India's BESS market: A shift from tendered capacities to bankable execution

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Introduction and background

01 Evolution of India's BESS landscape from pilot deployment to policy-led scale-up

India's BESS landscape evolved gradually from early experimentation during 2015 to 2021, with deployments largely limited to backup, microgrids, telecom and pilot renewable integration use cases. A structural inflection emerged around 2022, when energy storage was embedded into system planning through the CEA's National Electricity Plan (NEP), which identified a requirement of 47.24 GW and 236.22 GWh by FY2032[1]. This was followed by the introduction of VGF-backed tenders, ISTS waivers and formal procurement frameworks, which enabled standalone BESS to emerge as a grid-scale, tenderable asset. Since then, falling battery costs and rapid tender issuance by SECI have accelerated the shift from pilot deployments to policy-backed procurement.

This evolution can be segmented into three distinct eras, reflecting a shift from early experimentation to policy-led procurement and now toward bankable execution.

2015-21

Experimentation and early recognition

BESS was pilot-led, with use cases centered on backup, microgrids and early technology validation rather than utility-scale deployment.

- **Pilot-led adoption:** BESS adoption was limited to microgrids, UPS/telecom backup and early RE-balancing pilots.
- **Resilience-led demand:** Demand was driven by backup and reliability needs; grid-flexibility use cases were still nascent.
- **Limited supply ecosystem:** India's domestic cell, pack, BMS, PCS and integration capabilities were still underdeveloped.
- **Weak bankability:** High costs, limited offtake models and uncertain revenues constrained large-scale deployment.

2022-25

Policy-backed market creation

BESS became a recognized grid resource, supported by national planning, VGF-backed tenders and rising standalone procurement.

- **Demand visibility:** CEA's NEP anchored long-term need at 47.24 GW/236.22 GWh BESS BY FY32.
- **Policy-led procurement:** VGF, ISTS support and procurement frameworks made BESS a tenderable grid resource.
- **Standalone emergence:** BESS began moving beyond RE-hybrid projects into a distinct standalone tender category.
- **Tariff compression:** Falling battery costs and fiscal support accelerated competitive tariff discovery.

2026 onwards

Bankable execution and grid integration

The market is shifting from tender creation to project delivery, with bankability, supply readiness and lifecycle economics becoming critical.

- **Broader use cases:** BESS expands into 24x7 RE, ancillary services, C&I, merchant and grid-support applications.
- **Execution test:** Large tender pipeline must now convert into financed, commissioned and operating capacity.
- **Supply resilience:** Domestic value chain depth, vendor capacity, EPC readiness and safety systems become key.
- **Lifecycle bankability:** Market shifts from lowest-tariff bidding to financeable, degradation-adjusted pricing.

Source: EY-Parthenon Analysis

The post-2026 phase is particularly critical, as the market shifts toward bankable execution, where project viability, supply readiness and lifecycle economics will determine actual deployment.

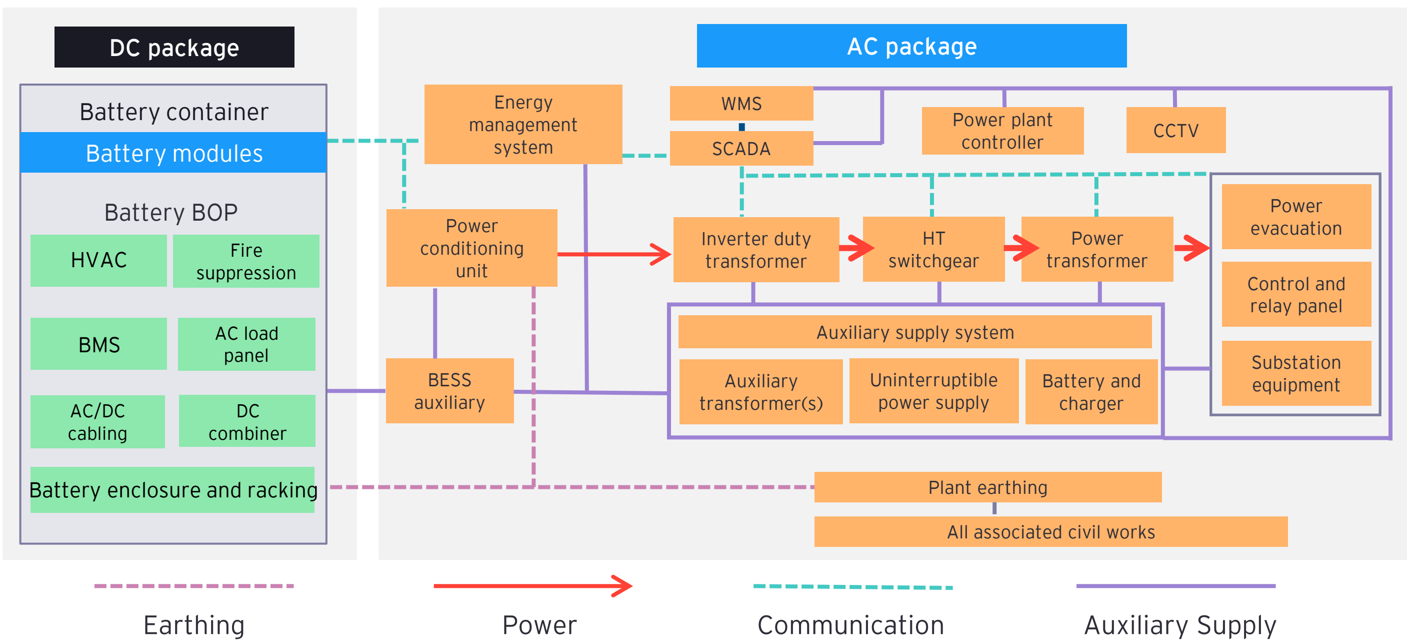
This document builds on this evolution and examines the forces shaping the future trajectory of standalone BESS deployment in India.

1. National Electricity Plan, March 2023, Central Electricity Authority

02 Role of system architecture in determining BESS performance, cost and bankability

As India's BESS landscape moves into execution, project outcomes are increasingly driven by system design and configuration. These choices directly influence capital cost, performance, safety and long-term bankability, making them central to project viability.

Figure 1: Components of a battery energy storage system (BESS)



Source: EY-Parthenon Analysis

At a high level, a BESS can be understood as an integrated system comprising three core layers, each of which plays a distinct role in determining overall project viability:

- **DC package:** The DC layer forms the core of the storage system and is the primary cost driver. It determines usable energy capacity, degradation profile and replacement requirements over the project life. Performance at this level has a direct impact on lifecycle costs and long-term returns.

- **AC package:** The AC layer enables conversion of stored energy into grid usable power and governs how efficiently that energy can be dispatched. It plays a critical role in determining system efficiency and grid readiness, which in turn affects revenue realization and contractual performance.

- **Control, auxiliary and safety systems:** These components ensure coordination across charging, discharging and monitoring while maintaining safe and stable operations. They influence availability, performance consistency and risk management, all of which are key considerations for financing and long-term asset reliability.

Variations in component selection and integration can significantly impact cost and performance outcomes. As evaluation shifts toward lifecycle economics, system design becomes central to tariff discovery, bid competitiveness and investment decisions.

02.

