LEOCH BATTERY

ELBC
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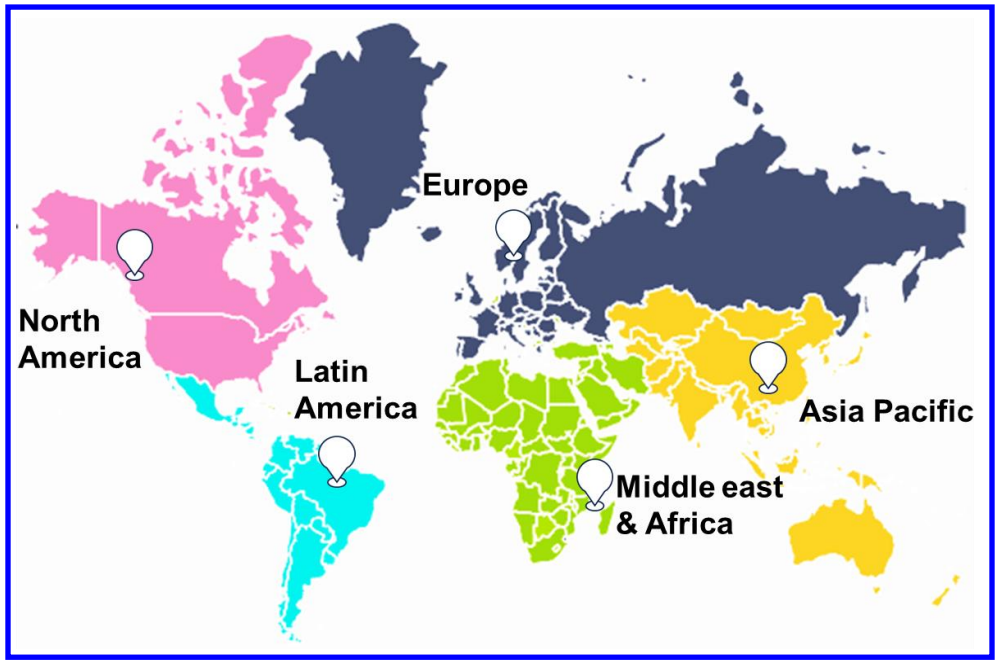
LEAD-ACID BATTERY MARKETS & TRENDS

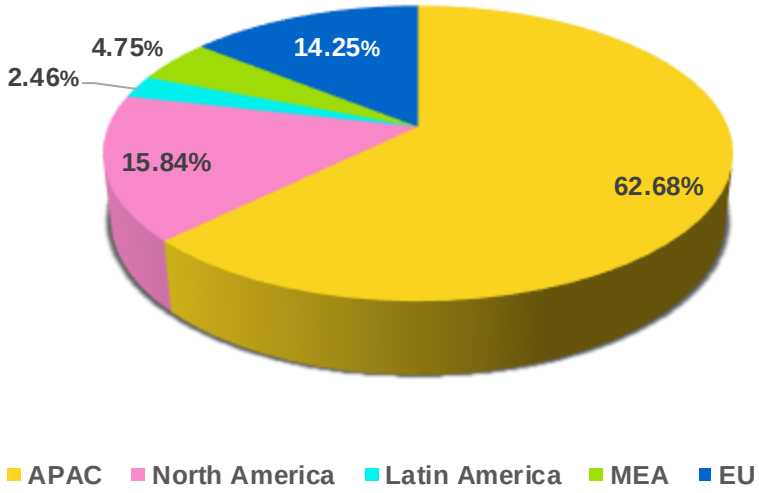
Dr. DONG LI

Content Title

Lead-acid Battery Market & Trend

Global outlook of lead-acid batteries in the Year 2023





Region	(B USD)
APAC	32.28
North America	7.96
Latin America	1.37
MEA	2.55
EU	7.34
Total	51.50

