forecast



Projections methodology:

- Average injection rate of the last 5 years for each individual day
- Slowest injection rate of the last 5 years for each individual day (i.e. not the year with the lowest injection during the whole period, but the lowest injection monitored during each individual day)

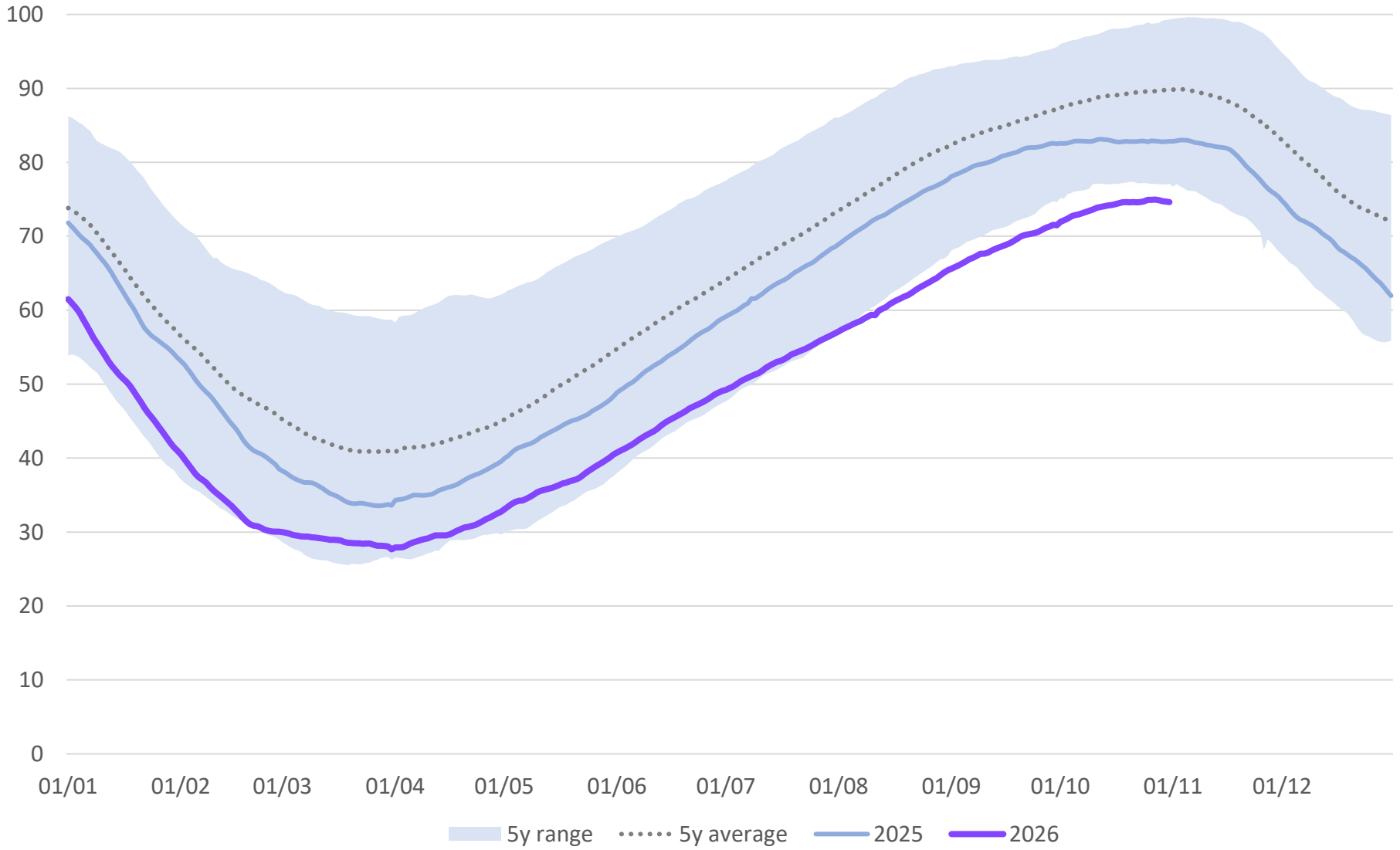
Conclusions:

- It is likely that storages will be filled below the lowest range of the last 5 years (lowest storages since statistics started in 2011)
- Injection rates have recovered strongly since mid-August
- September is the month with the highest range in injection rates outside of the winter period, which scored very well in 2026
- Current level (21/10) is **74,62%**, which is well above our projection scenarios from 01/10:
  - Average injection rate (+0,57%)
  - Slowest injection rate (+2,17%)

Source: GIE AGSI data

European gas storage rates

%; Storage filled up as % of maximum storage level in Europe



Source: GIE AGSI data

- The current energy crisis
- **Future expectations – near- and midterm**
- CO2 & ETS2
- Q&A



ENTSOG Winter Supply Outlook

PowerPulse

Winter Demand	RU Supply	LNG Scenario	Demand Response Needs	Final UGS Filling Level
Reference Winter	Minimised	Optimal	No	29%
		Tight	No	13%
		High	No	31%
	Disrupted	Optimal	No	21%
		Tight	2%	11%
		High	No	26%
Cold Winter	Minimised	Optimal	7%	11%
		Tight	12%	11%
		High	No	20%
	Disrupted	Optimal	9%	11%
		Tight	15%	11%
		High	3%	18%
5YA -15%	Minimised	Optimal	No	32%
		Tight	No	29%
	Disrupted	Optimal	No	32%
		Tight	No	22%

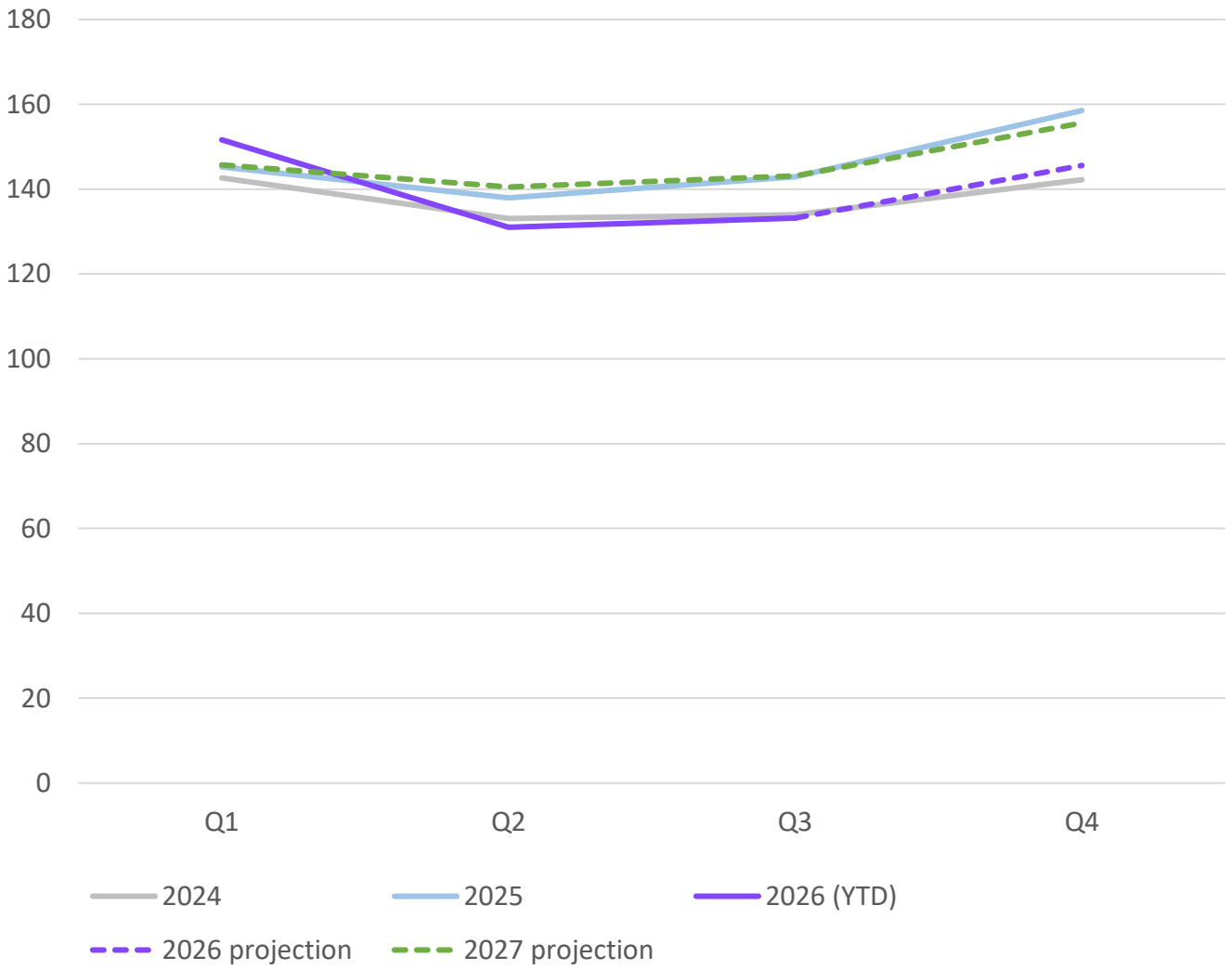
Table 1. Winter Supply Outlook Results Summary[3]

