

CLIENT CASE STUDY

Sustainable Sodium-Ion
Battery Assembly Project
in Latvia, Europe

From Investment Idea to Bankable Reality — Powered by NPCS Expertise

PROJECT SNAPSHOT

Client	M/s. Sustainable Mobility Technologies
Location	Latvia, Europe
Industry	Large-Scale Energy Technology Manufacturing
Project	Assembly of Sodium-Ion Batteries
Services by NPCS	Techno-Economic Feasibility, DPR, Market Analysis, Financial Modelling, Strategic Advisory
Status	Client has accepted NPCS recommendations and is proceeding with implementation

02 ABOUT NPCS

NIIR Project Consultancy Services (NPCS) is one of Asia's most trusted names in industrial consultancy, serving entrepreneurs, MSMEs, startups, and large investors worldwide. For over three decades, NPCS has been transforming business ideas into bankable, investor-grade industrial ventures.

“NPCS is part of Asia’s leading industrial knowledge ecosystem with thousands of project profiles and global consulting expertise.”

Core Services

- Detailed Project Reports (DPR)
- Techno-Economic Feasibility Studies
- Market Research & Demand Analysis
- Engineering & Process Advisory
- Financial Modelling & Investment Analysis
- Implementation Strategy & Roadmap

NPCS By the Numbers

150K+ Detailed Project Reports Published	85 Countries Served Globally	30+ Years of Industrial Expertise	150K+ Industrial Projects Supported
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03 CLIENT OVERVIEW

M/s. Sustainable Mobility Technologies is an emerging energy-technology firm headquartered in Latvia, Europe. The company is committed to building long-term, sustainable businesses that contribute to both economic growth and environmental goals within Europe's evolving clean energy landscape.

Business Goals	Client Requirements
• Diversify into a high-growth manufacturing segment • Leverage Latvia's regional resource availability • Achieve long-term profitability with moderate capital • Align with European sustainability mandates • Establish first-mover advantage in sodium-ion battery space	• Expert sector identification aligned with capital capacity • Rigorous market and technical feasibility analysis • Bankable DPR for lenders and investors • Financial projections with sensitivity analysis • Regulatory compliance and implementation roadmap

04 PROBLEM STATEMENT & CHALLENGES

When M/s. Sustainable Mobility Technologies approached NPCS, they faced several significant strategic and operational challenges that required expert navigation:

Market Uncertainty	The sodium-ion battery sector was nascent with few proven European players. The client needed clarity on market size, timing, and demand drivers.
Technical Complexity	Assessing the right plant capacity, equipment specifications, and manufacturing process for a first-generation facility in Latvia was complex without in-house expertise.
Financial Risk	Without accurate CapEx/OpEx modelling and profitability analysis, attracting lenders and investors was impossible. Sensitivity to raw material cost volatility posed additional risks.
Supply Chain Gaps	European sodium-ion supply chains are early-stage. Understanding sourcing options for sodium salts, aluminium current collectors, and carbon anodes in the region required deep research.
Regulatory Complexity	Navigating the EU Battery Regulation, Net-Zero Industry Act, European Critical Raw Materials Act, and upcoming Battery Passport requirements (2027) required specialist regulatory knowledge.

05 OUR APPROACH & METHODOLOGY

NPCS applied its comprehensive, time-tested consultancy framework — combining rigorous quantitative analysis with deep sector knowledge — to deliver a structured, phased solution for the client.

01	Project Identification	NPCS scanned emerging manufacturing segments aligned with the client's capital capacity, regional resources, and strategic ambitions. Sodium-ion battery assembly emerged as the optimal opportunity based on multi-criteria scoring of growth, viability, and fit.
02	Market Analysis	Detailed assessment of global and European sodium-ion battery markets using research from Grand View Research, Mordor Intelligence, and IMARC. Key drivers, application segments, competitive landscape, and demand forecasts were analysed in depth.
03	Raw Material Feasibility	NPCS verified the abundance of sodium salts across Europe (Germany, France, Spain) and Latvia's access to regional supply chains. Aluminium and carbon anode material availability were also confirmed, de-risking the supply chain.
04	Technical Feasibility	Benchmarked processes against technology leaders (CATL, BYD) and European pilot projects using lignin-based anodes. Identified optimal plant capacity range of 2–5 GWh and mapped equipment requirements for electrode preparation, cell assembly, and packaging.
05	Financial Modelling	Developed detailed CapEx and OpEx estimates. Built profitability scenarios incorporating production volume ramp-up, pricing trends, and demand growth. Sensitivity analyses tested viability under conservative market assumptions.
06	Implementation Strategy	Provided phase-wise implementation timelines covering construction, equipment procurement, licensing, staffing, and commissioning. Identified potential European technology partners and research institution collaborations.

