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The Status of the Recycled Lead Industry in China

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Malaysia

AGENDA

01. Overview of Lead Market

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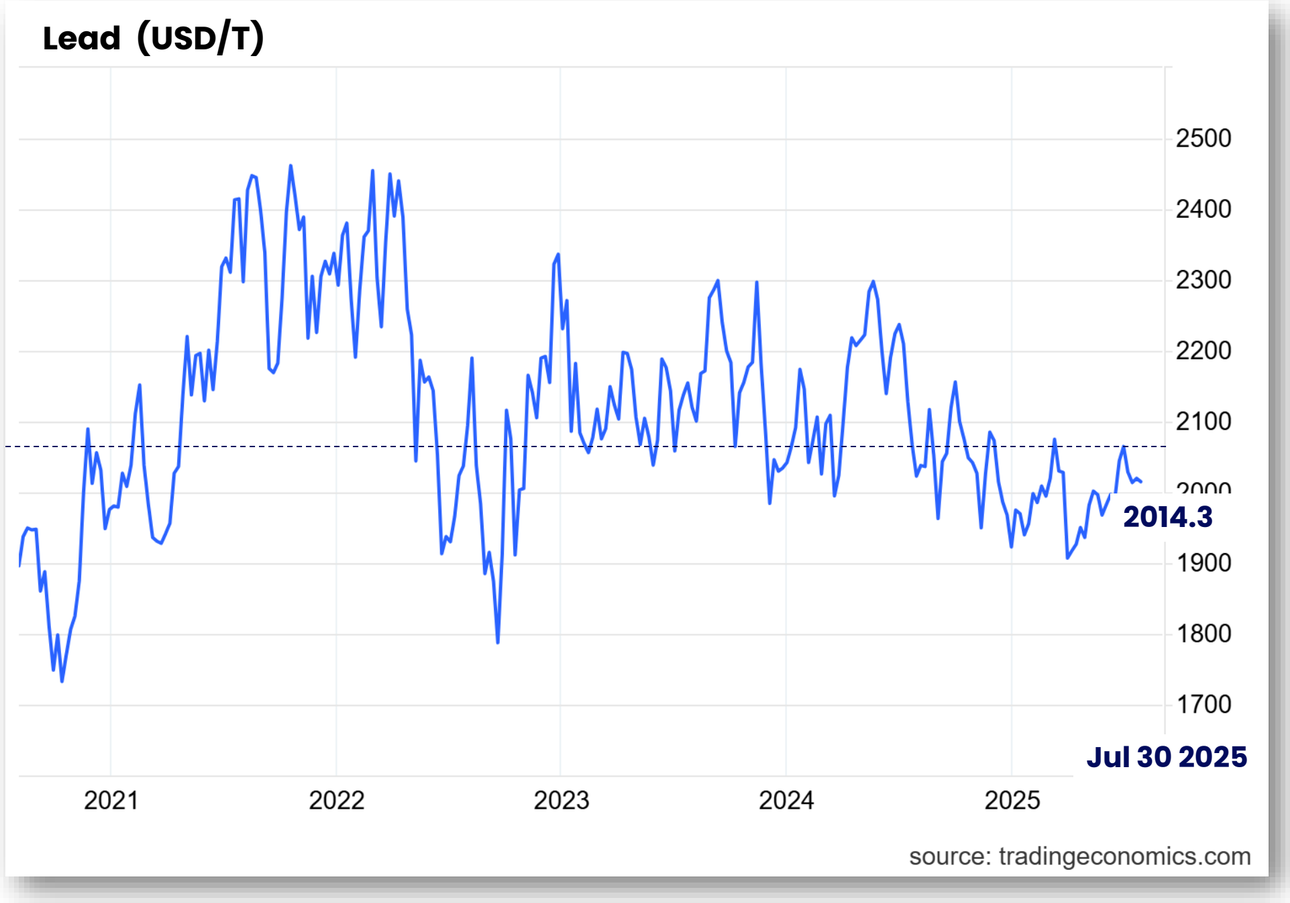
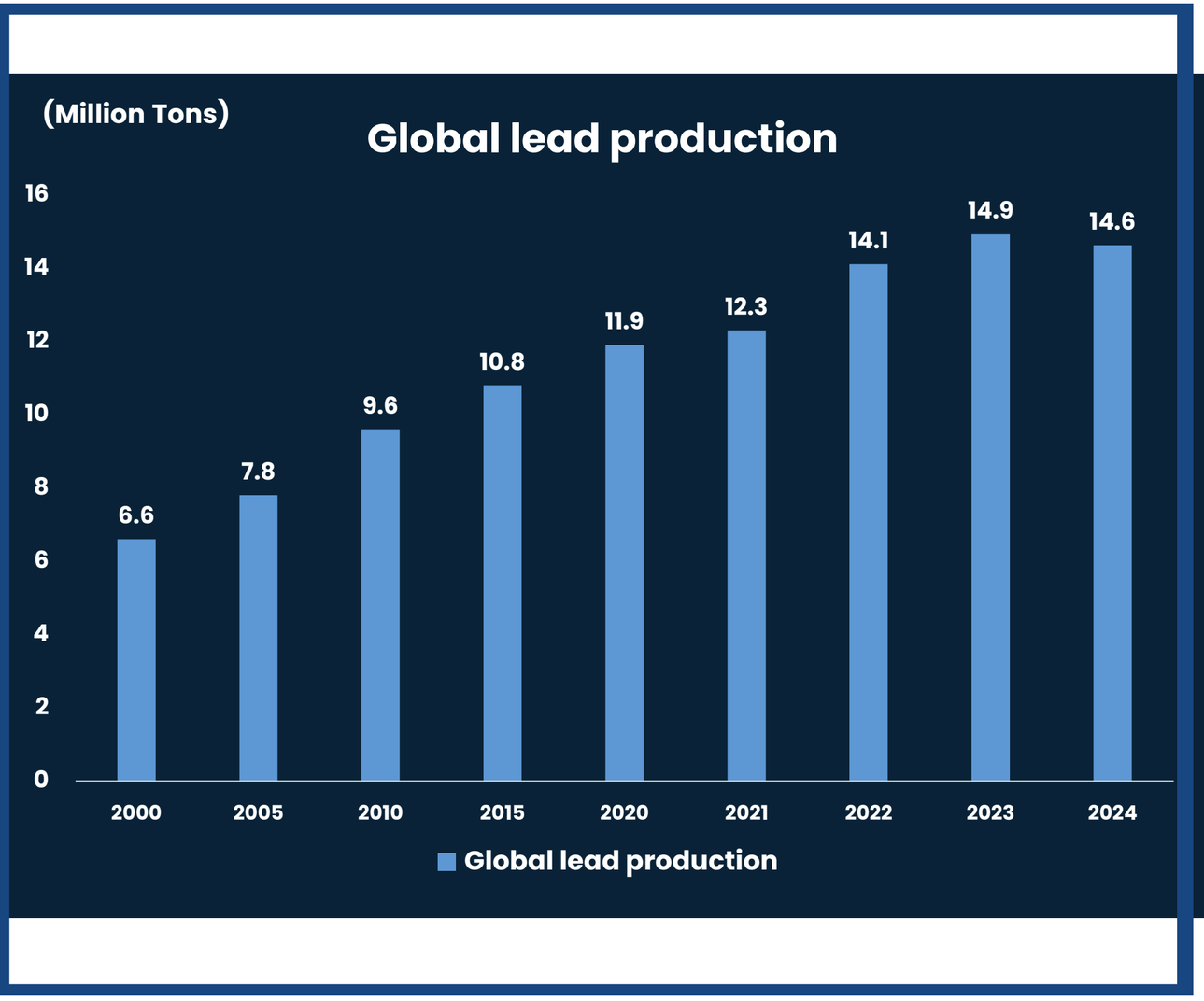
The Price of Lead for the Last Five Years