- Difference between a normal and a cold winter are significant
- In a cold winter scenario demand responses are needed in 5/6 scenarios
- Storage levels on 1st of April are expected to end up between 11-32%

Source: SO0072-26_Winter Supply Outlook 2026-27.pdf

Expected quarterly LNG supply without sizeable Hormuz flows

BCM per quarter; Historical figures for 2024, 2025 and Q1-Q2 2026; Projections for Q3-Q4 2026 and 2027
Scenario without full reopening of Strait of Hormuz (average Qatar and UAE LNG flows during March-June 2026 were used in the projections)



Conclusions in case of no sizeable Hormuz flows:

Q4 2026:

- LNG supply **well below 2025** levels, and only just above 2024 levels

2027:

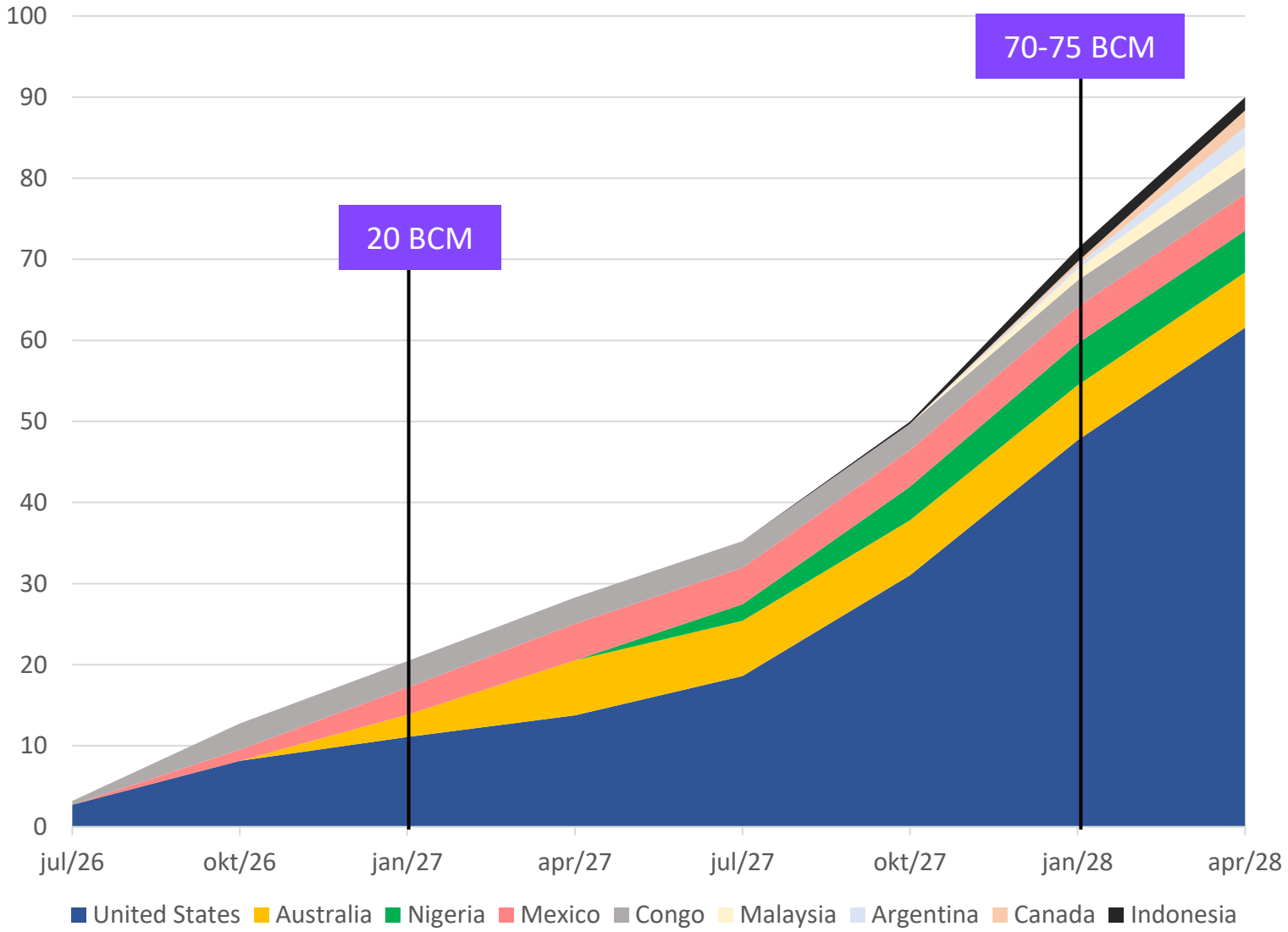
- During **Q1** LNG flows expected to be **well below 2026** and similar to 2025
- **From Q2** onwards LNG levels are expected to **recover** to **2025 levels**
- Thanks to **new projects** LNG flows will be **well above 2026** levels from Q2 onwards