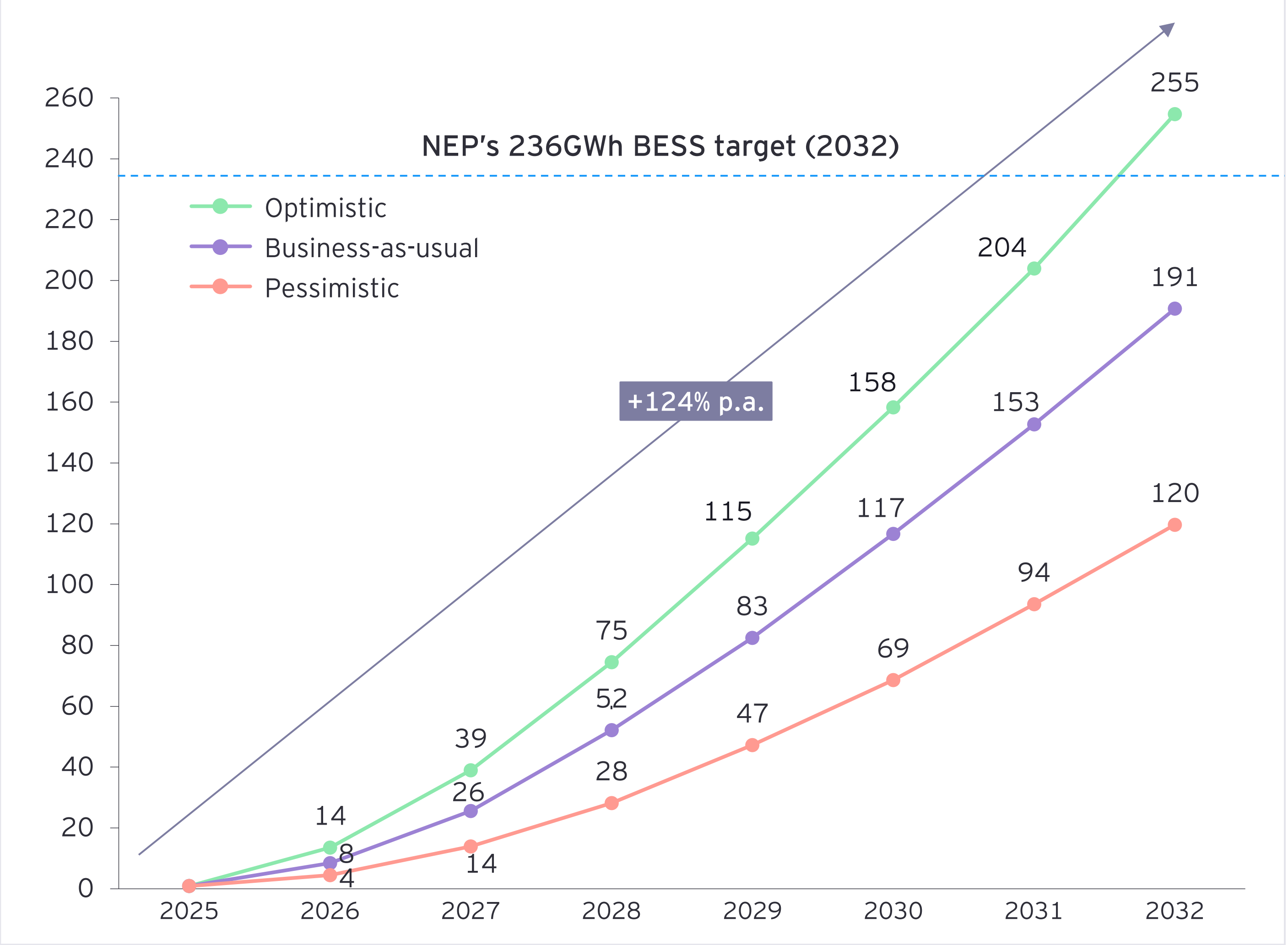
BESS landscape: Demand-side

India's BESS demand is shifting from early deployments to a visible procurement pipeline, driven by accelerating FTM tenders and steady growth in BTM applications across C&I, data centers, telecom and rooftop solar. This reflects a transition toward multiple demand channels scaling in parallel.

01 Front-of-the-meter BESS deployment linked to grid-scale procurement

Front-of-the-meter BESS is the primary channel through which India's storage requirement is accelerating from planning to procurement, anchored in the NEP target of 236 GWh by FY2032 and reflected in scaling standalone, RTC, FDRE and solar-plus-storage tenders. However, deployment will depend on how quickly awarded capacity is converted into commissioned projects. To assess this, we evaluated FTM deployment across three trajectories: optimistic, business-as-usual and pessimistic, capturing different execution outcomes.

Figure 2: Projected cumulative FTM BESS installation (GWh)



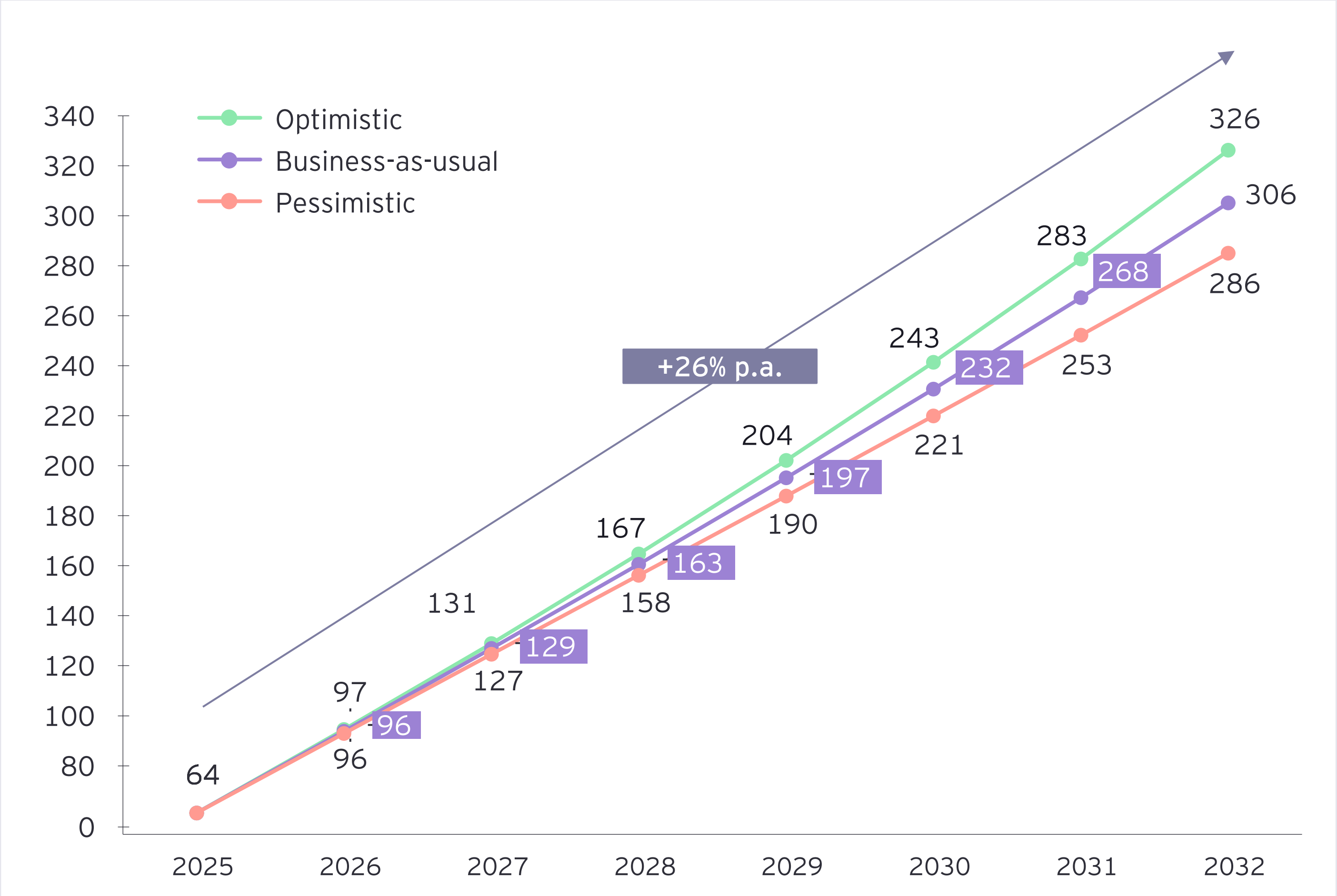
Source: Publicly available BESS capacity data for 2025; EY-Parthenon Analysis

The trajectories indicate that FTM BESS deployment will remain modest in the near term, with capacity ramping up meaningfully from 2027 as the existing tender pipeline begins to convert into operational assets. The optimistic trajectory reaches ~255 GWh by 2032, broadly aligning with the NEP target of 236 GWh, while the business-as-usual (~190 GWh) and pessimistic (~120 GWh) cases remain materially lower. This spread highlights that future deployment is not constrained by demand, but by execution outcomes. Overall, the outlook suggests a back-ended build-out, where the pace of tender conversion, financing closure and commissioning will determine how much of the visible pipeline translates into installed capacity.

