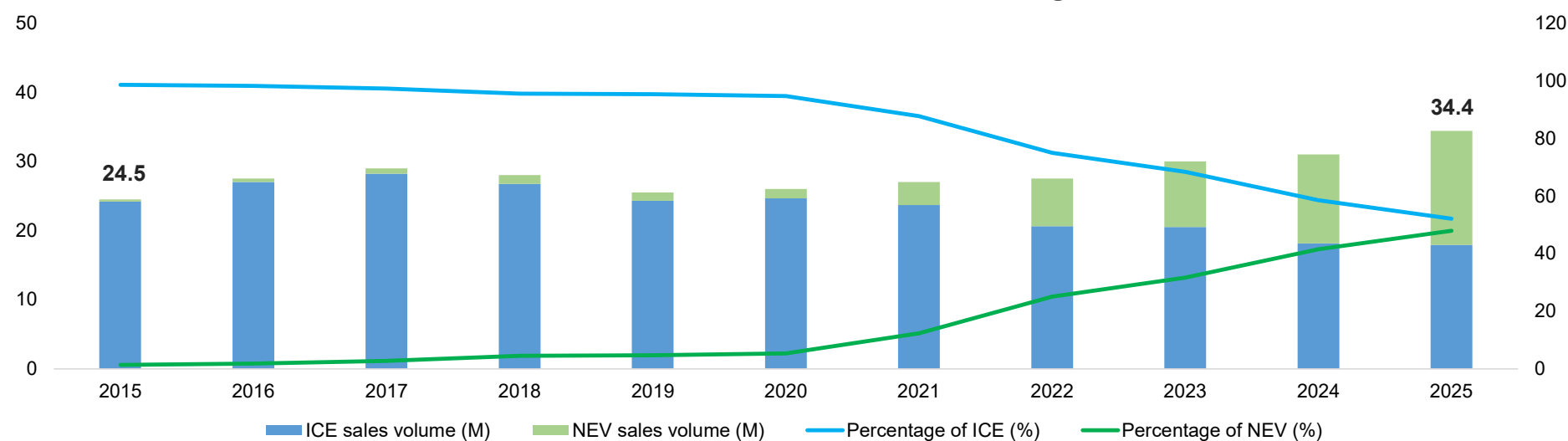




China Auto Low-Volt Battery Trend

China automotive sales volume and growth rate

China automotive vehicle sales volume and growth rate



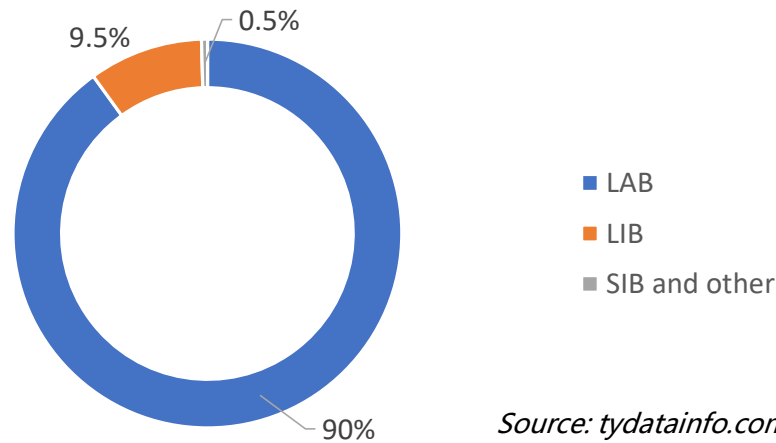
Source: public information

From 2015 to 2025, China's total automobile sales are projected to climb from **24.5 million** units to **34.4 million** units, representing a growth of approximately **40%**.

Driven by China’s dual-carbon targets and dual-credit policies, sales of ICE vehicles have been declining continuously since **2020**, with a cumulative reduction of over 6 million units over the decade. During the same period, NEV sales have experienced strong growth, with their market share approaching **48%** by 2025, achieving parity with ICE vehicles.

