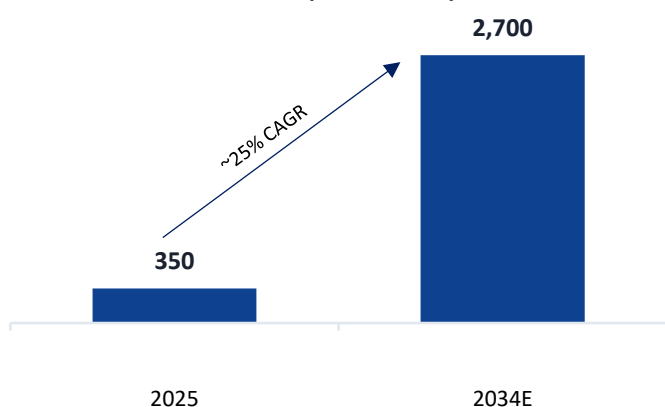


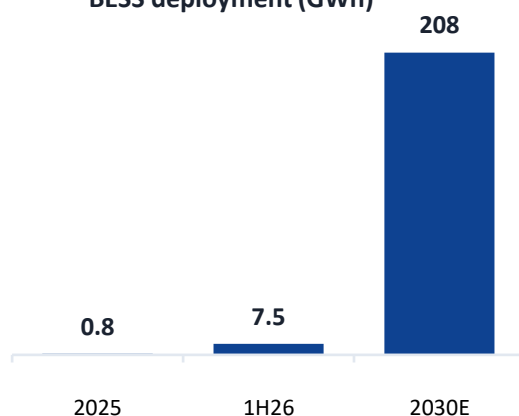
India has surpassed 250 GW of installed renewable energy capacity in 2025 and remains on track to achieve its target of 500 GW of non-fossil fuel capacity by 2030E. As renewable penetration rises, maintaining grid reliability and addressing intermittency have become critical challenges, particularly during evening peak demand when solar generation is unavailable. **Battery Energy Storage Systems (BESS) are emerging as a key enabler** of the energy transition by storing excess renewable power during periods of high generation and discharging it during peak demand.

MARKET SIZE AND DEPLOYMENT TRAJECTORY

BESS market size (US\$ million)



BESS deployment (GWh)



>90 GWh

projects already in the pipeline

~25%

market size CAGR to 2034E

<1 GWh

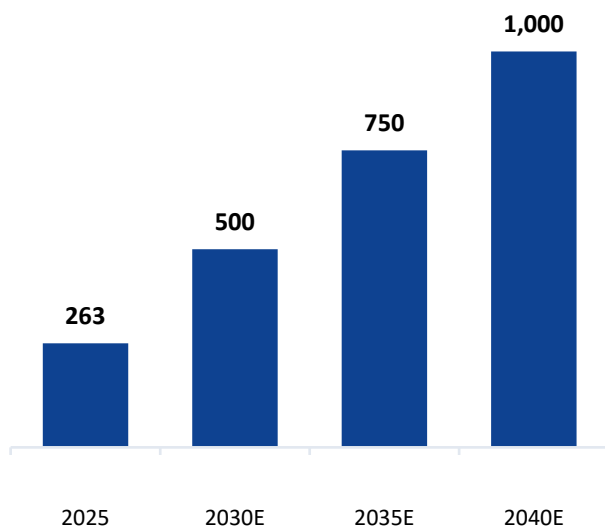
grid-scale BESS installed in 2025

208 to 230

GWh storage needed by 2030E

THE TARGET THAT DRIVES STORAGE DEMAND

India non-fossil capacity target (GW)



What it means

- Reaching 500 GW of non-fossil power by 2030E will require large-scale storage to ensure a reliable supply of electricity from solar and wind power
- India's BESS capacity is expected to reach ~208-230 GWh by 2030E, up from the current capacity of ~7.5GWh
- Roughly 80 GWh of BESS is expected to be added each year between 2027E and 2035E
- Storage is now mandatory in many renewable tenders (minimum two hours), turning BESS from an optional add-on into a critical component of India's renewable energy infrastructure.

