BERNSTEIN
SOCIETE GENERALE GROUP

14 October 2026

Global Energy Storage

Global Energy Storage: No sign of an ESS slowdown



Neil Beveridge, Ph.D.
+852 2123 2648
neil.beveridge@bernsteinsg.com



Brian Ho, CFA
+852 2123 2615
brian.ho@bernsteinsg.com



Katherine Li
+852 2123 2694
katherine.li@bernsteinsg.com



Kelvin Yuan, Ph.D., CFA
+852 2123 2612
kelvin.yuan@bernsteinsg.com

Investors are questioning the sustainability of ESS growth in 2027. Despite strong battery demand and shipments since the beginning of this year, slower solar and wind installation growth and comparatively low ESS installations, particularly in China, have raised concerns over the underlying demand trajectory. The widening gap between shipments and installations has prompted questions about whether this year's strength reflects demand being pulled forward from 2027 or inventory accumulation. In this note, we examine the order pipeline and project-development cycle to assess the outlook.

Tenders and overseas orders point to continue strong shipments over the next two quarters. Our historical regression shows a strong fit between combined China tenders and overseas orders and Chinese manufacturers' ESS battery shipments two quarters lag. The relationship implies shipments of **403GWh in 4Q26 and 324GWh in 1Q27**, representing **90% and 50% yoy growth**, respectively. Even against the high shipment base in 1Q26, the pipeline points to substantial growth in 1Q27, supporting our positive outlook entering 2027.

Installation lags explain the apparent disconnect with shipments. Our analysis shows a **strong fit** between China installations and domestic shipments **one year earlier**, as well as tenders **18 months earlier**. These relationships reflect the time required to move from procurement and battery delivery through installation and grid connection. The lagged pipeline supports our forecast of approximately **250GWh of China installations in 2026**, which we view as highly achievable, and explains why installations have yet to catch up with strong shipments.

Low storage penetration supports substantial long-term growth globally and in China. The cumulative battery storage-to-solar-and-wind ratio was approximately **0.2GWh/GW globally and 0.17GWh/GW in China in 2025**, rising to our forecasts of **0.8GWh/GW and 0.9GWh/GW by 2030**, respectively. With many new renewable-linked projects adopting storage durations exceeding **4 hours**, further deployment across the existing renewable fleet and longer-duration systems provide substantial headroom for battery demand growth.

CATL remains our preferred exposure to ESS market expansion. As the global battery leader, CATL holds approximately 22% of global ESS battery shipments YTD, positioning it to benefit directly from continued industry growth. We believe concerns over a 2027 slowdown have driven an excessive share-price reaction, while the order pipeline points to a strong start to next year and low storage penetration supports the longer-term opportunity. **We rate CATL Outperform and retain it as our top pick.**

See the Disclosure Appendix of this report for required disclosures, analyst certifications and other important information. Alternatively, visit our Global Research Disclosure Website.

First Published: 13 Oct 2026 20:30 UTC Completion Date: 13 Oct 2026 11:10 UTC

BERNSTEIN TICKER TABLE

			13 Oct 2026		TTM	Reported EPS			Reported P/E (x)		
Ticker	Rating	Cur	Closing Price	Price Target	Rel. Perf.	Cur	2025A	2026E	2027E	2025A	2026E	2027E
300750.CH (CATL)	O	CNY	289.10	770.00	(42.7)%	CNY	16.14	21.10	26.28	17.9	13.7	11.0
3750.HK (CATL)	O	HKD	486.60	740.00	(31.1)%	CNY	16.14	21.10	26.28	25.7	19.7	15.8
247540.KS (EcoPro BM)	U	KRW	115,600	140,000	(22.4)%	KRW	403.00	854.00	1,963.00	286.8	135.4	58.9
051910.KS (LG Chem)	M	KRW	260,500	312,000	(27.6)%	KRW	(13,258.70)	2,693.22	28,743	(19.6)	96.7	9.1
373220.KS (LGES)	M	KRW	398,000	351,000	(6.8)%	KRW	(4,580.94)	(2,364.33)	10,225	(86.9)	(168.3)	38.9
003670.KS (Posco Future M)	U	KRW	177,000	116,000	(8.7)%	KRW	376.72	379.39	781.72	469.8	466.5	226.4
006400.KS (SDI)	M	KRW	561,000	520,000	144.7%	KRW	(9,933.80)	1,751.66	18,577	(56.5)	320.3	30.2
300274.CH (Sungrow)	O	RMB	79.91	151.00	(64.1)%	RMB	6.55	6.93	7.95	12.2	11.5	10.1
002466.CH (Tianqi Lithium)	O	CNY	38.50	80.00	(43.3)%	CNY	0.28	3.90	7.75	136.4	9.9	5.0
9696.HK (Tianqi Lithium)	O	HKD	25.24	65.00	(65.7)%	CNY	0.28	3.90	7.75	76.3	5.5	2.8
ASIAX			1,918.33									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

Source: Bloomberg, Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

One of the worries among battery investors is that ESS sales will slow dramatically next year, after what has been two outstanding years of growth. Two reasons are frequently cited. The first is a slowdown in solar installations this year in China, which turned negative. The second is that ESS shipments have significantly exceeded installations. While we agree that growth will slow, we still expect positive growth. Based on forward indicators such as overseas orders and China shipments, we expect 4Q will be a record quarter and that 1Q27 growth will record 50% growth y-o-y. Our recent discussions with companies in the battery supply chain also confirm 40-50% growth y-o-y for 2027. While solar installations have declined, the reality is that cumulative battery storage in GWh per GW of cumulative installed capacity of solar and wind is 0.2. We think that this has the potential to exceed 1 in the long term and possibly much more. Secondly, while installations are running at a lower pace than shipments or tenders, this is to be expected given the lag of 1-2 years between tender and installation. In summary, we think that ESS shipments are on track to exceed 1,000GWh this year and reach 1,500GWh next year which implies a further 50% growth. For companies such as CATL which are highly exposed to this theme and trade on 11x P/E (A-share), we see plenty more upside ahead. We rate CATL Outperform on A and H share.

