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ESS Demand

Against Consensus: Why we remain constructive on ESS into 2030

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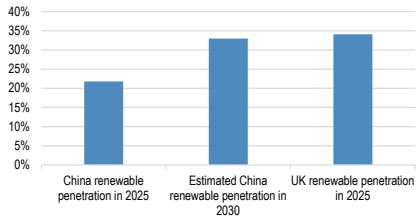
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China ESS value chain stocks have corrected sharply since 1 June, with CATL-A (-28%), HyperStrong (-42%), Deye (-26%) and Sungrow (-49%) vs. CSI300 (-7%), reflecting investor concerns over a weak 2027 China ESS demand outlook and rising geopolitical uncertainties. We believe the market is becoming overly pessimistic. In this report, we present our latest views and key takeaways from two recent ESS expert calls.

We stand by our China installation CAGR of >20% through 2030, suppored by required build and global attachment benchmarks. China is still mid-way through a policy roll-out to push ESS with tailwinds ahead. On battery shipments, we forecast ~20% YoY in 2027, versus market expectations for little to no growth. In our view, concerns have been amplified by incomplete installation statistics while underestimating ongoing policy tailwinds. Meanwhile, the market has focused too heavily on China demand, overlooking the fact that overseas markets account for the majority of key players' ESS shipments (e.g. 60-65% for CATL) and remains a key growth driver. Our analysis of 3mn data points in the European power market reveals power peak-trough price spread has reached an elevated level, supporting the thesis for solid ESS demand in Europe. Within our ESS value chain coverage, our preferred names remain **CATL-A/H, Sungrow and Deye**.

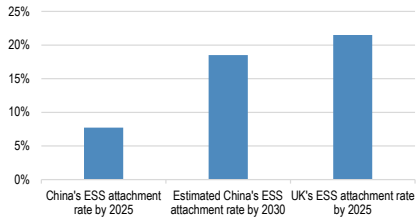
- **Standing by our China ESS installation CAGR of 22% through 2030, supported by required build and global attachment benchmarks.** Our long-term view is anchored in what is required as China's power system transitions. Under our medium-term assumptions, China's renewable mix rises to ~33% by 2030 while cumulative ESS attachment increases to ~18%, which we do not view as aggressive in a global context. For reference, the UK already operates ~34% renewable penetration with ~22% cumulative storage attachment (2025). The 1H26 installation decline cited in CNESA tallies is, in our view, more likely a function of incomplete or lagging project tallying (supported on our expert call) rather than a fundamental demand reversal, particularly as policy rollout (capacity fees, emerging auxiliary services) continues to broaden.
- **China is still mid-way through a policy roll-out to push ESS, with tailwinds ahead**. Capacity-fee frameworks are progressing but remain incomplete: on our call, an expert said checks suggest roughly ~10 provinces are still yet to fully introduce or formalize capacity fees, implying further policy announcements should broaden the revenue stack for independent ESS. In parallel, an auxiliary service fee market is in the making. Separately, market-design tweaks that improve renewables economics could catalyze "attachment/retrofit" demand. For example, Shandong has recently rolled out a policy that enables solar farms retrofitted with ESS to trade power into higher-priced evening hours.
- **Independent ESS projects can be attractive for those with capacity fees rolled out** (ranging from ~6 to 9% on average, and ~12-15% in more favorable places). Returns are highly connection-point dependent, driven by dispersion in peak–trough price spreads: an expert cited spreads of up to ~RMB 0.6/kWh

Figure 1: We expect China's renewable penetration to rise by 2030 and approach the UK's 2025 level



Source: CEC, BloombergNEF, J.P. Morgan estimates. Note: Renewable penetration is defined as solar and wind power generation as % of total power generation.

Figure 2: Thus, we estimate that China's cumulative ESS attachment rate by 2030 could be broadly in line with the UK's 2025 level



Source: CEC, NEA, CNESA, BloombergNEF, J.P. Morgan estimates. Note: ESS attachment rate is defined as ESS capacity as % of solar+wind capacity.

See page 15 for analyst certification and important disclosures, including non-US analyst disclosures.

(at congested nodes) versus more typical spreads of ~RMB 0.2–0.3/kWh. These return ranges already factor in the rise in grid system operating fees since early 2026. Looking ahead, policy development could reduce the burden, with expectations tilting toward charging grid fees on a net-charge basis, which would support project economics further.

- **Bullish view on Europe ESS installation outlook (after analyzing ~3mn data points):** Analyzing ~3mn data points across 32 regions of European power markets since 2015, we observe peak–trough price spreads at an unusually elevated level (~EUR105/MWh), comparable in magnitude to the dislocation seen during the 2022 energy crisis (~EUR128/MWh), vs. LT avg. of ~EUR50/MWh). This is structurally linked to renewables (wind+solar) overtaking gas in the generation mix in a few major regions, deepening the "duck curve" and sustaining volatility that supports ESS monetization. Furthermore, the deepening duck curve is increasing the need for longer-duration BESS, as greater discharge hours are required to capture prolonged renewable-driven price dislocations, further supporting ESS demand.
- **Action and recommendations:** Chinese ESS Integrators: We like **Deye**, as it rides Europe and EM C&I ESS growth. For Sungrow, we believe the ~40% since 1 July (vs the SHCOMP Index) has largely priced in geopolitical risks. We maintain our OW rating on **Sungrow**, supported by its strong ESS integration capabilities and robust ex-US ESS installation growth outlook. Chinese ESS battery: We view **CATL** as the best way to gain exposure to global ESS growth, given its leading market share, strong overseas exposure and attractive valuation after the recent correction.

