

# **Expected ROI of sodium ion battery storage project in India 2030**





## Overview

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being observed in countries like India. With a strong mandate to achieve 500 GW of non-fossil fuel electricity capacity and 50% share of non-fossil fuel energy in the energy mix by 2030, India has set ambitious targets for its pathway to achieving net zero by 2070. As part of these targets, the.

In India, BESS demand from electric vehicles (EVs) and stationary grid applications by 2030 is expected to be 381 GWh and 181 GWh, respectively, as per the 2022 NITI Aayog report. Thus, the challenges with LIBs, coupled with the increasing demand for BESSs, make it imperative to explore alternative.

As the nation endeavors to generate 50% of its energy from renewable sources by 2030, the spotlight is increasingly turning towards sodium-ion batteries (SIBs) as a promising alternative to traditional lithium-ion batteries (LIBs). Recent advancements in sodium-ion battery technology have showcased.

India is focusing on sodium-ion batteries to improve technology amid lithium supply risks. In brief Sodium-ion batteries (SIBs) are emerging as a promising alternative to lithium-ion batteries (LIBs), offering lower costs and better safety. India should adopt a multifaceted approach for SIB.



As India accelerates its clean energy and electric mobility goals, experts are calling for a bold shift in battery strategy—from lithium-ion to sodium-ion. While lithium-ion batteries (LIBs) currently dominate electric vehicles (EVs) and grid-scale storage due to their high energy density and. Why is India focusing on sodium-ion batteries?

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Are sodium ion batteries a viable solution for large-scale energy storage?

Manufacturing costs for sodium-ion batteries are projected to decrease by 15-20% by 2030. This makes SIBs an economically viable solution for large-scale energy storage. Their affordability can boost their adoption across various sectors. SIBs offer enhanced safety features compared to LIBs.

Are sodium-ion batteries a transformative force in India?

Sodium-ion batteries (SIBs) are positioning themselves as a transformative force in India's quest for energy independence. Unlike conventional Lithium-ion batteries (LIBs), SIBs are crafted from materials that are abundant in India. This availability reduces reliance on scarce minerals like cobalt and helps India strengthen its energy security.

Are sodium-ion batteries a viable alternative to existing infrastructure?

Sodium-ion batteries (SIBs) emerge as a promising alternative, offering lower costs, better safety, and compatibility with existing infrastructure. India's chemical industry and policy initiatives can support SIB development through R&D funding, pilot lines, and commercial incentives.

Are sodium ion batteries a viable alternative to lithium-ion battery?

In brief Sodium-ion batteries (SIBs) are emerging as a promising alternative to lithium-ion batteries (LIBs), offering lower costs and better safety. India should adopt a multifaceted approach for SIB technology, focusing on increased research funding, pilot line development, and innovation.

How much sodium ion battery production is planned by 2030?

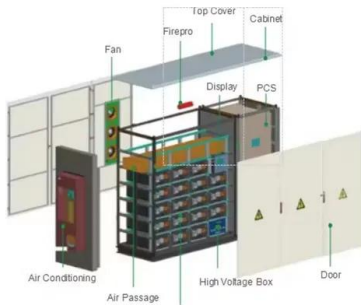
Currently, there is over 100 GWh of sodium-ion battery production planned by



2030, with most capacity being built in China (Benchmark Minerals Intelligence, 2023). Understanding battery cell manufacturing stages is critical because one cannot expect to create an immediate full comparative advantage across the entire supply chain.



## Expected ROI of sodium ion battery storage project in India 2030



### Sodium Ion Battery Market Size, Growth Opportunity ...

The sodium ion battery market size exceeded USD 270.1 million in 2024 and is set to grow at a CAGR of 26.1% from 2025 to 2034, due to the rising demand for cost-effective sustainable solutions with reduced supply chain risk is set to ...

### Cost Projections for Utility-Scale Battery Storage: 2023 ...

Executive Summary In this work we describe the development of cost and performance projections for utility-scale lithium-ion battery systems, with a focus on 4-hour duration ...