VALUATION COMPS TABLE

EXHIBIT 1: **Lithium-ion battery players valuation comps table**

	Price		EV	Mkt cap	P/E				EV/Sales				Sales Growth
Company	13-Oct	Curcy	USD mn	USD mn	24A	25A	26E	27E	24A	25A	26E	27E	24-25
LGES	410,000	KRW	90,858	71,554	-155.7	-144.4	-250.8	59.1	5.2	5.6	3.9	3.1	-8%
CATL(H)	485.2	HKD	280,272	294,276	0.0	29.8	20.8	16.9	0.0	4.6	3.0	2.5	19%
CATL(A)	289.1	CNY	189,880	203,884	28.7	20.4	14.3	11.5	3.7	3.1	2.1	1.7	19%
Samsung SDI	560,000	KRW	42,194	33,658	48.8	-93.2	70.5	29.6	3.5	4.7	3.5	2.8	-26%
Panasonic	4,366	JPY	72,835	67,797	23.5	30.4	43.0	21.6	1.3	1.3	1.5	1.4	7%
BYD	73.3	HKD	113,285	101,079	18.5	19.6	17.5	13.5	1.1	0.9	0.8	0.7	15%
SK Innovation	156,800	KRW	44,140	19,770	-20.9	-22.6	8.4	13.3	0.9	0.8	0.6	0.6	8%
Gotion High Tech	28.3	CNY	17,243	7,679	65.4	17.5	25.5	20.2	3.4	2.6	1.8	1.5	29%
EVE	48.4	CNY	19,640	15,702	26.6	24.0	14.6	10.9	2.9	2.0	1.3	1.0	41%
Sunwoda	19.7	CNY	12,041	5,445	23.6	18.4	18.2	12.2	1.6	1.3	0.9	0.7	25%
CALB	15.5	HKD	14,397	3,489	41.4	18.8	8.9	5.7	3.3	2.4	1.4	0.9	38%

	LTM	Rel LTM	LTM	LTM	GPM (%)	OPM (%)	ND/E		EV/EBITDA				25A EV/Capacity
Company	%	%	High	Low	25A	25A	24A	25A	24A	25A	26E	27E	(USD M/GWh)
LGES	-6%	-45%	437,500	224,000	18%	6%	40%	48%	37.9	26.9	21.3	14.3	257
CATL(H)	-8%	-5%	795	453	25%	19%	-34%	-46%	0.0	19.3	13.3	10.9	374
CATL(A)	-20%	-19%	469	285	25%	19%	-34%	-46%	16.1	13.1	9.0	7.4	253
Samsung SDI	171%	58%	820,000	200,500	8%	-13%	42%	34%	22.8	125.2	21.1	14.4	671
Panasonic	140%	82%	4,982	1,657	30%	5%	11%	15%	13.9	12.5	16.3	10.8	1,214
BYD	-31%	-27%	113	71	18%	4%	-51%	5%	8.1	7.8	5.9	5.0	241
SK Innovation	48%	-10%	166,000	87,700	6%	1%	78%	68%	22.1	17.6	5.0	7.4	400
Gotion High Tech	-31%	-29%	47.6	24.3	18%	7%	125%	122%	29.7	19.0	14.0	11.8	79
EVE	-37%	-40%	89.9	47.0	17%	8%	37%	49%	21.2	16.4	11.4	8.9	152
Sunwoda	-36%	-35%	37.9	16.0	16%	3%	61%	99%	22.2	20.3	12.9	10.0	147
CALB	-51%	-49%	39.3	14.9	17%	6%	96%	106%	24.9	18.3	8.7	6.6	77

CATL, LG Energy Solution, and Samsung SDI are covered by Neil Beveridge. BYD is covered by Eunice Lee. Panasonic is covered by Kengo Makita. All other stocks are not covered by Bernstein. Source: Bloomberg (consensus estimates) and Bernstein analysis

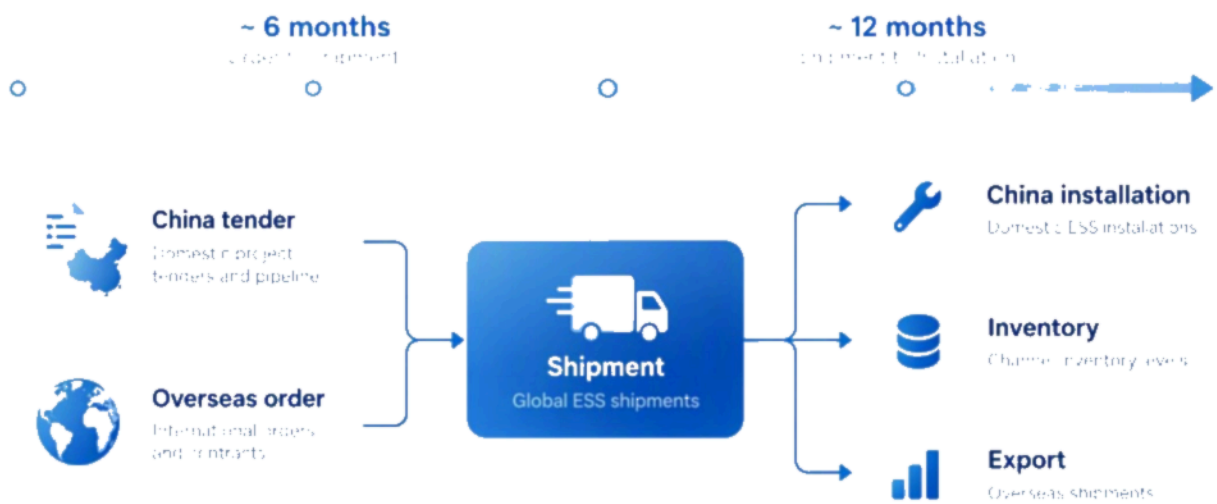
DETAILS

We remain positive on ESS shipment growth entering 2027, supported by a strong order pipeline and substantial longer-term deployment potential. Our regression indicates Chinese manufacturers' ESS battery shipments of 403GWh in 4Q26 and 324GWh in 1Q27, up 90% and 50% yoy, respectively. Combined China tenders and overseas orders are estimated at 308GWh in 3Q26, up 72% yoy, providing approximately two quarters of shipment visibility. Installations follow domestic shipments by approximately one year and tenders by approximately 18 months, helping explain the gap between current procurement and deployment. We forecast China installations of 250GWh in 2026, up 37% yoy, while cumulative battery storage per GW of solar and wind increases from 0.17GWh/GW in 2025 to 0.87GWh/GW by 2030. This combination of near-term visibility and longer-term expansion supports our positive view on CATL.

ORDERS AND TENDERS PROVIDE VISIBILITY INTO 2027

The market's concern is whether strong shipments can continue into 2027. Our framework distinguishes China tenders and overseas orders from shipments, inventory, exports and domestic installations. Orders precede shipments by approximately six months, while domestic installations follow shipments by approximately 12 months. A gap between current shipments and China installations therefore does not, by itself, establish weakening demand.