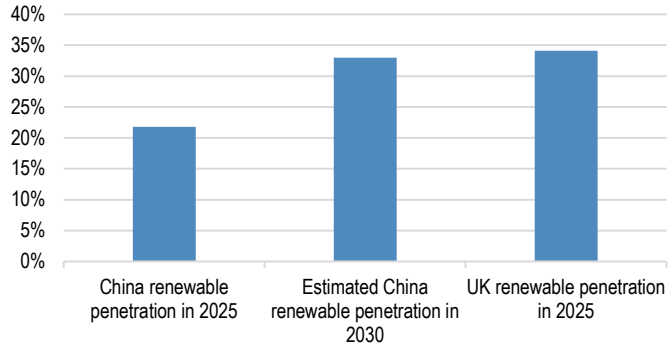
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China ESS installation outlook: Standing by our ~22% CAGR into 2030E; supportive policy rollout only at mid-way point

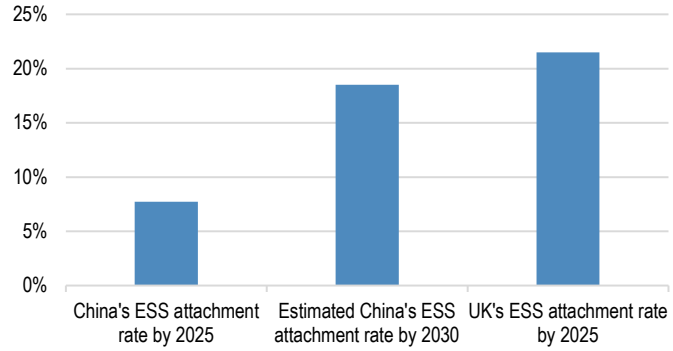
We stand by our China ESS installation CAGR forecast (~22% through 2030), supported by the required build and global attachment benchmarks. We stand by our China ESS installation growth forecast of a ~22% CAGR through 2030. This pace is supported by what is needed to get to where China's system is heading versus global benchmarks. Under our medium-term assumptions, China's renewable mix rises to ~33% by 2030 while ESS cumulative attachment rates increase to ~18%. That attachment level is not aggressive in a global context. For example, the UK already operates ~34% renewable penetration with a cumulative ~22% storage attachment (2025). Our view aligns with the CNESA expert seeing 20 to 25% CAGR for installation growth into 2030. Near-term growth (i.e., 2026) is increasingly driven by independent ESS. In 1H26, new independent ESS additions were ~15GW (per CNESA), lifting independent ESS's share of the mix to ~70% from ~55% in 1H25. The expert expects this share could rise further to ~75% by the end-2026. Policy tailwind for existing wind/solar farms attaching ESS: Separately, policy and market-design tweaks that improve renewables economics—such as allowing PV paired with storage to bid into higher-priced evening hours—suggest a longer-dated pathway for broader "attachment/retrofit" demand alongside existing wind and solar assets.

Figure 3: China vs. UK renewable penetration



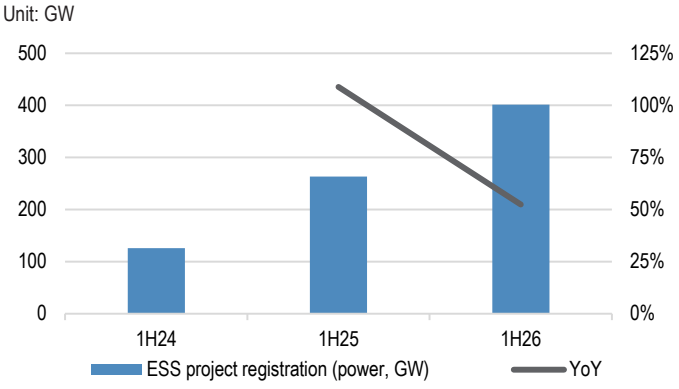
Note: Renewable penetration is defined as solar and wind power generation as % of total power generation.
Source: CEC, BloombergNEF, J.P. Morgan estimates.

Figure 4: China vs. UK cumulative ESS attachment rate



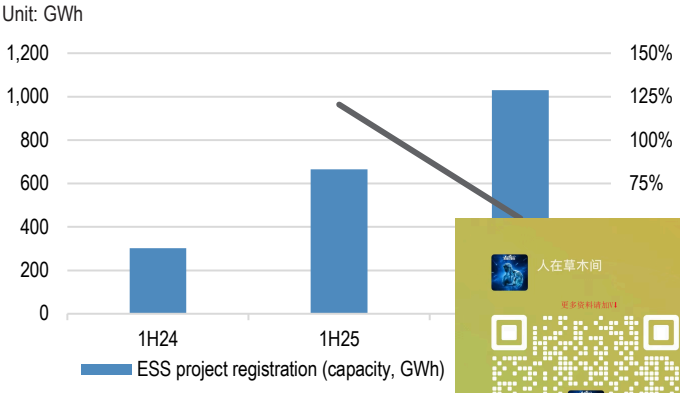
Note: ESS attachment rate is defined as ESS capacity as % of solar+wind capacity.
Source: CEC, NEA, CNESA, BloombergNEF, J.P. Morgan estimates.

Figure 5: China's new ESS project registration volume (GW)



Source: CESA, Solarbe Energy Storage.

Figure 6: China's new ESS project registration volume (GWh)

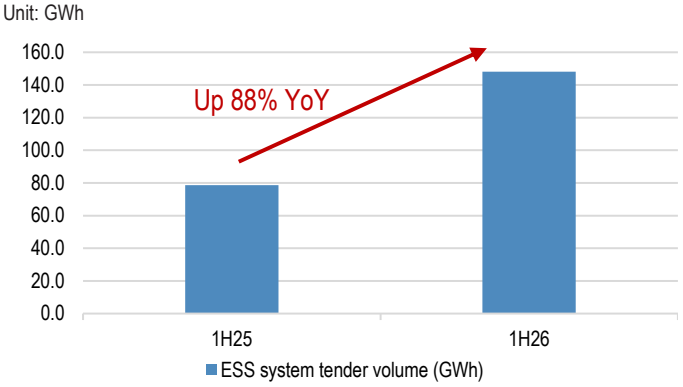


Source: CESA, Solarbe Energy Storage.



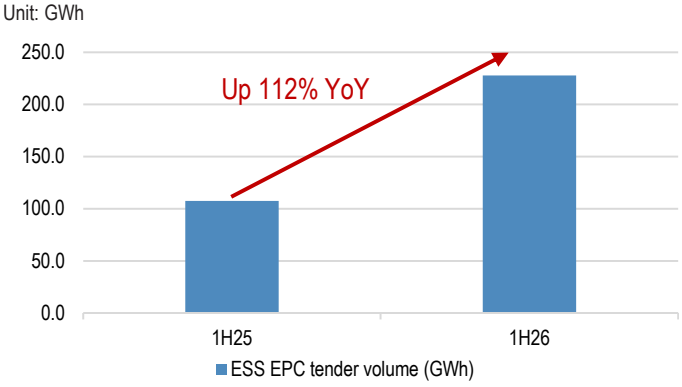
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Figure 7: China's ESS system tender volume (GWh)



Source: CNESA.

Figure 8: China's ESS EPC tender volume (GWh)



Source: CNESA.

