Exploring the Remanufacturing Landscape in China's Automotive Sector

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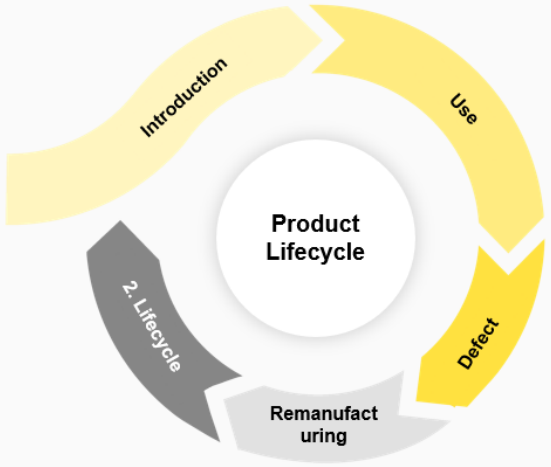
Remanufacturing can give vehicle components a second product life

Definition:

In **remanufacturing**, a defective product (core) is reconditioned to the performance specification of a new part **through a standardized process**. The remanufactured component fulfills the **same standards** for performance, appearance, and warranty **as a new one**.

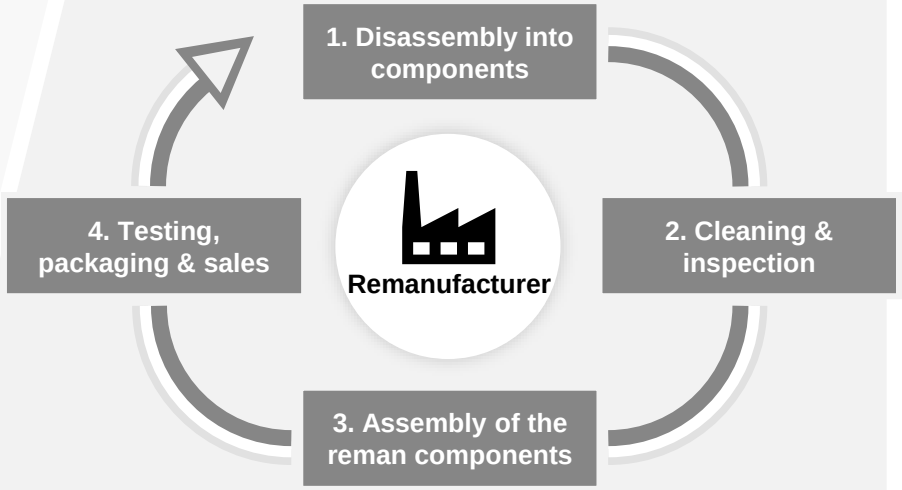
Localization of remanufacturing in the product life cycle



What are the drivers of Reman?

- **Economic profitability**
- **Demand for the product**
- **Technical feasibility**

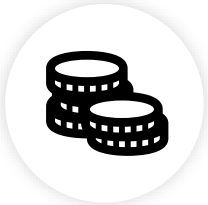
How does an old automotive part become a remanufactured part?



The **industrialized process of remanufacturing** old parts **extends the product life cycle**, offering **numerous advantages.**

Remanufacturing supports all 3 dimensions of sustainability and offers further advantages

Economical



Remanufactured parts are up to **60% cheaper** than new parts

Ecological

Up to **90% of material is saved** during remanufacturing

Energy savings of up to 90% are achieved during remanufacturing **compared to new parts**

Socio-cultural

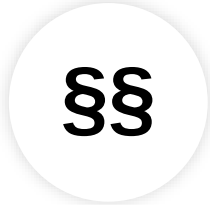
The remanufacturing industry employs around **43,000 people in Germany**