- **Highest price in the past five years: 2,458.9 USD/t (Oct 18, 2021)**
- **Lowest price in the past five years: 1,725.9 USD/t (Oct 12, 2020)**
- **Average price in the past five years: 2,065.0 USD/t**



Source: https://tradingeconomics.com/commodity/lead

01. Overview of Lead Market



Global lead production shows a structural growth trend in the long term.

In the coming years, output may plateau—especially if lithium batteries further replace lead-acid applications.

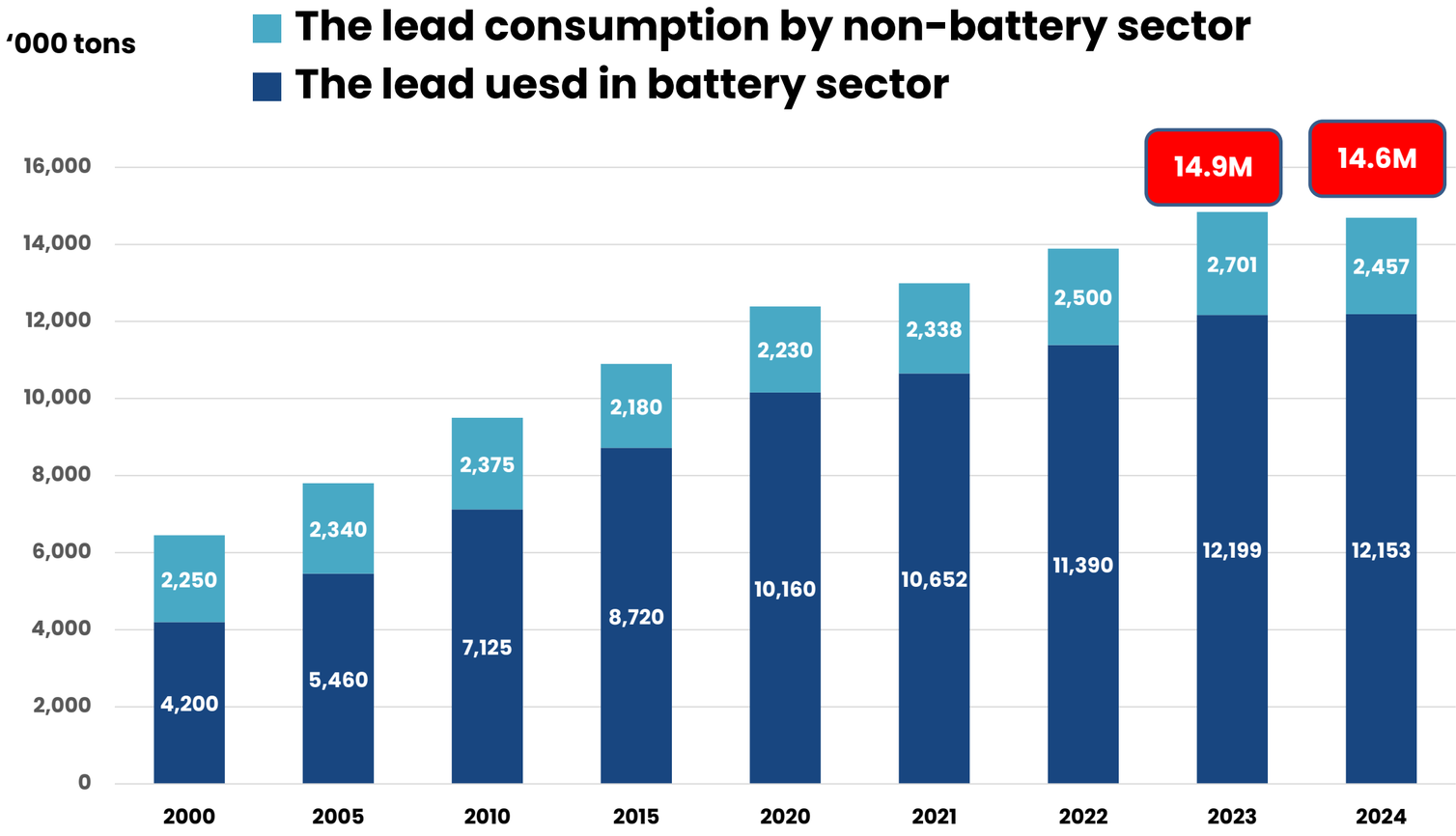
Recycled lead will account for a growing share of total output and become the key driver of future growth.