China power-market reform: Capacity fees still rolling out, auxiliary services emerging — tailwinds for ESS installations. China is still mid-way through reforming its power market to improve the return profile for independent ESS. While progress on capacity charges has begun, rollout remains incomplete. According to the expert, roughly ~10 provinces have issued opinions or draft rules following Doc 114, and a few have announced prior to Doc 114 (which may need to realign), implying that another ~10 provinces are still yet to fully introduce or formalize their capacity-fee frameworks. Where published, proposed levels vary widely. For example, Liaoning has a relatively high fee of RMB 370/kW per year, followed by Jilin and Gansu at RMB 330/kW per year. Many others around RMB 165/kW per year. For details, please refer to the table below. The expert also emphasized the funding mechanism: capacity fees are not funded "from local government pockets," but are instead allocated through the grid cost stack and ultimately recovered from end users. Separately, several provinces (e.g., Inner Mongolia, Zhejiang, and Hebei) introduced their own capacity charge policies prior to Doc 114. The expert expects that these policies may be adjusted to better align with the Doc 114 framework. On top of the capacity charge, the regulator is also working to introduce an auxiliary service fee system to the power market, which could be a new revenue stream for ESS.

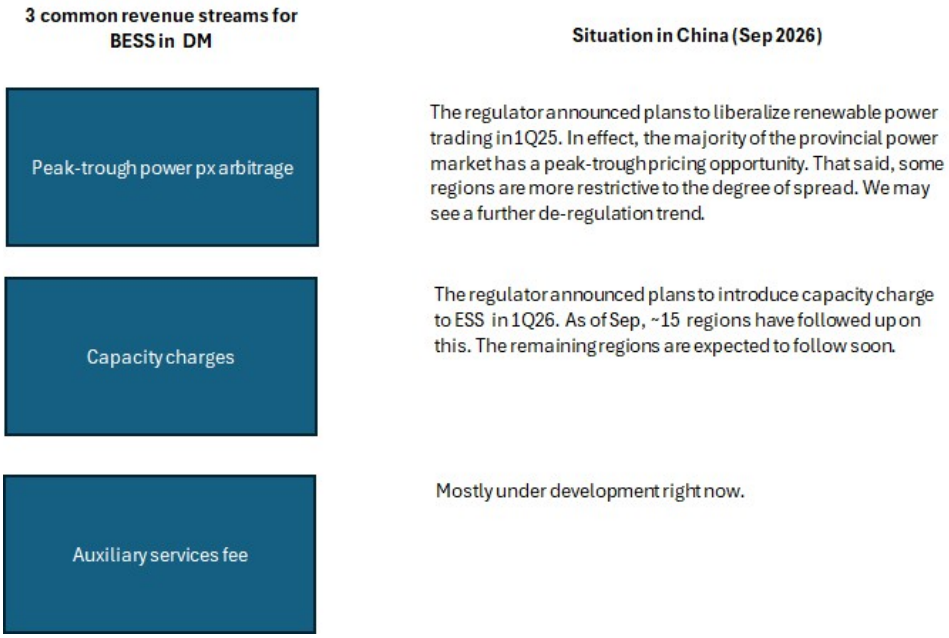
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Table 1: Provincial level capacity charge policy details

Province	Compensation model	Full standard (CNY/kW per·year)	Baseline duration	Remarks
Gansu	Capacity charge (reliable capacity compensation)	330	6h	Effective from 2026-01-01, pilot through 2027-12-31
Jilin	Capacity charge (coal-power baseline conversion)	330	8h	Effective from 2026-05-12
Liaoning	Reliable capacity compensation	370	8h	Planned from 2027-01-01, implementation period 1 year
Qinghai	Unified framework for reliable capacity compensation	185	8h	Effective from 2026-07-07, implementation period 5 years
Hubei	Capacity charge	165	10h	Effective from 2026-02-01, tentatively 1 year
Shaanxi	Capacity charge	165	6h	Effective from 2026-08-01, tentatively 3 years
Xinjiang	Capacity charge (categorized capacity-charge mechanism)	165	6h	Effective from 2026-06-01
Ningxia	Capacity charge (generation-side capacity-charge mechanism)	165	6h	CNY 100 for Oct-Dec 2025; CNY 165 from 2026 onward
Henan	Reliable capacity compensation (framework established in advance)	330	10h	Detailed rules planned to take effect 2027-01-01
Zhejiang	Capacity compensation (annual step-down)	170	6h	CNY 170 in 2026, then steps down year by year
Guangdong	Capacity charges (above the coal-power baseline)	200	4h	For independent energy storage definition/caliber: effective from 2026-03-01
Hebei	Capacity charge (fixed standard)	100	-	Effective from 2025-01-01; capacity electricity fee valid for 12 months. Fixed CNY 100/kW·year, if annual dispatch/calls is over 330 times
Shandong	Market-based composite model (non-fixed capacity charge)	-	-	Capacity compensation: CNY 0.0705/kWh, adjusted monthly. For a 4-hour system, compensation revenue is twice as that of a 2-hour system. 2026 revised rules apply.
Inner Mongolia	Discharged energy (throughput) compensation	-	-	Per-kWh compensation CNY 0.28/kWh (CNY 0.35/kWh in 2025). Compensation period 10 years; set annually.
Yunnan	Capacity leasing (market-based)	-	-	Reference lease price: CNY 220/kW·year; transaction price may be ~30% lower. Already implemented.

Source: Local government announcements, BJX.

Figure 9: Revenue model (DM vs. China)