### [BESS costs could fall 47% by 2030, says NREL](#)

The national laboratory is forecasting price decreases, most likely starting this year, through to 2050. Image: NREL. The US National Renewable Energy Laboratory (NREL) ...

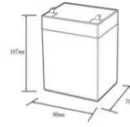


### Review of Grid-Scale Energy Storage Technologies Globally ...

Sodium-ion - similar in principle to lithium-ion batteries but replace the lithium with sodium; recently, have seen rapid technological developments, increasing energy densities and the ...



12.8V6Ah



Nominal voltage (V):12.8  
 Nominal capacity (ah):6  
 Rated energy (Wh):76.8  
 Maximum charging voltage (V):14.6  
 Maximum charging current (A):6  
 Floating charge voltage (V):13.6-13.8  
 Maximum continuous discharge current (A):10  
 Maximum peak discharge current @10 seconds (A):20  
 Maximum load power (W):100  
 Discharge cut-off voltage (V):10.8  
 Charging temperature (°C):0-+50  
 Discharge temperature (°C):-20-+60  
 Working humidity: <95% R.H (non condensing)  
 Number of cycles (25 °C, 0.5c, 100%doD): >2000  
 Cell combination mode: 32700-4s1p  
 Terminal specification: T2 (6.3mm)  
 Protection grade: IP65  
 Overall dimension (mm):90\*70\*107mm  
 Reference weight (kg):0.7  
 Certification: un38.3/msds



### India's Energy Future: Embracing Sodium-Ion Batteries for ...

As the nation endeavors to generate 50% of its energy from renewable sources by 2030, the spotlight is increasingly turning towards sodium-ion batteries (SIBs) as a ...

### Sodium-Ion Batteries Industry Report 2025-2034 Featuring Key ...

The sodium-ion batteries market is set for substantial growth due to rising renewable energy adoption, such as solar and wind, and increasing demand for low-speed ...



### Sodium-ion batteries key for India's storage manufacturing ambitions

Combined with a reduced reliance on critical minerals like cobalt, these factors make SIBs a promising option for India's projected need for 41.7 GW/208 GWh of battery ...



### Sodium-ion batteries: A sustainable answer to India's energy storage

In India, BESS demand from electric vehicles (EVs) and stationary grid applications by 2030 is expected to be 381 GWh and 181 GWh, respectively, as per the 2022 ...



### Estimating the Cost of Grid-Scale Lithium-Ion Battery Storage in India

We estimate costs for utility-scale lithium-ion battery systems through 2030 in India based on recent U.S. power-purchase agreement (PPA) prices and bottom-up cost ...

### Sodium-ion batteries: A real challenger or another

Energy storage is a dynamic battleground of evolving technologies where many make headlines, but few become commercial products. Since the formal launch of Sodium Ion Battery (SIB) cells in 2003, it has taken ...



### [Energy Outlook 2025: Energy Storage](#)

The aim is to further promote the integration of renewables into the wider energy system which will stimulate energy storage growth in turn. Additionally, IRENA has conducted ...



[solar battery, rechargeable battery](#)

Historical Context of India's Battery Import Policies India's approach to regulating lithium-ion battery imports has undergone several transformations over the past decade, ...



**Sodium-ion batteries present an opportunity for India ...**

Sodium-ion batteries, with the abundance of input materials, make a viable choice for India to reduce its reliance on imports to meet its energy storage needs, says a new report.

**Exploring The Potential Of Sodium-Ion Batteries In India's ...**

The Accelerating Smart Power and Renewable Energy in India (ASPIRE) program, supported by the Foreign Commonwealth and Development Office (FCDO) of the ...



[BESS costs could fall 47% by 2030, says NREL](#)

The national laboratory is forecasting price decreases, most likely starting this year, through to 2050. Image: NREL. The US National Renewable Energy Laboratory (NREL) has updated its long-term lithium-ion ...



## Breakthrough in EV Battery Tech for India , EY

In brief Rising demand for electric vehicles (EVs) has created the need to diversify into newer battery technologies, beyond lithium-ion batteries. Sodium-ion is a ...