02 Behind-the-meter BESS adoption across distributed end-use applications

Behind-the-meter BESS demand in India is shaped by distributed, customer-driven adoption across C&I users, data centers, telecom, UPS and rooftop solar. While backup remains the core near-term use case, demand is gradually expanding toward power quality, cost optimization and resilience, supported by falling battery costs and evolving tariff structures. To reflect these adoption dynamics, we evaluated three BTM trajectories-optimistic, business-as-usual and pessimistic - capturing different rates of customer uptake and use-case expansion.

Figure 3: Projected cumulative BTM BESS installation (GWh)



Source: Publicly available BESS capacity data; EY-Parthenon Analysis

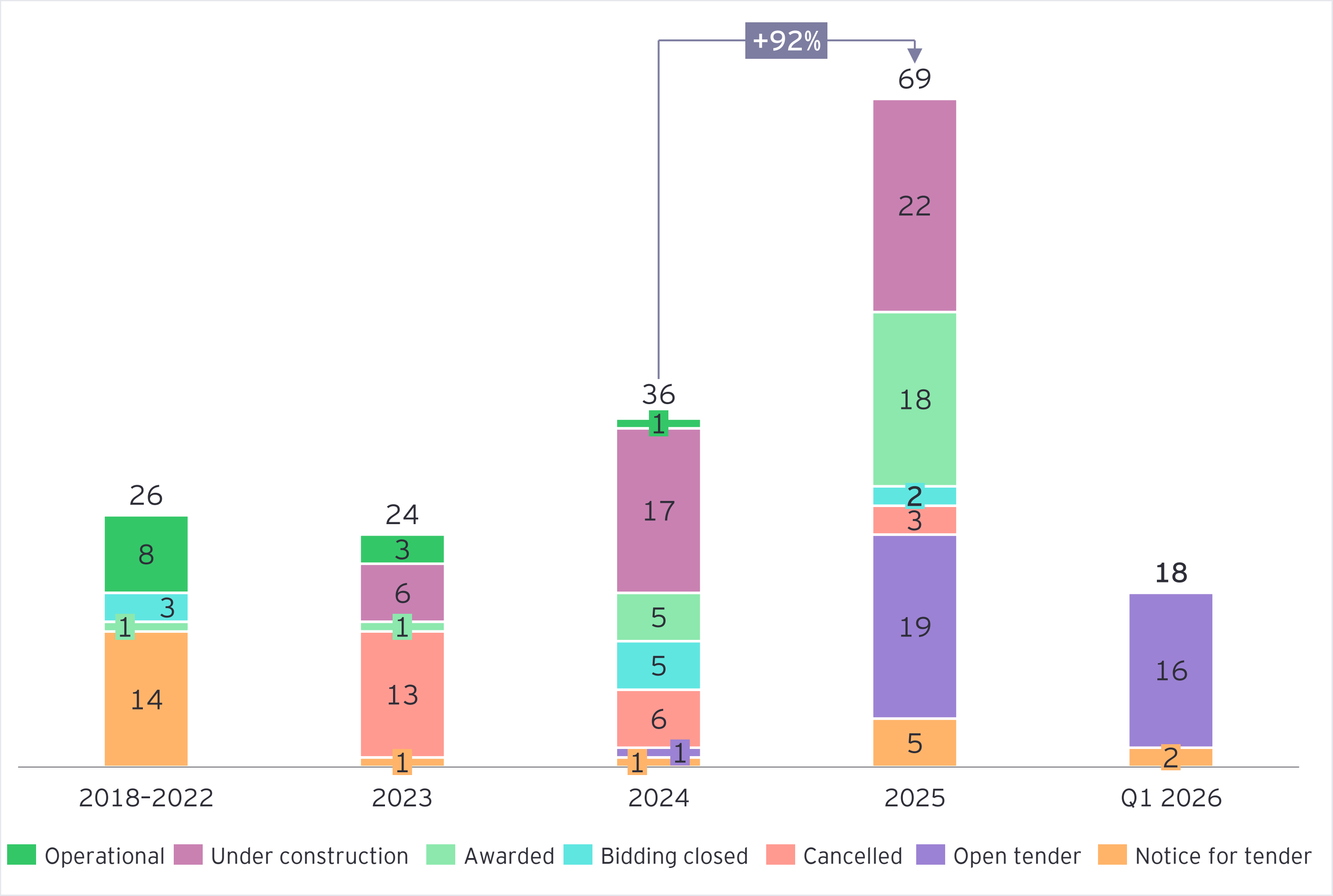
The developed BTM trajectories reflect a progressive shift from reliability-led demand toward broader customer adoption, with near-term deployments still anchored in segments such as C&I, data centers, telecom and rooftop solar where storage already has a clear value proposition. As battery costs decline and solar-plus-storage economics improve, adoption is expected to widen beyond backup use cases into cost optimization and energy management applications.

Across scenarios, capacity is expected to scale steadily but with relatively limited divergence, indicating that BTM growth is less exposed to execution risk and more dependent on adoption pace. Overall, deployment will be shaped by how quickly users move beyond backup systems toward integrated energy solutions, making BTM demand structurally resilient but adoption-driven.

03 BESS tendering expansion and project conversion dynamics

India's BESS tender pipeline has scaled rapidly, with project count rising from 24 in 2023 to 69 in 2025, a ~190% increase, including a ~92% jump from 2024 alone. The pipeline now spans multiple stages and formats, indicating a shift from pilot procurement to broad-based adoption across standalone, RTC, FDRE and solar-plus-storage tenders.

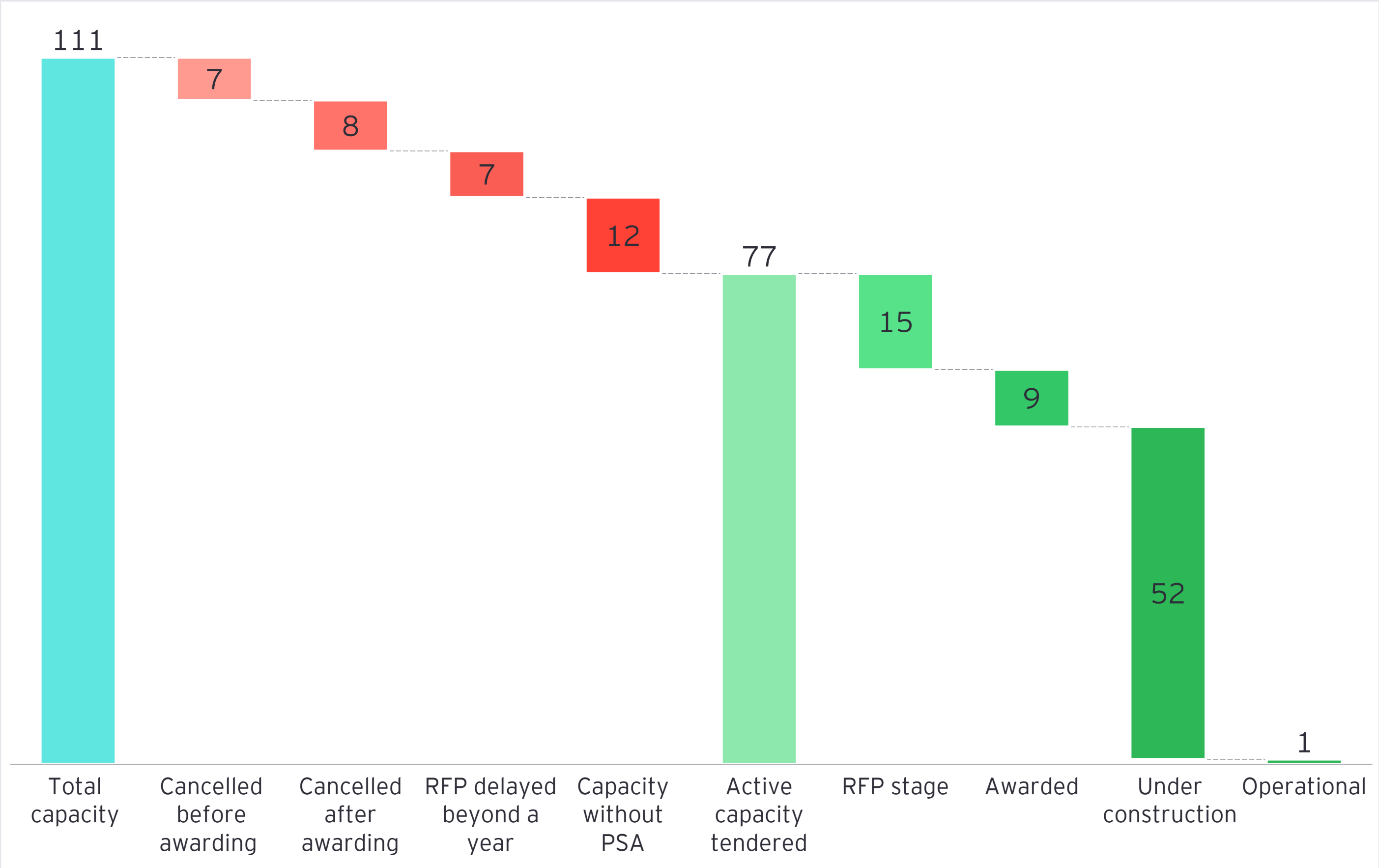
Figure 4: BESS tender activity by project status



Source: Annual Report and Monthly Energy Storage Market Report, 2026, India Energy Storage Alliance; EY- Parthenon Analysis

The rise in project count reflects strong procurement momentum, but most capacity remains in pre-commissioning stages such as tendering, awarding and construction. This makes conversion into operational capacity the key test, requiring the pipeline to be assessed through capacity progression, not just project count.