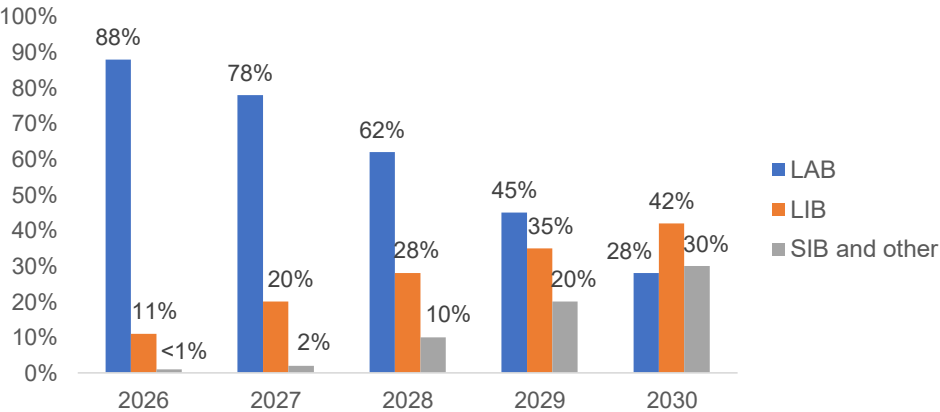
China auto LV battery Core Scenarios and Characteristics_ICE

LV battery market share in China's ICE vehicle



Source: tydatainfo.com

Forecast of LV Battery Market Share in China's ICE Vehicle Market over the Next Five Years



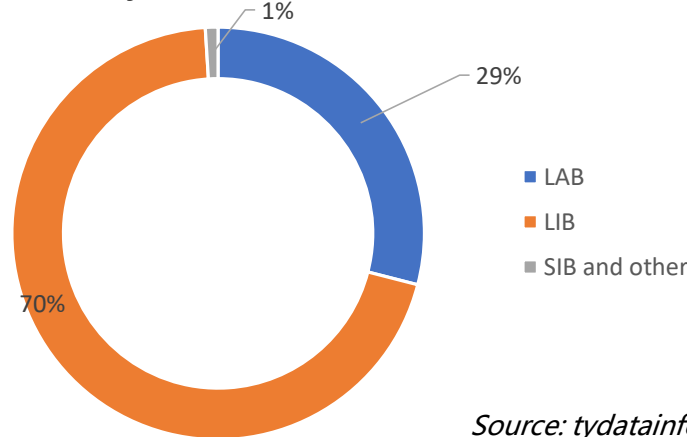
Source: finance.sina.com.cn

Technology	Core Scenarios and Characteristics
LAB <i>lead-acid batteries</i>	In all scenarios of gasoline vehicles, AGM is gradually replacing flooded fluid, while EFB is mainly used in small and medium-sized vehicles such as Japanese cars.
LIB <i>Lithium-ion batteries</i>	Mid-to-high-end gasoline vehicles, commercial vehicle start-up and parking applications. Cycle life, lightweight, and intelligent adaptation to crushed lead-acid batteries.
SIB and others <i>Sodium-ion batteries, etc.</i>	Small-batch installations for cold-region fuel and start-stop verification have been completed, but large-scale installations have not yet been implemented.

Stage	Expected market structure
Short term (2026-2027)	LAB have an absolute monopoly; LIB are used in small quantities in high-end applications; start-stop lithium batteries are rapidly penetrating the market; SIB are being demonstrated in vehicles and used in small batches in northern regions.
Mid-term (2028-2029)	SIB are being mass-produced, fuel sales in cold regions are rapidly increasing, LIB and SIBs are replacing LAB, and mid-range fuels are being fully switched to LIB.
Long term (2030 and Aafter)	Lithium and sodium account for two-thirds of the incremental market, while LABs only cover the low-end and existing stock, creating a three-way market structure.