### APPLICATION SCENARIOS



## How sodium-ion batteries can power India's energy ...

Sodium-ion batteries (SIBs) are emerging as a promising alternative to lithium-ion batteries (LIBs), offering lower costs and better safety. India should adopt a multifaceted approach for SIB technology, focusing on ...

## Sodium-ion batteries present an opportunity for India to establish ...

Sodium-ion batteries, with the abundance of input materials, make a viable choice for India to reduce its reliance on imports to meet its energy storage needs, says a new ...



## Opportunity for India to Establish an Indigenous ...

Sodium-ion batteries (SIBs) offer a significant opportunity for India to build a self-sustained energy storage ecosystem. India has abundant raw materials essential for SIB production, positioning the country favorably when ...





### Figure 1. Recent & projected costs of key grid

The "Report on Optimal Generation Capacity Mix for 2029-30" by the Central Electricity Authority (CEA 2023) highlight the importance of energy storage systems as part of ...



### [Energy Storage Sodium Ion Battery Market](#)

1 ??· The energy storage sodium ion battery market is projected to expand globally at a CAGR of 25.3% from 2025 to 2035, supported by its affordability, raw material abundance, and suitability for large-scale storage applications. China ...

### Sodium-Ion Batteries and Their Potential in India

EVs: The current EV penetration in India leads to an estimated battery demand of ~27 GWh as per the battery size estimations done by The Council on Energy, Environment, and Water ...



### Sodium-ion batteries key for India's storage manufacturing ambitions

A new report says sodium-ion batteries (SIBs), made from abundant materials, could help India to reduce its dependence on imports to meet its energy storage needs.



### Sodium-Ion Batteries: India's Next Big Leap in ...

The Future of Sodium-Ion Batteries in India The future looks promising for sodium-ion batteries in India. With ongoing research and development, the efficiency and capacity of these batteries are expected to ...



### Batteries and Secure Energy Transitions - Analysis

In the power sector, battery storage is the fastest growing clean energy technology on the market. The versatile nature of batteries means they can serve utility-scale projects, behind-the-meter storage for households and ...

### Sodium-ion batteries: A real challenger or another

Energy storage is a dynamic battleground of evolving technologies where many make headlines, but few become commercial products. Since the formal launch of Sodium Ion ...



12.8V 200Ah



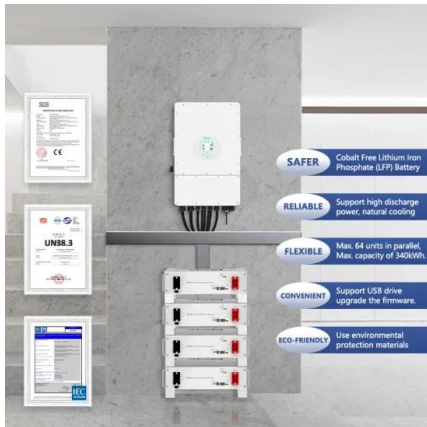
### India Embraces Sodium-Ion Batteries for Energy ...

Use Cases for Sodium-Ion Batteries Grid Energy Storage: India aims to achieve 41.7 GW/208 GWh of energy storage capacity by 2030. SIBs can help meet these ambitious goals by effectively managing renewable energy ...



## Sodium-ion batteries need breakthroughs to compete

A thorough analysis of market and supply chain outcomes for sodium-ion batteries and their lithium-ion competitors is the first by STEER, a new Stanford and SLAC ...



## Making India Aatmanirbhar in Advance Battery Storage

India's expected demand for advance batteries till 2030 is about 1100 GWh across different use cases. This would be ample to support the economies of scale and the target of 50 GWh capacity of advanced battery ...

## Batteries and Secure Energy Transitions - Analysis

In the power sector, battery storage is the fastest growing clean energy technology on the market. The versatile nature of batteries means they can serve utility-scale ...



## India Develops Sodium-Ion Battery That Charges 80

This sodium-based battery technology offers a cheaper, safer, and scalable alternative to lithium-ion batteries--especially suited for: EVs and electric 2-wheelers Solar grid energy storage



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