Figure 5: BESS tendered capacity conversion waterfall



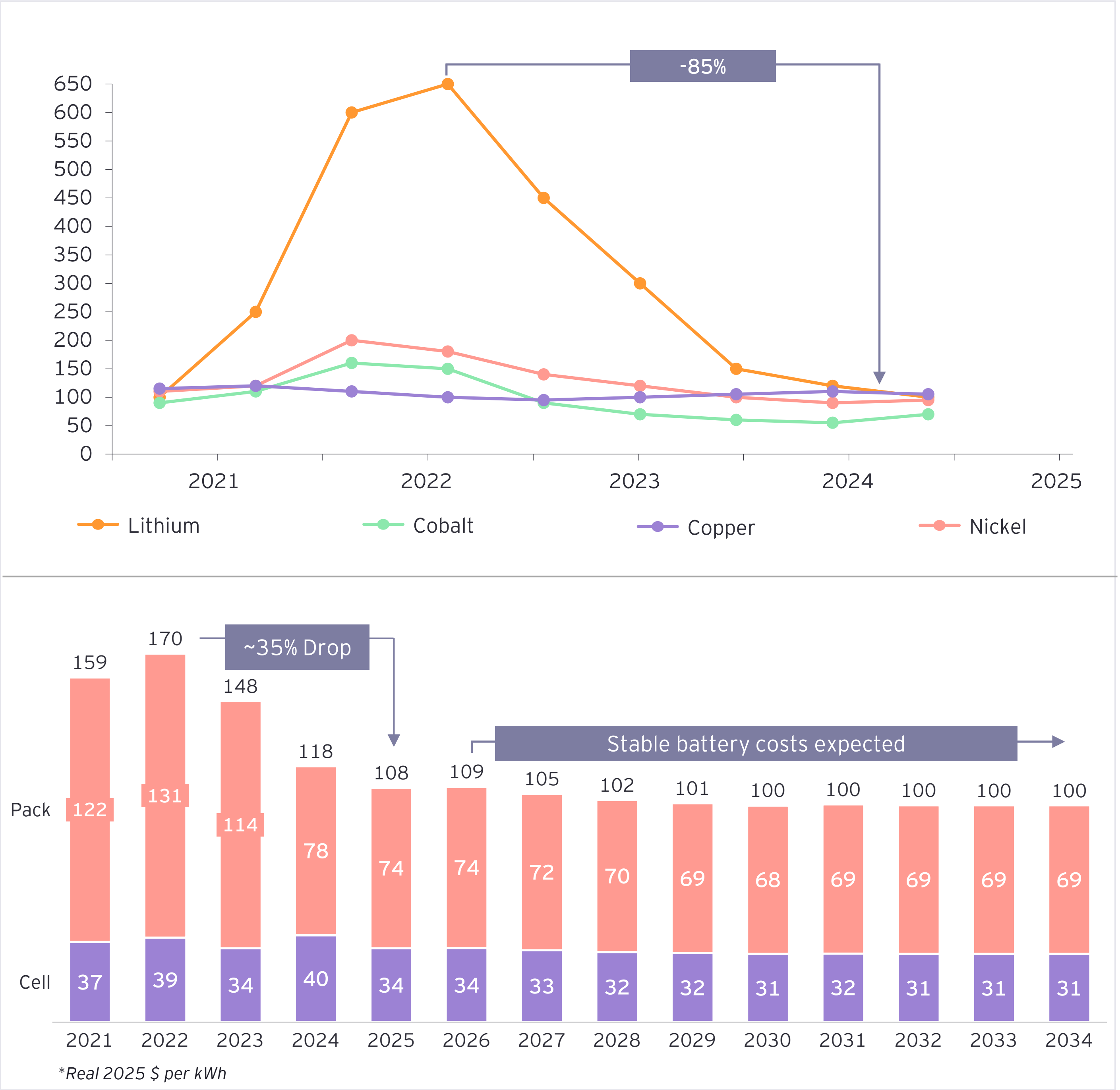
Source: Annual Report and Monthly Energy Storage Market Report, 2026, India Energy Storage Alliance; EY- Parthenon Analysis

India has built a sizeable BESS pipeline, but only a small share has translated into operational capacity. Of ~111 GWh tendered, ~30% has not progressed due to cancellations, delays or lack of PSA, while ~70% remains in RFP, awarded and construction stages, with operational capacity still below 1%. This indicates that near-term deployment will remain constrained, with execution across PSA closure, financing and commissioning emerging as the key determinant of how quickly demand converts into operational assets.

04 Decline in battery cost and its implications for BESS deployment economics

India's BESS pipeline is now established, but battery costs will determine how much of it becomes executable. Since the DC package is the largest cost component, the correction in raw material prices and decline in Li-ion pack prices improve project economics and support conversion from award to execution.

Figure 6: Battery raw material prices (indexed) and volume-weighted avg. li-ion battery pack price outlook



Source: Li-ion Battery Price Survey, 2025, Bloomberg NEF; EY-Parthenon Analysis
Price of selected battery materials and lithium-ion batteries, 2015-2024, March 2024, International Energy Agency (IEA); EY-Parthenon Analysis

Battery raw material prices have corrected sharply from earlier peaks in late 2022, especially lithium, easing cost pressures across the value chain. This has translated into a ~35% decline in Li-ion pack prices, which are expected to stabilize at lower levels. While this improves tariff viability and supports financial closure, project bankability will still depend on procurement timing, Forex exchange exposure and lifecycle cost assumptions, making the current cost environment a deployment window rather than a guarantee.

03.