Impact on hedging:

- **Most of the high risk** in LNG markets is in **Q4 2026 and Q1 2027**
- **From Q2 2027** markets are expected to be **more balanced** (but low EU storages could impact this)
- **In case Hormuz** flows **return** to the market, LNG balances will **loosen significantly**

LNG flows expected from new projects (after June 2026)

BCM/y additional LNG flows from new capacity in the coming two winter periods (trains ramping up after June 2026)



Winter 2026/27

- Limited new capacities come online in winter 2026/27
- 20 BCM from new projects after June 2026 (earlier in 2026 extra new LNG also came online)
- Main projects that contribute are Golden Pass (USA), Pluto (Australia), Energia Costa Azul (Mexico) and FLNG Congo

Winter 2027/28

- Significantly more LNG is expected to be available by winter 2027/28
- 70-75 BCM from new projects vs June 2026
- Most new LNG expected to come from the US

Natural gas indicative price trajectories for coming winter

PowerPulse

Price drivers for Winter 2026 - 2027

	Strait of Hormuz traffic	Winter	TTF Spot Q4 2026 and Q1 2027
Pessimistic	No reopening	Cold	110 EUR/MWh
Base	Current market consensus*	Average	87 EUR/MWh
Optimistic	Full reopening	Mild	60 EUR/MWh