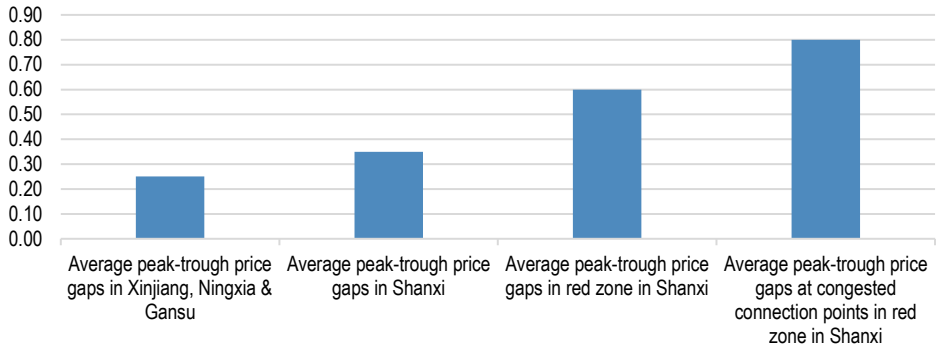


Source: J.P. Morgan Research

Project economics can be attractive, but are highly connection-point dependent. Using a 4-hour "market average" benchmark, the expert suggested that in provinces

where capacity pricing has been introduced, all-in returns can reach ~8–9%+—and in more favorable cases ~12–15%—including contributions from both spot-market revenues and capacity charges. This return profile already takes into account the elevated grid system operating fees (grid fee), which have risen materially since early 2026. Policy development on grid fee for ESS: The expert thinks that policy directives will tilt towards charging grid fees per net charge (i.e. amount of charged minus discharged), a similar arrangement as how independent ESS pays T&D fee, which will materially decrease grid fee burden for ESS projects. The expert emphasized that the dispersion in return profile is driven largely by the connection point. For example, peak–trough spreads vary meaningfully by region (average spreads of ~RMB 0.25/kWh in Xinjiang/Gansu/Ningxia vs. ~RMB 0.35/kWh in Shanxi) and even within a province (average ~RMB 0.35/kWh in Shanxi, versus "red zone" spreads cited up to ~RMB 0.6/kWh, and up to ~RMB 0.8/kWh at congested "red zone" connection points). The expert also noted that the most attractive spreads often come with tighter land/line constraints and more challenging development conditions.

Figure 10: Comparison of average peak-trough price gaps in different regions



Source: CNESA expert

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Overseas ESS demand remains constructive

ICCSino forecasts global ESS installations to reach 508GWh in 2026, up c.53% yoy, with ex-China demand contributing c.254GWh. In 2027, global installations are expected to grow another c.31% yoy to 664GWh, driven by c.40% growth in China and c.21% growth overseas. Overseas growth should be supported by increasingly diversified regional drivers: rising AIDC demand in the US, policy-backed projects in Australia and India, and large-scale project commissioning in the Middle East and Latin America. Europe should also continue to grow, although performance is likely to vary by country following strong project deliveries in 2026.

- **Europe: Renewable integration and policy support underpin demand.** Rising renewable penetration and widening intraday power-price spreads are improving ESS economics, while long-term revenue support and grid-fee exemptions are accelerating projects in Germany, the UK and Italy. Bulgaria provides an additional boost in 2026 owing to mandatory grid-connection deadlines, although demand is expected to normalize in 2027. We summarize key policy and market drivers in the table below.
- **APAC ex-China: Australia and India lead regional growth.** Australia benefits from household-storage subsidies, coal-power retirements and utility-scale procurement, while two rounds of central VGF subsidies covering 33.2GWh support India's project pipeline. APAC ex-China installations are forecast to reach 72GWh in 2026 and 77GWh in 2027, making it the largest ex-China regional market in both years.
- **Middle East and Latin America offer higher growth from smaller bases.** Middle East demand is supported by several large-scale projects, including the 19GWh Abu Dhabi project expected to connect around mid-2027. In Latin America, Chile remains the key market, supported by improved standalone-storage economics, solar shifting and mining-related off-grid demand.
- **US: AIDC is emerging as the key incremental driver.** The expert forecasts US AIDC ESS installation to grow at a >50% CAGR over the next five years, with a further potential uplift from 2028 as new data centers adopt higher storage penetration and longer duration. Conventional utility-scale projects, however, remain constrained by grid-connection queues and transformer availability.

We remain constructive on overseas ESS demand and expect it to remain a key driver of Chinese battery suppliers' shipment growth in 2027. Global ESS battery shipments reached 725GWh in 8M26, up 97% yoy, with overseas markets accounting for 54% of demand (our latest ESS report published on17-Sep). For Chinese battery players, the EU and RoW represent the robust overseas growth opportunities, with shipments rising c.120% and 136% yoy, respectively, in 8M26 and together accounting for 45% of Chinese suppliers' shipments. The US remains a key growth market, driven primarily by AIDC demand, although battery sourcing is increasingly shifting towards Korean and Japanese suppliers. Looking into 2027, renewable integration and policy-backed projects in Europe and APAC, AIDC demand in the US, and utility-scale projects in emerging markets should support continued overseas demand growth. While shipment growth may normalize from the unusually strong 2026 base, we do not view this as a weakening in underlying demand, given the visible project pipeline and long shipment-to-commissioning cycle for overseas projects.

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Table 2: Key drivers of ESS demand in Europe

Market	Driver	Key demand catalyst	Timing / implication
Germany	Policy	New ESS projects commissioned by **4 Aug 2029** can receive a **20-year grid-fee exemption** under EnWG §118; the planned removal of EEG feed-in tariffs also supports residential storage.	Supports accelerated utility-scale installations during **2026-29**.
UK	Policy	CfD AR5 covering **5.5GW**, 15-year capacity-market contracts and the first LDES Cap & Floor round covering **16 projects/7.6GW** provide long-term revenue visibility.	Supports FIDs and the **23-27GW 2030 storage target**.
Italy	Policy	MACSE provides **15-year fixed-premium contracts**, with **10GWh** awarded in the first round and **16GWh** planned in the second; PNIEC also promotes PV-plus-storage.	Supports conversion of the **53.5GW project pipeline** toward the **50GWh 2030 target**.
Netherlands	Policy	The phase-out of net metering from **1 Jan 2027** improves the case for pairing rooftop PV with storage.	Residential ESS attachment is expected to rise from **29% to 42%**; utility-scale installations also accelerate.
Ukraine	Market	Grid damage and power outages make storage important for backup supply; PV projects have high storage attachment.	ESS demand is driven by power-security requirements rather than pure project economics.
Poland	Policy	Net-billing reform and the capacity market improve storage economics, while existing solar capacity has limited ESS attachment.	Residential attachment rises from **32% to 44%**; utility-scale demand could accelerate in **2027-28**.
Spain	Policy	RD 997 promotes storage attachment for utility-scale PV, supplemented by the **22GW PNIEC storage target** and **€700mn** of dedicated support.	PV-plus-storage attachment is projected to rise from **15% to 50% during 2025-30**.
Sweden	Market	Grid congestion and the FCR-D frequency-regulation market support a “battery-first” investment model.	Aggregation may lift project IRRs by **3-5ppt**; utility-scale ESS is projected to expand **2.5x during 2026-30**.
France	Policy	CRE requirements for utility-scale PV storage attachment and a dedicated **1GW/4h BESS tender** provide policy support.	Policy acts as the main backstop given relatively stable power prices and narrower peak-trough spreads.
Bulgaria	Policy	The NRRP RESTORE program provides **€704mn** for **113 projects/14GWh**, with projects concentrated around mandatory commissioning deadlines.	Installations could reach **10.4GWh in 2026**, before normalizing to c.**1.5GWh p.a.** from 2027.