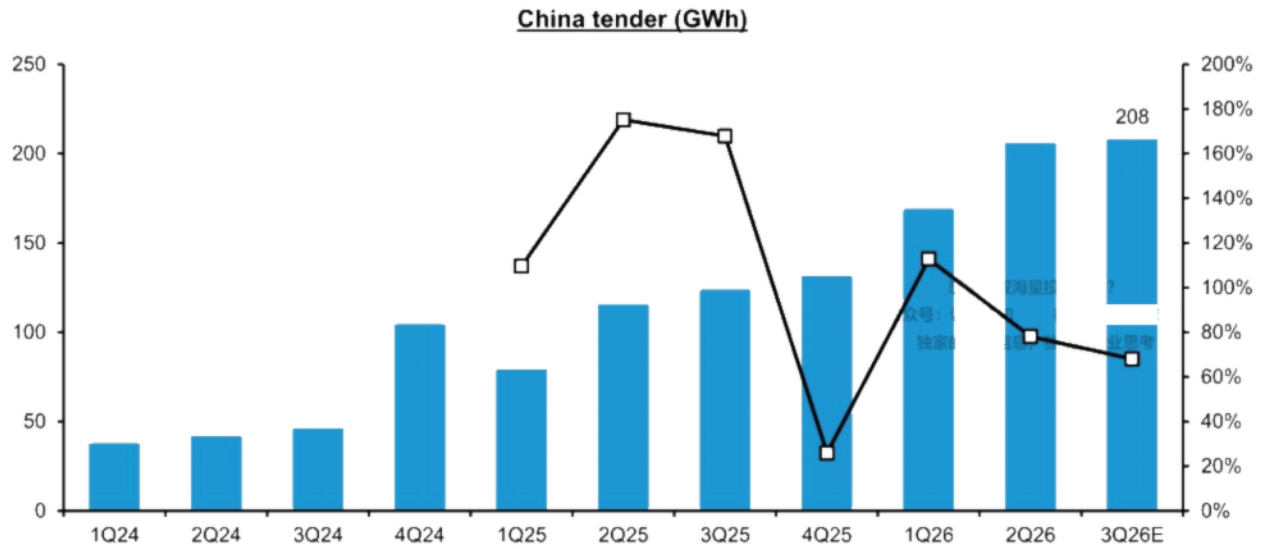
EXHIBIT 2: **ESS Market Flow: From Orders to Shipments and Deployment**



Source: CNESA, Bernstein analysis

China tenders remain elevated. We estimate China ESS tenders of 208GWh in 3Q26, up 68% yoy, following 169GWh in 1Q26 and 206GWh in 2Q26. Although YoY growth moderates against a higher base, tender volumes continue to support a substantial future procurement pipeline.

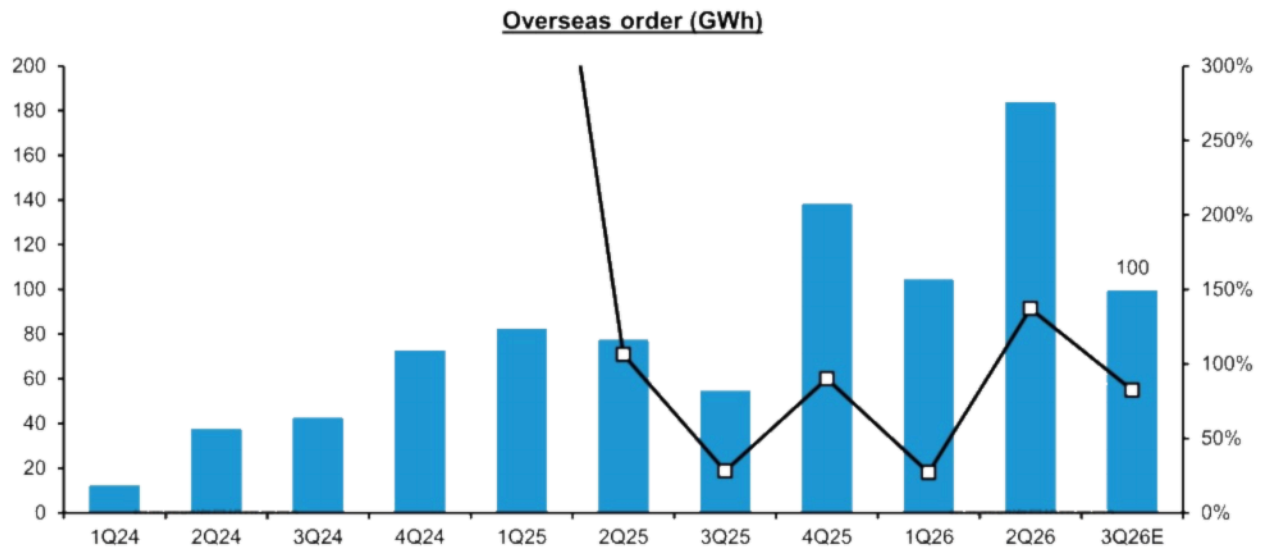
EXHIBIT 3: **China ESS Tenders: We expect volumes to reach 208GWh in 3Q26, up 68% yoy**



Source: ICC data center, Bernstein analysis and estimates

Overseas orders provide a second source of shipment visibility. We estimate overseas ESS orders of 100GWh in 3Q26, up 82% yoy, following 105GWh in 1Q26 and 184GWh in 2Q26. Quarterly intake is uneven, but the estimated 3Q26 volume remains substantially above the 55GWh recorded in 3Q25.(+82% YoY).

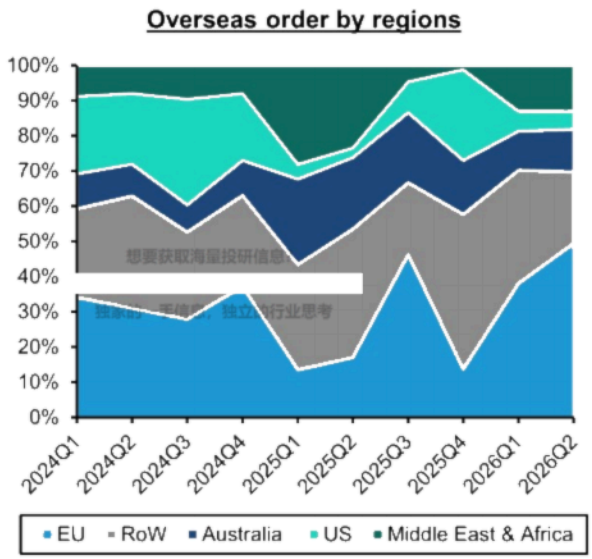
EXHIBIT 4: **Overseas ESS Orders: We expect volumes to reach 100GWh in 3Q26, up 82% yoy**



Source: CESA, Bernstein analysis and estimates

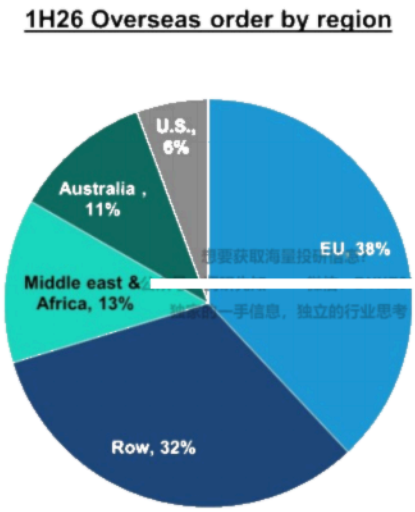
Europe is the largest regional contributor to overseas orders. Europe accounted for 38% of overseas orders in 1H26, followed by RoW at 32%, the Middle East and Africa at 13%, Australia at 11% and the US at 6%. The regional mix changes over time, highlighting why shipment demand should be assessed across overseas markets rather than through China installations alone.

