



China's ageing population and a circular economy: recycling and remanufacturing for growth

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Key takeaways

- China's demographic structure has long been emerging as a source of pain for the country's economy and productivity. Subsequent falling productivity and an inequitable pension allocation structure are creating a perfect storm of downward pressure on GDP growth.
- In an approaching environment of overcapacity and insufficient consumption, recycling and remanufacturing could provide the ongoing support needed in the absence of new growth.
- End-of-life vehicles provide a great example of a source of remanufacturing opportunity for the Chinese economy.

Ageing population pressures consumption

China's domestic consumption as a percentage of GDP has been lagging the rest of the world, accounting for only 50-60% of national output over the past few decades versus a global average of 70-80%¹. An over-reliance on investment and exports, alongside income inequality, have been key factors behind China's subdued consumer demand. Falling property prices, sluggish wage growth, and increased geopolitical tensions have also been contributors to this in recent years.

China's rapidly ageing population represents a formidable structural challenge over the coming decades. The country's population began to decline in 2022, mainly due to its low birth rate. Added to this, since 2023, China has experienced a startling increase in the number of people retiring. By 2040, China will have around 500 million retirees, representing about 36% of its population.

“China's rapidly ageing population represents a formidable structural challenge over the coming decades.”

¹ NBS, World Bank, Wind & Nomura Global Economics, as at August 2024.

The rural elderly make up 54.7% of all retirees in the country (Figure 1). People in this subset see their income plunge once they are excluded from non-farm job markets; their pension benefits represent only 6.5% of the corporate pensioner segment and just 3.4% of government pensioners (Figure 2).

An abrupt loss of income for so many of those entering retirement is highly detrimental for consumer demand. People who anticipate much lower income after retirement tend to put a greater proportion of their wages towards saving rather than consumption, further dragging on consumer demand, and limiting their contributions to China's growth outlook.

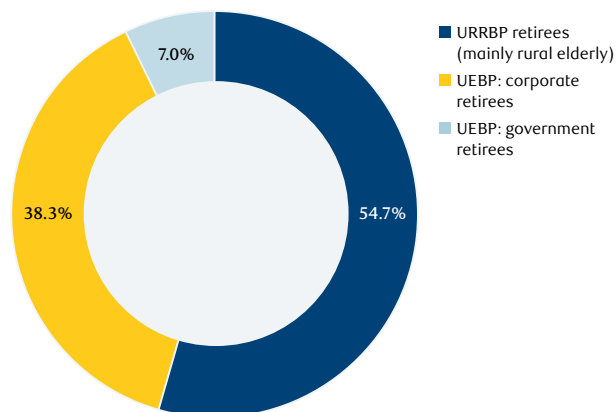
Focus shifting from 'new growth' to recycling

Historically, Beijing has relied on tax cuts and subsidies to overcome negative demand shocks. However, it is increasingly turning to alternative ways to boost consumer demand as it seeks to navigate the nation's longer-term structural challenges. Initiatives to encourage consumers to replace old products for new ones have become a major policy focus.

In 2024, the government unveiled a programme to boost the trade-in of consumer products, including cars and home appliances. The plan, which should stimulate domestic consumer demand for cars and certain other consumer goods, also aims to further spur the development of the country's circular economy by encouraging recycling and remanufacturing.

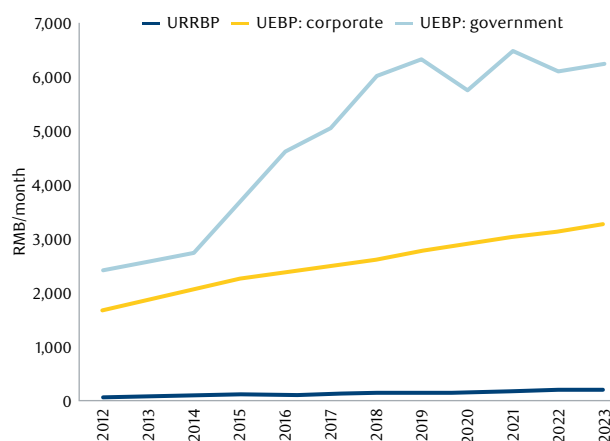
This strategy should create robust conditions for growth in Chinese vehicle recycling and remanufacturing, driven by an increasing number of ELVs as cars bought in the economic boom years are retired, and a rising recycling rate for ELVs.