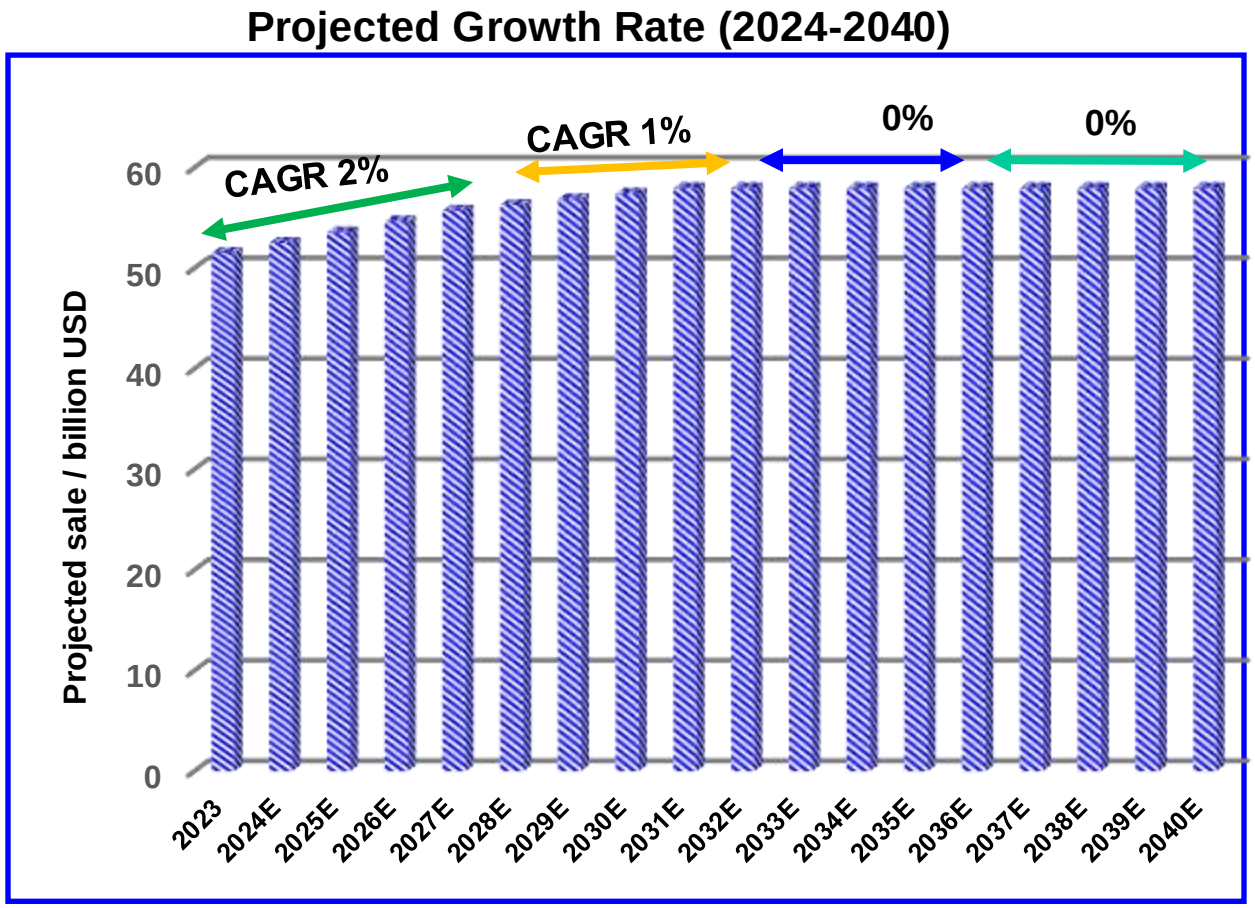
Key points

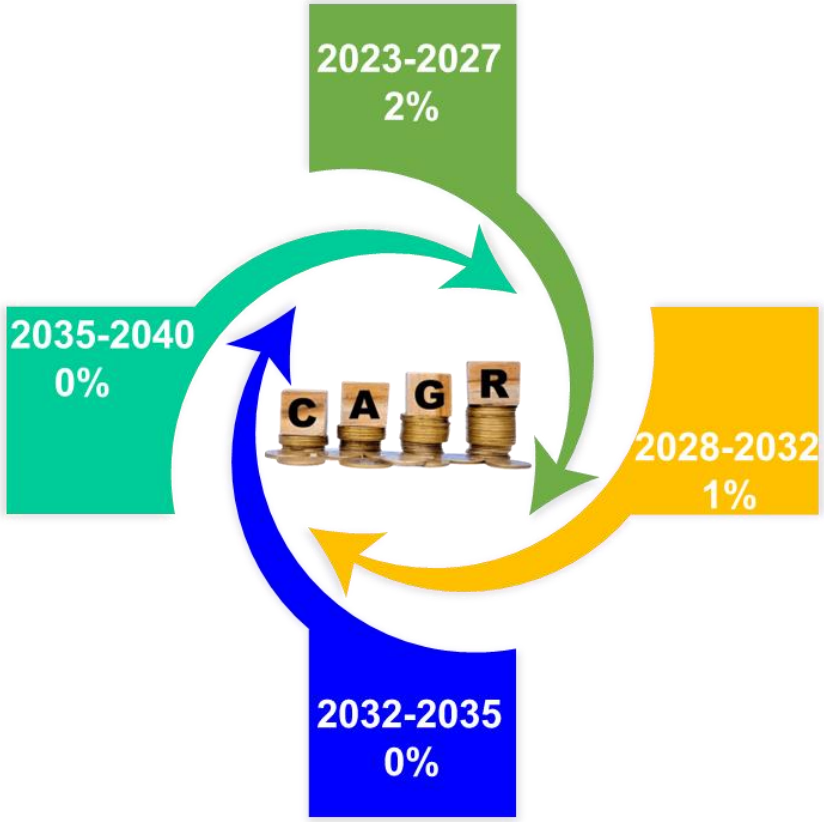
The total global lead-acid market in 2023 was around **51.50 billion** US$

The APAC lead-acid market in 2023 was alone **32.28 billion** US$ representing **62.68%** of total global lead-acid market.