EXHIBIT 5: **Overseas ESS Order Mix: Regional shares evolve over time**



Source: CESA, Bernstein analysis

EXHIBIT 6: **Overseas ESS Orders by Region: Europe lead the world accounted for 38% of orders in 1H26**

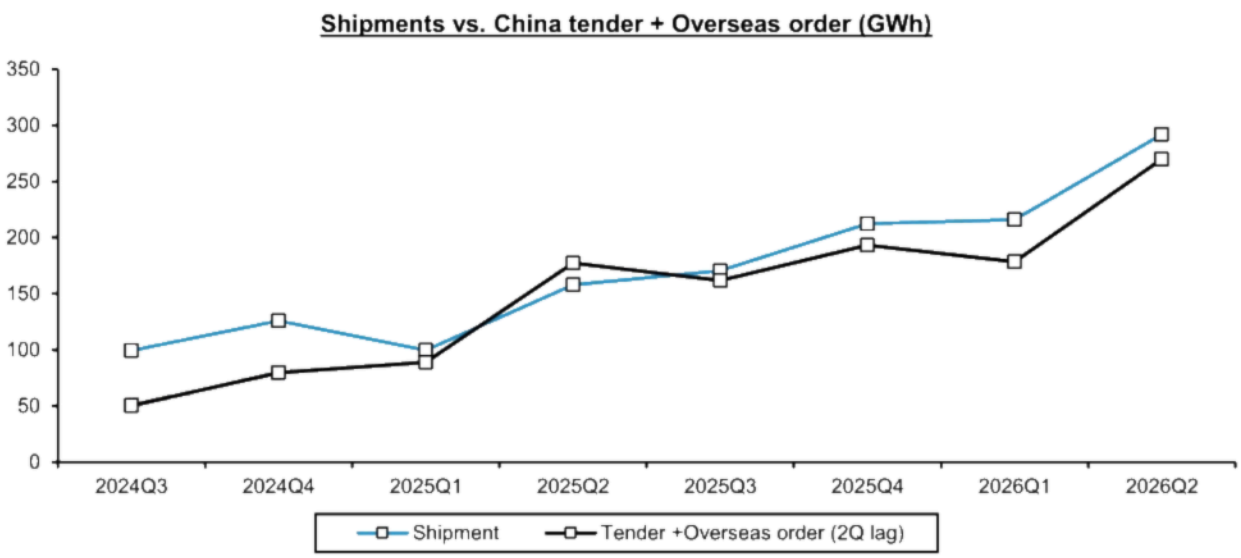


Source: CESA, Bernstein analysis

SHIPMENT OUTLOOK: STRONG GROWTH EXTENDS INTO 1Q27

Shipments track the earlier order pipeline. Chinese manufacturers' ESS battery shipments broadly follow combined China tenders and overseas orders with a two-quarter lag. Shipments reached 216GWh in 1Q26 and 292GWh in 2Q26, compared with combined pipeline volumes of 270GWh in 4Q25 and 274GWh in 1Q26. Matching the appropriate periods is more informative than comparing current

EXHIBIT 7: **ESS Shipment Trends: Shipments closely track China tenders and overseas orders with a two-quarter lag**

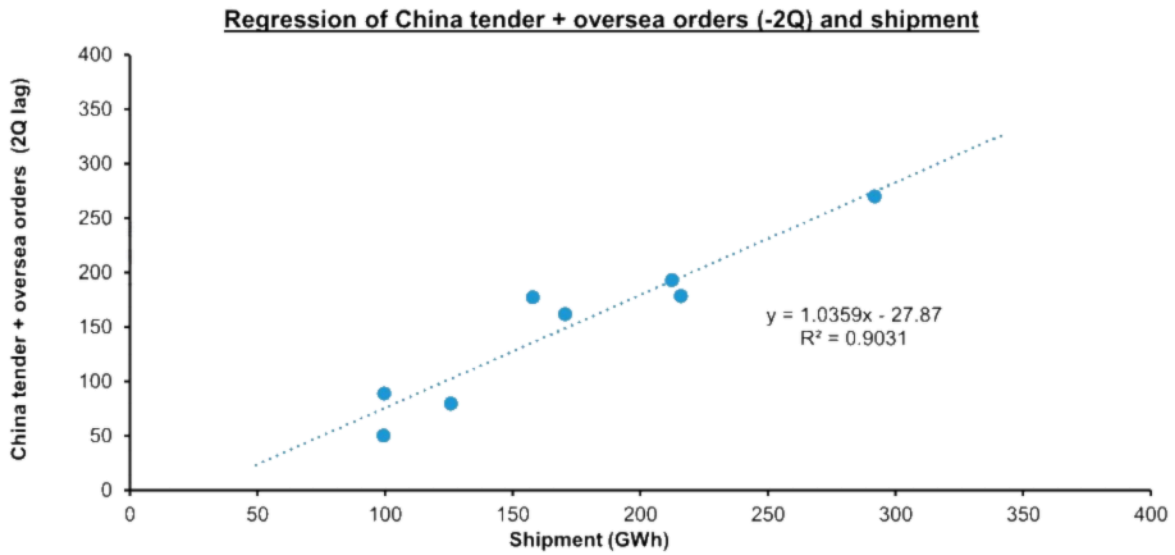


Source: CESA, ICC data center, Bernstein analysis

Shipments closely track the earlier order pipeline. The historical series shows Chinese manufacturers' ESS battery shipments moving closely with combined China tenders and overseas orders two quarters earlier. This relationship makes lagged order

activity a useful indicator of upcoming shipments, rather than simply a confirmation of demand already delivered.