Source: SMM

01. Overview of Lead Market

Global Lead consumption is driven by the lead-acid battery industry

- Lead-acid batteries are widely used in automotive, motive power, and network power applications.
- The period before 2020 saw rapid growth, then transitioned to steady growth.
- Since 2015, the share of the lead-acid battery industry in global lead consumption has consistently remained above **80%.**



Source: SMM

01. Overview of Lead Market

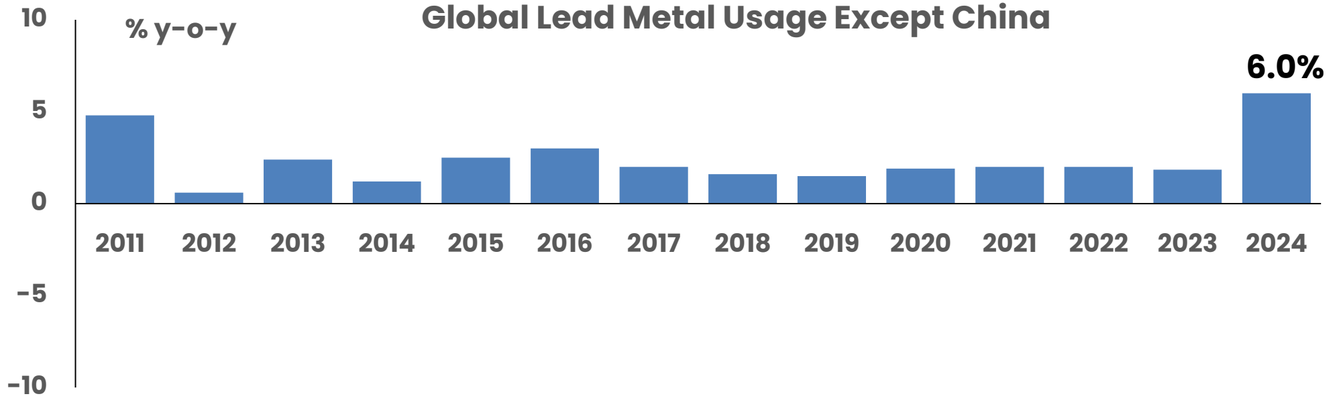
Global lead metal usage is slowing down

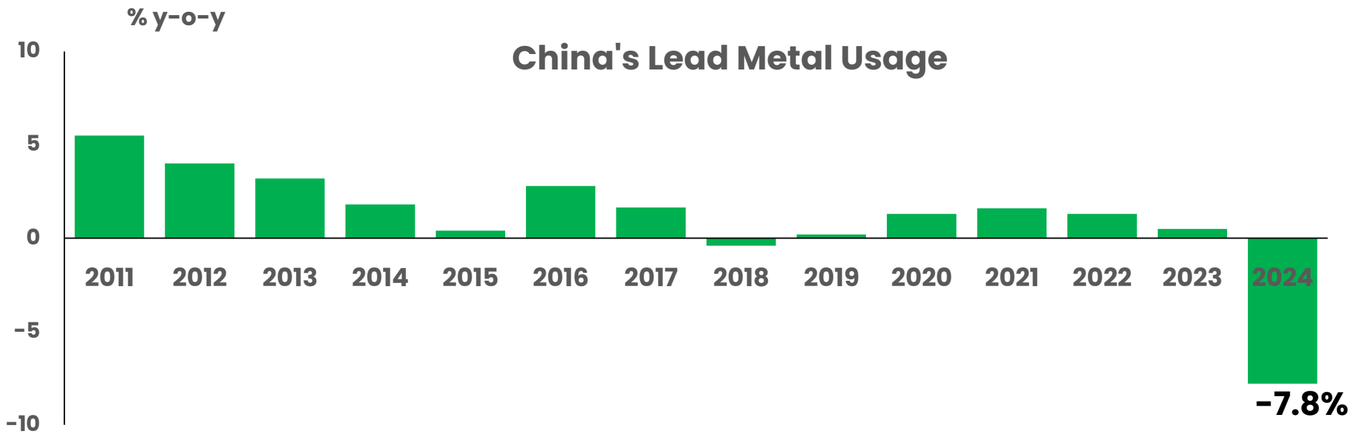
Lead-acid batteries are still widely used
In many developing regions, lead-acid batteries remain dominant in vehicles and backup power due to low cost and reliability.

Infrastructure growth boosts demand
Expansion of telecom, rural electrification, and backup systems in emerging markets drives higher lead consumption.

The growth of lead-acid electric two-wheeler has gradually slowed, with the stock market approaching saturation.

At the same time, the rising share of new energy vehicles and the increasing use of low-voltage lithium batteries have also led to a slowdown in the growth of the original equipment market for lead-acid batteries.