06 SCOPE OF SERVICES DELIVERED

Consulting Deliverables

- ✓ Sector opportunity screening & selection rationale
- ✓ Techno-Economic Feasibility Report
- ✓ Detailed Project Report (DPR) — bankable document
- ✓ Plant layout and capacity recommendations
- ✓ Machinery selection & technology benchmarking
- ✓ Financial model (CapEx, OpEx, P&L, cash flow)
- ✓ Market demand validation & growth forecasts
- ✓ Implementation roadmap with milestones

Advisory Services

- ✓ EU regulatory compliance guidance (Battery Regulation, CRMA)
- ✓ Battery Passport requirements planning (2027)
- ✓ Environmental & social impact considerations
- ✓ Raw material supply chain mapping
- ✓ European technology partner identification
- ✓ Research institution collaboration opportunities
- ✓ State aid and incentive programme guidance
- ✓ Ongoing strategic advisory support

07 PROJECT EXECUTION TIMELINE

Phase	Activity	Key Outputs
Phase 1	Discovery & Scoping	Client onboarding, requirement mapping, sector screening, opportunity shortlisting
Phase 2	Research & Analysis	Market research, raw material assessment, technology benchmarking, competitive analysis
Phase 3	Financial & Technical Modelling	CapEx/OpEx estimation, financial scenario modelling, technical process design, sensitivity testing
Phase 4	Reporting & Advisory	DPR compilation, feasibility report delivery, implementation roadmap, client presentation & Q&A

08 TECHNICAL INSIGHTS

Manufacturing Process — Sodium-Ion Battery Assembly

NPCS mapped the complete battery assembly process, identifying key stages and equipment requirements for a 2–5 GWh annual capacity facility in Latvia:

1.	Electrode Preparation	Anode/Cathode slurry mixing — blending active materials, binders, and conductive additives to precise specifications for coating.
2.	Electrode Coating & Calendering	Uniform layer deposition onto aluminium foil (cathode) and aluminium/carbon substrate (anode), followed by calendering to achieve target density.
3.	Cell Assembly	Electrode stacking/winding, electrolyte filling into prismatic, cylindrical, or pouch cell formats under controlled dry-room conditions.
4.	Formation Cycling	Initial charge-discharge activation cycles to form the solid-electrolyte interphase (SEI) layer, activating cell chemistry and setting baseline performance.
5.	Module & Pack Assembly	BMS integration, module construction, thermal management, and final packaging into battery packs ready for stationary or mobility applications.

Material Advantages

- Sodium — 6th most abundant element globally
- Aluminium current collectors replace costly copper
- Locally sourced materials (salt deposits in Germany, France, Spain)
- Lignin-based anodes from European forestry (pilot-plant proven)
- No cobalt or lithium — reduced critical mineral dependency

Performance Specifications

- Energy density: up to 175 Wh/kg (competitive with LFP)
- Temperature resilience: 90% capacity retained at –40°C
- Operating range: –40°C to +70°C
- Superior thermal stability vs. lithium-ion
- Excellent cycle life for stationary storage applications

09 FINANCIAL & MARKET ANALYSIS

Global Market Overview

USD 600.9M Global Market Size (2025) Source: Grand View Research	USD 1.43B Projected Size by 2033 11.6% CAGR	36% CAGR European Market Growth 2026–2034, fastest growing region	2–5 GWh Plant Capacity Range Optimal for Latvia facility
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European Market Outlook