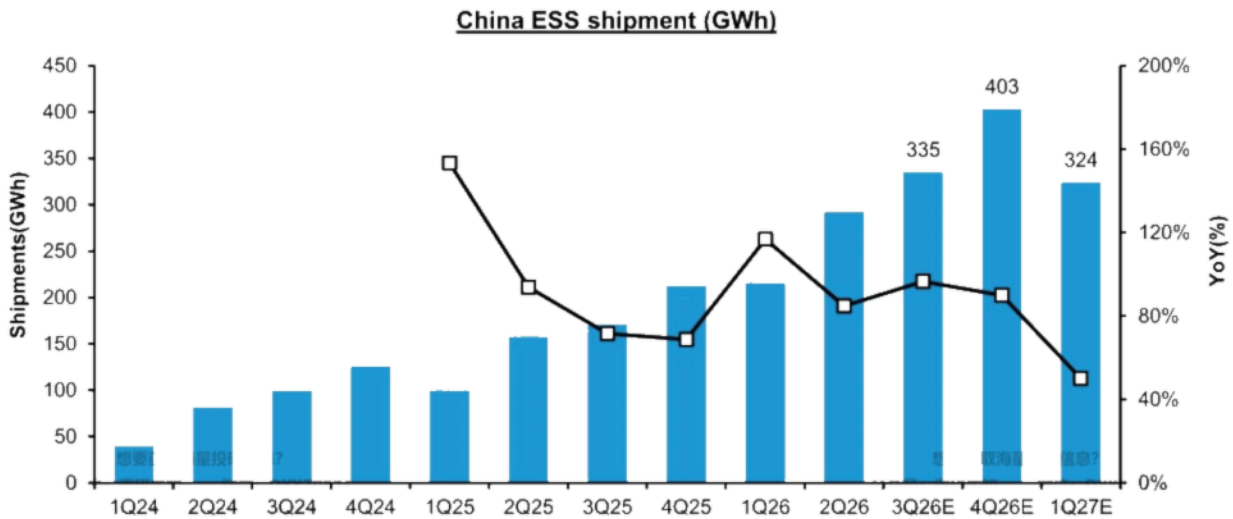
EXHIBIT 8: **ESS Shipment Regression: Lagged China tenders and overseas orders show a strong fit with shipments**



Source: CESA,, ICC data center, Bernstein analysis

Strong year-on-year shipment growth extends into 1Q27. We forecast shipments of 335GWh in 3Q26, 403GWh in 4Q26 and 324GWh in 1Q27, representing growth of 96%, 90% and 50% yoy, respectively.

EXHIBIT 9: **China ESS Shipment Outlook: We expect shipments of 403GWh in 4Q26 and 324GWh in 1Q27,up 90% and 50% yoy**



Source: ICC data center, Bernstein analysis and esitmates

The combined pipeline remains supportive. China tenders plus overseas orders totalled 274GWh in 1Q26 and 390GWh in 2Q26, and are estimated at 308GWh in 3Q26, up 69%, 102% and 72% yoy, respectively. These figures provide the underlying pipeline for the next shipment cycle and support continued growth entering 2027.

EXHIBIT 10: **China ESS Summary: Tender Volumes, Overseas Orders and Shipments forcast**

	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26	3Q26E	4Q26E	1Q27E
GWh													
China tender	38	42	46	105	79	116	124	132	169	206	208		
YoY(%)					110%	175%	168%	26%	113%	78%	68%		
Overseas order	12	38	43	73	82	78	55	138	105	184	100		
YoY(%)					565%	106%	28%	90%	27%	137%	82%		
Tender +Overseas order	50	80	89	177	162	193	179	270	274	390	308		
YoY(%)					222%	143%	101%	52%	69%	102%	72%		
Shipment	39	81	99	126	100	158	171	212	216	292	335	403	324
YoY(%)					153%	94%	72%	69%	117%	85%	96%	90%	50%

Source: CESA, ICC data center, Bernstein analysis and estimates

INSTALLATION LAGS HELP EXPLAIN THE GAP WITH SHIPMENTS

Project development creates a meaningful deployment lag. The illustrative timeline allows approximately three months from tender to award, 3–6 months for production, 1–3 months for transportation, 3–6 months for installation and 3–9 months for grid connection. Battery delivery and operational deployment therefore would not fall within the same reporting period

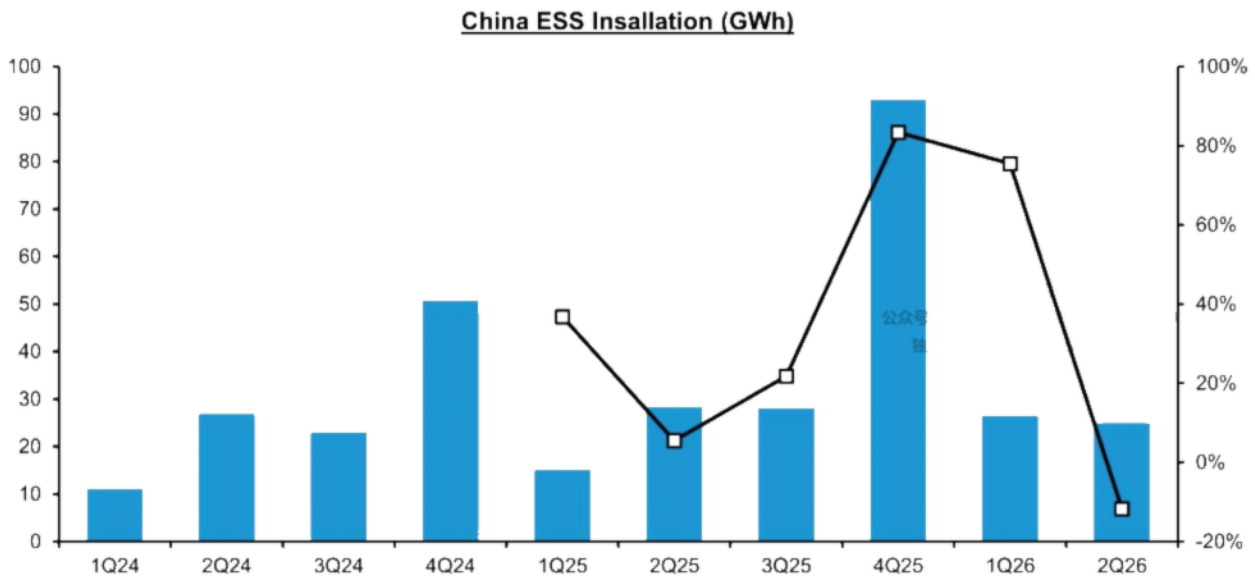
EXHIBIT 11: **ESS Project Timeline: From Tender to Operation**



Source: HBOWA energy, Bernstein analysis

Quarterly installations are uneven. Historical data shows a pronounced 4Q25 installation peak, followed by lower volumes in 1Q26 and 2Q26. This uneven quarterly profile reinforces the need to assess installations against the relevant earlier domestic shipment cycle, rather than treating each quarter as a direct read-through to current battery demand.

