LESSONS FROM CHINA: SELECTIVE ADOPTION IS KEY

CHINESE BESS CAPACITY HAS GROWN RAPIDLY IN RECENT YEARS

BESS GROWTH IN CHINA

	CY19	CY23	CY24
BESS Capacity (GW)	3	42	74
BESS Capacity/ Solar Capacity (%)	1	5	8

Compared to this, India's BESS capacity is less than 0.5% of its solar capacity

ENABLERS OF GROWTH

- Aggressive centralised planning through "New Energy Storage Development Implementation Plan (2021-25)
- Simplified single-window clearances
- Direct capacity building by SOE (State Grid Corp., China Huaneng)
- Low cost of capital
- Integrated battery manufacturing
- Economies of scale
- Stacked revenue structure

ENABLER 1: MARKET DRIVE REVENUE STACKING – CAN BE ADOPTED IN INDIA

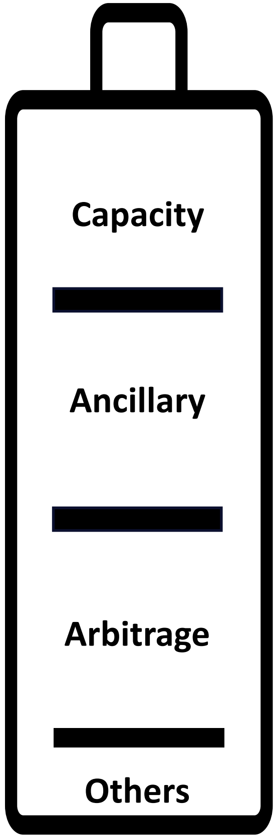
KEY REVENUE SOURCES FOR BESS PROJECT

- Forms the largest share of revenues, typically over 60%. Is indexed to normative operating parameters
- Consists of payment made by Buying Entity (typically DISCOM) with/without intermediary at competitively bid tariff

- Anywhere between 0-30% of the capacity is tied up by SECI with NLDC (or state DISCOM with SLDC)
- Payment is made from NLDC/SLDC via intermediary at typically same rate as base tender – no separate market mechanism to discover tariff

- On a case-to-case basis, upto 40% has been seen to be allocated towards merchant capacity
- Developers have limited scope to recharge using non-RE sources because of RPO/ESO restrictions

- VGF and State incentives offer tariff cushion
- Renewable integration through FDRE/RTC is also important



- Forms the largest share of revenues but contribution is usually lower than in India
- Consists of payment made by distribution entities. There are usually no intermediaries

- Capacity may be sold through contracts specifically for ancillary services delinked from other uses
- Deep markets experience in certain provinces for determining ancillary tariffs in real time

- Developers can make merchant capacities depending on ability to secure clearances
- No national level restriction on recharging only using RE. Some provinces have such mandates

- Incentives exist, but generally contribute less to overall revenue
- Renewable integration is important like in India

The next stage of BESS project development in India would involve diversification of revenue sources beyond capacity charges through market based ancillary services monetisation mechanism with active participation from bodies others than SLDC/NLDC

Source: CERC, SECI, News Sources, SBICAPS

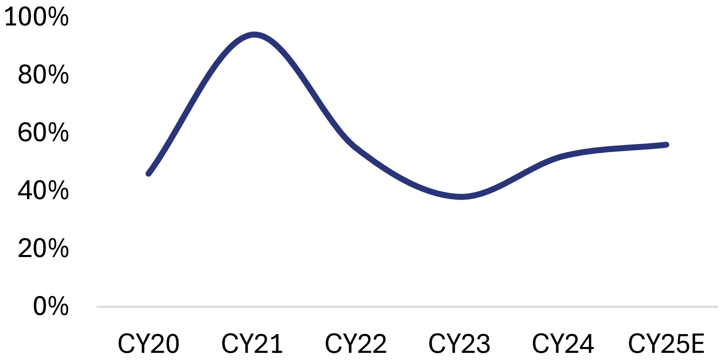
ENABLER 2: INTEGRATED UPSTREAM ECOSYSTEM – STILL SOME TIME AWAY IN INDIA

SBICAPS
Complete Investment Banking Solutions

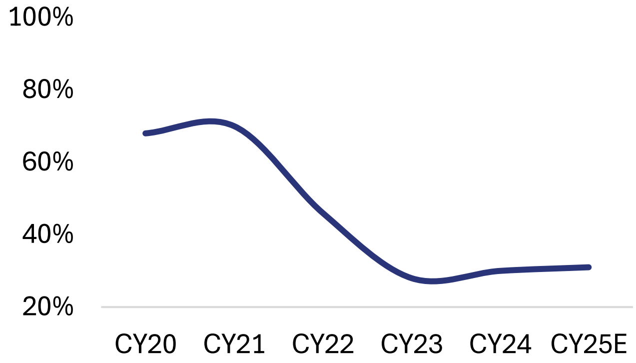
Cathode | Anode | Electrolyte | Separator — **Cell**