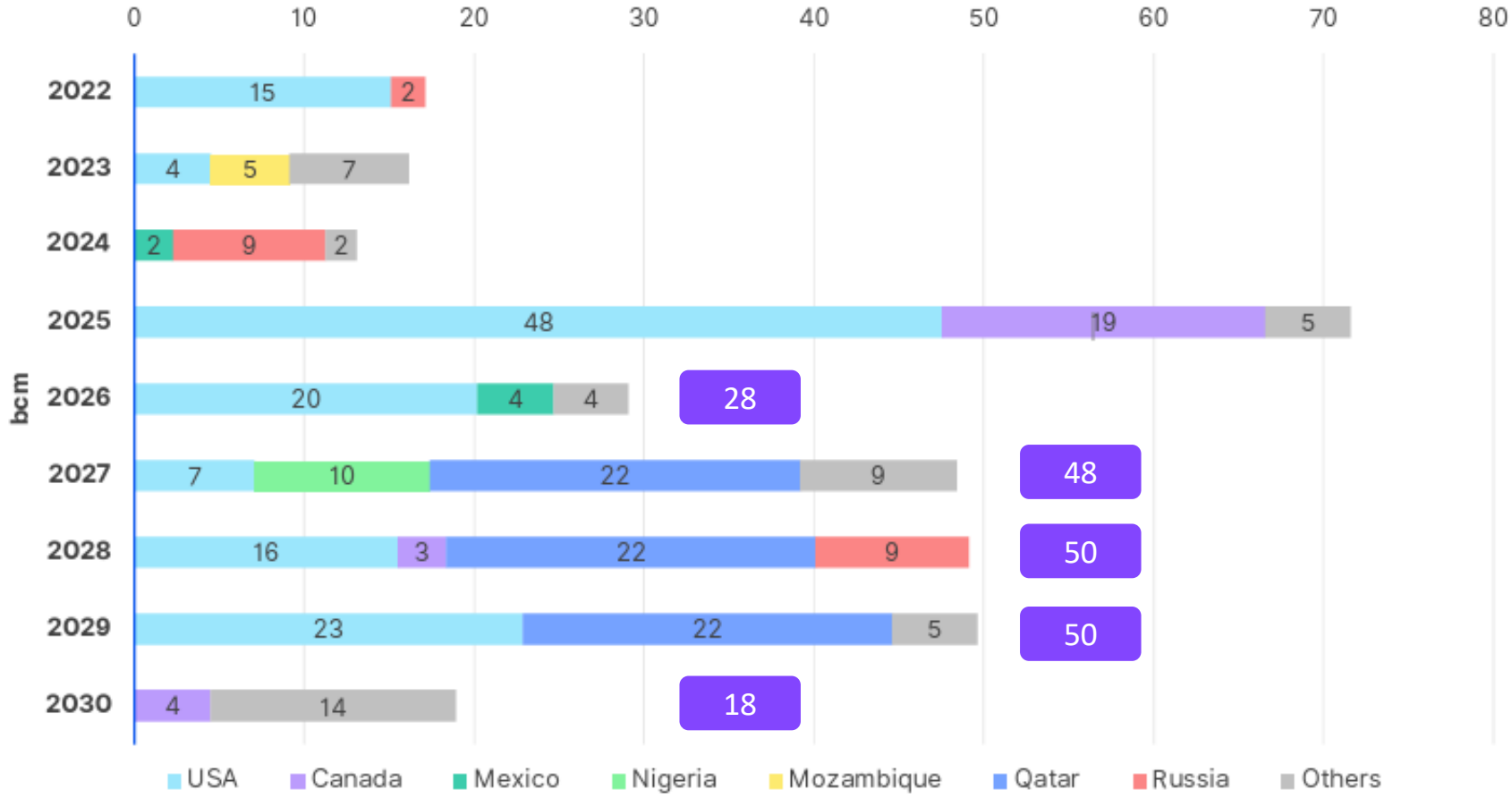
Base case: Forward prices as of 16/10/2026
Pessimistic trajectory: Recent public forecasts of 110 EUR/MWh by Montel and Enervis (July 2026) and above 100 EUR/MWh by Goldman Sachs (August 2026) in case of no Hormuz flows in coming winter.
Optimistic trajectory: Average forward price levels for Winter 2026/27 between 1 June and 15 July 2026, when market was more optimistic of Hormuz reopening increased by 10€/MWh to account for low storage levels

* Current market consensus is implied in market prices. Current forward prices indicate a mix of trader's views about traffic through Strait of Hormuz
Note: This slide presents indicative price trajectories based on pre-defined strait of Hormuz traffic and winter temperatures. Not all possible scenarios were analyzed. Actual market price could be different from the trajectories shown on this slide.
Source: ICE, Montel, Enervis, Goldman Sachs, PowerPulse assumptions

ACER outlook for new LNG supply capacity

PowerPulse

Figure 5: New capacity developments in global LNG liquefaction (bcm) - 2022 – 2030