10,000 employees in the automotive industry

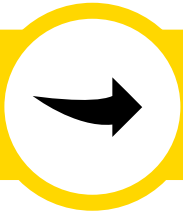
Supply Security

Supply disruptions and therefore **high post-production costs** can be avoided

Regulation



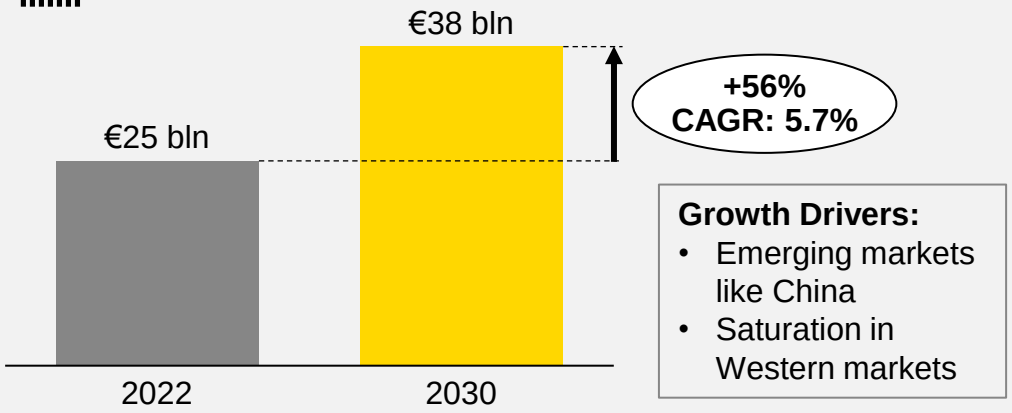
Requirements can be fulfilled by **remanufacturing** and the company can be **protected from sanctions**



In addition to **economic, ecological and socio-cultural benefits**, remanufacturing also fulfils **regulatory requirements** and enables **security of supply.**

Global Automotive Remanufacturing: Market Overview & Growth Opportunities

Global Reman Aftermarket Revenue Growth:



Growth Drivers:
- Emerging markets like China
- Saturation in Western markets

Regional Dynamics:

North America and Europe lead in reman aftermarket (€16.8 bln in 2022, reaching €23.9 bln by 2030).

China's increased involvement in global reman logistics and domestic adoption present substantial growth opportunities.

Latin America shows growth, driven by price.
Could emerge as an alternative sourcing hub to China.

Growth Opportunity:

- **Legacy components** (e.g., engines and transmissions)
- **Emerging electronic components** (e.g., control modules and engine control units)

Significant growth forecasted in the next 5 - 8 years

Market Strategies:

Players introduce **reman private-label or value-line products** to boost margins and reduce operational costs.

The **Original Equipment Supplier (OES) channel** improves **serviceability**, while **Independent Aftermarket (IAM) channel** offers **competitive solutions at lower prices.**

China's automotive reman market **presents major growth potential** with a stock of 365 million vehicles and a repair and maintenance market valued at €128 bln.

Source: Ellen MacArthur Foundation (2022); Frost & Sullivan (2023)

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Accelerating Ahead:
A Comprehensive Look at China's Automotive Industry Evolution

New Energy Vehicles (NEVs):
In China, this is an umbrella term that encompasses battery electric, plug-in hybrid electric, and hydrogen fuel cell electric vehicles (EVs).

1. Early 1980s:

(4 decades ago…)

China's automotive industry produced just **a few thousand vehicles.**

2. Transition Phase:

- **State intervention** via state owned enterprises and industrial policies fueled growth.
- **Early Joint Ventures** (JVs) between state owned groups (SOEs) and foreign multinationals for technology transfer had limited success.
- **Shift Towards Sustainability:**
  - ***2004:*** *Initiatives for battery-electric, hybrid, and energy-saving vehicles*
  - ***2009:*** *Auto Industry Adjustment and Revitalization plan*
  - ***2015:*** *Made in China 2025 emphasized EV technology and market development*
  - ***2017:*** *Market regulations set targets for fuel consumption and NEV production (e.g., Parallel Administrative Measures)*

3. Today:

(Current Chinese Automotive Landscape)

- **Leads global car manufacturing:** Produced over 26 million vehicles in 2021
- **World's top vehicle exporter**: Over 5 million units in 2023
- **Leads in NEV production and sales:** 78.5% market share domestically; (1st half of 2022), claiming a commanding 63.6% of the global market
- In the last five years, China removed auto ownership caps, allowing **100% foreign ownership, led by Tesla.**
- **Reverse joint ventures** are on the rise, with Volkswagen and Stellantis investing in Chinese EV firms like XPeng and Leapmotor-

Source: ITA Guangzhou (2022)