Lead-acid Battery Market & Trend

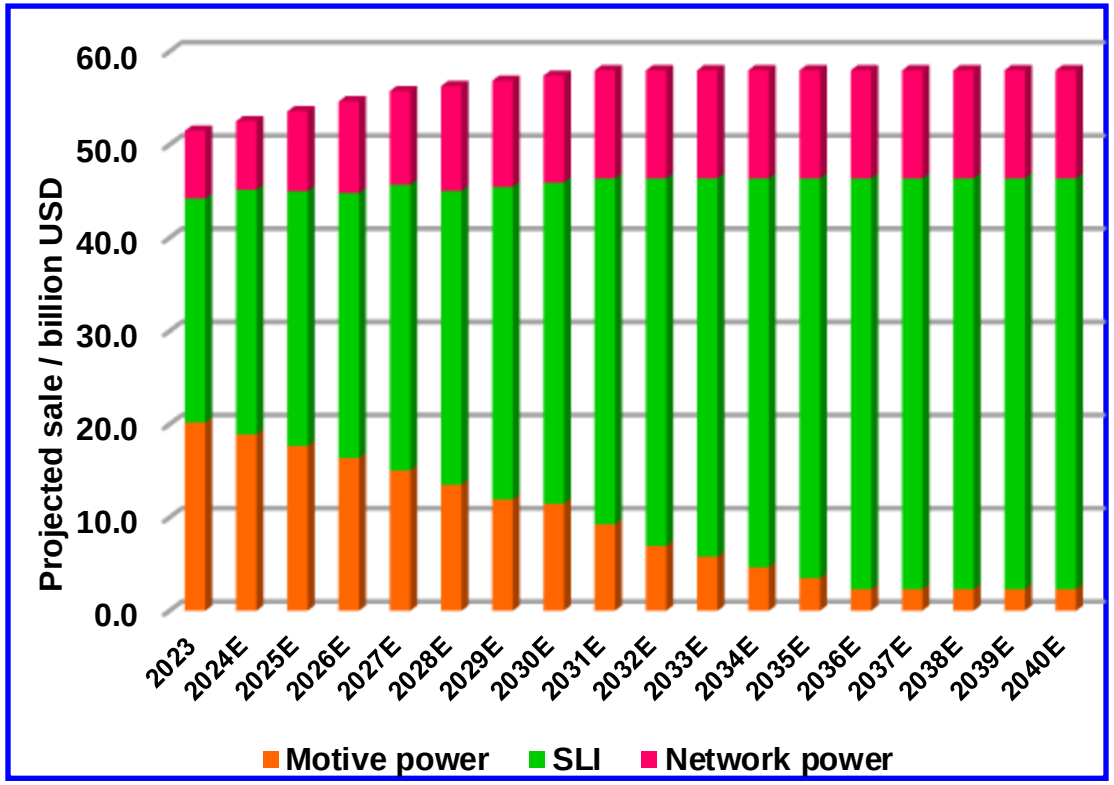
Global market forecast

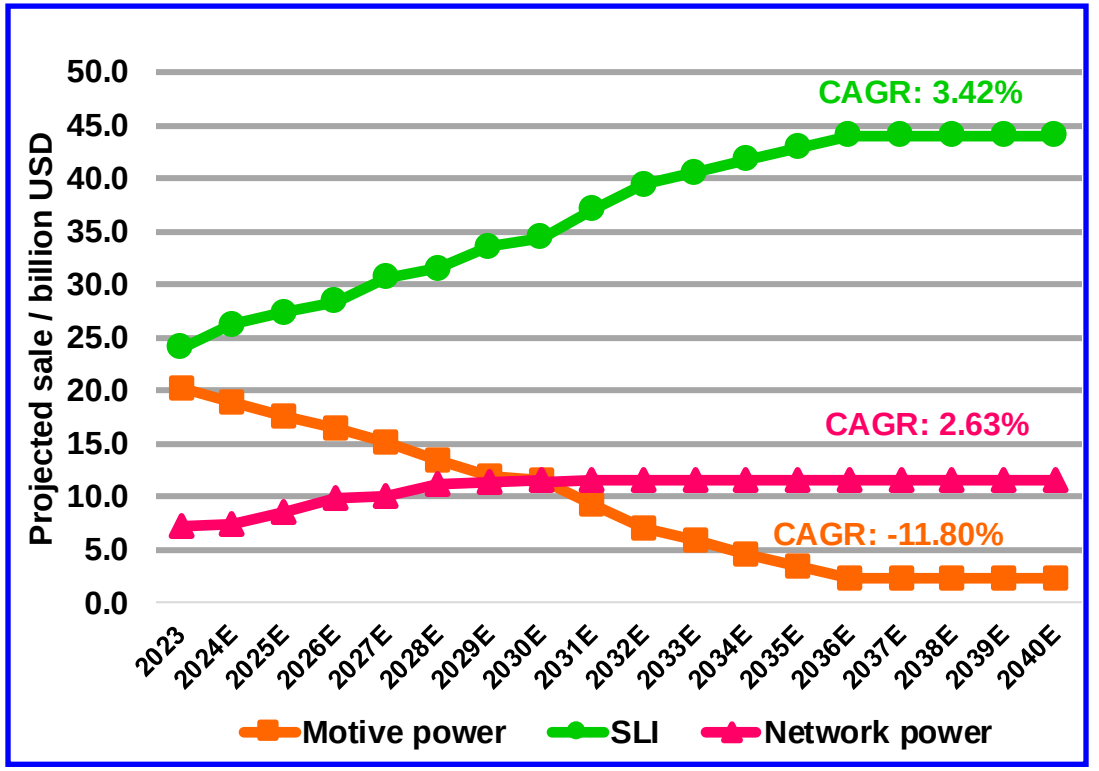




Lead-acid Battery Market & Trend

Global market forecast by application





Lead-acid Battery Market & Trend

Global lead-acid battery market drivers

1. Strong growth in the automotive SLI aftermarket

The SLI battery aftermarket is expected to reach a predominant position by 2040. Sign ificant advancements in battery technologies for enhancing battery efficiency, capacity, and safety will influence the industry outlook.

2. Rapid energy storage growth

The lead-acid battery energy storage system market is gaining traction due to the advantages of low cost, high reliability, and high specific power that are suitable for renewable energy integration, grid stabilization, and backup power systems.

3. Wide applications

Lead-acid batteries have been used for over a century, and their versatility and low cost have made them a popular choice in a variety of industries. From renewable energy storage to telecommunications, electric forklifts to medical equipment, lead-acid batteries are an essential part of many systems and devices.

4. Safety

The low energy density ensures that it is very rare for lead-acid batteries to catch fire!.

5. Eco-friendly

One of the most significant eco-friendly features of lead-acid batteries is their recyclability. Unlike many other battery chemistries, lead-acid batteries boast a recycling rate of up to 99%, with the lead and plastic components being reused to manufacture new batteries.

Lead-acid Battery Market & Trend

Global lead-acid battery competitive landscape

The World's Leading Lead-Acid Battery Manufacturing Companies

	Clarios	GS Yuasa	Enersys	Tianneng	Exide Technologies	Leoch
Main Products Covered	SLI Batteries	Reserve Power Batteries, SLI Batteries, Motive Batteries	Reserve Power Batteries, Motive Batteries	Motive Batteries	Reserve Power, SLI Batteries, Motive Batteries	Reserve Power Batteries, SLI Batteries, Motive Batteries
Geographical Coverage	Comprehensive Coverage of Global Regional Markets	Comprehensive Coverage of Global Regional Markets	Comprehensive Coverage of Global Regional Markets	Almost all in China's Domestic Market	Comprehensive Coverage of Global Regional Markets	Comprehensive Coverage of Global Regional Markets

Source: Frost & Sullivan

1 Lead-acid Battery Market & Trend

2 APAC Lead-acid Battery Status

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APAC Lead-acid Battery Status

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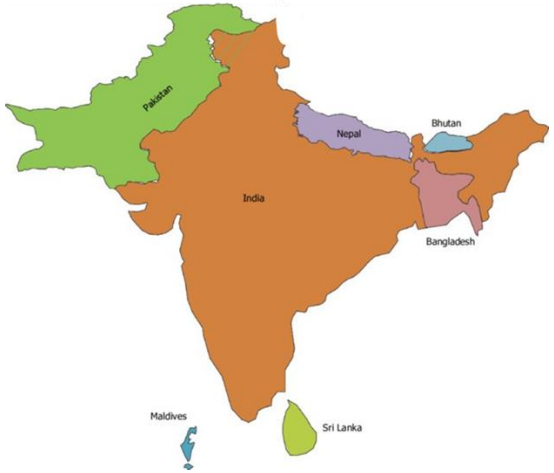
APAC Countries

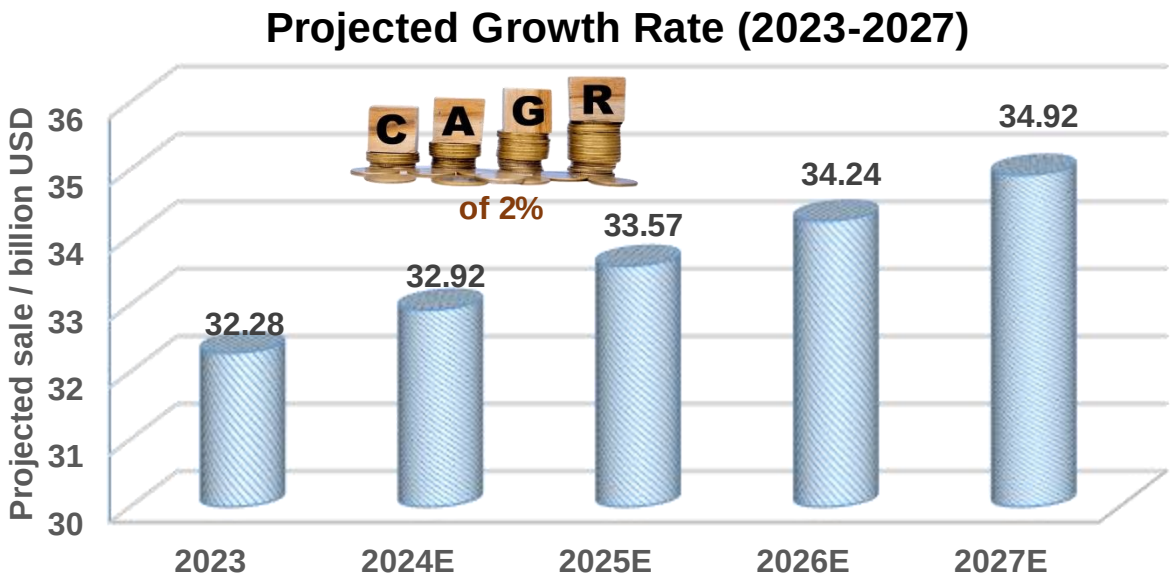
- **ASEAN Countries**
- **East Asian Countries**
- **South Asian Countries**
- **Oceania Countries**