Total new annual capacities in BCM: 312

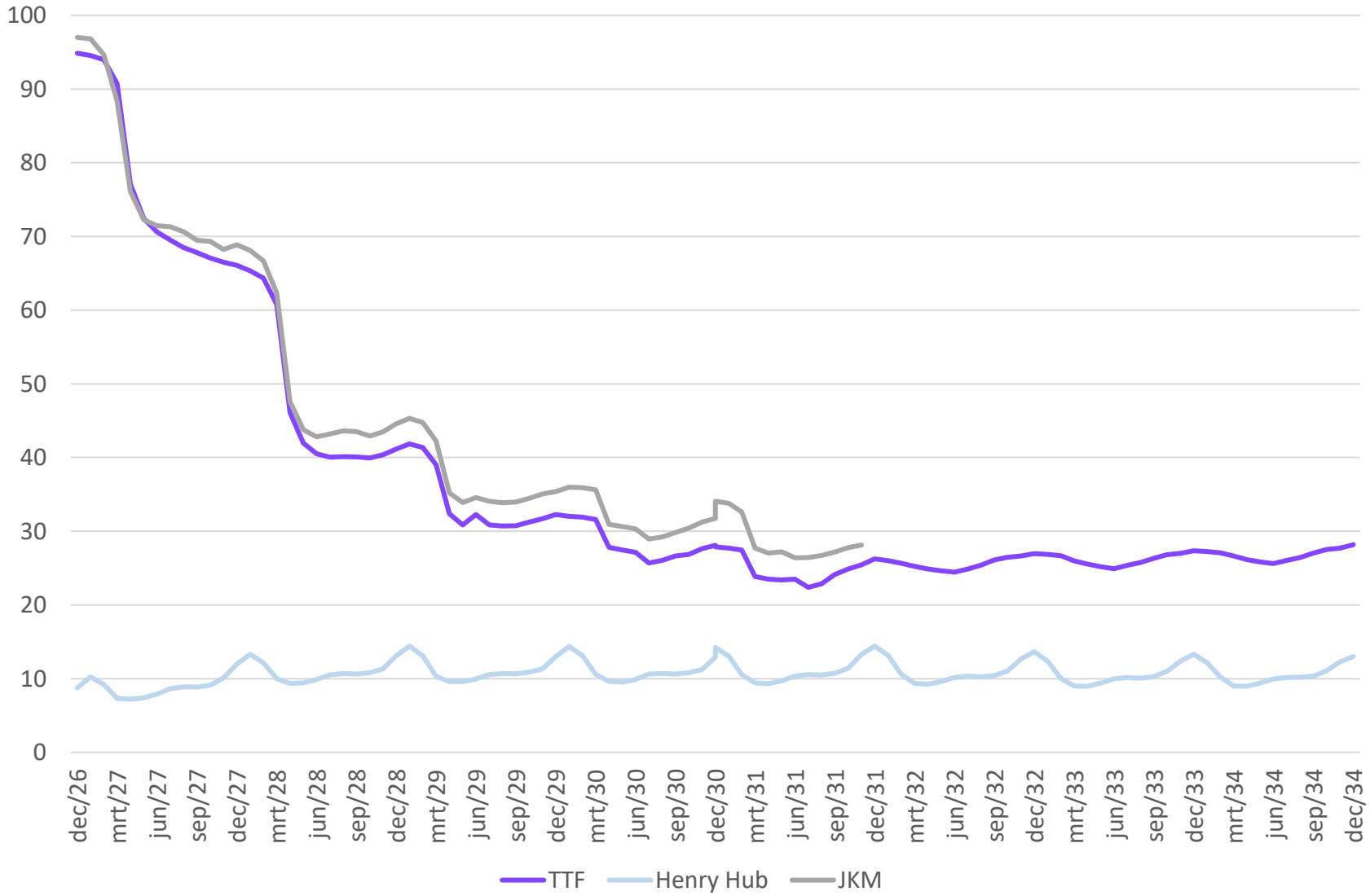
Total of 166 BCM new LNG capacities expected to come online between 2027-30

Source: ACER based on data from S&P Global.