Figure 1: The composition of retiree population



Source: China Labour Statistical Yearbook, Nomura Global Economics. Note: the composition is computed based on 2022 data.

Figure 2: Pension benefits per capita under the basic scheme



Source: China Labour Statistical Yearbook, Nomura Global Economics. Note: the composition is computed based on 2022 data.



The value chain of automobile recycling

Remanufacturing uses advanced technology to transform recycled auto parts into products that are of equal or better quality than new products. It involves dismantling, cleaning, inspecting, reprocessing/replacement, reassembly, and quality control testing.

The cost of remanufactured auto parts is lower than brand new parts as fewer resources and people are needed to make them. This could go some way to helping alleviate the productivity problem caused by China's ageing population, improving the output efficiency of the available workforce. Remanufactured auto parts are also better for the environment, reducing carbon footprint via the manufacturing process, raw material extraction, and logistics.

Capturing the ELV remanufacturing opportunities in China

China has by far the largest number of registered automobiles in the world, with approximately 336 million registered vehicles in 2023². In comparison, the US contained 283 million registered cars in 2022³. This results in a huge addressable market for ELV recycling in China. Nevertheless, China's ELV remanufacturing industry is still in an early stage of development compared to many developed countries, with North America and Europe currently leading the global remanufacturing aftermarket.

Comparing China's ELV market to Europe underlines the immense growth potential for Chinese auto recycling and remanufacturing. The more mature EU market has around double the ratio of ELVs collected as a percentage of total vehicles versus China⁴. While China is currently focused on boosting the uptake of recycling and remanufacturing domestically, it could increasingly emerge as a serious challenger in the global remanufacturing logistics industry.



Policy formalisation is driving growth in ELV recycling

In 2019, the Chinese authorities introduced measures to incentivise collection, enabling car owners to sell ELVs at a better price through official dismantling centres. The government also strengthened environmental protection and clamped down on illegal processing. These changes have stimulated the formalisation of China's auto recycling industry, with the number of registered recycling firms rising by around 70% in the three years after the measures were introduced.

“China’s refocus towards recycling and remanufacturing is creating substantial growth opportunities for Chinese firms operating in the industry.”

ELV recycling has traditionally suffered from high leakage. The China Resource Recycling Association (CRRRA) estimates that 35-38% of the country's ELVs are dispatched to certified auto dismantling facilities. However, research by JPMorgan estimates the true figure is closer to 56%. This would mark a substantial improvement compared with estimated collection rates prior to 2000.

A refocus towards recycling and remanufacturing

A refocus towards recycling and remanufacturing growth makes sense for the auto sector against the backdrop of a rapidly ageing population: growth in Chinese ELVs is set to eclipse new vehicle registrations over the coming years, especially as cars purchased during China's economic boom years are being retired. China's refocus towards recycling and remanufacturing is creating substantial growth opportunities for Chinese firms operating in the industry, and there is significant potential for consolidation, given the number of small firms with less efficient operations.

A pivot towards auto recycling and remanufacturing is also good news for the environment due to carbon footprint reduction in manufacturing, raw materials, and transportation. Whilst there are significant savings due to the lower energy consumption and labour requirements of remanufacturing versus manufacturing, the biggest saving comes from a much-reduced need for raw materials, particularly as recycling and remanufacturing auto parts allows for the recovery and reuse of metals from ELVs.

² [China's trade-in program boosts consumer goods sales by over 1 trillion yuan.](#)

³ [U.S. vehicle fleet 1990-2022 | Statista.](#)

⁴ Based on annual data released by Ministry of Public Security of PRC, Ministry of Commerce of PR, Eurostat, and the Europe Commission.