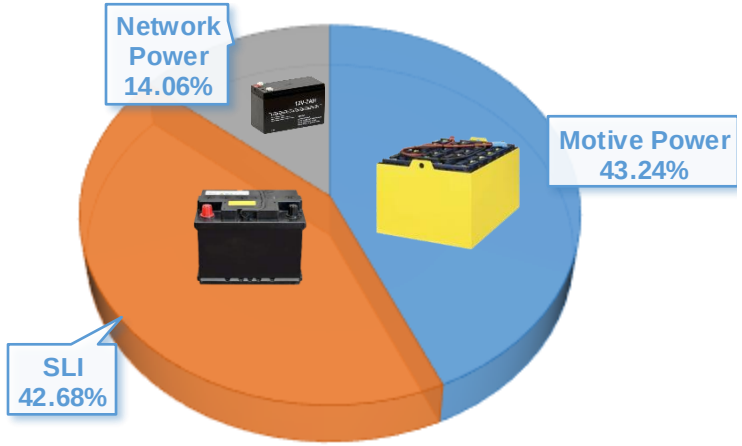


APAC Lead-acid Battery Status

APAC Lead-acid Market Overview

2023 Market Segment (B USD)	
Motive Power	13.96
SLI	13.78
Network Power	4.54
Total	**32.28**





APAC Lead-acid Battery Status

ASEAN Countries Estimated Total Market Size

Network/SLI/Motive Power

Country	Total Value (M USD)
Indonesia	2,170.10
Thailand	598.16
Vietnam	456.31
Malaysia	390.00
Philippines	271.47
Myanmar	137.50
Singapore	65.23
Cambodia	42.63
Laos	27.04
Brunei	11.87
Total	**4.17B USD**

APAC Lead-acid Battery Status

East Asian Countries Estimated Total Market Size

Network/SLI/Motive Power

Country/Region	Total Value (M USD)
China	17,854.71
Japan	1,325.43
Korea	550.81
China Taiwan	405.83
Mongolia	165.50
China Hong Kong	80.36
Total	**20.38B USD**

APAC Lead-acid Battery Status

South Asian Countries Estimated Total Market Size

Network/SLI/Motive Power

Country	Total Value (M USD)
India	5,120.01
Pakistan	442.31
Bangladesh	182.18
Sri Lanka	153.42
Nepal	88.15
Bhutan	9.26
Maldives	4.75
Total	**6.08B USD**

APAC Lead-acid Battery Status

Oceania Countries Estimated Total Market Size

Network/SLI/Motive Power

Country	Total Value (M USD)
Australia	1,321.62
New Zealand	327.49
Total	**1.65B USD**

APAC Lead-acid Battery Status

Key Suppliers in APAC Region

GS YUASA

天能集团 TIANNENG GROUP

超威 CHILWEE

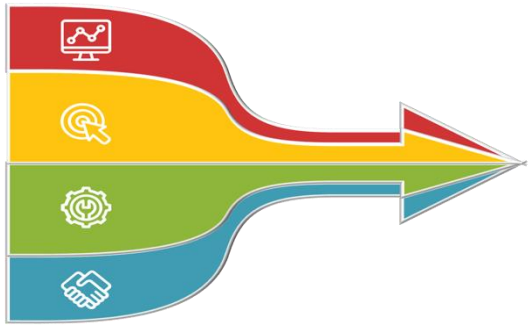
EXIDE

LEOCH BATTERY

AMARA RAJA
Gotta be a better way

CAMEL
POWER BEYOND COMPARE

CLARIOS

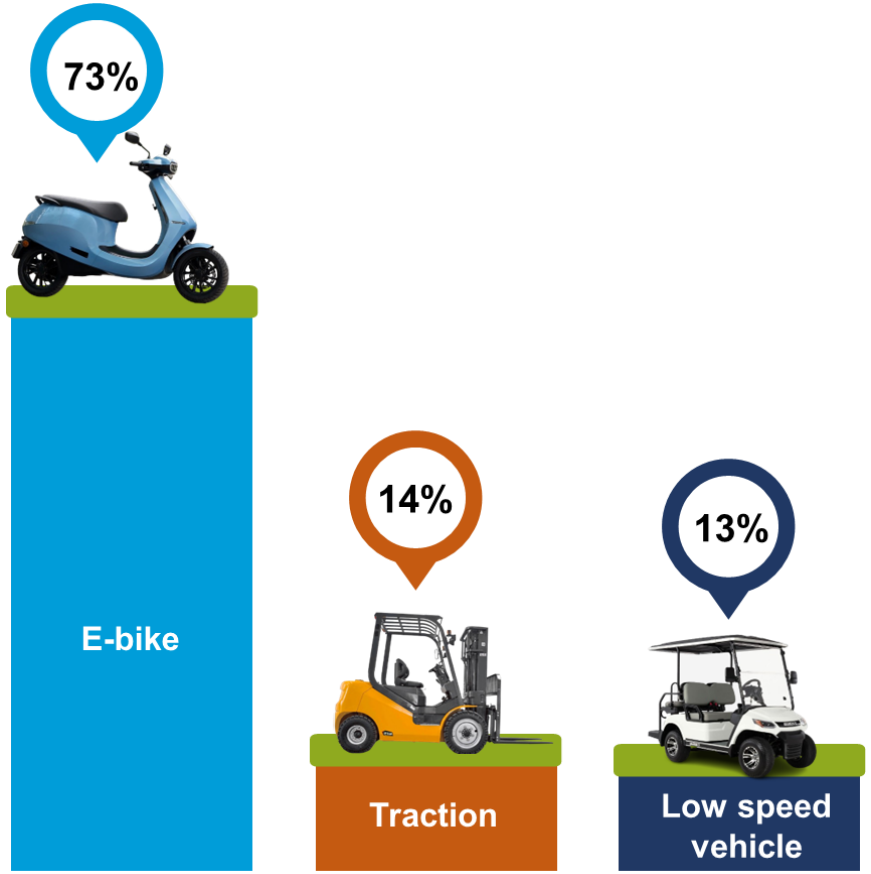


These companies are not only investing in research and development to improve the performance and efficiency of lead-acid batteries but also expanding their lithium-ion battery production capacity to meet the growing demand.

APAC Lead-acid Battery Status

Motive Power Battery Market Size：13.96 B USD

Motive Power Battery (B USD)	
E-Bike	10.16
Traction	1.98
Low-Speed Vehicle	1.82
Total	**13.96**



Key Points

1. China dominates the E-bike market, Accounting for 90.04% of the total.
2. China leads with a significant number of dedicated E-bike lanes, contributing significantly to the region's growth.
3. The E-bike market in China and Japan Is close to a saturation point.
4. Indonesia, India, Vietnam, and South Korea are expected to witness significant growth in the near future.