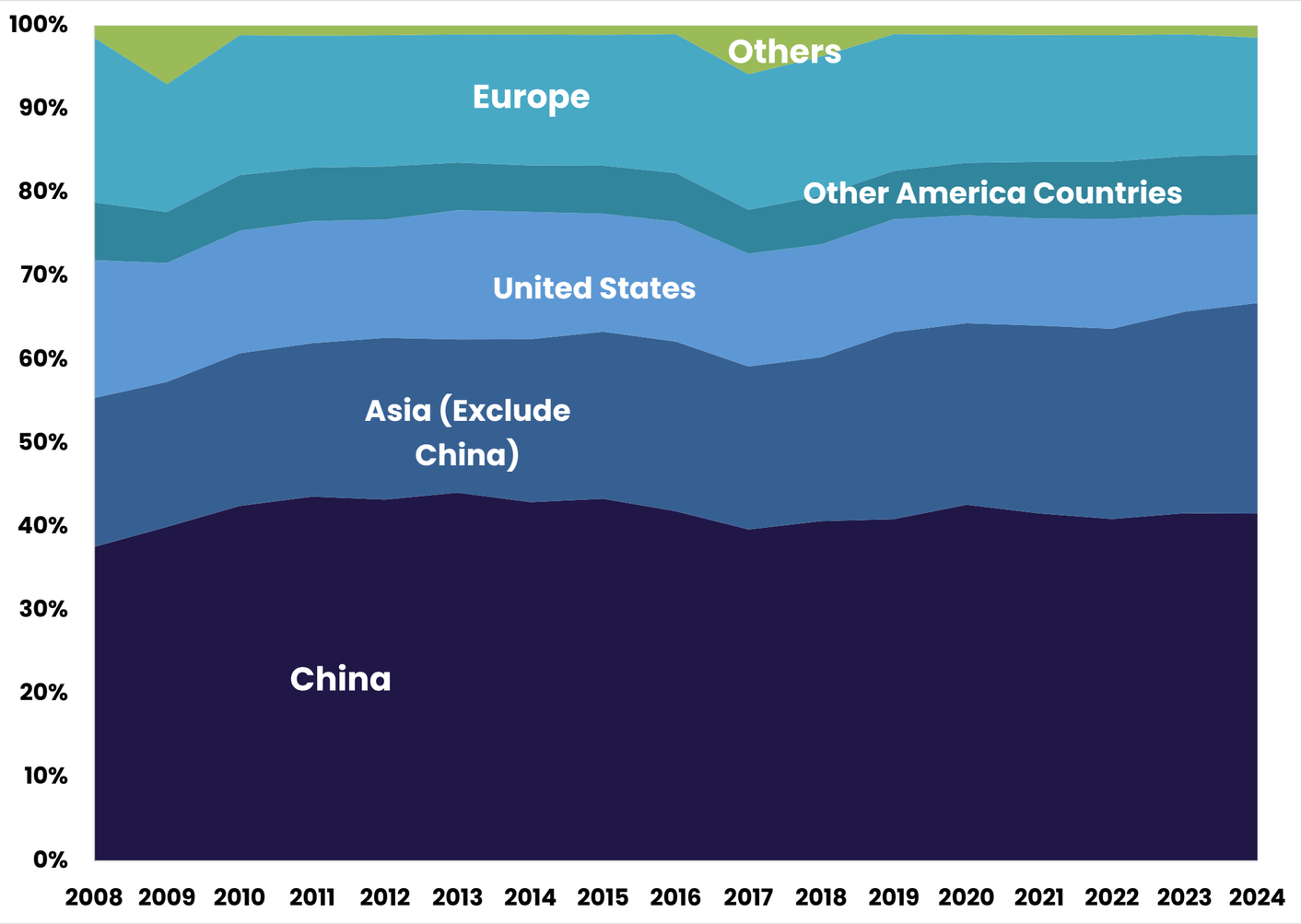




Source: SMM

01. Overview of Lead Market

Regional share of global lead consumption



Regional Lead Consumption Worldwide, 2008–2024

- China's lead consumption stabilized after 2010, maintaining approximately 40% of global consumption.

Source: ILZSG

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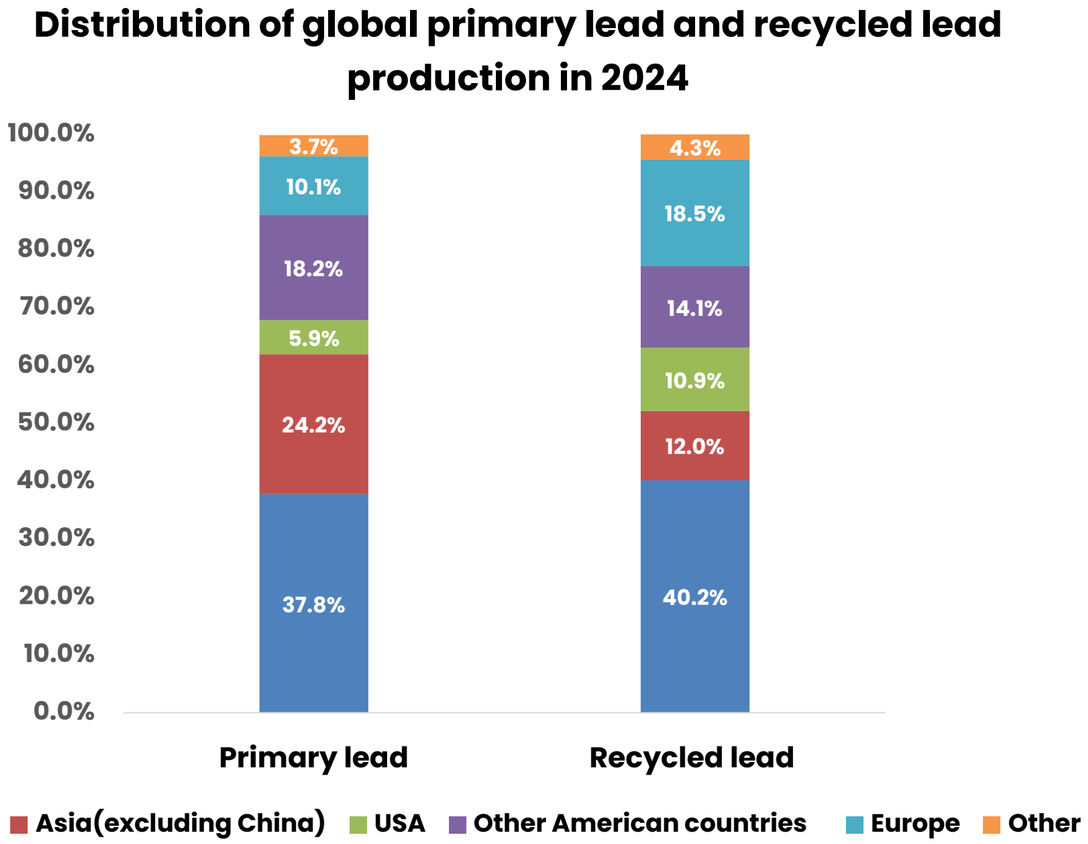
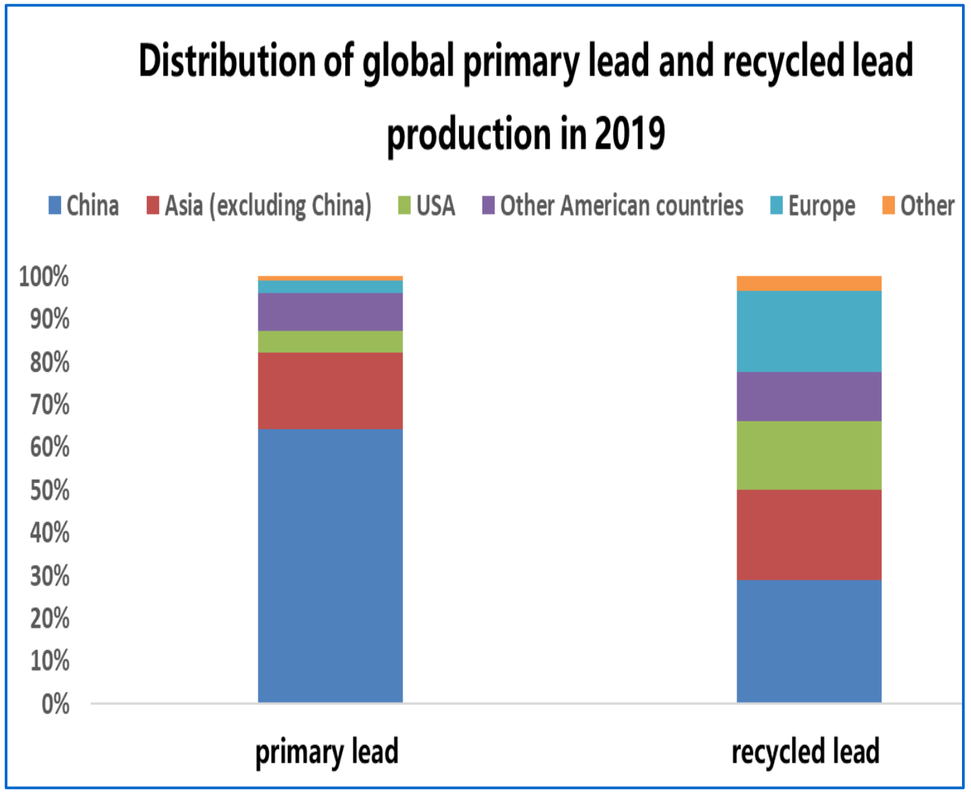