Source: ICCSino

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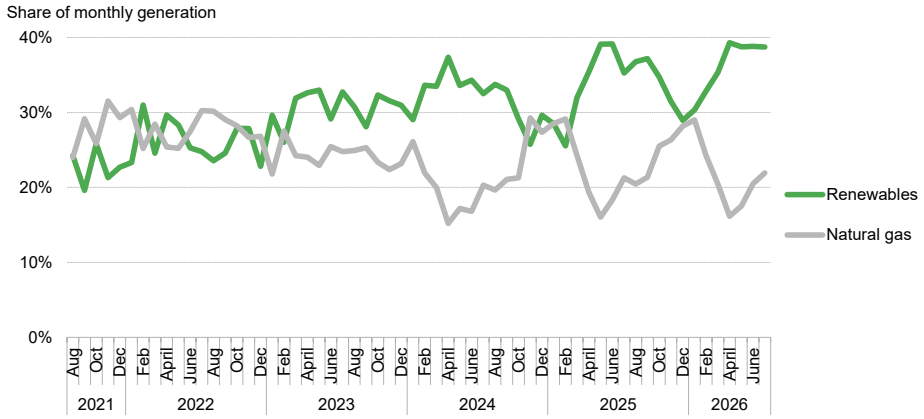
Why is European ESS demand so strong?

Renewables overtake gas in power generation

We believe the increasingly pronounced duck curve reflects the rapid expansion of wind and solar – one of the most significant structural shifts since the previous crisis. Renewables now account for a higher mix to the power market than before.

Figure 11: Average monthly share of renewables and natural gas in power generation across five European power markets

Unit: % of generation



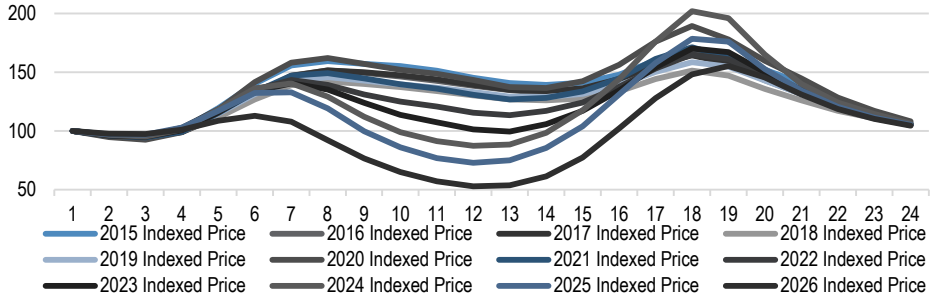
Note: Values represent monthly averages of gas and renewables generated electricity as a share of total power generation across Great Britain, Germany, France, Spain and Italy. Renewables include solar and wind.
Source: BloombergNEF.

The duck curve in major European power markets is getting duckier

We analyzed power price data across European markets and found that the "duck curve" is becoming increasingly pronounced. The widening gap between mid-day and evening peak prices reflects rising renewable penetration – particularly solar – and more frequent periods of excess generation. This dynamic is pushing mid-day prices lower (declining each year through 2026), while evening prices remain supported by tighter net-load conditions, fuel-linked marginal costs, and ramping constraints.

Figure 12: Duck curve of power prices in Europe

Indexed to 100 at hour 0



Note: Indexed Hourly Price by Year.
Source: Ember Energy, J.P. Morgan.

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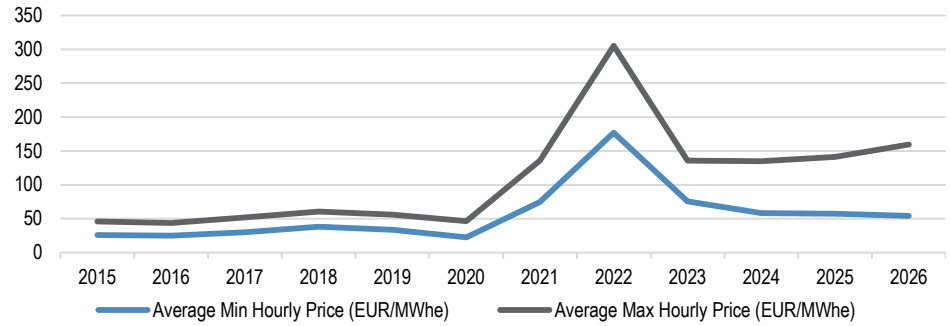
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Widening power price spreads should incentivize ESS installation

Intraday power price volatility is rising and the value pool is increasingly shifting toward flexibility. We see this as supportive for energy storage demand in Europe, as ESS can monetize volatility through applications such as demand response and peak shaving. As long as price spreads remain elevated, we expect European ESS project returns to improve, underpinning the secular growth potential for ESS installation in the region.

Figure 13: Hourly power price spread in Europe

Unit: EUR/MWhe



Note: Full year coverage from 2015 to 2025; YTD through August coverage for 2026.
Source: Ember Energy, J.P. Morgan.

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From ESS installation to battery shipment

China ESS installation data has become a key focus for investors, given the apparent gap between reported installations and battery shipment growth. So far, three major data sources suggest China ESS installations of only 45-60GWh in 1H26. At first glance, this appears weak relative to our 2026E China ESS installation forecast of 255GWh and approximately 500GWh of ESS battery shipments (with ~330GWh shipped in 8M26 alone). The widening gap between installations and battery shipments has raised concerns over the sustainability of future shipment growth and the possibility of elevated channel inventories.

ESS installations are typically back-end loaded

Historical data suggest that China ESS installations are heavily weighted toward 2H, with second-half deployments typically reaching 2-3x first-half levels. Comparing CNESA's annual installation data with its monthly disclosures, the implied December 2025 installation volume represented roughly half of the reported FY25 total. This highlights the seasonality of the market and suggests caution when extrapolating full-year demand from partial-year installation data.