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the E-bike Market

天能集团 TIANNENG GROUP

超威 CHILWEE

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Narada RECHARGEABLE BATTERIES

EXIDE

AMARA RAJA Gotta be a better way

UPLUS NEW TECHNOLOGY BATTERY

CSB BATTERY

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the Traction Battery Market

GS YUASA

火炬 Torch

HOPPECKE
POWER FROM INNOVATION

CHLORIDE

HAWKER®

SEBANG
SEBANG GLOBAL BATTERY

HITACHI
SUPER LIFTTOP ECO
For battery forklift

LEOCH®
LEOCH BATTERY

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the Low-Speed Vehicle Market

TROJAN BATTERY COMPANY

U.S. Battery Manufacturing Company

LEOCH BATTERY

GS YUASA

EXIDE INDUSTRIES LIMITED

FULLRIVER BATTERY

APAC Lead-acid Battery Status

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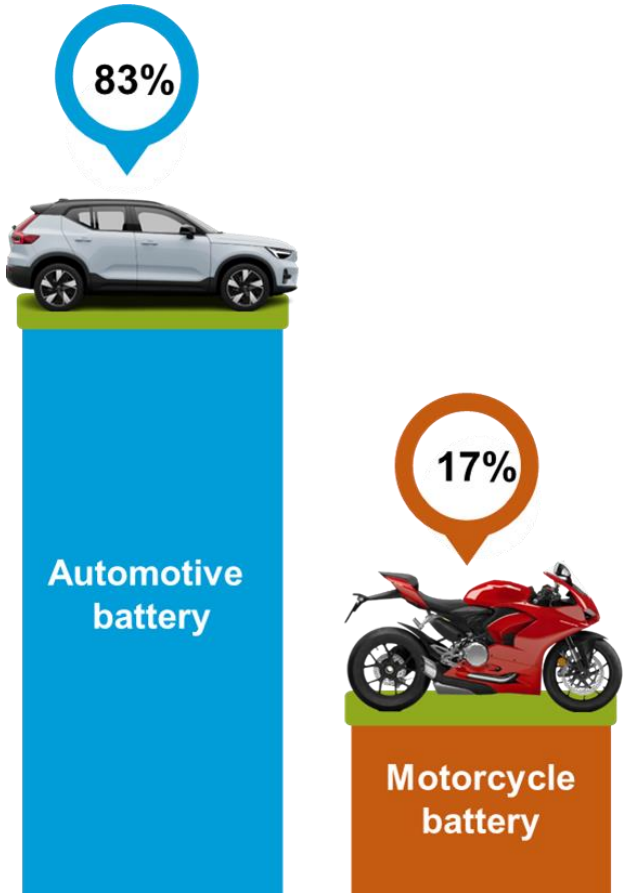
Motive Power Battery Top Customers

	TOP Customers
E-bike	YADEA, BAFANG, 台铃, AIMA HI-TECH, LUYUAN, NIU, XIN RI, LIMA, JD, MERIDA
Traction	TOYOTA INDUSTRIES CORPORATION, HELI, HANGCHA, Godrej, KION GROUP, CROWN, LONKING, Logisnext, Linde Material Handling Linde, 合派叉车 HOPPER
Low-Speed Vehicle	EZGO, YAMAHA, Marshell, EAGLE, HDK, Club Car, LVTONG, EXCAR

APAC Lead-acid Battery Status

SLI Battery Market Size：13.78 B USD

SLI Battery (B USD)	
Automotive Battery	11.41
Motorcycle Battery	2.37
Total	**13.78**



Key Points

1. Aside from APAC, the SLI market in North America is expected to experience the highest growth.
2. China's automotive lead-acid battery industry is predicted to be one of the most promising after the United States and Germany.
3. The India is the largest market in South Asia for SLI and motorcycle lead-acid batteries. Increased manufacturing of passenger and commercial automobiles will continue to drive India's growth.
4. The expanding automotive fleet in Indonesia, Malaysia, Vietnam, and Thailand is acting as another significant growth-inducing factor in APAC.

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the Automotive Battery Market

GS YUASA

SEBANG GLOBAL BATTERY

CAMEL

AMARA RAJA
Gotta be a better way

LEOCH BATTERY

CLARIOS

EXIDE INDUSTRIES LIMITED

MOTOLITE PANGMATAGALAN

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the Motorcycle Battery Market

GS YUASA

LEOCH BATTERY

AMARA RAJA
Gotta be a better way

DYNAVOLT
power your life

UPLUS
NEW TECHNOLOGY BATTERY

FB FURUKAWA BATTERY

APAC Lead-acid Battery Status

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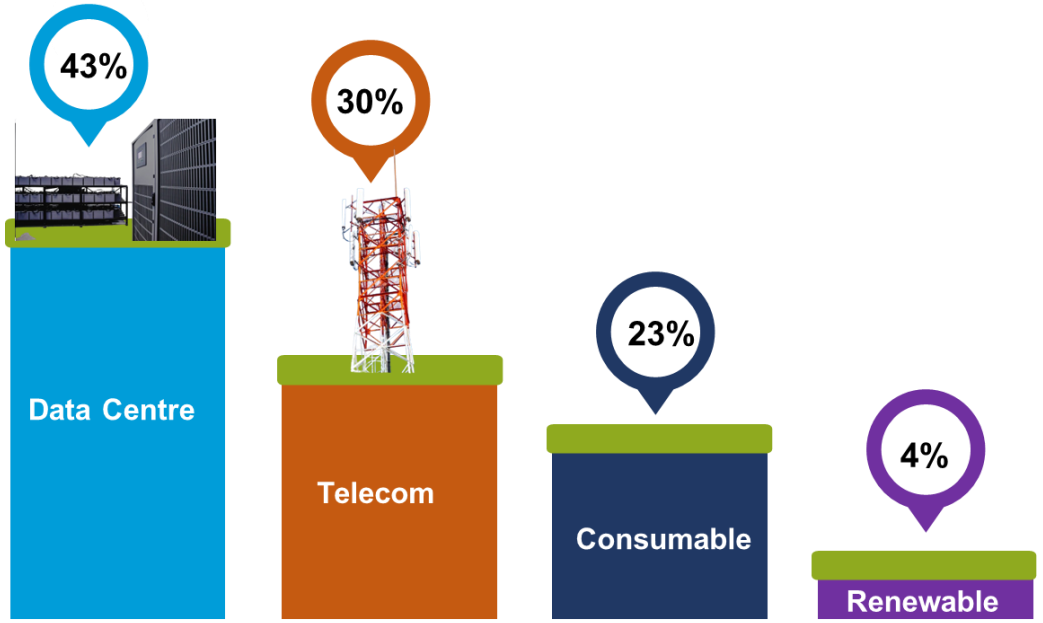
SLI Battery Top Customers

Automotive Battery	
Motorcycle Battery	

APAC Lead-acid Battery Status

Network Power Battery Market Size：4.54 B USD

Network Power Battery (B USD)	
Data Centre	1.94
Telecom	1.35
Consumable	1.05
Renewable	0.20
Total	**4.54**



Key Points

1. Automation and digitalization boost power consumption in many operations, causing a boom in UPS demand throughout the APAC region.
2. Hong Kong and China dominated data center development in 2019, followed by Australia, India, Japan, and Singapore.
3. In APAC, Thailand, Indonesia, and Malaysia have also been investing significantly in data center development.
4. Although many providers now offer lithium-ion batteries, lead-acid batteries will remain the ideal choice for data centers due to their safety and mature technology.