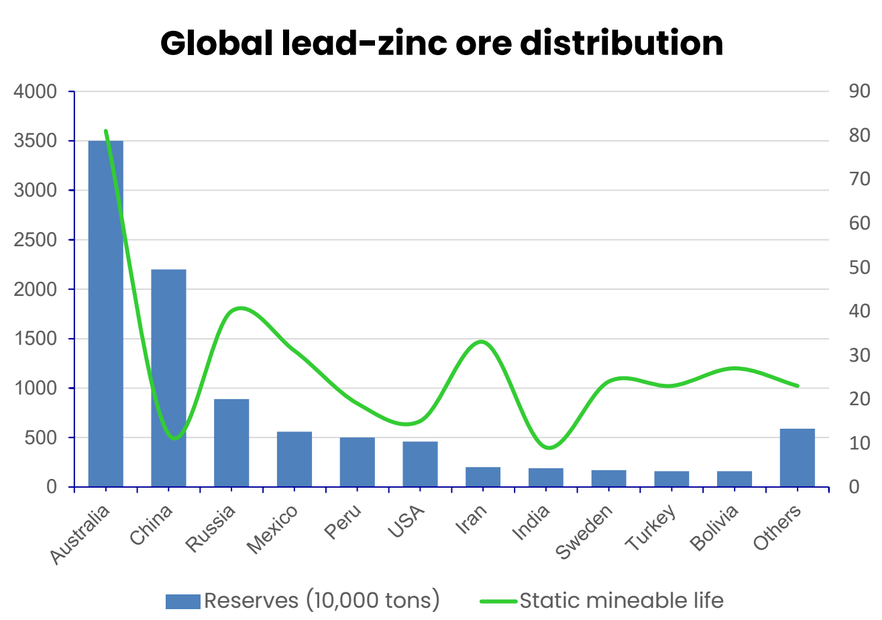
China's share of global primary lead production declined from 65% in 2019 to 38% in 2024.

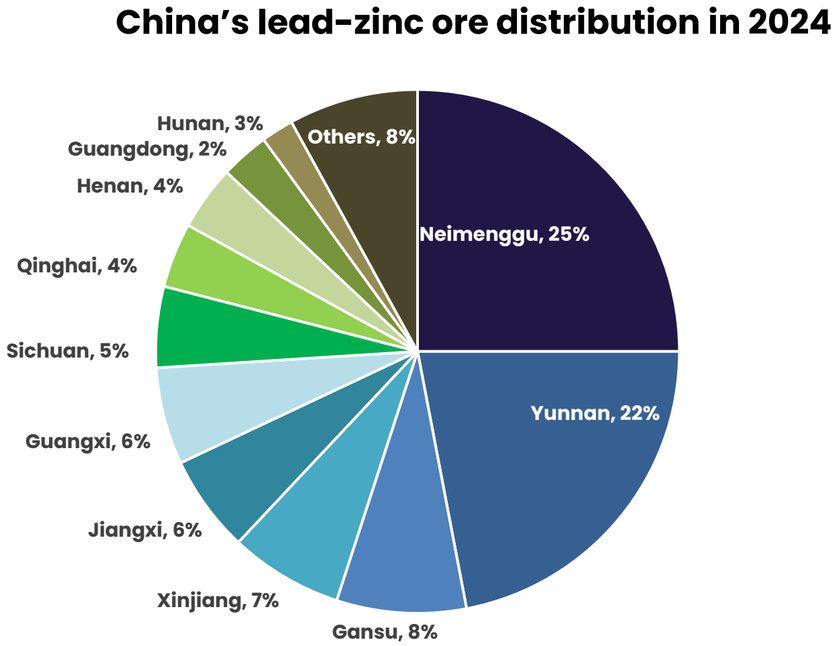
Meanwhile, its share of global recycled lead production increased from 29% in 2019 to 40% in 2024.

Source: Leoch research Institute

01. Overview of Lead Market

Global lead-zinc ore distribution





Key Points:

1. According to the US Geological Survey, the global lead ore supply is **96** million tons, of which **73.0%** is zinc.
2. The Global static mineable life is **22.3** years.
3. China's lead ore supply is about **22** million tons, accounting for **23.0%** of the world's total amount.
4. China's static mineable life is **11.6** years.

Source: USGS

02. The Development of the Recycled lead in China

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Advantages and disadvantages for recycled lead development in China

Advantages

1.Abundant and Stable Raw Material Supply

China has the world's largest stock of lead-acid batteries, providing a substantial and reliable source of used batteries for recycling.

2.Mature and Well-Established Industrial System

A complete industrial chain for recycled lead has been developed, with globally leading production capacity, resulting in strong economies of scale and cost advantages.

3.Supportive Government Policies

National "dual carbon" goals and environmental regulations are accelerating the standardization and green transformation of the lead recycling industry.