CNESA's 1H26 installation data should not be viewed as a complete tally

CNESA reported 1H26 ESS capacity additions of 21.8GW/58.6GWh, down approximately 16% YoY on a GWh basis. However, we do not view this dataset as a complete or real-time measure of market installations. CNESA compiles its database from public announcements, tender results, regulatory filings and industry cross-checks, covering not only electrochemical storage but also other storage technologies, including user-side projects.

Importantly, our discussions with the CNESA expert suggest that monthly and partial-year installation data are frequently revised upward during the full-year reconciliation process, as project reporting can lag by several months and, in some cases, extend into February or March of the following year. This also helps explain the apparent discrepancy between CNESA's previously reported 11M25 installations of approximately 100GWh and its final FY25 installation figure of ~190GWh. Taken at face value, the 11M25 data would imply an unusually large December installation volume, suggesting that subsequent reporting revisions likely played an important role in the year-end reconciliation.

Battery shipments, installations and revenue recognition follow different timelines

We reiterate that battery shipments, ESS installations and revenue recognition occur along different timelines. Battery shipments typically lead project commissioning (or grid connection) by around 6-12 months for the domestic market and ~12 months or longer for overseas markets.

The ICCSino expert similarly highlighted that overseas projects generally experience longer transportation, integration and grid-connection cycles than domestic projects. As a result, we believe a meaningful portion of the strong ESS battery shipment growth seen in 2026 is likely to convert into project installations and revenue recognition during 2027, rather than indicating excess inventories across the supply chain.

We further note that consensus expectations for lower lithium prices in 2027 reduce the economic incentive to accumulate inventory across the value chain. Therefore, **we**

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believe the divergence between battery shipments and reported installations is more likely driven by project timing and reporting lags than by substantial inventory build-up.

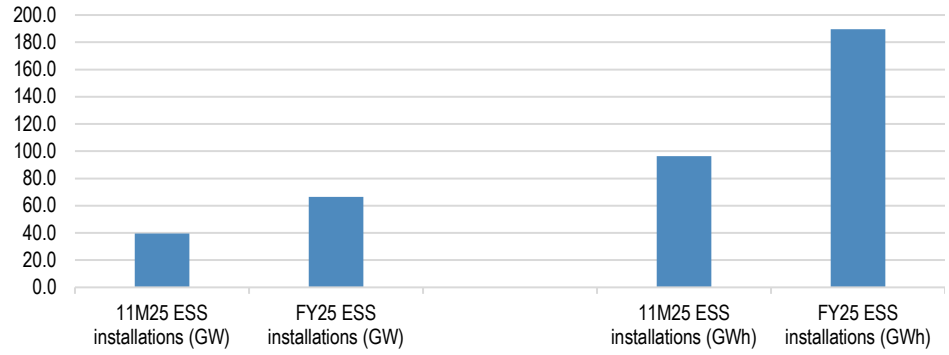
Figure 14: ESS installation data from NEA and CEC

NEA: Newly installed ESS	Unit	1H23	2H23	1H24	2H24	1H25	2H25	1H26
Capacity	GW	8.6	14.0	13.1	29.3	21.2	41.1	17.0
Power output	GWh	17.7	31.0	32.2	68.8	54.0	129.0	45.0
HoH								
Capacity			61.9%	-6.6%	124.7%	-27.9%	94.3%	-58.6%
Power output			74.8%	3.9%	113.8%	-21.5%	138.9%	-65.1%
YoY								
Capacity				51.2%	109.9%	62.1%	40.1%	-19.6%
Power output				81.7%	122.1%	67.8%	87.5%	-16.7%

CEC: Newly installed ESS	Unit	1H23	2H23	1H24	2H24	1H25	2H25	1H26
Capacity	GW	7.4	10.7	10.4	26.8	13.7	33.5	21.6
Power output	GWh	14.7	22.1	24.2	66.3	33.8	101.1	60.2
		120%	140%	133%	104%	160%	128%	75%
HoH								
Capacity			44.4%	-3.1%	158.1%	-49.0%	145.2%	-35.4%
Power output			50.2%	9.4%	174.3%	-49.1%	199.6%	-40.4%
YoY								
Capacity				39.9%	150.1%	31.7%	25.2%	58.4%
Power output				64.4%	200.1%	39.6%	52.4%	78.4%

Source: NEA, CEC.

Figure 15: CNESA reported 11M25 vs. FY25 ESS installations



Source: CNESA.

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Appendix

J.P. Morgan's ESS model

Figure 16: China's ESS installation forecasts

GW/GWh	2021	2022	2023	2024	2025	2026E	2027E	2028E	2029E	2030E
Solar and wind capacity addition	100.1	123.0	292.8	357.0	437.5	375.0	380.0	325.0	325.0	325.0
ESS attachment rate	3%	5%	6%	8%	11%	16%	19%	22%	23%	24%
ESS capacity addition (grid and power)	**2.5**	**5.5**	**18.5**	**29.3**	**49.7**	**58.1**	**72.2**	**69.9**	**73.9**	**78.0**
Misc addition	0.0	0.5	1.0	6.5	8.4	10.3	12.3	14.2	16.1	18.0
ESS capacity addition on user side	0.0	1.5	1.5	4.0	5.0	7.0	10.0	13.0	16.0	19.0
Communication base stations' ESS capacity addition	0.0	1.5	1.5	2.4	3.4	4.3	5.2	6.1	7.1	8.0
Total ESS capacity addition (GW)	**2.5**	**9.0**	**22.5**	**42.2**	**66.4**	**79.7**	**99.7**	**103.2**	**113.1**	**123.0**
(YoY%)		*261%*	*149%*	*88%*	*57%*	*20%*	*25%*	*4%*	*10%*	*9%*
Average ESS battery duration (hours)	2.0	2.0	2.2	2.4	2.9	3.2	3.4	3.6	3.9	4.2
Total ESS capacity addition (GWh)	**5.0**	**18.1**	**48.6**	**100.4**	**189.5**	**255.2**	**333.9**	**371.5**	**441.1**	**516.6**
(YoY%)		*261%*	*169%*	*107%*	*89%*	*35%*	*31%*	*11%*	*19%*	*17%*

Source: CEC, NEA, CNESA, J.P. Morgan estimates.