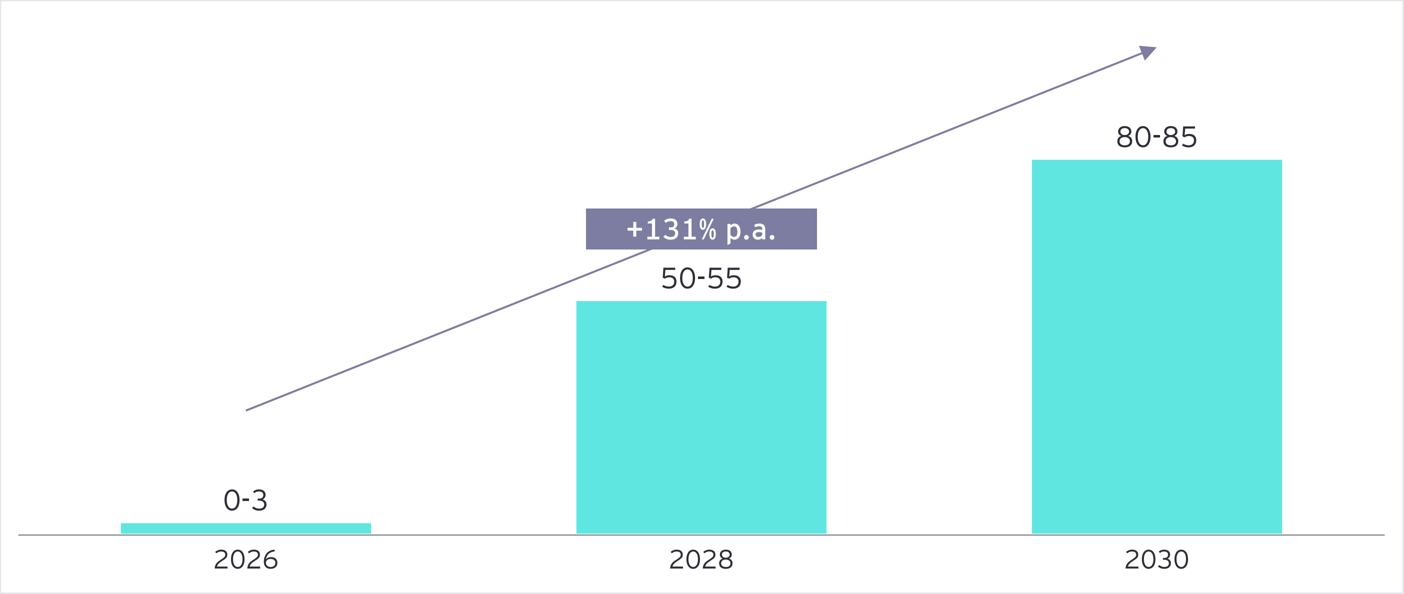
BESS landscape: Supply-side

India's BESS deployment will depend on the readiness of the domestic supply ecosystem. As projects move toward execution, access to cells, packs and system integration becomes critical, with announced cell-to-pack capacity rising rapidly. The key question is whether this capacity can translate into timely, bankable and cost-competitive supply to support the demand ramp-up.

01 Expansion of domestic cell-to-pack manufacturing capacity

India's BESS supply ecosystem is scaling rapidly, with announced cell-to-pack capacity rising from a negligible base to ~80-85 GWh by 2030 (~130% CAGR). This signals a shift from limited assembly to multi-GWh manufacturing platforms.

Figure 7: Announced cell-to-pack capacity and key upcoming BESS players in India



Note- Shown capacity includes Li-ion manufacturing focussed on stationary battery energy storage (BESS) only
Source: Industry consultations; EY-Parthenon Analysis

India's announced BESS manufacturing pipeline is being led by large industrial and energy players such as Reliance New Energy, Exide, Amara Raja, and Agratas, reflecting a shift toward institutional-scale participation and integrated offerings across battery packs, BMS and containerized systems. This strengthens the foundation for domestic supply and improves the ability to support grid-scale project execution with standardized and bankable solutions.

However, translating this into supply readiness will depend on timely capacity commissioning, technology partnerships, quality certification, warranty strength and localization of critical components. As BESS deployment moves from tendering to commissioning, the depth and reliability of this ecosystem will determine how effectively demand converts into operational capacity.

02 Emerging role of upstream localization in strengthening supply competitiveness

India's cell-to-pack capacity build-out marks a clear first step toward a domestic BESS supply base, while upstream localization is emerging as the next layer of competitiveness. Given that ~60%-70% of battery cost lies in materials, capabilities across cathode, anode, electrolyte, foils and recycling will be critical to improving cost competitiveness and reducing import dependence.

Figure 8: Announced cell-to-pack capacity and key upcoming BESS players in India

State	Player / Project	Component	Key Details
Andhra Pradesh (Chittoor)	NPSPL Speciality Chemicals	Cathode Material	~₹2,550 Cr investment; ~105-acre plant; among first large-scale cathode material facilities in India
Gujarat (Dahej/ Bharuch)	Gujarat Fluorochemicals (GFCL EV)	Cathode (LFP), Electrolyte, LiPF6, PVDF binders	Integrated battery materials ecosystem; IFC invested ~$50M; backward integration play
Gujarat (Dahej PCPIR)	Neogen Ionics	Electrolyte, Electrolyte Salts	~30,000 MT electrolyte capacity + ~3,000 MT salts/additives planned; JV with Morita (Japan)
Karnataka (Bellary)	Epsilon Advanced Materials	Anode (Graphite), Cathode (LFP)	Graphite anode plant; ~30,000 TPA by 2027; scaling to ~100,000 TPA by 2030
West Bengal (Hooghly)	Himadri Speciality Chemical	Anode Material	Initial ~200 MTPA anode facility; expansion planned for EV/battery-grade materials
Odisha (Near Sambalpur)	Hindalco Industries	Battery-grade Aluminium Foil	~₹800 Cr investment; ~25,000 TPA foil capacity for Li-ion cells; backward integration

Source: Various Public Sources; EY-Parthenon Analysis

Early investments across states such as Andhra Pradesh, Gujarat, Karnataka, West Bengal and Odisha indicate that this shift has begun, with activity in cathode materials, LFP chemistries, electrolyte salts, graphite anodes and battery-grade aluminum foil. While this broadens the ecosystem beyond pack assembly, the key will be scaling these investments into qualified, cost-competitive supplies that can support downstream manufacturing and grid-scale BESS deployment.

03 Value-chain gaps across upstream and midstream battery ecosystem

India's BESS localization push is progressing from cell-to-pack capacity toward upstream and midstream value-chain development. However, the depth of localization remains uneven. The strategic gap analysis assesses key value-chain elements across supply availability, price competitiveness, technology readiness and investment intensity, highlighting where targeted policy support will be most critical.

H High · M Medium · L Low

Figure 9: Strategic gap analysis across upstream battery value-chain elements

Value-chain element	Supply gap	Price gap	Technology gap	Investment gap	Policy recommendations
Critical mineral feedstocks (Li, Ni, Co, Mnores/concentrates & battery-grade salts)	H	M	M	H	▪ Fast-track National Critical Mineral Mission (NCMM): domestic exploration/mining + overseas sourcing; ▪ Ease import duties on critical minerals
Refining & conversion to battery-grade chemicals (Li2CO3/LiOH; Ni/Co/Mn sulfates; pCAM precursors)	H	H	H	H	▪ Create processing parks + targeted capex/interest support for battery-grade refining ▪ single-window env. clearances; QA labs.
Graphite (natural/synthetic) - spherical graphite for anodes	H	M	M	M	▪ Incentivize battery-grade purification/spheroidization plants; secure feedstock via overseas assets; ▪ support recycling-to-graphite pilots.
Cathode active materials (CAM) (LFP/NMC/LMFP) & pCAM	H	H	H	H	▪ Launch PLI-style support for CAM/pCAM + qualification labs; ▪ Incentivize JVs/tech transfer; calibrate duties to avoid inverted structure.
Anode active materials (AAM) (graphite, silicon blends)	H	M	H	H	▪ Component incentive for Anode active materials; shared pilot/validation lines; ▪ Standards/testing; de-risk demand via long-term offtake/DVA procurement.
Electrolyte salts (LiPF6/LiFSI) and high-purity electrolyte formulation	H	H	H	H	▪ First-of-a-kind support for LiPF6 (capex + safety infra); chemical cluster utilities; fast approvals; import-duty relief for inputs.

Source: EY-Parthenon Analysis

The upstream analysis shows that the most acute gaps sit in critical minerals, battery-grade refining, cathode and anode active materials and electrolyte salts. These areas face high supply, technology and investment constraints, making them central to India's long-term BESS competitiveness. Policy support will need to focus on mineral security, processing infrastructure, qualification labs, technology partnerships and duty rationalization.

H High | M Medium | L Low

Figure 10: Strategic gap analysis across midstream and enabling battery value-chain elements

Value-chain element	Supply gap	Price gap	Technology gap	Investment gap	Policy recommendations
Electrolyte solvents & additives (EC/DMC/EMC, additives)	M	M	M	M	▪ Support battery-grade purification & consistency (standards + labs); duty rationalization for key solvent intermediates.
Separator films (PP/PE, ceramic-coated)	H	M	H	H	▪ Targeted capex + concessional finance for separator lines; JV/tech transfer; anchor demand via DVA-linked cell procurement.
Binders & processing chemicals (PVDF, SBR/CMC, NMP) + conductive additives	M	M	M	M	▪ Promote battery-grade PVDF/NMP via chemical parks; strengthen EHS compliance support; incentivize domestic supply contracts.
Current collectors (battery-grade copper/aluminium foils)	M	M	M	M	▪ Support foil upgrades (quality grants + testing); align duties on foil inputs; facilitate supplier qualification with cell makers.
Recycling & black-mass processing (collection - hydromet refining)	M	L	M	M	▪ Tighten Extended Producer Responsibility (EPR) enforcement + scale CPCB portal trading; incentivize hydromet refining; mandate recycled content in cells over time.
Manufacturing equipment & process IP (coating, calendaring, formation, dry rooms)	H	H	H	M	▪ Zero/low duty on cell-manufacturing machinery; speed commissioning clearances; create shared training centres; enable tech-transfer frameworks.