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the UPS Battery Market

GS YUASA

LEOCH BATTERY

SHOWA DENKO

EnerSys Power/Full Solutions™

EXIDE

EASTPENN INTERNATIONAL

APAC Lead-acid Battery Status

Major Suppliers of Batteries for the Telecomm Battery Market

GS YUASA

LEOCH BATTERY

Narada

EnerSys
Power/Full Solutions

shoto

HOPPECKE
POWER FROM INNOVATION

APAC Lead-acid Battery Status

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Lithium Battery Overview

Global supply and demand of lithium batteries today and in the future for Mobility application

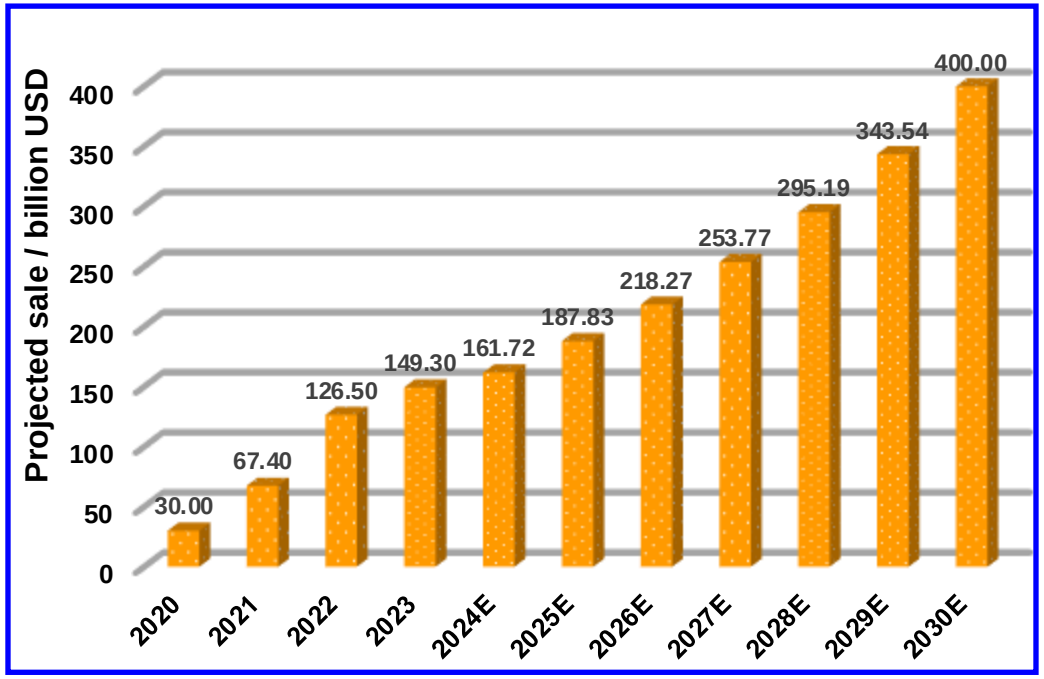
Global lithium batteries are mainly produced by companies from China, Japan, and South Korea

Country	2021	2022	2023
China	44.1	94.9	111.5
Japan	4	4.8	5.3
Korea	14	18.5	22.8
Other countries	5.3	8.3	9.7
Total	**67.4**	**126.5**	**149.3**

Source: JRC Science for Policy Report, doi:10.2760/87175, China Industrial Association of Power Sources