Battery

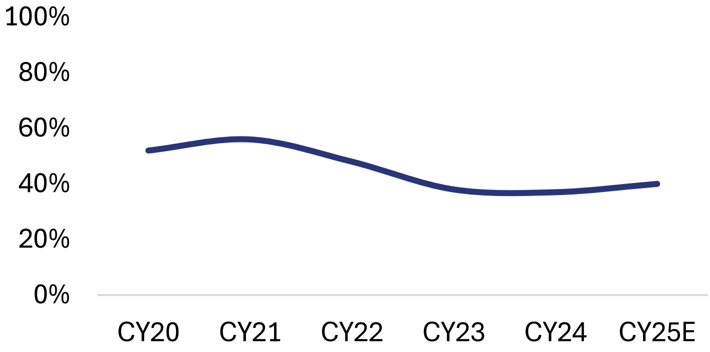
CATHODE CUF - GLOBAL



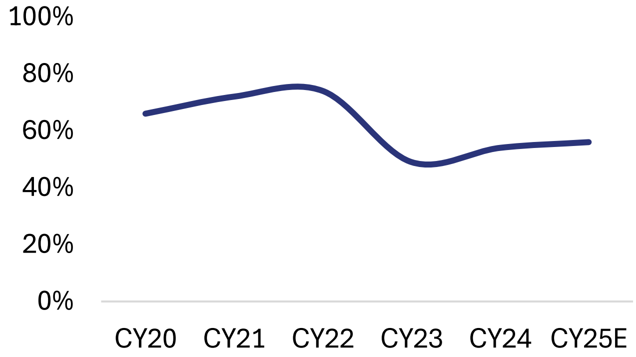
ELECTROLYTE CUF - GLOBAL



ANODE CUF - GLOBAL

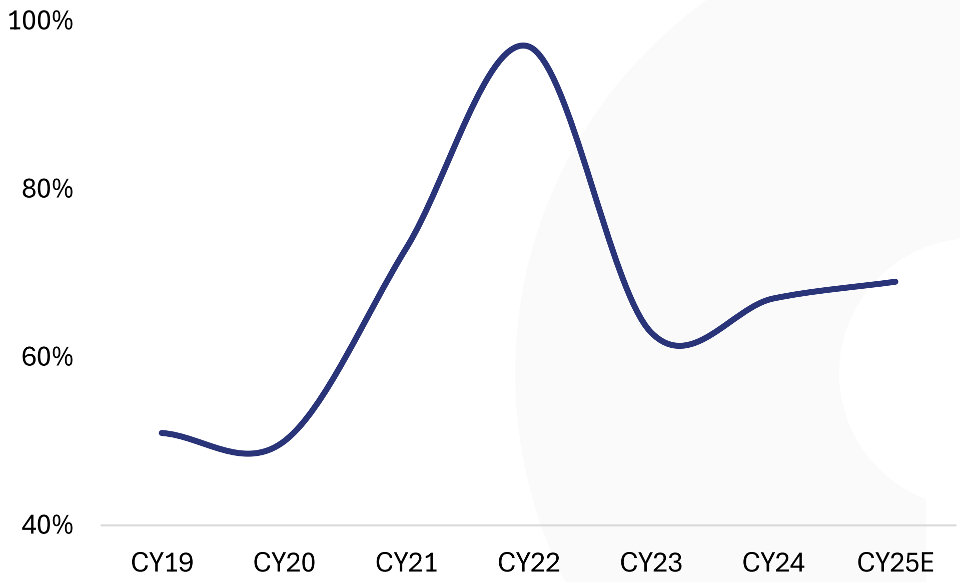


SEPARATOR CUF - GLOBAL



Only a few cell makers in the globe are making and RoE>10% The situation was not much better for precursors such as cathodes and anodes as well. While LFP remains relatively less crowded than NMC, supply remains high keeping capacity utilisation moderate

BATTERY EFFECTIVE CAPACITY UTILISATION - CHINA



- Over 97% of the 345.0 GWh of the ESS batteries produced in the world in CY24 were made in China, with S. Korea and Japan making up the remainder
- India had no significant production of LFP batteries for ESS. ACC PLI scheme mainly focuses on EV batteries. Limited LFP capacity is expected to come up in India over the medium term

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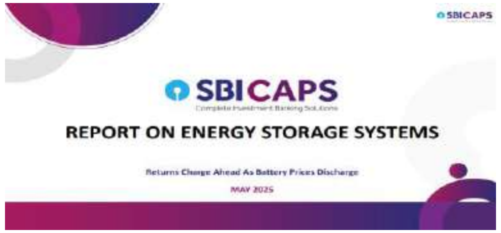

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