Current Structure of the China Automotive Industry

China's automotive industry has transformed remarkably over the years. **The industry structure is defined by 3 main groups of firms:**

Large State-owned Enterprises (SOEs):
- Engaged in joint ventures with foreign multinationals
- Dominating the industry with 18.0 million cars produced in 2021

Independent producers:
- Lower output than large SOEs with 5.2 million cars produced in 2021
- Growth not based on partnerships with foreign producers

NEV Focused:
- Firms and startups specializing in NEVs (shift towards sustainable mobility)
- Demonstrate technological innovation and international market ambitions

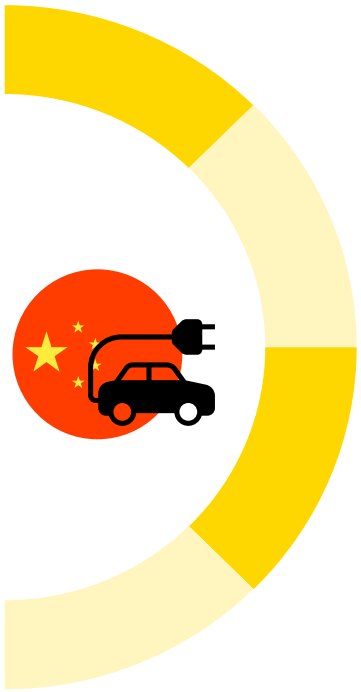
** New wave of joint ventures between Chinese groups and foreign OEMs in recent years, focusing mainly on EVs.*

Total: 26,082,220 Units of Vehicles produced in 2021

Source: ITA Guangzhou (2022)

NEV Evolution: Reinforcing China's Position in the Global Market

China currently enjoys some **important advantages over other competitors** to leverage the opportunities in the NEV sector to bypass previous first-mover advantages of foreign competitors, develop independent technologies and brands, and establish a prominent presence in the market.



Government Support:

Strong government policies since 2004 have accelerated NEV market development. Recent plans, like the New Energy Vehicle Development Plan (2021-2035), aim to establish China as a global leader in electric car technology. This commitment is also evident in the push for autonomous vehicles and intelligent connected vehicle technology.

Battery Production:

China's leadership in battery production, particularly in lithium iron phosphate (LFP) batteries, provides a significant advantage due to cost-effectiveness and reduced reliance on critical minerals.

Strategic Minerals Control:

China's control over strategic minerals essential for electric car components gives it a significant advantage in the global market, e.g., -lithium, cobalt, and rare earth.

Connectivity and ICV Technology:

While China lags behind US competitors in intelligent connected vehicle (ICV) technology, collaboration between tech giants and automotive companies is driving innovation in autonomous vehicles and sustainable mobility.

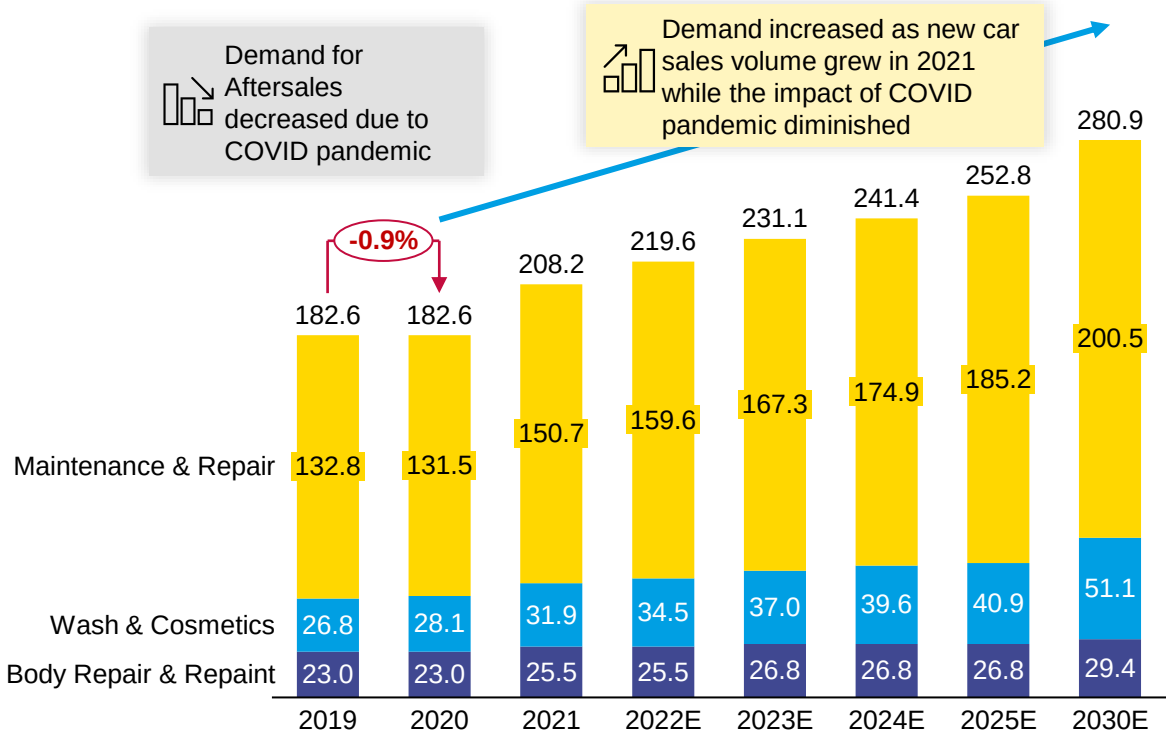
Source: ITA Guangzhou (2022)