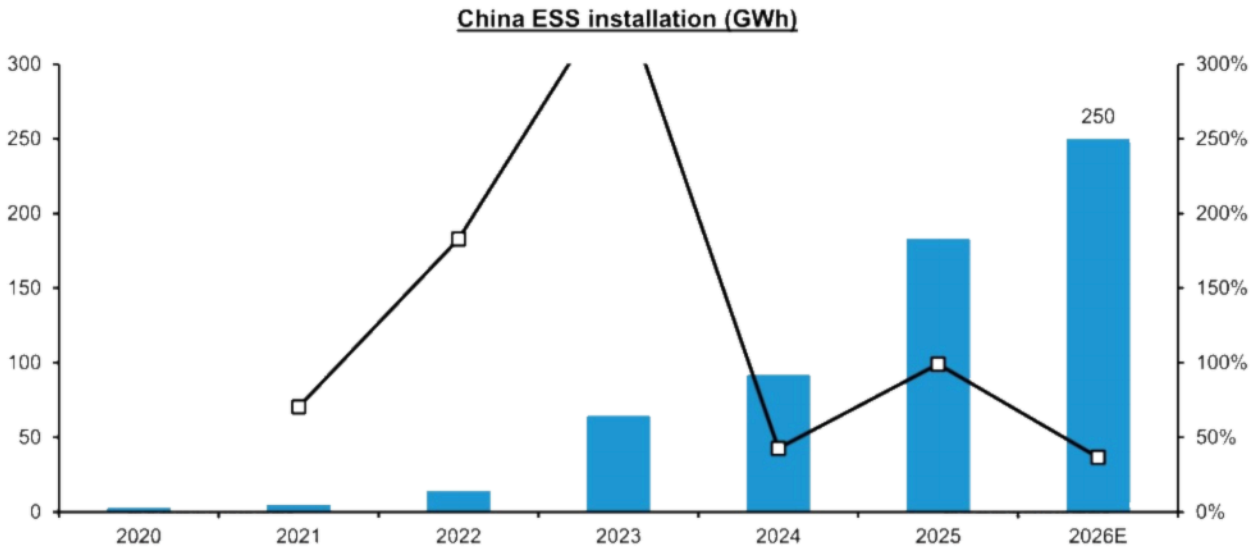
EXHIBIT 12: **China ESS Installations: Quarterly Volumes and YoY Growth**



Source: CABIA, Bernstein analysis

We still think annual installations would grow. We expect China ESS installations to reach 250GWh in 2026, up 37% yoy, from 183GWh in 2025.

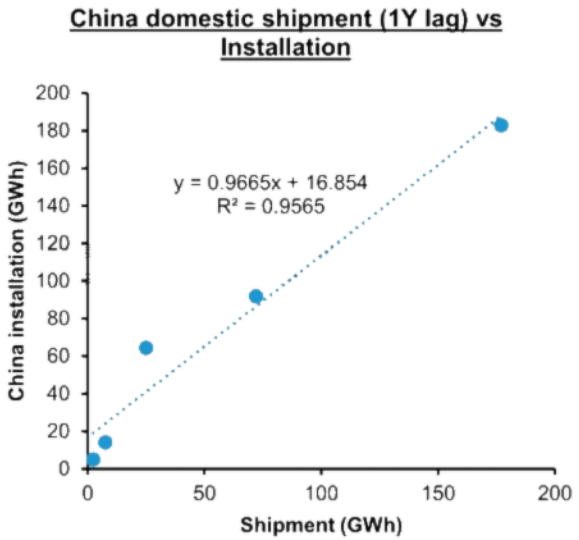
EXHIBIT 13: **China ESS Installation Outlook: We expect installations to reach 250GWh in 2026, up 37% yoy**



Source: BNEF, Bernstein analysis and estimates

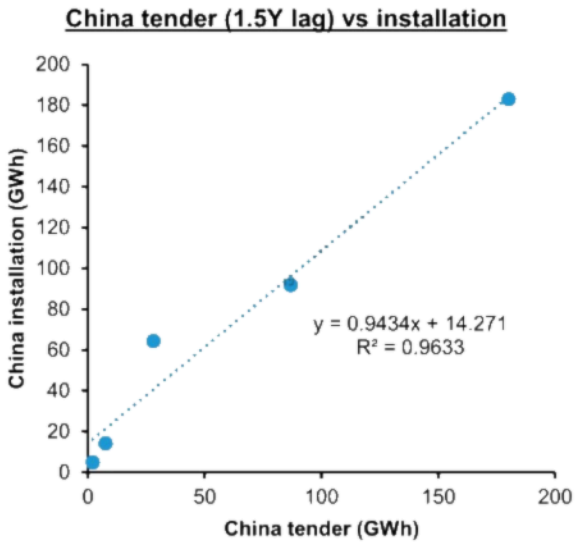
Our regressions show a strong fit between installations and the lagged domestic pipeline. China installations track domestic shipments approximately one year earlier and tenders approximately 18 months earlier. These relationships are consistent with the project-development cycle and help explain why current installations are lower than current shipments and tenders.

EXHIBIT 14: **China ESS Shipment-to-Installation Regression: Domestic shipments show a strong fit with installations one year lag**



Source: BNEF, Bernstein analysis

EXHIBIT 15: **China ESS Tender-to-Installation Regression: Tender volumes show a strong fit with installations 18 months lag**



Calculted by average of (T-2) and (T-1)
Source: BNEF, Bernstein analysis

Domestic procurement and deployment measure different parts of the pipeline. In 2025, China recorded 450GWh of tenders, 235GWh of domestic shipments and 183GWh of installations, with the table showing growth of 95%, 33% and 99% yoy, respectively. Our 250GWh installation forecast for 2026 should be assessed in the context of this earlier pipeline. The lags help explain the differences, but do not imply that every tender ultimately converts into an installation.

EXHIBIT 16: **China Domestic ESS Overview**

China Domestic ESS (GWh)	2020	2021	2022	2023	2024	2025	2026E
Tender	3	12	44	130	231	450	
YoY(%)		300%	267%	195%	78%	95%	
Shipment	2	8	25	72	177	235	
YoY(%)		226%	233%	188%	146%	33%	
Installation	3	5	14	64	92	183	**250**
YoY(%)		71%	183%	353%	43%	99%	**37%**

Source: BNEF, ICC data center, CESA, government reports, Bernstein analysis and estimates