Source: EY-Parthenon Analysis

The midstream and enabling segments show a more varied gap profile. Electrolyte solvents, binders, current collectors and recycling show moderate gaps, while separator films and manufacturing equipment remain more critical bottlenecks due to technology and supply concentration. These areas will require targeted support through standards, testing infrastructure, concessional finance, supplier qualification and technology transfer.

Taken together, the two analyses show that India's BESS supply-side challenge is shifting from capacity announcements to value-chain depth. Scaling cell-to-pack capacity will support near-term deployment, but durable competitiveness will depend on closing gaps in materials, components, equipment and recycling. Without targeted interventions, India risks building downstream assembly capacity while remaining dependent on imported inputs for the most strategically sensitive parts of the battery value chain.

04.

BESS regulatory and standards landscape

India's BESS regulatory landscape spans multiple agencies across central ministries, regulators and states. While central bodies have established the core framework through VGF, ISTS waivers and procurement guidelines, state-level policies are now driving implementation, reflecting a shift toward more execution-focused and bankability-led regulation.

01 Evolution of BESS policy frameworks from market enablement to bankability support

India's BESS policy stack has evolved across central and state-level interventions. The initial regulatory push was led primarily by central agencies, with Ministry of Power guidelines, the National Framework for Energy Storage Systems, Energy Storage Obligations and CEA clarification on co-located storage establishing BESS as a recognized grid resource. These measures created the foundation for procurement by clarifying how storage could support renewable integration, grid reliability and ancillary services.

Figure 11: Evolution of India's BESS policy stack from deployment enablement to procurement support

1 MoP Guidelines for Procurement and Utilisation of BESS

Ministry of Power (MoP)

- One of the first central framework enabling BESS use across generation, transmission, distribution, and ancillary services.
- Established the base policy architecture for later BESS tenders, state regulations, and deployment support schemes.

2 National Framework for Promoting Energy Storage Systems (ESS)

Ministry of Power (MoP)

- Recognised ESS/BESS as a mainstream power-sector asset for grid reliability, renewable integration, and energy transition.
- Became the umbrella national framework shaping later measures such as VGF, state regulations, and co-location guidance.

3 CEA Clarification / Advisory on Co-locating ESS with Solar Projects

Central Electricity Authority (CEA)

- Clarified the treatment of solar + BESS co-located configurations, reducing implementation ambiguity.
- Supported faster scale-up of solar-coupled storage projects by improving regulatory certainty for developers and utilities.

2022 | 2023 | 2024 | 2025

4 RPO and Energy Storage Obligation (ESO)

Ministry of Power (MoP)

- Introduced Energy Storage Obligation within the renewable-obligation framework, creating policy-led demand for storage.
- Strengthened the case for BESS procurement as part of renewable integration and long-term resource planning.

5 Andhra Pradesh Integrated Clean Energy Policy

Government of Andhra Pradesh

- Created a state-level storage market and set a target of roughly 25 GWh of BESS under multiple deployment modes.
- Positioned Andhra Pradesh as one of India's most explicit state policy markets for large-scale BESS adoption.

6 Extension of ISTS Charge Waiver for Co-located BESS

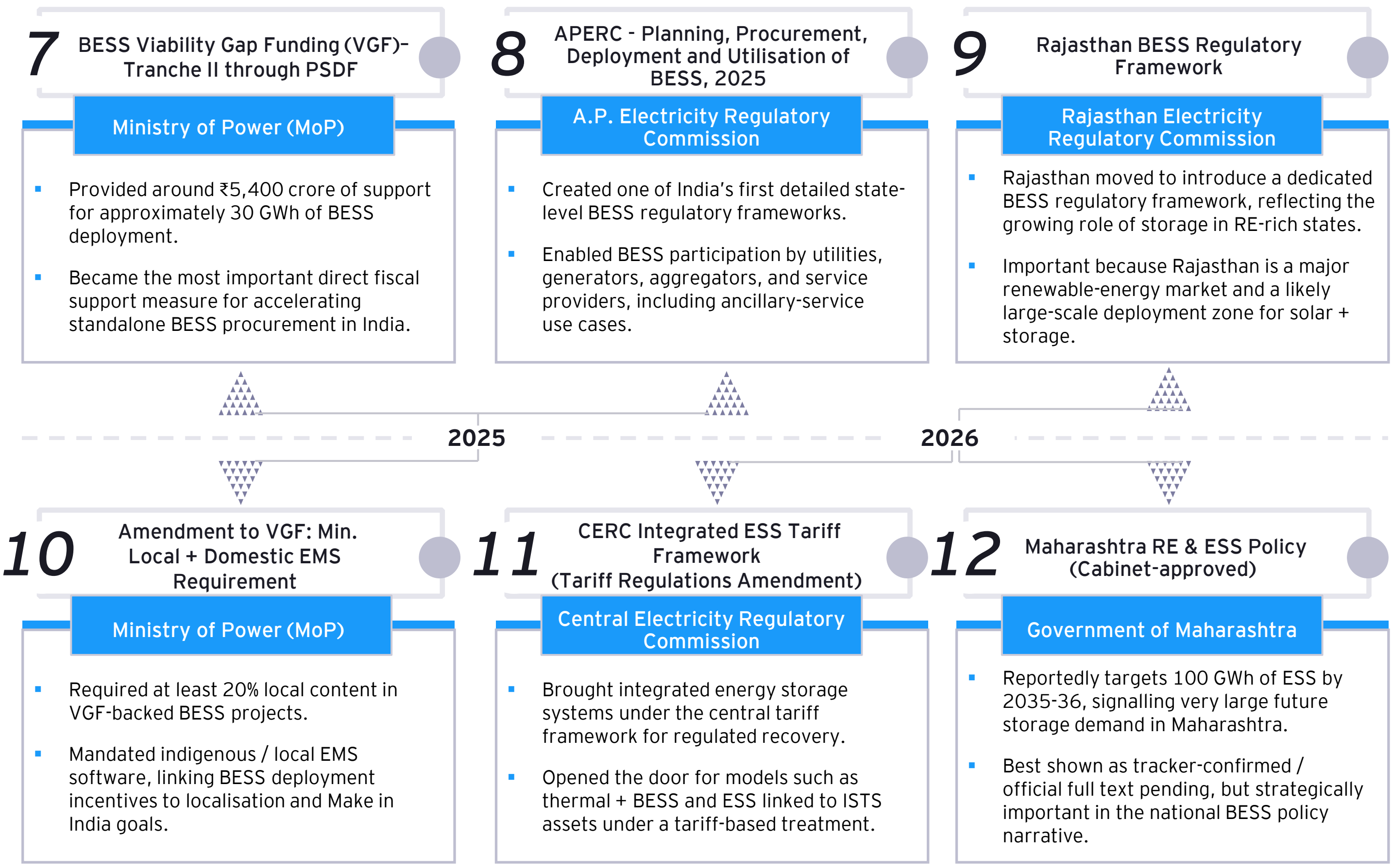
Ministry of Power (MoP)

- Extended 100% ISTS charge waiver for eligible co-located BESS projects commissioned by 30 June 2028.
- Materially improved project economics for utility-scale RE + BESS and strengthened interstate deployment viability.

Source: Various Public Sources; EY-Parthenon Analysis

The more recent wave of interventions is moving closer to project bankability. VGF support, ISTS waivers, domestic EMS and local content requirements, CERC tariff recognition and state-level frameworks from Andhra Pradesh, Rajasthan and Maharashtra indicate that policy action is no longer limited to creating demand. The focus is now expanding toward improving project economics, enabling regulated cost recovery, supporting localization and giving states a clearer role in storage deployment.

Figure 12: Emerging bankability measures through VGF, tariff recognition and state-level regulations



Source: Various Public Sources; EY-Parthenon Analysis

Taken together, the policy stack shows that India's BESS regulatory framework is becoming broader and more implementation focused. Central agencies have created the foundation for storage procurement, while state-level policies and regulations are beginning to translate that framework into deployment pathways. The next challenge will be to ensure consistency across these layers so that developers and lenders have clearer visibility on tariffs, incentives, safety compliance, local content rules and approvals. This will determine whether regulatory momentum can translate into faster financial closure and commissioned BESS capacity.