China Automotive Aftermarket Development

Market Size and Growth Projection

- The **automotive aftermarket** is **set for strong growth:**
  - €252.8 bln by 2025 (CAGR 2020 – 2025E: +6.4%)
  - €280.9 bln by 2030 (CAGR 2025 – 2030E: +2.4% CAGR)
- **Maintenance and repair** will dominate the aftermarket:
  - Dominates: **Over 70% of market value**
  - Driven by: **Aging car parc** (~6.1 years by end of 2022) and **increasing car ownership**
- **Independent Aftermarket (IAM) of maintenance and repair:**
  - €144.4 bln by 2025 (CAGR 2020 – 2025E: +10%)
  - **4 times larger than the 4S/ OEM-authorized market**, which is projected to decline slightly to €35.8 bln.
    - **IAM's growth** is driven by **online platforms enhancing efficiency.**
    - **4S/ OEM-authorized market** struggles with **slower new car sales and lower customer loyalty**.

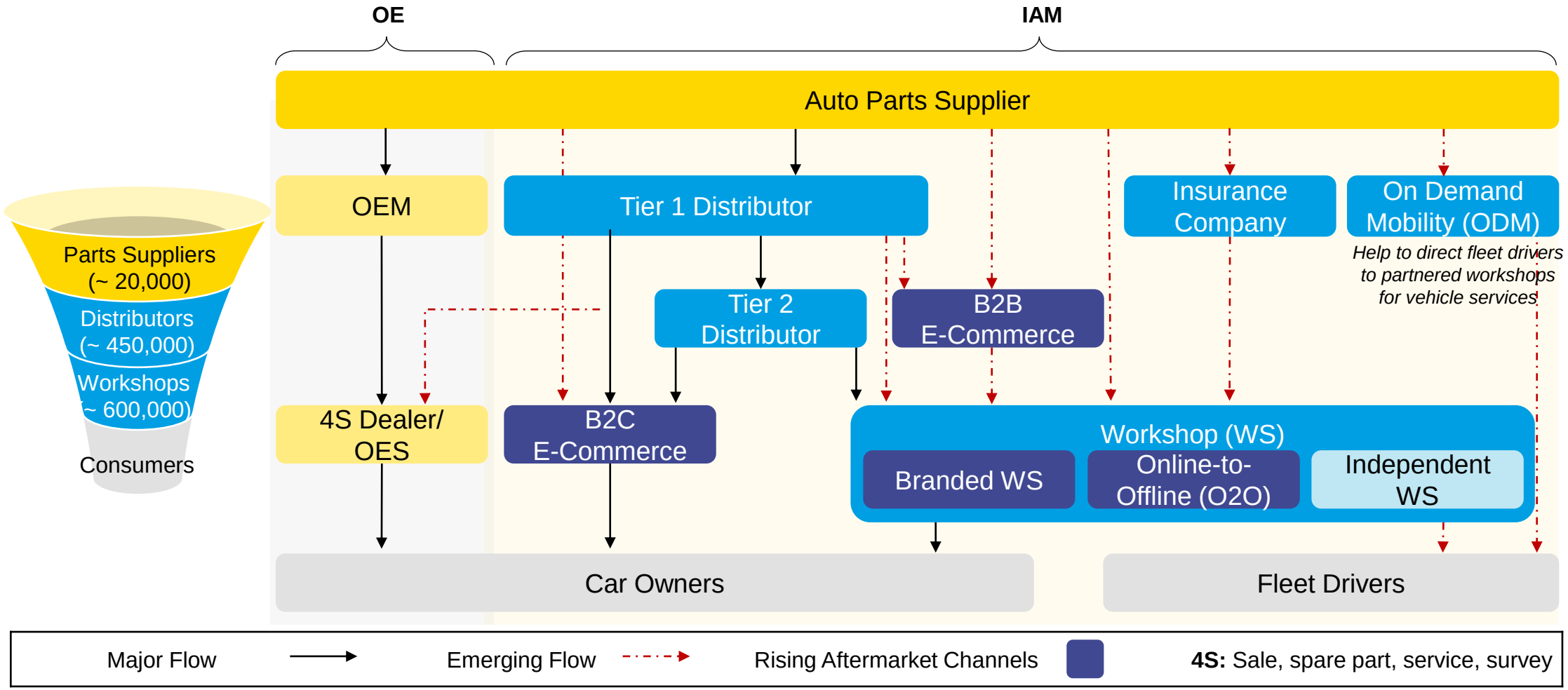
China's Auto Aftermarket Market Size (€ bln, 2019 – 2030E)