Disadvantages

1.Low Industry Concentration and Difficult Integration

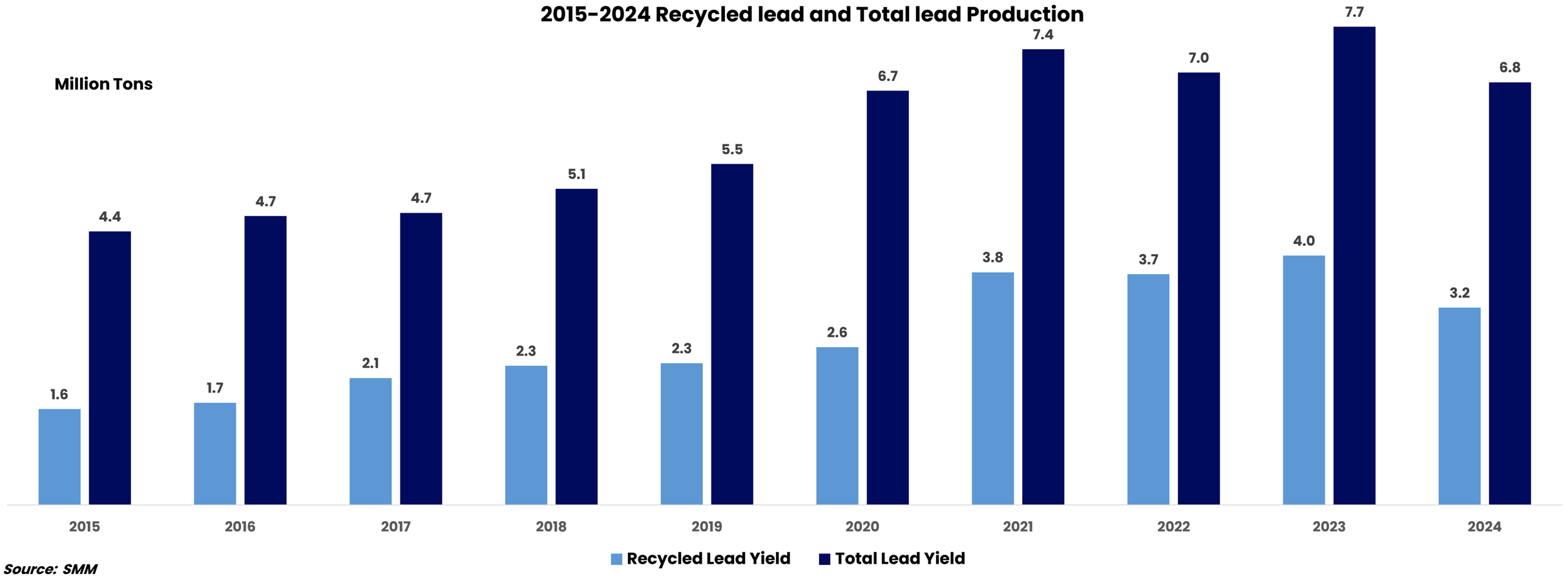
The sector is highly fragmented with numerous small and medium-sized enterprises, lacking effective consolidation, which hinders industrial upgrading and standardized management.

2.Inconsistent Product Quality

In China, recycled lead mainly comes from electric bicycle batteries, unlike overseas markets where automotive batteries are the primary source. Due to lower lead content and more impurities, these batteries lead to unstable raw materials and inconsistent recycled lead quality

02. The Development of the Recycled lead in China

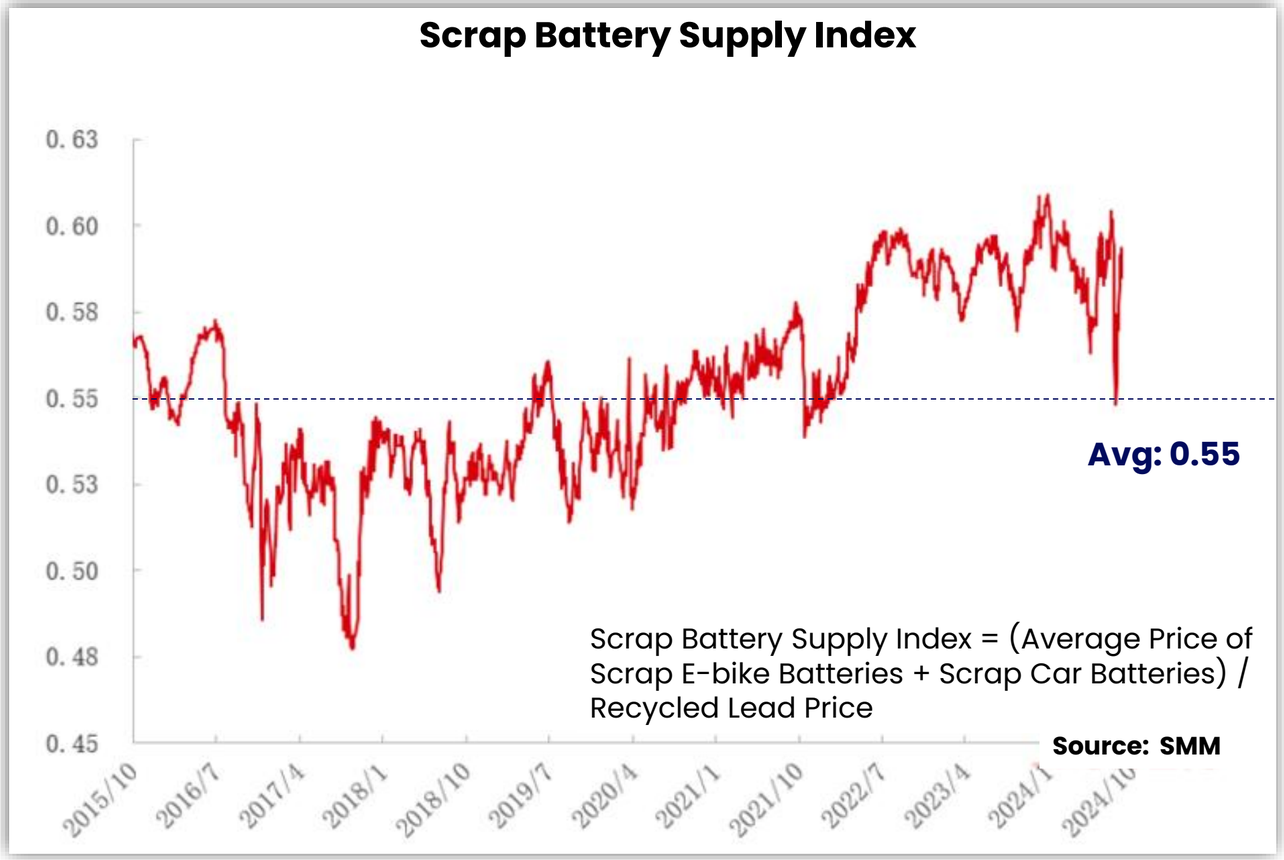
Recycled lead output grew consistently from 2015 to 2021, then stabilized with fluctuations, while its share in total supply kept rising.



Source: SMM

02. The Development of the Recycled lead in China

Challenges in Sourcing Used Batteries



Scrap Battery Supply Index has been rising, increasing raw material cost pressure on recycled lead producers.

Multiple Factors Converge to Create a Shortage in Used Battery Supply

Rising Exports, Limited Return of Used Batteries:

As hazardous waste, used lead-acid batteries face strict import restrictions, causing an annual loss of about 600,000 tons of lead—roughly 10% of domestic supply.