Contemporary Amperex Technology Co. Ltd (CATL)

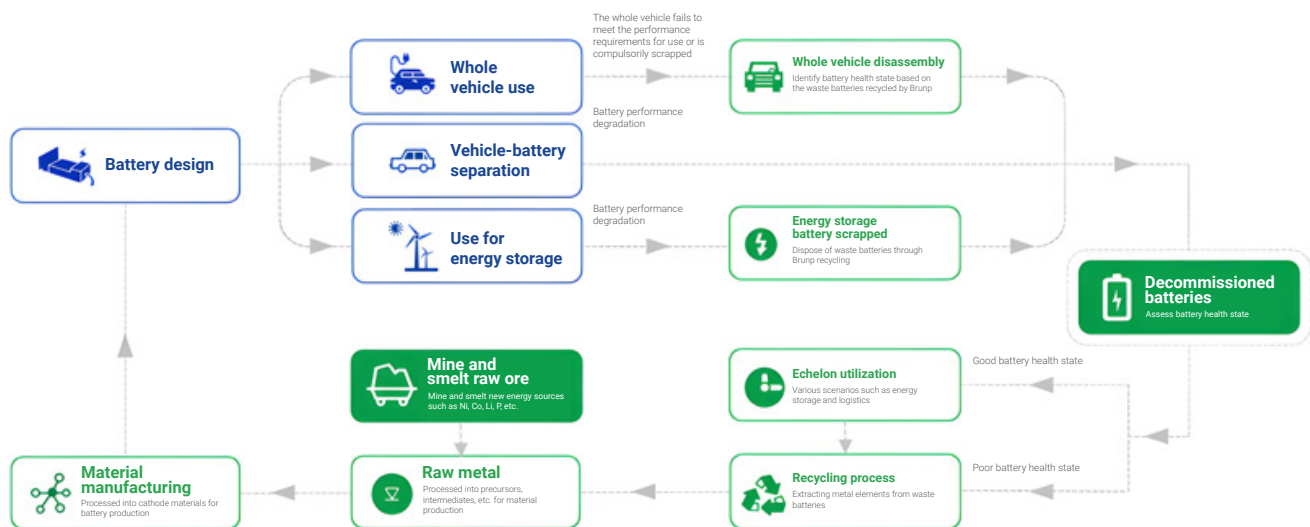
CATL is a Chinese manufacturer of batteries, including those used in electric vehicles (EVs). The firm has manufacturing bases in China, Germany, and Hungary, as well as resource centres in China and Indonesia. Within these resource centres are recycling bases, where materials are reclaimed from waste batteries to be re-constituted for production. The implementation of these centres has allowed CATL (via a subsidiary) to achieve a recovery rate of 99.6% for nickel, cobalt and manganese⁵.

This significant rate of recovery and the leveraging of relationships at different stages of the value chain allows CATL to effectively reduce total carbon emissions throughout the production cycle of its batteries. Sustainable use of materials is key to the effective adoption of EVs and the success of the industry, and the introduction of a recycling value chain helps to alleviate the issues caused by battery production (Figure 3).

That said, the market for the recycling of EV batteries remains very small and thus generates a limited financial impact. In the longer term, the increased use of this service is expected to follow the growth trend of the EV market after a lag period. It is therefore reasonable to suggest that the use of recycled batteries and their constituent materials might see a notable increase over the next few years. With market-leading firms like CATL claiming their stake in this growing trend, we hope to see a broader recognition for the benefits of battery recycling and auto remanufacture, in terms of both the environment and the societies and economies that it supports.

“The plan aims to spur the development of the country’s circular economy by encouraging recycling and remanufacturing.”

Figure 3: CATL’s battery recycling value chain



Source: CATL.

Capturing the opportunity

Beijing has shown through the ongoing formalisation of the remanufacturing industry that it sees worthwhile benefits in supporting its growth, and their view is becoming even more impactful with the number of ELVs set to outstrip the number of new vehicles registered. The gap in process efficacy when compared with Europe shows that the opportunity is there to be taken.

The Asian Equity team is made up of industry and country experts who specialise in bottom-up stock picking with ESG considerations integrated throughout. We see investment opportunities from a long-term, global point of view, and we aim to identify strong businesses that can navigate demographic challenges or disruptive industry changes better than others. We believe that for leading firms such as CATL, ESG is not only about managing risk, but shaping and seizing new growth opportunities. Our own firsthand bottom-up work assesses these opportunities holistically, studying dynamics across the value chain, and gauging how management team works with various stakeholders to win over the long term.

⁵ [Avoiding a crunch in critical minerals through technology, recycling and global collaboration: Robin Zeng.](#)

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