	CAGR 2020 – 2025E	CAGR 2025 – 2030E
Total:	6.4%	2.4%
Maintenance & Repair:	6.5%	2.1%

Source: ITA Guangzhou (2022)

A Snapshot Overview of China's Automotive Aftermarket Structure



Source: ITA Guangzhou (2022)

Shifts in the Structure of China's Automotive Aftermarket

Competitive Landscape

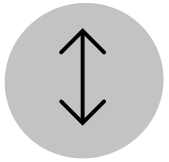
- Suppliers face intense competition from **local and global players**, with over 20,000 parts suppliers needing extensive SKU coverage.
- **Digital technology** has disrupted multiple distribution tiers
- Fragmentation in the aftermarket leads to **lower quality, competitive pricing, and limits economies of scale.**

Rising influence of e-commerce platforms and digital technologies

- Leading to **new business models like O2O** (e.g., Alibaba and Tencent) and **B2B** (digitally-enabled distributors driving supply chain integration)

Top 4S stores' aftermarket value declines

- **NEV automakers** are increasingly adopting **direct B2C sales models** to enhance customer service.



Emerging business models disrupt and integrate the value chain

- **S2B2b2C Model**: connects parts suppliers with service providers via a supply chain platform
- **All-in-one model:** Integrates manufacturers, supply chains, e-commerce platforms, and service networks for direct service provision to end customers

Source: ITA Guangzhou (2022)

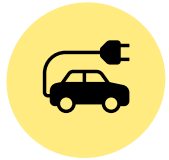
Shifts in the Structure of China's Automotive Aftermarket

Changing Consumer Preferences

- Chinese consumers **favor online shopping**, boosting e-commerce in the aftermarket.
- They **prioritize convenience, affordability, and reliability**, driving a shift toward holistic service experiences.
- **O2O model** is gaining traction for its transparent pricing and genuine products.

Auto parts suppliers are adopting different Business Models

- Full trading company setup, exclusively with 1 distributor/ agent, trading + retail, trading + remanufacturing, e-commerce platform, cross-border online platform, etc.



Electrification and Autonomous Driving

- **Electrification** simplifies design but boosts demand for specific components
- **Autonomous driving** lowers collision rates but necessitates new diagnostic tools and training.
- Aftermarket players must invest in these emerging technologies to **stay competitive**

Source: ITA Guangzhou (2022)

Challenges: Circularity Struggles in China's Automotive Industry

Low Recovery Rates

China, as the world's largest automobile market, witnesses a **steady increase in End-of-Life Vehicles (ELVs)** annually.