EV Adoption Reduces Scrap Volume:

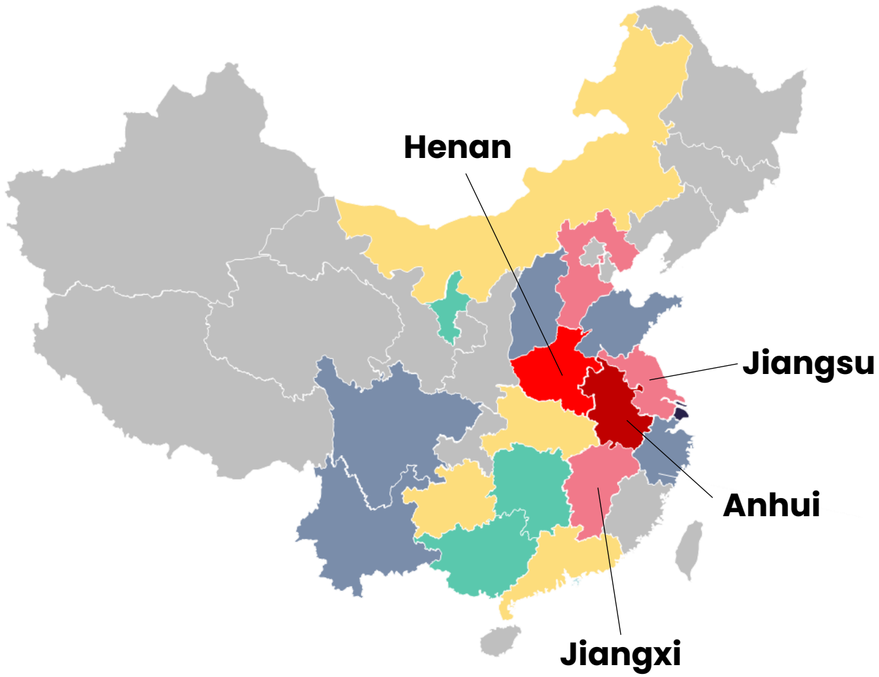
The rise of new energy vehicles is shrinking the market for lead-acid batteries, especially in two-wheelers, leading to a drop in battery scrappage.

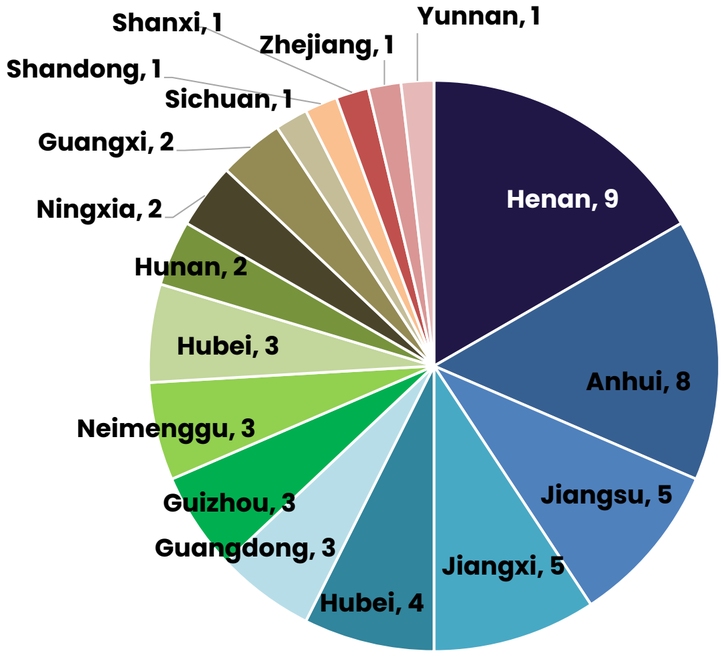
Weak Recycling System, Widespread Illegal Dismantling:

China's formal recycling channels are underdeveloped, with poor transparency and widespread informal dismantling by small workshops.

02. The Development of the Recycled lead in China

Recycled lead smelters in China





Distribution of operational recycled lead manufacturers by region(Total 54)

The provinces of Henan, Anhui, Jiangsu, and Jiangxi have the highest concentration of enterprises, accounting for 46% of the total number nationwide.

These four provinces also represent 59% of the country's approved processing capacity. Henan and Anhui each exceed 4 million tons, while Jiangsu and Jiangxi surpass 2 million tons, demonstrating a clear clustering effect.

Source: Mysteel

02. The Development of the Recycled lead in China

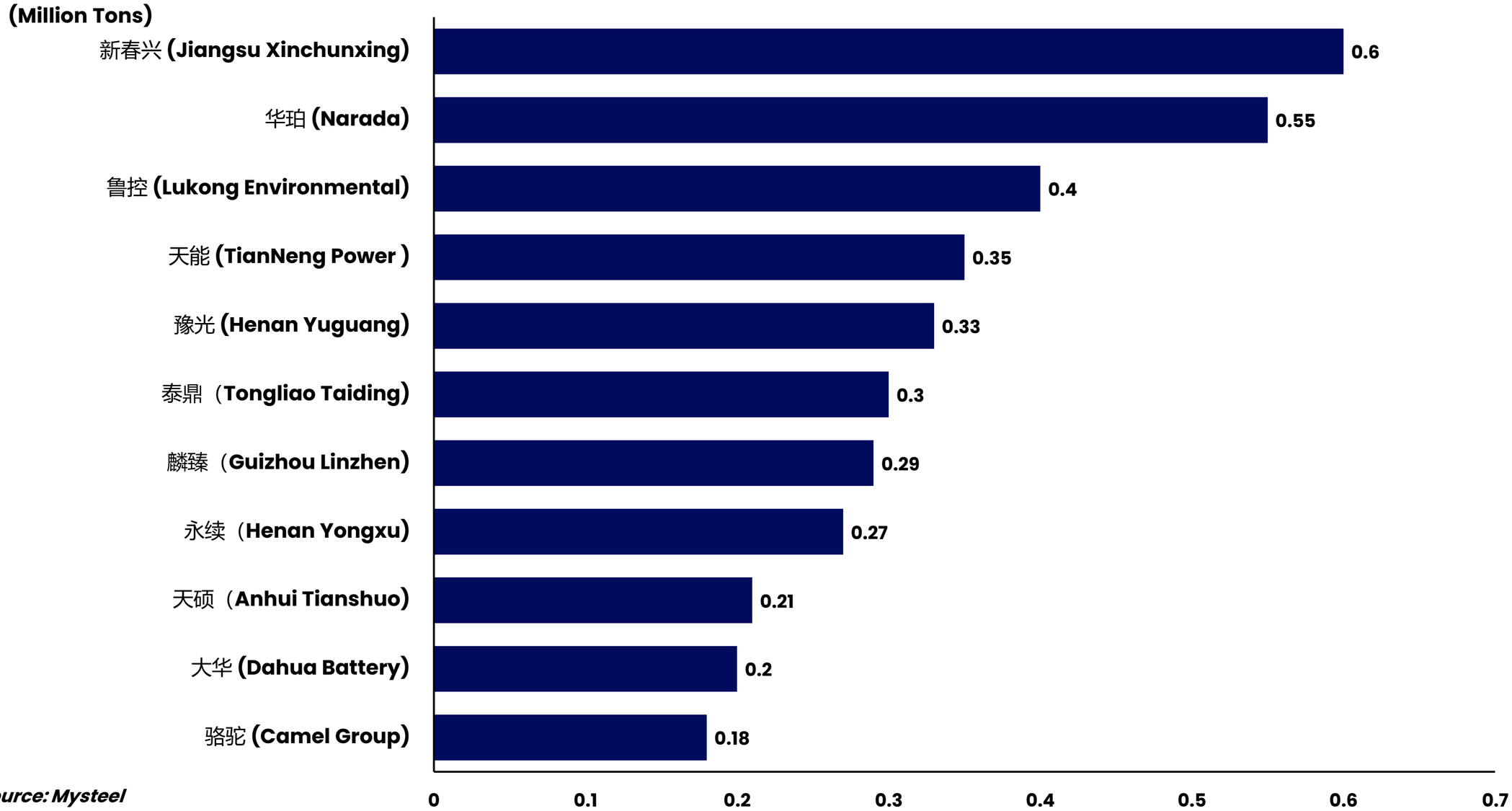
Production Capacity Status of Recycled Lead Enterprises