WHY NOW? STRUCTURAL DEMAND DRIVERS



Renewable
penetration



Grid stability needs



Transport and
industry



AI data-centre
demand



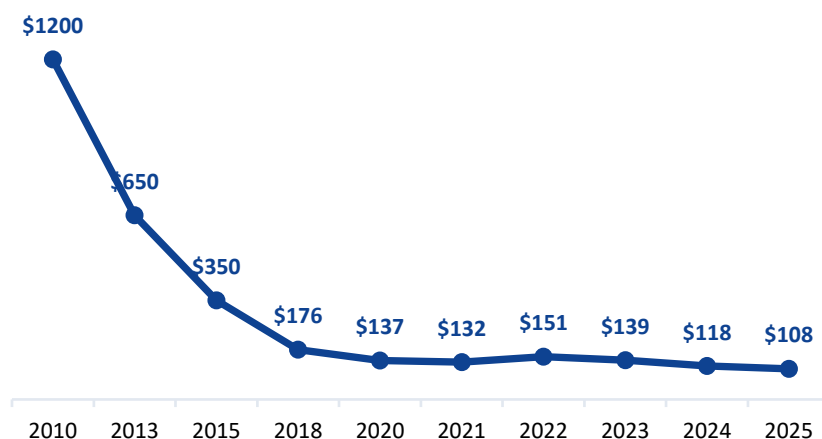
Supportive policy



Two-hour storage
mandate

LITHIUM-ION BATTERY PACK PRICE, 2010 TO 2025

Average Li-ion battery pack price (US\$/kWh)



US\$108

per kWh pack price in 2025

~91%

fall in pack prices since 2010

~60%

battery packs as share of BESS capex



Falling cells, viable projects

Why cost curve is the story

- Battery pack prices have plunged over 15 years due to scale, technology gains, and mature supply chains
- With packs comprising ~60% of BESS capex, lower cell costs directly strengthen project economics
- Lower capex is the primary reason grid-scale BESS has entered commercial viability in India



The capex opportunity

- At an indicative ₹1.5 crore per MWh (₹1,500 crore per GWh), deployment scales into a large investment cycle
- Building 208–230 GWh of capacity would require ₹3.0–3.4 lakh crore (US\$25–30 billion) investment over the next 3–4 years
- Spending would span the value chain, from batteries and EPC to system integration, power electronics, grid equipment, and utilities

POLICY SUPPORT STRENGTHENING PROJECT ECONOMICS



Viability Gap Funding (VGF)

Covers up to 30% of project capex, about ₹18 to ₹27 lakh per MWh



Solar Energy Corporation of India tenders

Standalone and hybrid BESS tenders scaling procurement



Energy Storage Obligation (ESO)

Mandates minimum storage requirement



Round the clock (RTC) & Firm Dispatchable RE (FDRE)

Drives BESS adoption for 24x7 renewable supply

THE BESS VALUE CHAIN AND KEY BENEFICIARIES



Developers and Independent Power Producers (IPP)

Develop, own and operate renewable projects integrated with utility-scale BESS to firm supply.

Key names: Adani Green, JSW Energy, NTPC Green, and Tata Power



Battery manufacturers

Make cells, modules and packs for stationary storage applications.

Key names: Exide Industries, Amara Raja Energy, and Mobility



Grid and electrical equipment

Supply transformers, switchgear, substations, power-conversion and grid-automation systems.

Key names: Hitachi Energy, Siemens, CG Power, and GE Vernova



EPC and system integrators

Design, engineer, build, integrate and commission complete BESS projects, including EMS.

Key names: Waaree, Sterling and Wilson, Sungrow, and Fluence

KEY INVESTMENT TAKEAWAYS FOR PORTFOLIO MANAGERS



From building generation to building flexibility

- India's energy transition is shifting from building renewable generation to building grid flexibility
- BESS is becoming essential infrastructure for integrating renewables and maintaining grid reliability
- Strong policy support and visible procurement pipelines provide long-term demand visibility
- A US\$25 to 30 billion capex cycle should benefit multiple sectors across the power value chain
- BESS is among the most compelling long-term infrastructure investment themes in India's power sector
- Early positioning in companies with strong execution capabilities, technology partnerships and integrated BESS offerings could drive superior long-term returns.

KEY RISKS TO WATCH

01



Policy & tender delays

Delays in policy approvals and project tenders may slow the pace of BESS deployment

02



Raw-material price swings

Fluctuating battery raw-material prices could pressure project economics and returns

03



Import & supply-chain reliance

Dependence on imported battery cells creates supply-chain vulnerability and pricing risk

04



Technology disruption

Rapidly evolving energy-storage technologies may increase competitive pressure over time

ARANCA'S VIEW

BESS is emerging as the **next structural infrastructure investment theme in India's energy transition**, as the focus shifts from renewable capacity expansion to grid flexibility and reliability.

BESS is positioned to become a critical enabler of renewable integration and grid stability, supporting India's transition towards a reliable, low-carbon power system. Over the next 3–4 years, the sector is expected to attract US\$25-30 billion of investment, making BESS one of the most compelling long-term infrastructure themes within India's power sector.



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500+

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120+

Sectors and sub-sectors researched by our analysis

80+

Countries where we have delivered projects

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A photograph of a person climbing a steep, rocky cliff face.

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