Lithium Battery Overview

Global market forecast

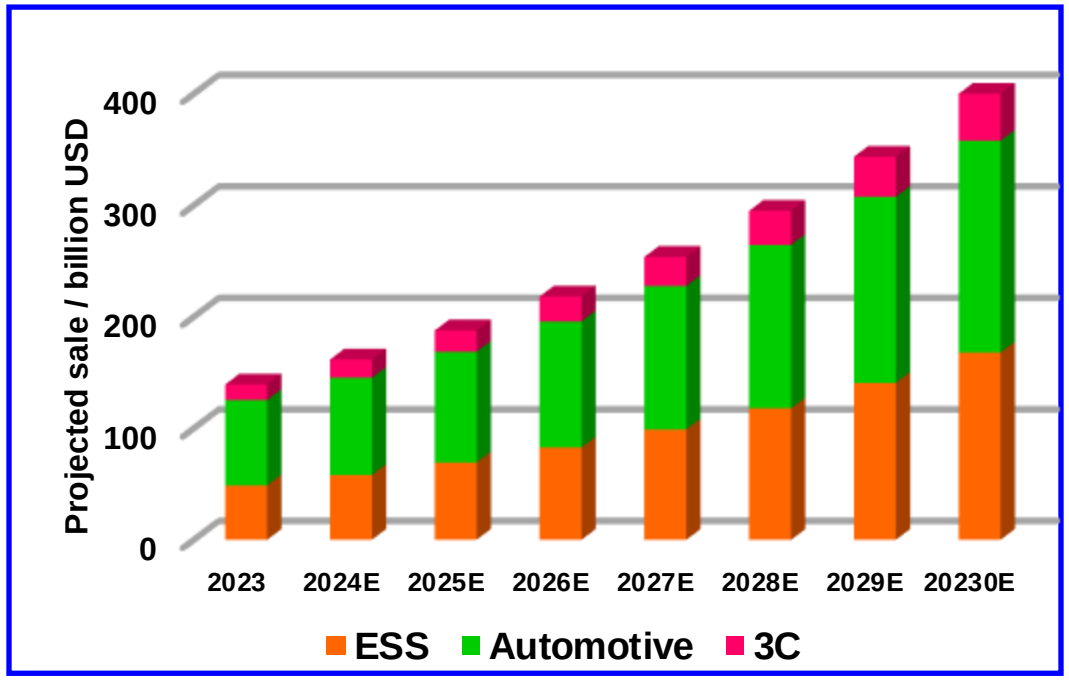


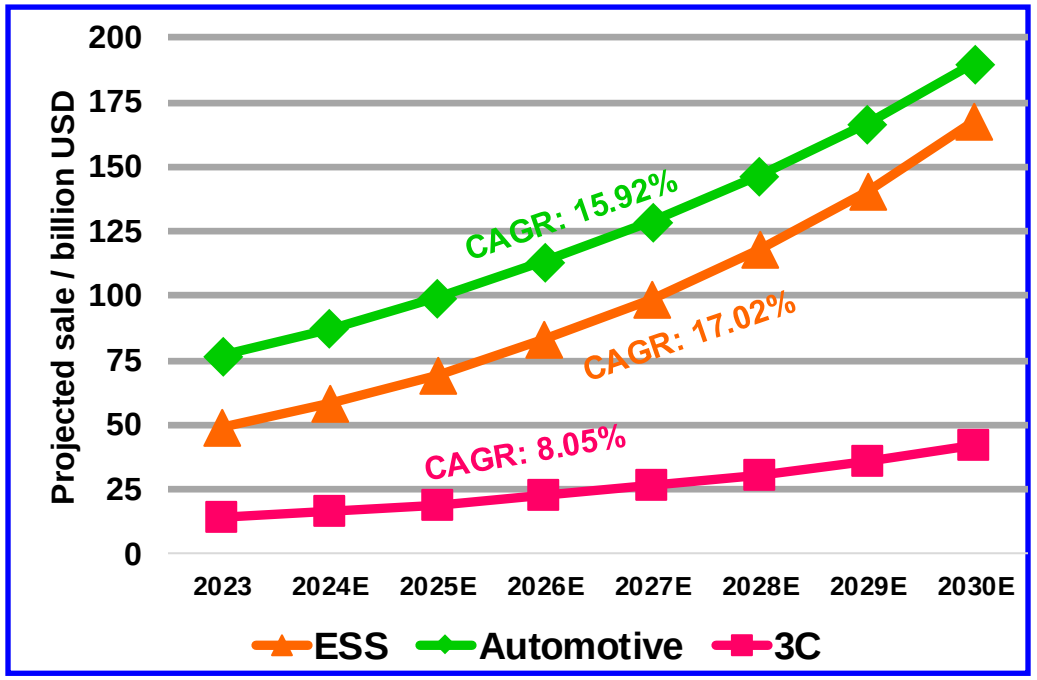
The global lithium-ion battery market size was valued at USD 30 billion in 2020 and is expected to expand USD 400 billion at a compound annual growth rate of 29.56% from 2020 to 2030.

Source: Battery 2030: Resilient, Sustainable, and Circular. McKinsey & Company

Lithium Battery Overview

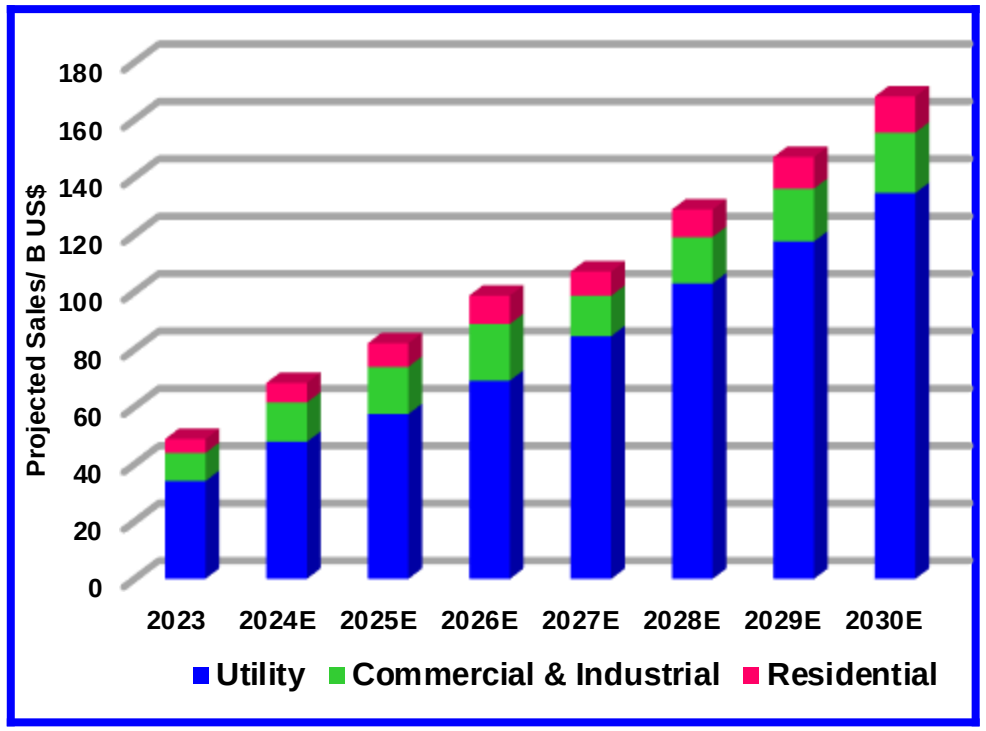
Global market forecast by application





Lithium Battery Overview

The ESS segmentation forecast from 2023 to 2030



The Utility Segment

The utility segment would be the fastest-growing with a 25% CAGR.

The 400 to 450 GWh utility-scale installation is forecast for the year 2030.

The Utility segment customers are grid operators and renewable developers looking to balance the intermittency of renewables and provide grid stability.

The Commercial & industrial (C&I)

C&I is the second-largest segment, with a 13% CAGR.

It is forecast that C&I could reach between 50 and 70 GWh by 2030.

The Residential segment

The residential segment would be growing with a 8% CAGR.

The residential segment could reach 20 GWh by 2030.

In this segment, BESS can be combined with PV panels or integrated into smart homes or home EV charging systems.

Lithium Battery Overview

Lithium battery industry is growing quite rapidly

The global lithium-ion battery market size was valued at 30.00 billion USD in 2020.It is expected to grow by 400.00 billion USD at a CAGR of 29.56% at the end of 2030.

Leoch has built several facilities in Anhui province and Vietnam, to meet the growing demand for lithium batteries.

- **Motorcycle lithium battery production started: 2012.**
- **Telecom lithium battery production started: 2015.**
- **lithium battery cells production started: 2019.**
- **Land occupation: 400,000 sq.m.**
- **Lithium battery cell annual production capacity: 4GWh/year.**
- **Lithium battery pack annual production capacity：6GWh/year**

Lithium Battery Overview

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Leoch Lithium-ion Battery Products

Network Power Solutions

Telecom Solutions

48V communication lithium battery (48V, 10Ah-200Ah)

48V GPS Communication lithium battery (48V 100Ah-200Ah)

48V Intelligent lithium battery (48V100ZN)

5G Integrated Power Battery(48V-50Ah)

Data Center Solutions

PU UPS Short-time Backup Power Series (256V-512V, 50Ah-100Ah)

BU Long-time Backup Power Series (256V-716V, 200Ah)

HDU HVDC Short-time Backup Power Series (240V-336V, 50Ah-100Ah)

DU DC Power Panel Backup Power Series (110V-220V, 100Ah)

Energy Storage Solutions

Household Energy Storage

General household energy storage(48V, 100Ah-200Ah)

Residential Energy Storage Battery (Wall-mounted) (48V, 100Ah-200Ah)

Low Voltage & Stackable (48V, 100Ah-400Ah)

High Voltage & Stackable (180V-350V)

Industrial & Commercial ESS

All In One Battery Storage Cabinet

Centralized Energy Storage (Liquid Cooled)

Green Transportation Solutions

Motive Power

Golf Cart (48V, 82Ah-200Ah)

Forklift (24V-48V, 60Ah-600Ah)

AGV (48V, 20Ah-40Ah)

Electric moped (48V-72V, 20Ah-27Ah)

Stacker (48V-72V, 32Ah-100Ah)

Industrial Scrubber (24V, 200Ah)

Motorcycle

12V Motorcycle Start Lithium Battery

(12.8V, 2Ah)

(12.8V, 5Ah)

(12.8V, 8Ah)

12V Lead-acid Battery Replacement

12V Lead-Acid Battery Replacement

(12V, 100Ah)

(12V, 150Ah)

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Summary

Lead-acid battery current status

In 2024, the global lead-acid battery market is expected to be worth USD 52.53 billion, and the lithium battery market is anticipated to be USD 161.72 billion. However, in 2020, the global lead-acid battery market was USD 48.47 billion, and the lithium battery market was USD 30.00 billion.