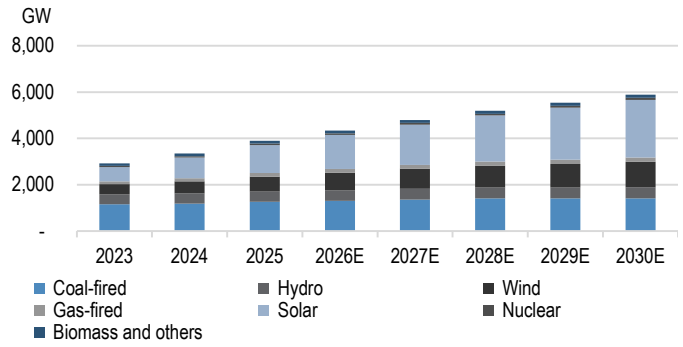
Table 3: J.P. Morgan ESS shipment forecasts

ESS battery shipment	2021	2022	2023	2024	2025	2026E	2027E	2028E	2029E	2030E
Global shipment by end demand market										
China market demand	**26**	**64**	**139**	**155**	**257**	501	606	697	822	946
		145%	*117%*	*12%*	*65%*	*95%*	*21%*	*15%*	*18%*	*15%*
Ex-China market demand	39	62	74	175	382	635	892	1,092	1,250	1,378
		57%	*20%*	*136%*	*118%*	*66%*	*40%*	*22%*	*14%*	*10%*
Global ESS battery shipment (GWh)	**66**	**126**	**213**	**330**	**639**	**1,136**	**1,498**	**1,789**	**2,072**	**2,323**
yoy		*92%*	*70%*	*55%*	*93%*	*78%*	*32%*	*19%*	*16%*	*12%*
Global ESS battery production	**66**	**126**	**213**	**346**	**609**	**1,159**	**1,529**	**1,826**	**2,114**	**2,371**
yoy		*92%*	*70%*	*62%*	*76%*	*90%*	*32%*	*19%*	*16%*	*12%*
Shipment by markets				**330**	**639**	**1,136**	**1,498**	**1,789**	**2,072**	**2,323**
China				155	257	501	606	697	822	946
					89%	*95%*	*21%*	*15%*	*18%*	*15%*
US				55	110	128	179	150	219	303
					100%	*16%*	*40%*	*-16%*	*46%*	*38%*
EU				46	104	198	277	347	378	390
					45%	*90%*	*40%*	*25%*	*9%*	*3%*
RoW				75	168	309	436	596	653	685
					105%	*85%*	*41%*	*37%*	*10%*	*5%*
Chinese players' shipment	38	112	198	321	622	1,091	1,423	1,682	1,927	2,138
yoy		*197%*	*77%*	*62%*	*94%*	*76%*	*30%*	*18%*	*15%*	*11%*
Ex-China players	28	14	15	9	17	45	75	107	145	186
yoy		*-50%*	*11%*	*-41%*	*89%*	*163%*	*65%*	*43%*	*35%*	*28%*
Chinese players as % of Global	57%	89%	93%	97%	97%	96%	95%	94%	93%	92%

Source: J.P. Morgan estimates

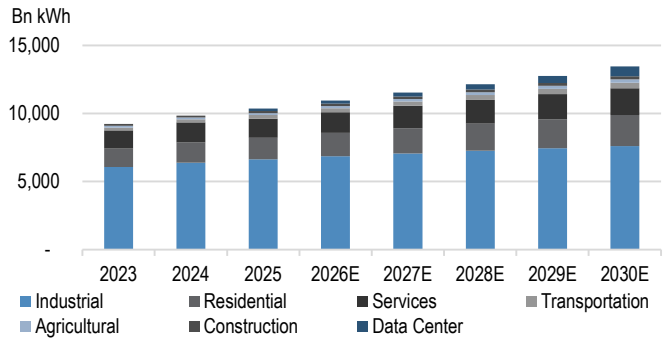
China's power mix forecast

Figure 17: China's installed power capacity forecast until 2030



Source: NEA, CEC, J.P. Morgan estimates.

Figure 18: China power demand forecast until 2030



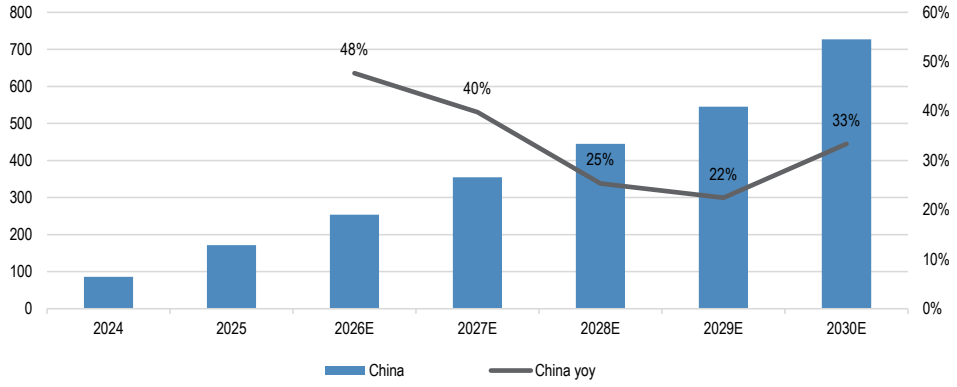
Source: NEA, CEC, J.P. Morgan estimates.

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Global ESS installation forecast (ICCSino)

Figure 19: China ESS installation forecast (ICCSino)

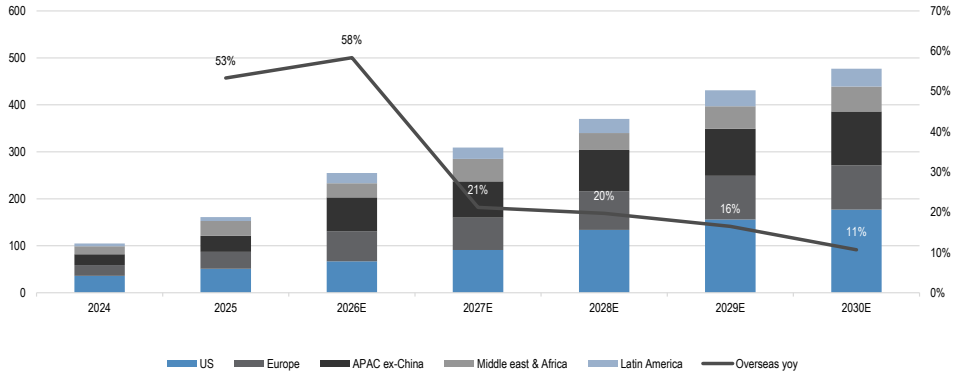
Unit: GWh



Source: ICCSino

Figure 20: Overseas ESS installation forecast (ICCSino)