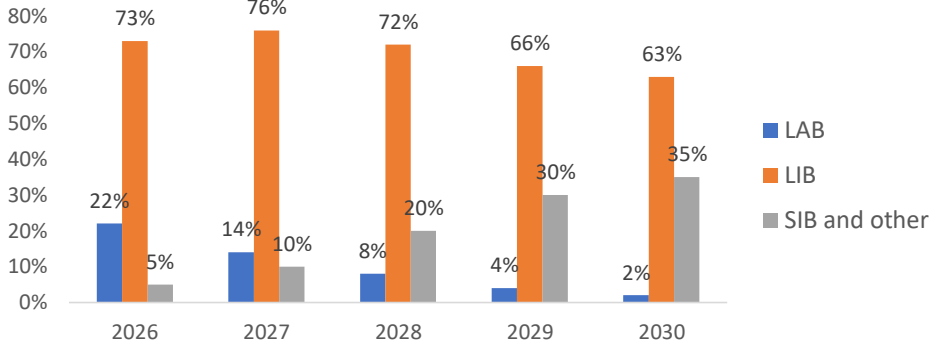
China auto LV battery Core Scenarios and Characteristics_NEV

LV battery market share in China's NEV



Source: tydatainfo.com

Forecast of LV Battery Market Share in China's NEV Market over the Next Five Years



Source: finance.sina.com.cn

Technology	Core Scenarios and Characteristics
LAB lead-acid batteries	Low cost, reliable cold start, and extremely complete industrial chain, suitable for economical new energy vehicle models.
LIB Lithium-ion batteries	Mid-to-high-end pure electric / hybrid vehicles will be equipped with long-cycle, lightweight, and high-voltage domain architecture features, gradually replacing lead-acid batteries.
SIB and others Sodium-ion batteries, etc.	Small-scale pilot installations and low-voltage fast charging scenario verification have not yet been scaled up.

Stage	Expected market structure
Short term (2026-2027)	LIBs are now the dominant force, LABs are rapidly declining in production, SIBs are entering large-scale production, lead-acid batteries are virtually eliminated from the market for entry-level cars, and sodium batteries are rapidly increasing in production in cold, northern regions.
Mid-term (2028-2029)	With both lithium and sodium batteries operating in parallel, SIBs due to their low cost and low-temperature performance, are gaining a significant foothold in the low-end new energy market, leaving lead-acid batteries only in niche, inexpensive vehicles. The market share of sodium batteries has more than doubled.
Long term (2030 and Aafter)	Lithium-based, sodium-based, and lead-acid nearly phased out of the new market.

Comparison of auto LV battery technology solutions in 2025

Comparison	LAB	LIB	SIB
Core Application Scenarios	Full range of fuel vehicles, light hybrids, mid-to-low-end commercial vehicles, construction machinery, agricultural machinery, aftermarket replacement	New energy passenger vehicles (EV/PHEV), high-end fuel vehicles, 48V mild hybrids, new energy commercial vehicles	Heavy-duty trucks/buses in northern frigid regions, 24V commercial vehicle start-stop systems, low-temperature special vehicles, vehicle-mounted power supplies
Maturity	Extremely high , century-old technology, complete supply chain	High, vehicle-grade mass production supporting for over 10 years	Medium, small-scale launch in 2025-2026, early stage of commercialization
OEM Procurement Cost	Lowest , optimal cost-performance ratio	2.0~3 times that of lead-acid batteries	Between lead-acid and lithium batteries, 20%~30% lower than lithium batteries
Energy Density	Low (35-45Wh/kg)	High (120-150Wh/kg)	Medium (80-110Wh/kg)
Cycle Life	4500(70%DOD)	6000 (100%DOD)	4000(100%DOD)
Low-Temperature Performance (-20°C~-40°C)	Excellent , stable low-temperature start, strong frost resistance	Poor, significant low-temperature capacity attenuation, requires supporting heating	Top-tier , ≥85% capacity retention at -40°C, no low-temperature weaknesses
High-Temperature Stability	Average, prone to water loss and bulging at high temperatures	Excellent , LFP has strong thermal stability	Good, wide temperature range tolerance
Safety & Explosion Protection	Stable structure , strong overcharge resistance	Vehicle-grade LFP with high safety, no thermal runaway risk	Intrinsically high safety, not prone to combustion or explosion
BMS Requirements	No complex BMS required , simple structure	BMS management must be standard equipment	Requires simplified BMS, lower control difficulty than lithium batteries
Recycling System	Mature and complete , closed-loop lead recycling, 99% recovery rate	Recycling system gradually improving, high dismantling costs	Recycling system not yet established on a large scale

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