05.

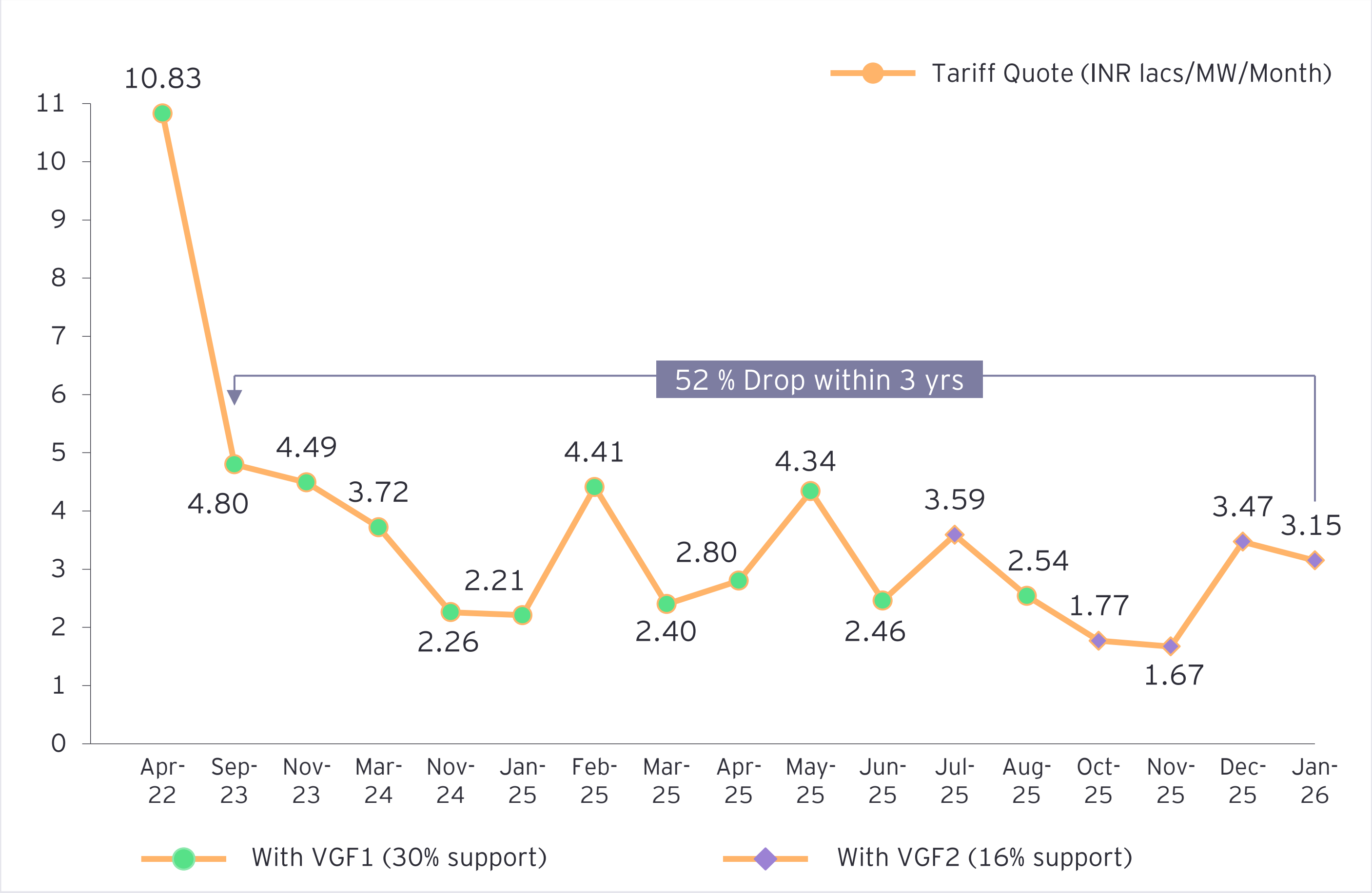
BESS tariff and financial analysis

Standalone BESS tariffs in India have seen sharp decline driven by falling battery costs, VGF support and increased competition. Recent trends, however, indicate a shift toward re-assessing whether these tariffs can sustain full lifecycle costs, making tariff analysis critical to understand whether the current pipeline can translate into bankable and commissioned capacity.

01 Standalone BESS tariff trends and pricing evolution

Standalone BESS tariffs in India have corrected sharply over the last three years, declining from INR10.83 lakh per MW per month to sub INR2 lakh levels at the trough - an ~85% drop driven by falling battery costs, VGF support and increased competition. However, the recent rebound in tariffs despite stable battery prices indicates that earlier bids were likely driven by increased competition or by underpriced lifecycle costs such as financing, degradation, augmentation and execution risks. This trend suggests a transition from initial tariff discovery toward a more bankable pricing phase.

Figure 13: Standalone BESS tender tariff trend in India



Source: Industry tenders; Industry consultations; EY- Parthenon Analysis

The recent increase in BESS tariffs shows that the market is moving away from very aggressive bidding and towards more realistic pricing. Early low bids helped create interest in the market, but many of these tariffs may not be sufficient to cover the full cost of a project over its life. This creates execution risks for projects bid at very low tariffs, including difficulty in achieving financial closure, exposure to battery price and associated foreign exchange movements, delays in procurement and commissioning, and possible compromises in equipment quality or system reliability. Going forward, tariff competitiveness will need to be assessed along with execution feasibility, so that projects are not just awarded at low tariffs but are also capable of being financed, built and operated reliably over the contract period.

02 Financial feasibility of BESS tariffs

To assess tariff sustainability, we developed a lifecycle financial model for a representative 150 MW BESS project over a 15-year life, targeting a 16% equity IRR. The model tests whether discovered tariffs can recover not just capex and O&M, but also financing, degradation, augmentation, replacement and FX-related costs over the project life.

The financial analysis indicates that the minimum bankable tariff remains materially higher than some of the most aggressive bids. For a 150 MW project over a 15-year tenure, two-hour systems require tariffs in the range of INR3.5-INR3.8 lakh per MW per month with VGF and INR4.0-INR4.3 lakh without VGF, depending on whether the system operates at one or two cycles per day. In contrast, four-hour systems-which are more capital intensive-require materially higher tariffs of INR4.7-INR5.0 lakh with VGF and INR6.0-INR6.3 lakh without VGF.