Source: ACER 2026 analysis

International comparison of natural gas forward curves

EUR/MWh; Monthly TTF, Henry Hub and JKM natural gas futures price; Prices and EUR/USD rate of 2 November 2026



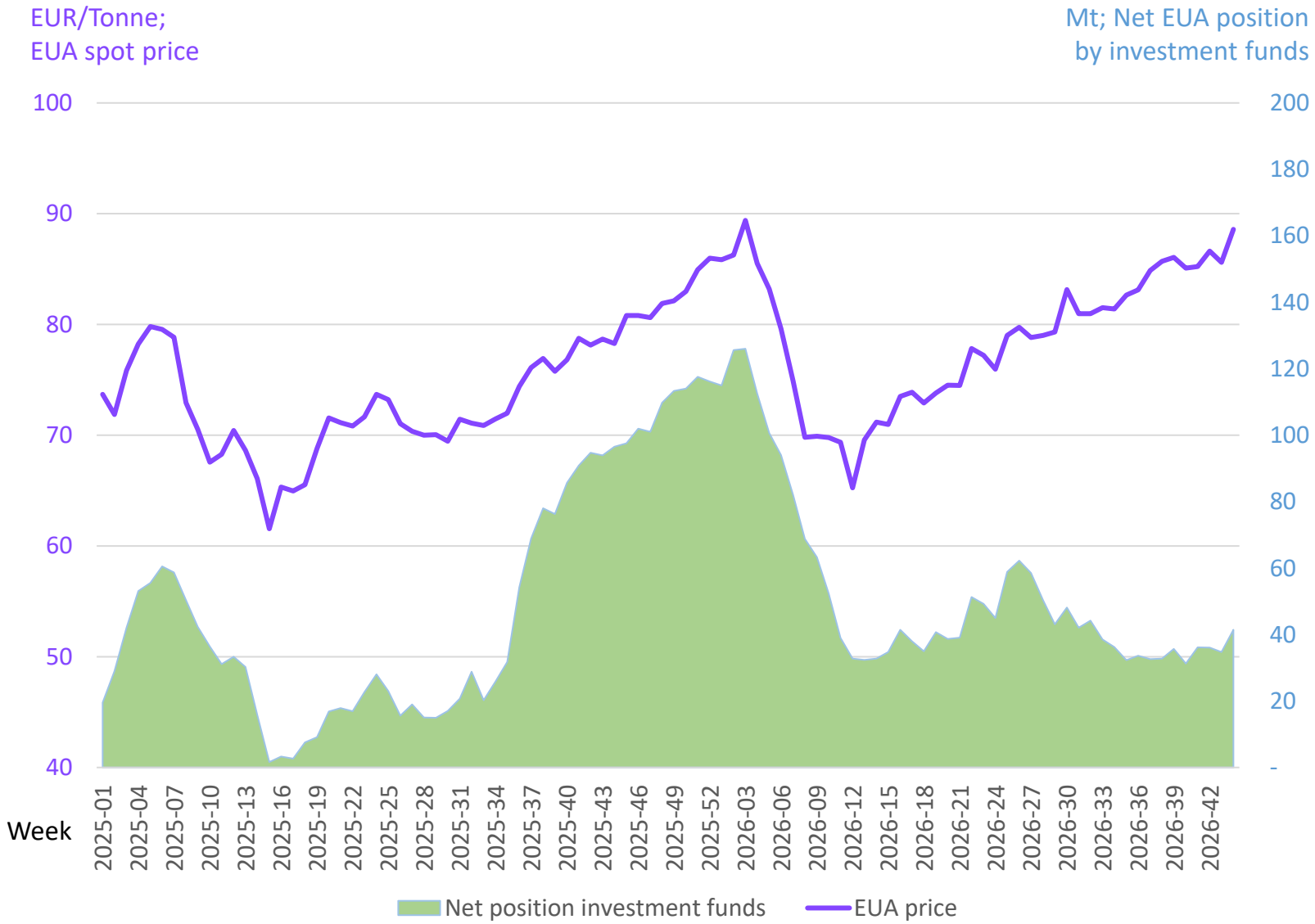
Source: ICE, CME

- The current energy crisis
- Future expectations
- CO2 & ETS2
- Q&A



EUA prices correlation to net position investment funds

Weekly data



- **Historically**, the EUA price was strongly **linked to the natural gas prices** due to the electricity production.
- **Mid 2025**, this linkage was disrupted by **investment funds speculating** on a shortage of EUA supply for compliance on the long term, forcing the EUA-price upwards.
- After **cashing in** of the investment funds at the **start of 2026**, the EUA-price collapsed to the early 2025-level.
- **Over 2026**, the **coupling** of the EUA-price **with natural gas prices** for compliance **reemerged** with the Middle East conflict. Gas-fired electricity producing units are pushed out of the market by more polluting coal-fired units, raising the EUA demand. Even the proposal of an **ETS-revision by the EU Commission** in July **did not ease the markets**.

Note: Compliance buyers includes also commercial enterprises
Source: EU Commission data, ICE, EEX

EU Emission Trading System

PowerPulse

Reform of ETS

- **Proposal** by Commission in **July 2026**; negotiations with the European Parliament and the Council of EU Member States expected to **conclude by the end of Q1 2027**
  - A **gradual reduction** in the **Linear Reduction Factor** resulting in **EUAs remaining in the market into the late 2040s**
  - Strengthening of the **requirements on how member states spend ETS auction revenues**
  - **Investment-based free allocation**, with **80%** of allowances granted upon **submission of a credible investment plan** and the remaining **20% linked to its implementation**
  - A **less stringent fallback benchmark for heat and fuel** for the 2026-2030 period
  - **Extension of the role of the Market Stability Reserve** (MSR) in managing market liquidity as the ETS cap declines and **removes the automatic cancellation mechanism**