- European market valued at USD 68.82 million in 2025, projected to reach USD 1.095 billion by 2034 (36% CAGR)
- Europe's dependence on imported lithium, cobalt, and graphite makes sodium-ion technology strategically attractive
- Policy support: EU Net-Zero Industry Act, European Battery Alliance, Critical Raw Materials Act
- Mandatory Battery Passports from 2027 will favour domestic producers with traceable, local supply chains
- Stationary energy storage dominates with ~71% market share; transportation growing rapidly
- CATL and BYD to commercially deploy second-generation sodium-ion batteries from 2026

Investment & Financial Projections

Financial Parameter	Estimated Range
Plant Capacity (Annual)	2 – 5 GWh
Raw Material Share of OpEx	60 – 70%
Gross Profit Margin	30 – 40%
Net Profit Margin	12 – 18%
Global Market CAGR (2026–2033)	11.6% (GVR) / 16.89% (Mordor)
European Market CAGR (2026–2034)	36%
European Market by 2034	USD 1.095 Billion

10 RESULTS & OUTCOMES

Business Impact

- ✓ Investment decision made with full confidence backed by data
- ✓ Bankable DPR ready for lender and investor presentation
- ✓ First-mover positioning in Europe's sodium-ion sector
- ✓ Detailed engineering design and procurement initiated
- ✓ Permits and incentive discussions begun with Latvian authorities

Risk Reduction

- ✓ Supply chain risk mitigated via local sodium sourcing
- ✓ Financial risk minimised through sensitivity-tested projections
- ✓ Regulatory risk reduced via EU compliance mapping
- ✓ Technology risk addressed by benchmarking against CATL/BYD
- ✓ Market risk de-risked via multi-source demand validation

11 CLIENT TESTIMONIAL

“NPCS provided us with a comprehensive, data-driven assessment that clarified both the opportunities and risks of entering the sodium-ion battery industry. Their detailed project report covered everything — from raw material sourcing and market demand to financial projections and policy compliance — enabling us to make an informed investment decision. We are confident that with NPCS’s guidance we are entering a promising sector with strong long-term potential.”

— Management, M/s. Sustainable Mobility Technologies, Latvia

12 WHY CHOOSE NPCS

Proven Industrial Expertise	30+ years and 150K+ project reports across hundreds of sectors. Deep domain knowledge spanning chemicals, food processing, pharmaceuticals, advanced materials, and energy technology.
Global Market Understanding	Clients in 85 countries trust NPCS for market intelligence that is accurate, current, and actionable. Our researchers track global trends, trade data, and regulatory landscapes across all major markets.
Data-Driven Feasibility	Every NPCS report is built on primary data, published industry research, and proprietary databases. Our financial models are stress-tested and designed to withstand lender and investor scrutiny.
End-to-End Project Support	From initial opportunity identification through to DPR, financial close, and implementation advisory, NPCS supports clients at every stage of their industrial investment journey.
Risk Mitigation Approach	NPCS systematically identifies and quantifies financial, market, technical, and regulatory risks. Our sensitivity analyses and scenario planning ensure investors can make decisions with confidence.
Sector-Agnostic Expertise	Whether food processing, chemicals, pharmaceuticals, advanced materials, or clean energy technologies, NPCS brings the same rigour and depth to every engagement.

13 CONCLUSION

This case study demonstrates the transformative value that NPCS's rigorous consultancy approach delivers to investors and entrepreneurs navigating emerging industrial opportunities. By combining meticulous market research, technical process assessment, and financial modelling, NPCS identified sodium-ion battery assembly as a sustainable, profitable, and strategically aligned opportunity for M/s. Sustainable Mobility Technologies in Latvia.

As Europe accelerates its green energy transition, sodium-ion battery assembly represents exactly the kind of high-growth, resource-secure, policy-aligned opportunity that NPCS specialises in identifying — before the market catches up.

READY TO BUILD YOUR NEXT INDUSTRIAL PROJECT?

Partner with NPCS to transform your investment idea into a profitable industrial venture.

Bankable Feasibility Studies • Detailed Project Reports • End-to-End Advisory

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