Unit: GWh



Source: ICCSino

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CATL - A(300750.SZ/Rmb301.95/OW), CATL - H(3750.HK/HK$507.00/OW), Deye - A(605117.SS/Rmb84.63/OW), Sungrow - A(300274.SZ/Rmb87.89/OW)

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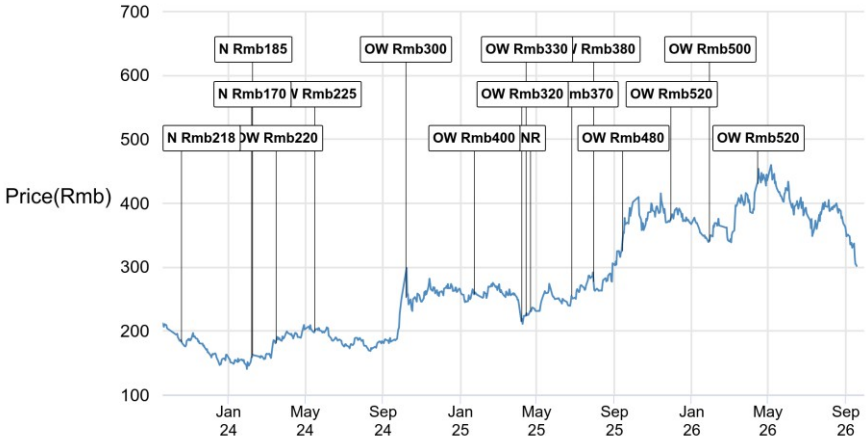
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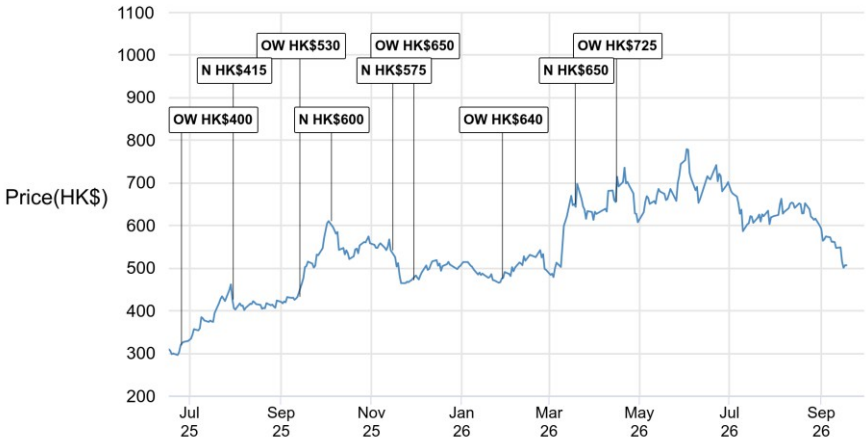
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Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Sep 27, 2018. All share prices are as of market close on the previous business day.

Date	Rating	Price (Rmb)	Price Target (Rmb)
20-Oct-23	N	182.70	218
07-Feb-24	N	158.33	170
09-Feb-24	N	162.84	185
17-Mar-24	OW	181.00	220
17-May-24	OW	199.67	225
07-Oct-24	OW	251.89	300
23-Jan-25	OW	258.00	400
08-Apr-25	OW	215.22	320
15-Apr-25	OW	224.00	330
22-Apr-25	NR	231.36	--
26-Jun-25	OW	254.90	370
31-Jul-25	OW	277.09	380
14-Sep-25	OW	325.00	480
30-Nov-25	OW	373.20	520
29-Jan-26	OW	339.99	500
16-Apr-26	OW	431.00	520

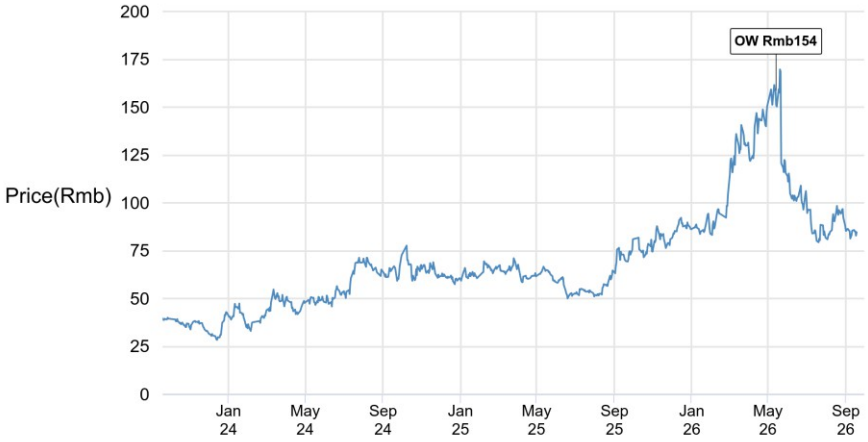
CATL - H (3750.HK, 3750 HK) Price Chart



Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Jun 25, 2025. All share prices are as of market close on the previous business day.

Date	Rating	Price (HK$)	Price Target (HK$)
26-Jun-25	OW	319.00	400
31-Jul-25	N	426.60	415
14-Sep-25	OW	432.80	530
05-Oct-25	N	610.50	600
16-Nov-25	N	542.00	575
30-Nov-25	OW	472.00	650
29-Jan-26	OW	475.40	640
19-Mar-26	N	650.50	650
16-Apr-26	OW	655.50	725

Deye - A (605117.SS, 605117 CH) Price Chart



Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage May 14, 2026. All share prices are as of market close on the previous business day.

Date	Rating	Price (Rmb)	Price Target (Rmb)
14-May-26	OW	158.87	154

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Sungrow - A (300274.SZ, 300274 CH) Price Chart



Date	Rating	Price (Rmb)	Price Target (Rmb)
03-Nov-23	OW	57.36	93
08-Dec-23	N	56.79	61
10-Mar-24	OW	71.00	83
21-Mar-24	OW	74.98	84.5
03-May-24	OW	73.82	85
03-Sep-24	OW	75.98	93
15-Oct-24	OW	96.75	123
07-Nov-24	OW	94.12	114
09-Apr-25	N	55.71	60
27-Apr-25	N	58.82	63
26-Aug-25	N	102.60	84
05-Nov-25	OW	187.19	240
30-Nov-25	OW	182.90	250
01-Apr-26	OW	150.76	212
29-Aug-26	OW	97.69	140

Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Jun 07, 2021. All share prices are as of market close on the previous business day.

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