Year	The number of recycled lead Enterprises (operational & non-operational)	Approved Production capacity (Million tons)	Actual Production capacity (Million tons)
2018	58	8.07	2.25
2019	66	10.37	2.29
2020	72	11.81	2.55
2021	75	13.23	3.76
2022	75	13.92	3.72
2023	75	15.54	4.03
2024	79	16.01	3.19

Source: Leoch Research institute

02. The Development of Recycled lead in China

Productivity of China’s recycled lead enterprises（2024）



Source: Mysteel

03. Prospects

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China’s Recycled lead Industry Faces Capacity Consolidation, stricter policies and tighter scrap supply drive structural reshaping.

Expansion enthusiasm cools

Due to rising raw material costs, stricter environmental regulations, and declining margins, investment in new capacity is becoming more cautious and rational.

Non-compliant capacity will be phased out

With clear government support for “stronger and more compliant” players, small-scale or environmentally substandard producers face elimination or forced consolidation.

Industry leaders to benefit from consolidation

Large, qualified players with technological and environmental advantages are expected to gain market share during the ongoing reshuffling of the industry.

03. Prospects

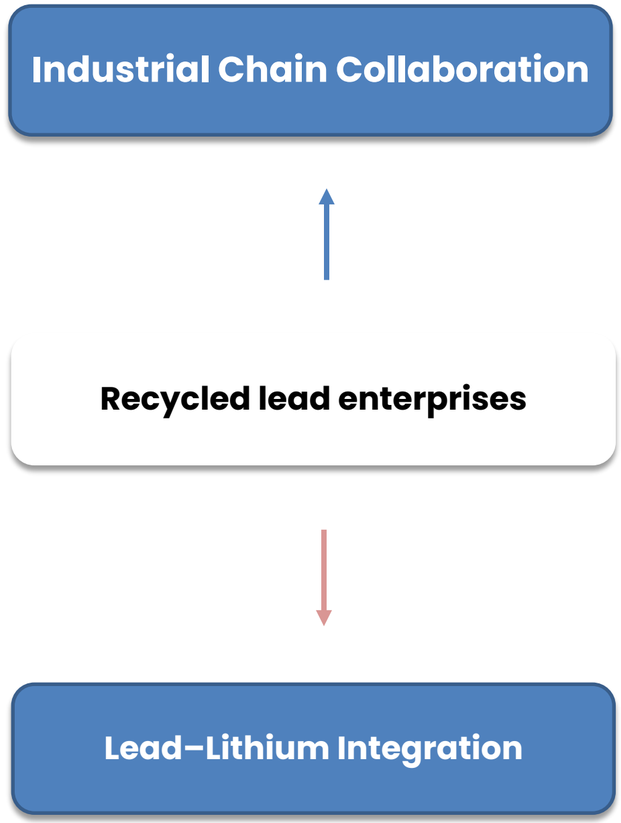
Synergistic and Integrated Industry Development

Industrial Chain Collaboration

- **Lead-acid battery manufacturers account for approximately 35% of total capacity. Primary lead producers account for around 15%.**
- **Vertical collaboration across the supply chain remains a key development direction.**

Lead–Lithium Integration

- **recycled lead enterprises possess unique strengths in collection channels and customer resources.**
  - Companies such as Tianneng, Nandu Power, and Camel Group's subsidiaries have become certified players in the comprehensive recycling of used power batteries.
  - Leoch, Lukong, and Wanyang are also actively advancing integration into lithium battery recycling and utilization.



03. Prospects

Deepen International Cooperation

Capacity Cooperation

- **Focus on developing recycled lead and lead-acid battery projects and industrial parks in countries and regions with favorable resources, strong supporting infrastructure, and high market potential.**
- **Southeast Asian countries (e.g., Thailand, Myanmar) have policies promoting electric two-wheelers as substitutes for gasoline motorcycles. The Chinese lead-acid battery industry is accelerating its global expansion.**
- **Export growth (Jan–Aug 2024):**
  - Lead-acid batteries: 840,000 tons, +15% YoY
  - Starter batteries: +20% YoY

Regulatory & Policy Alignment

- **EU Batteries Regulation: Sets targets for recycled material usage and material recovery rates in batteries.**
  - By Dec 31, 2025: Lead-acid battery recycling efficiency ≥75%
    By Dec 31, 2030: Lead-acid battery recycling efficiency ≥80%
  - By Dec 31, 2027: Lead material recovery rate ≥90%
    By Dec 31, 2031: Lead material recovery rate ≥95%
  - By Aug 18, 2031: Recycled lead content in new batteries ≥85%
- **Certification and evaluation systems are being accelerated to better align with international standards.**

04. Summary

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- **Global lead production is structurally growing, but is running into peak in the coming years. Recycled lead will become the main source of supply and a key driver for the future.**

- **In 2024, China remained a major player in the global lead industry, counting for 40.2% of recycled lead production, 37.8% of primary lead output, and 38.7% of global lead consumption, but rising exports ratio, capacity building in different countries, impact from Lithium battery, it is very challenging in the coming years in this industry.**

- **In China, due to product capacity surplus, competition is getting stronger and stronger, the industry is going through the consolidation, to phase out the small producers and strengthen the leading producers market position, the supply and demand will be balanced in the future.**

Thank you !

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