LONGER-TERM DEMAND REMAINS SUBSTANTIAL

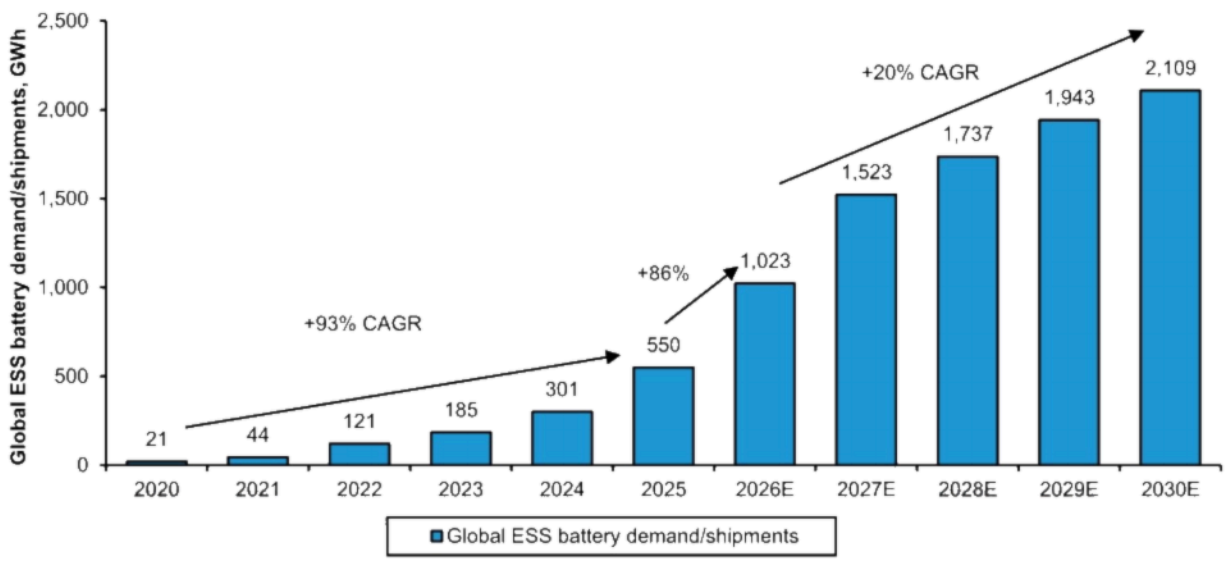
Since the beginning of the year, we have adopted a more positive outlook on ESS and elevated our forecast to capture the higher ESS penetration driven by improved economics and the critical role of ESS in ensuring grid stability. For 2025 global ESS demand growth was 83% YoY to 550GWh, we forecast 2026 global ESS demand growth as 86% YoY to 1,023GWh. Based on data we track here, growth is clearly tracking above our estimates. Looking further ahead, our long-term expectations for 2030 have been 2,109GWh with a 20% CAGR. Overall, the increase in ESS underscores the importance of ESS technologies as economic viability improves and the importance for grid resilience intensifies worldwide

EXHIBIT 17: **Global battery ESS capacity**

	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E	2029E	2030E	2050E
Total power capacity (GW)	7,690	8,053	8,495	9,160	9,973	10,812	11,755	12,799	13,887	15,012	16,170	40,260
Total solar and wind capacity (GW)	1,531	1,802	2,127	2,686	3,399	4,144	4,978	5,877	6,861	7,878	8,920	33,377
Share of solar and wind (%)	*20%*	*22%*	*25%*	*29%*	*34%*	*38%*	*42%*	*46%*	*49%*	*52%*	*55%*	*83%*
Net added solar and wind capacity (GW)	262	271	324	560	713	745	834	898	984	1,017	1,042	1,403
y-o-y (%)		*3%*	*20%*	*73%*	*27%*	*4%*	*12%*	*8%*	*10%*	*3%*	*2%*	*1%*
Cumulative ESS capacity (GW)	18	27	45	90	165	281	469	773	1,169	1,576	1,991	9,755
As of total capacity (%)	*0%*	*0%*	*1%*	*1%*	*2%*	*3%*	*4%*	*6%*	*8%*	*11%*	*12%*	*24%*
As of solar and wind capacity (%)	*1%*	*2%*	*2%*	*3%*	*5%*	*7%*	*9%*	*13%*	*17%*	*20%*	*22%*	*29%*
Net added ESS capacity (GW)	6	10	18	45	75	116	189	304	396	408	414	410
y-o-y (%)		*63%*	*82%*	*154%*	*68%*	*55%*	*62%*	*61%*	*30%*	*3%*	*2%*	*2%*
Duration (hours)	2.0	2.1	2.1	2.1	2.3	2.5	2.6	2.8	3.1	3.3	3.4	4.1
Cumulative ESS capacity (GWh)	**36**	**58**	**95**	**191**	**375**	**700**	**1,228**	**2,200**	**3,624**	**5,173**	**6,830**	**39,789**
Annual battery installation (GWh)	**12**	**22**	**37**	**96**	**184**	**325**	**542**	**1,009**	**1,501**	**1,712**	**1,915**	**4,406**
y-o-y	*61%*	*78%*	*71%*	*159%*	*91%*	*77%*	*67%*	*86%*	*49%*	*14%*	*12%*	*3%*
Annual ESS battery shipment/demand (GWh)	**21**	**44**	**121**	**185**	**301**	**550**	**1,023**	**1,523**	**1,737**	**1,943**	**2,109**	**4,605**
y-o-y	*73%*	*114%*	*175%*	*53%*	*63%*	*83%*	*86%*	*49%*	*14%*	*12%*	*9%*	*3%*
Cumulative GWh/GW(solar + wind)	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.2**	**0.2**	**0.4**	**0.5**	**0.7**	**0.8**	**1.2**

Source: Government websites, Bloomberg, InfoLink, IEA, BNEF, SNE Research, Bernstein analysis and estimates

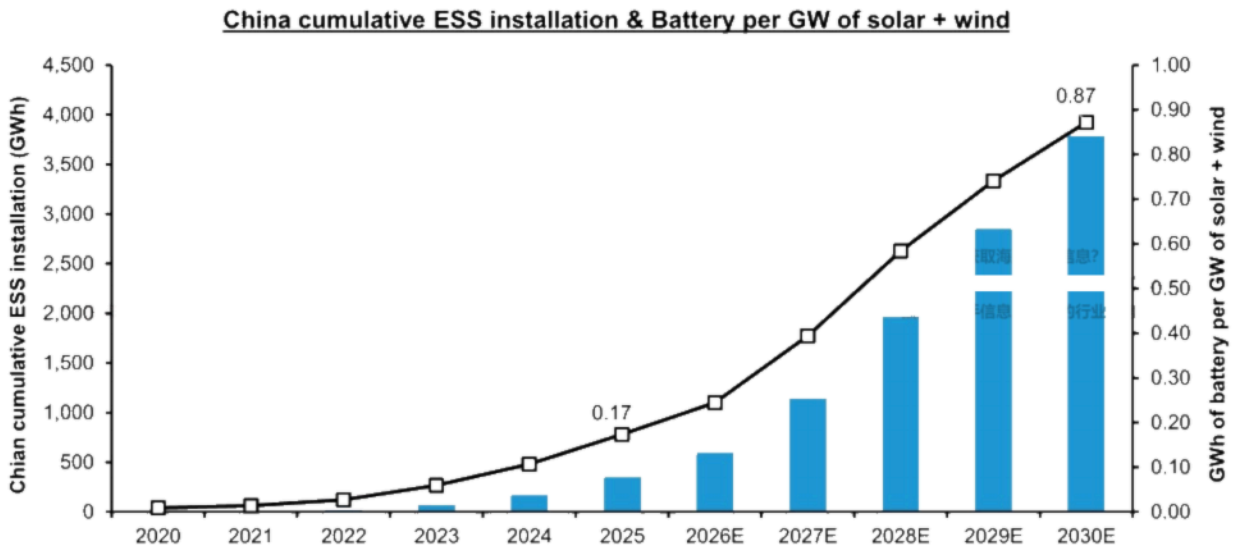
EXHIBIT 18: **At the battery cell shipment level, we expect BESS battery demand to increase by 86%, reaching 1023GWh in 2026, followed by a CAGR of 20% over the next four years, culminating in 2,109GWh**