Lead-acid battery future

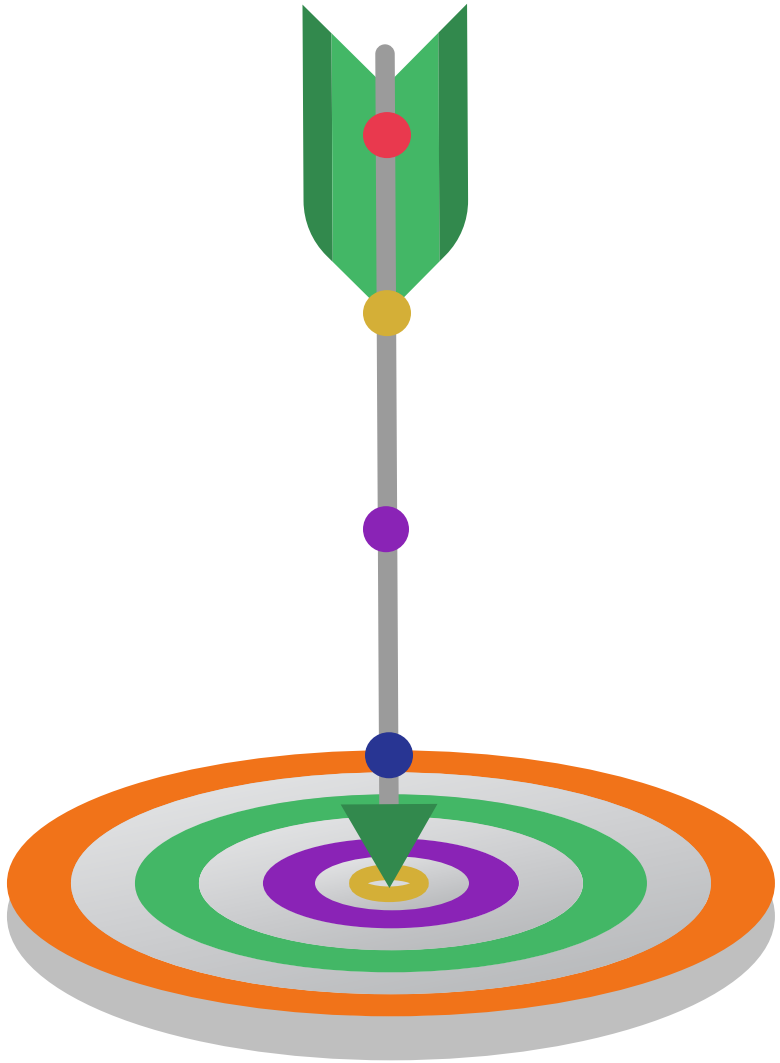
We believe lead-acid batteries will have a very stable future; the SLI segment will be in the leading position.

Lithium battery current status

In both existing and new markets, the lithium battery segment is anticipated to experience rapid growth.

Lithium cell production capacity

The global manufacturing capacity of lithium cells for electric cars and energy storage has been increased significantly. China holds over 70% of the global product capacity.



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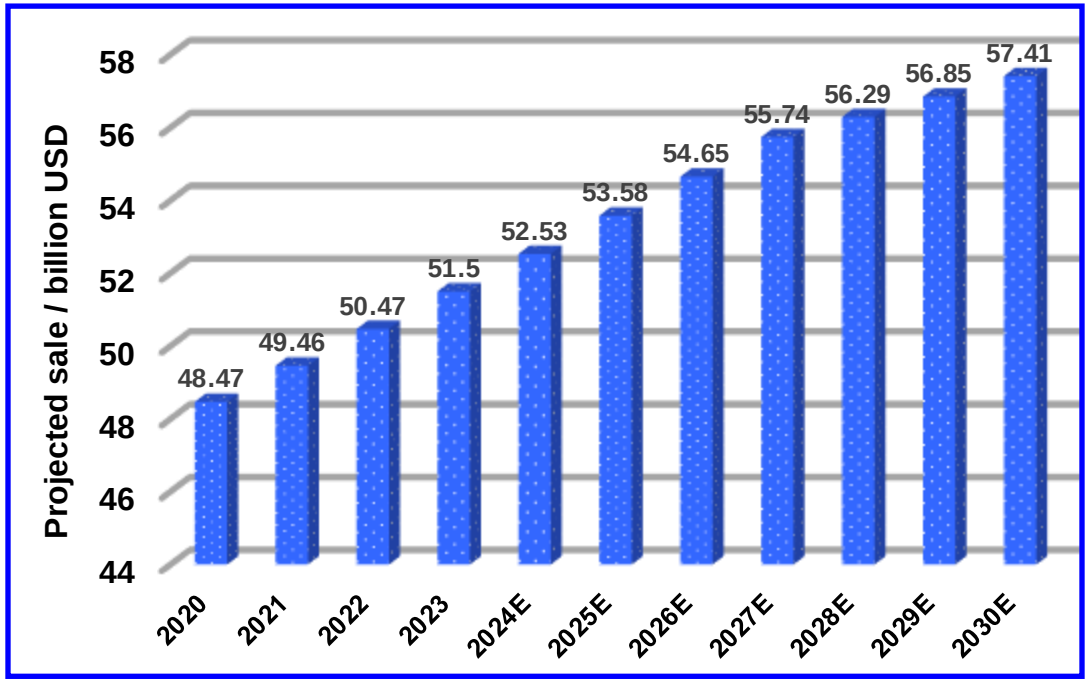
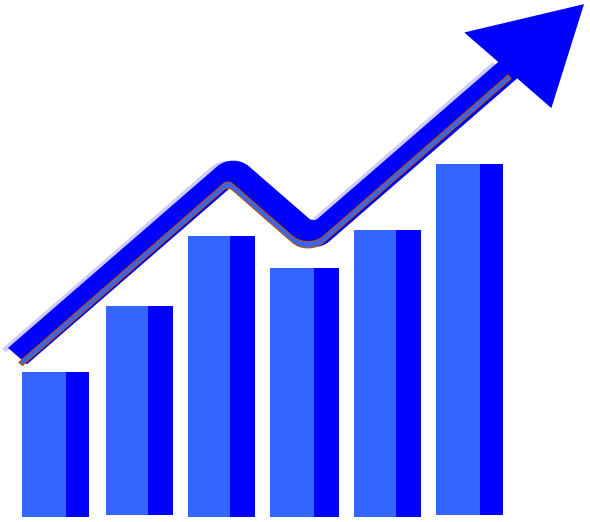
Provide Reliable and Innovative Power Supply

Projected Lead-acid Battery Growth Rate (2024-2030)





The global lithium-ion battery market size was valued at USD 48.47 billion in 2020 and is expected to expand USD 57.41 billion at a compound annual growth rate of 1.55% from 2020 to 2030.