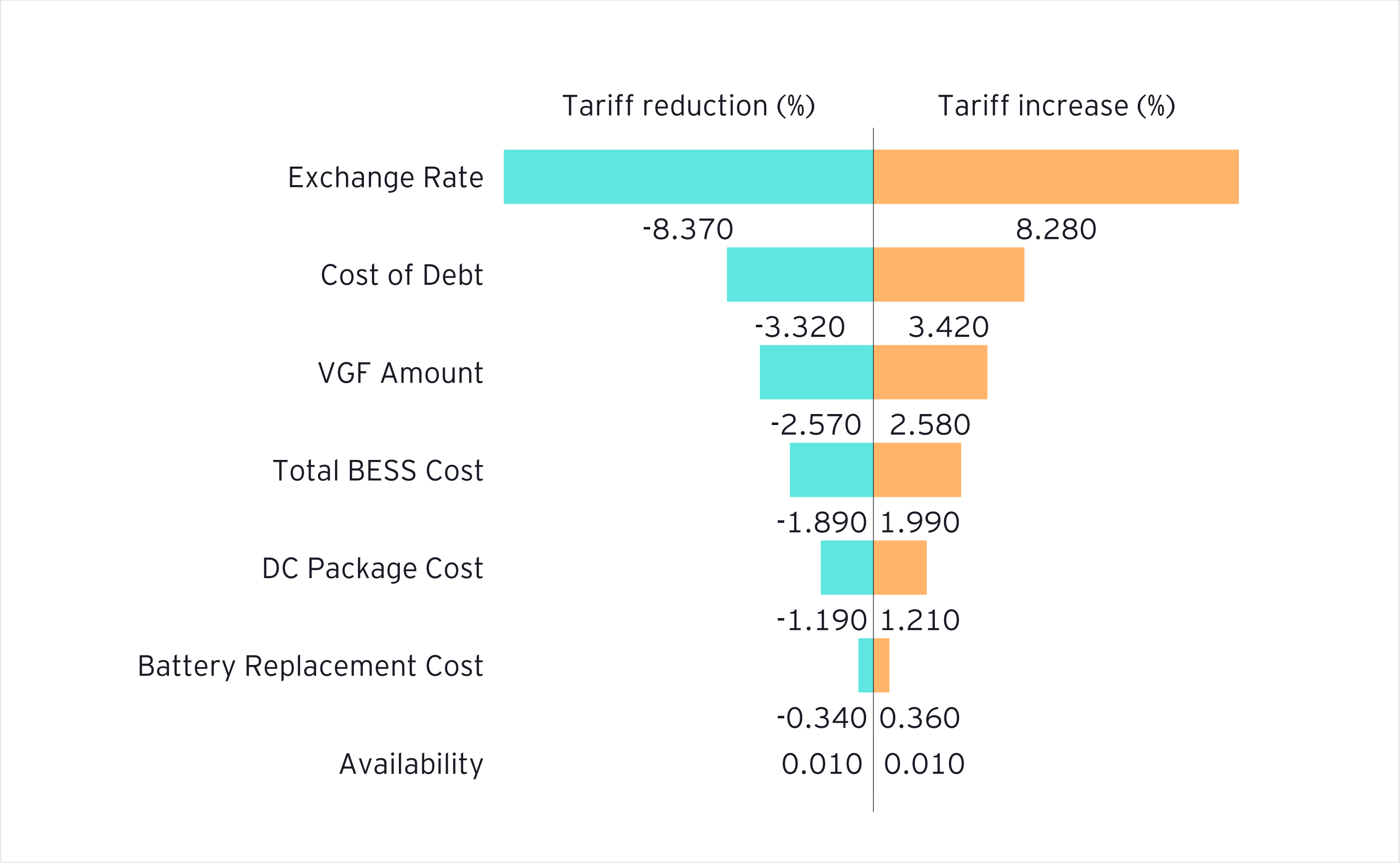
The variation between the estimated minimum bankable tariffs and the tariffs from aggressive bids underscores the importance of capital recovery, debt servicing and equity returns as primary drivers. While VGF lowers the upfront cost burden, tariffs still need to account for lifecycle costs such as O&M, augmentation and replacement, reinforcing that true viability depends on full lifecycle cost recovery rather than headline bid levels.

Figure 14: Estimated minimum bankable tariffs

Storage duration (in hr)	Cycles/ day	Project tenure (in yrs)	Capacity tendered (MW)	VGF	Estimated min. bankable tariff (in INR lakh/MW/Month)
2-hour	1	15	150 MW	Applicable	3.5 - 3.8
2-hour	1	15	150 MW	Not applicable	4.0 - 4.3
2-hour	2	15	150 MW	Applicable	3.5 - 3.8
2-hour	2	15	150 MW	Not applicable	4.0 - 4.3
4-hour	1	15	150 MW	Applicable	4.7 - 5.0
4-hour	1	15	150 MW	Not applicable	6.0 - 6.3
4-hour	2	15	150 MW	Applicable	4.7 - 5.0
4-hour	2	15	150 MW	Not applicable	6.0 - 6.3

While the BESS tariffs represent the base-case threshold, BESS tariffs are highly sensitive to external and financing variables. With a large share of costs linked to imported components, project economics are exposed to exchange rate movements, cost of debt and capital support levels. The model therefore evaluates how these factors impact minimum bankable tariffs and equity IRR, highlighting the sensitivity of project viability to underlying assumptions.

Figure 15: Minimum bankable tariff sensitivity (in Percentage)



Source: EY-Parthenon Analysis

The sensitivity analysis highlights exchange rate as the primary risk driver, with a 10% movement affecting tariffs by ~8.3%. Cost of debt and VGF levels are the next key sensitivities, while replacement costs and availability have a relatively lower impact. This indicates that aggressive tariffs remain highly exposed to exchange rates and financing risks, reinforcing the need to evaluate not just tariff levels but their resilience under changing cost and macro conditions.

06.

Recommendations and roadmap

India's BESS market has achieved rapid scale in tendering, but the next phase will require structural interventions to enable execution, bankability and sustainable deployment. The recommendations focus on improving conversion, strengthening pricing discipline, building supply depth and mitigating financial risks.

1. **Introduction of tariff floors for standalone BESS tenders:** Standalone BESS tenders should include a clearly defined tariff floor to ensure discovered tariffs remain within an executable range. Bids falling materially below this floor (>20-25% less than the floor) should be subjected to additional viability checks, including supporting documentation on battery costs, financing, O&M, degradation and warranty assumptions. This will help prevent discovered tariffs from falling into an inexecutable range.

2. **Supporting documents for abnormally low BESS tariff bids:** Bidders quoting very low standalone BESS tariffs should be required to submit documents supporting the viability of their quoted tariff. These should include assumptions on battery cost, EPC, O&M, financing, degradation, augmentation and warranty support. This will help procurers assess whether the bid is executable before awarding the project.

3. **Extending PLI-style support to BESS component manufacturing beyond cells:** India's BESS deployment currently depends heavily on imported cells, power conversion systems, energy management systems, battery management systems and fire safety components, creating supply chain, foreign exchange and quality risks that weaken project bankability. A PLI-like scheme should be extended beyond cells to cover BESS-specific components such as packs, PCS, EMS and BMS, thermal management systems and fire safety systems. Incentives should be linked to verified performance metrics such as cycle life, round-trip efficiency, safety compliance and warranty strength rather than to capacity addition alone.

4. **Approved list of battery manufacturers to enforce quality and localization:** Similar to the approved list of models and manufacturers for solar PV modules, an approved list of battery manufacturers and system integrators should be established to enforce quality standardization and promote domestic value addition across the supply chain. The list should define clear eligibility checks covering local content requirements, cell sourcing, EMS origin, quality standards and safety compliance. Bidders in VGF-backed and other government tenders should be required to procure systems only from approved manufacturers on this list, ensuring traceability and accountability across the BESS value chain. Local content requirements under this framework should be phased progressively in line with actual domestic manufacturing capacity.

5. **Limited battery price indexation and foreign exchange pass-through in BESS contracts:** BESS bids are highly sensitive to battery pack price movements and exchange rate fluctuations, and aggressive tariff bids based on projected future cost declines can quickly become unviable if battery prices or currency rates move adversely between bid submission and project commissioning. Future contracts should allow limited battery price indexation between bid submission and the financial closure or battery procurement milestone to give developers a credible path to project execution. A defined foreign exchange adjustment or hedging pass-through mechanism should be provided for imported cells, power conversion systems and other critical BESS components that cannot yet be sourced domestically. Indexation eligibility should be capped within a pre-defined band and linked to proof of OEM contracts and import-procurement invoices to prevent misuse or speculative bidding.

6. **Unified national BESS safety certification and enforcement standards:** India's BESS safety standards remain technically fragmented, with no single unified enforceable safety code comparable to mature global regimes (such as UL, UN, and IEC), creating insurance, approval and investor confidence risks across projects. A dedicated national BESS safety code should be notified covering site requirements, spacing norms, ventilation, fire protection and emergency response protocols applicable uniformly across all project types and capacities.

7

Ensuring power sale agreement availability or commitment before bid issuance: A significant share of awarded BESS capacity in India remains stalled, delayed or cancelled due to the absence of firm offtake commitments, making financial closure difficult or impossible for developers despite having won competitive tariff bids. Tenders should only be issued where procurers have clear demand visibility or at minimum in-principle offtake discussions in place before the tendering process begins. Phased tendering should be adopted, with request for selection or bid issuance happening after initial DISCOM or beneficiary alignment, and PSA closure made a condition before letter of award or financial closure is granted.

8

Diversifying beyond lithium-ion chemistry and supporting emerging battery technologies: India's overwhelming reliance on lithium-ion technology exposes the BESS sector to global supply chain shocks, price volatility and geopolitical concentration risks, particularly given India's limited domestic lithium reserves. Future tenders should progressively allocate a share of storage capacity to alternative battery chemistries such as vanadium redox flow and sodium-ion, which offer longer lifespans, higher salvage value and lower supply chain concentration risk relative to lithium-ion.

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