Source: Government websites, Bloomberg, InfoLink, Bernstein analysis and estimates

China's existing renewable fleet leaves substantial room for storage. Cumulative battery storage per GW of solar and wind capacity stood at 0.17GWh/GW in 2025, versus our forecast of 0.87GWh/GW by 2030. China's low storage base and the shift towards longer-duration projects underpin our positive long-term outlook for ESS. Many new projects now feature storage durations exceeding four hours, while storage deployment relative to China's large installed solar and wind fleet remains low. This combination leaves substantial room for growth in battery storage demand.

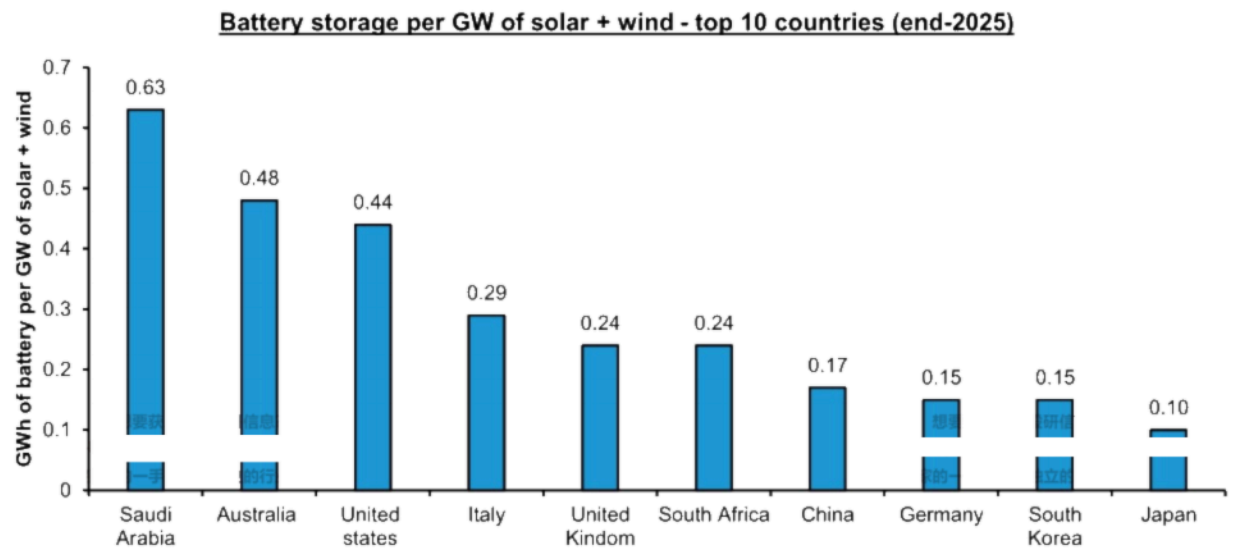
EXHIBIT 19: **China Storage-to-Renewables Ratio: We expect battery storage (GWh) per GW of solar and wind to rise from 0.17 in 2025 to 0.87 by 2030**



Source: BNEF, government reports, Bernstein analysis and estimates

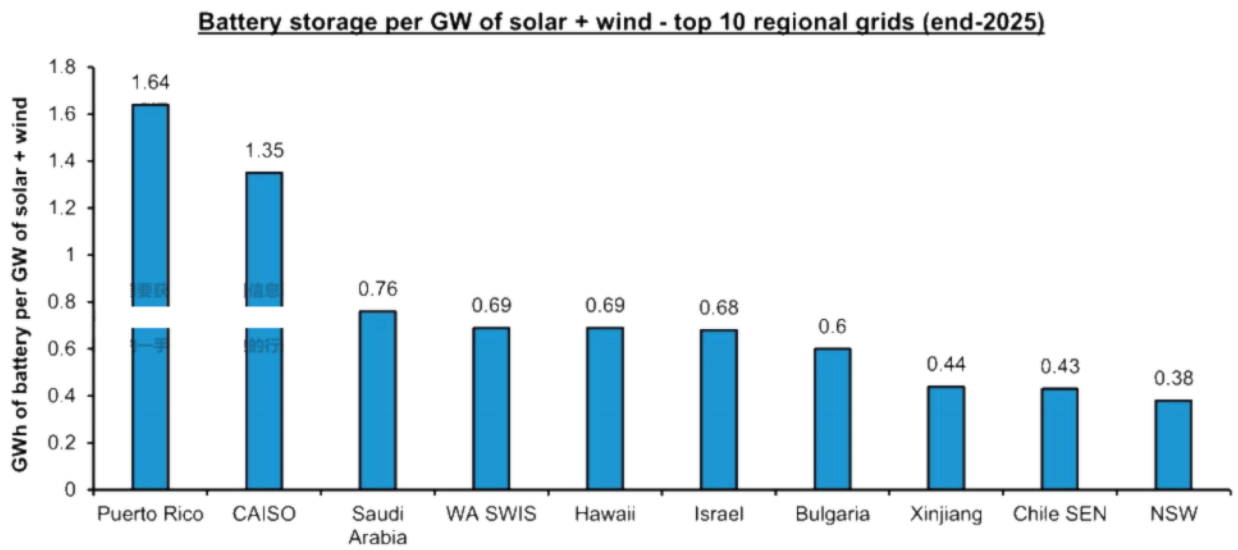
Global ESS penetration remains relatively low, suggesting substantial room for further deployment. At end-2025, Saudi Arabia led the countries shown with a battery storage-to-solar-and-wind capacity ratio of 0.63GWh/GW, ahead of Australia at 0.48GWh/GW, the US at 0.44GWh/GW and China at 0.17GWh/GW. Regional ratios were higher, with Puerto Rico leading at 1.64GWh/GW, followed by CAISO at 1.35GWh/GW. In our view, the adoption of four-hour systems in new storage projects could support further growth in installed battery energy capacity.

EXHIBIT 20: **Battery Storage Relative to Renewables by Country: Saudi Arabia leads the countries**



Source: IEA, Bernstein analysis

EXHIBIT 21: **Battery Storage Relative to Renewables by Market: Puerto Rico lead the markets**



Source: IEA, Bernstein analysis