  - An **investment booster** supported by 400 million allowances between 2028 and 2030 to fund mature industrial decarbonisation projects
  - Further opportunities for **high-integrity international carbon credits**, **high-quality permanent carbon removals**, and **circular carbon capture and utilisation (CCU)**, and obligations for departing **international flights,** the **maritime sector**, and **municipal waste incineration**

Current **position** of the European **Parliament and Council**

- Parliament proposes for a lower reduction factor in 2031, but a higher in 2036 compared to the proposal
- Parliament proposes to gradually phase in the 80/20 rule with a restriction on feasibility
- Both Council and Parliament propose to release even more allowances for the benchmark.
- Both Council and Parliament propose to reject the removal of automatic cancellation and set the bar at 700 million.

EU Emission Trading System

Launch of ETS2

- Starting in **2028**
- Additional cost on **combustion fuels** for **road transport**, **buildings**, and **additional sectors**
- Distributors and sellers of combustion fuels are **regulated entities** (monitoring, reporting, verification, surrender)
- **Pass-through** of costs **to the user**
- **Cap and trade** system
  - Initial trading on ICE with limited liquidity
- **Middle of political discussion**
  - Postponed for 1 year – still political complaint from Eastern European countries
  - Strengthening of Market Stability Reserve
- **Intention** to keep price under **control** until 2030
  - Strive value **45 €/tonne CO_2 + inflation** (58 €/tonne CO_2 by 2028)
  - With measures from the **market stability reserve**
  - **Analysts foresee** a potential **higher price** (60-80 €/tonne CO_2)
  - Early auctions begin on 18 January 2027

ETS2-price (€/tonne CO_2)	40	50	60	70	80
Natural gas (€/MWh)	7,3	9,1	10,9	12,7	14,6
Gasoline (ct€/l)	9,6	12,0	14,5	16,9	19,3

Natural gas (0,182 tonnes CO_2/MWh)
Gasoline (0,251 tonnes CO_2/MWh – 9,6 kWh/l)

Q&A

PowerPulse



Yannick Rotsaert
Business Energy Consultant
M: +32 472 708 406
E: yannick.rotsaert @power-pulse.be

Eleonore Buisseret
Techno-economic Energy Expert
M: +32 479 955 061
E: eleonore.buisseret@power-pulse.be



Back-up

PowerPulse