But **standard recovery rate remains low**, posing a significant challenge.

Low Resource Utilization

Resource utilization rates for ELV recovery and dismantling products are **suboptimal**, with **low reusability and recyclability rates**.

Disorder in ELV Market

Disorder in the ELV rear-end market contributes to **vehicles flowing into the black market**, **creating substantial hidden risks**.

Weak Recovery Infrastructure

Recovery base of automobile enterprises is **underdeveloped**, with **only a few companies exploring rear-end operations**, resulting in **disjointed industry segments**.

Source: China Automotive Technology and Research Center Co., Ltd. Automotive Data Center (2018)

Content

China’s Government Initiatives Driving Remanufacturing Growth

Policy Initiation and Legal Framework Establishment

- **Policy Issuance by NDRC and Ministries addressing remanufacturing**
  - *Recycling and Reutilization Policy of Automotive Product (2006); Administrative Measures for Pilot Remanufacturing of Automobile Parts and Accessories (2008)*
- **Circular Economy Law (2008)**
  - *Defines reuse to include remanufacturing*
  - *Outlines government responsibilities for promoting remanufacturing*
- **14th Five-Year Plan**
  - *Encourages the (auto-related) remanufacturing of parts in aftersales, enhances battery recycling and reuse*

Quality Control and Standardization

- **Quality Control Measures**
  - *Interim measures for remanufacturing product certification management (2010)*
  - *Entry Conditions for Comprehensive Utilization of Waste Tire (2012)*
- **Remanufactured Products Catalog (2011 -)**
  - *To ensure adherence to standards*
- **Interim Administrative Measures on Auto Parts Remanufacturing (2021)**
  - *To ensure the quality and promotion of high-quality remanufactured parts*

International Recognition and Standardization

- **Reman Certificates**
  - *Issued by the China Reman Association and collaboration with entities like RWE GMBH*
  - *Serve as endorsements, enhancing business credibility and market visibility*

Source: Ellen MacArthur Foundation (2022); Frost & Sullivan (2023); Kojima (2022); VRW (2022)

China’s Government Initiatives Driving Remanufacturing Growth

Sectoral Planning and Priority Sector Identification

- **High-End Smart Remanufacturing Plan (2018–2020)**
  - ➢ *Prioritized sectors: tunnel boring machines, aero engines, medical imaging equipment, etc*
- **Ministry of Industry and Information Technology Initiatives**
  - ➢ *Issued notices and requirements for pilot units in sectors like construction machinery, industrial equipment, and office equipment*

Industrial Policy Support

- **Government Support for Enterprises (2009)**
  - ➢ *Extended to motor vehicle components, construction machinery, machine tools, and retreaded tires*

Consumer Incentive Programs

- **Swap the Old for Remanufactured Products Program (2013)**
  - ➢ *Incentivized consumers to buy remanufactured parts with a 10% discount compared to new ones*

Regulatory Reform and Industry Collaboration

- **Administrative Measures for Recycle of End-of-Life Motor Vehicles law (2019)**
  - ➢ *Relaxation of restrictions on remanufactured goods*
  - ➢ *Allows the sale of used car parts to remanufacturers*
  - ➢ *Facilitates collaboration between vehicle recycling and remanufacturing sectors*

Source: Ellen MacArthur Foundation (2022); Frost & Sullivan (2023); Kojima (2022); VRW (2022)

China’s Government Initiatives Driving Remanufacturing Growth

Financial and Regulatory Incentives

- **Swap the Old for Remanufacturing Policy (2013)**
  - *Introduced by NDRC and MOF, providing subsidies to enterprises collecting end-of-life vehicles and components*
- **Revision of Regulation on Scrapped Vehicles (2019)**
  - *Allows qualified remanufacturing enterprises to purchase and reuse major vehicle parts, fostering industrial remanufacturing growth*

Pilot programmes and industrial clusters

- **Pilot Projects Initiation to test the market potential for vehicle remanufacturing (2014)**
  - *20 pilot enterprises licensed to sell remanufactured products.*
- **Industrial Parks for Remanufacturing**
  - *E.g., Shanghai Lingang Industrial Park (2013)*
- **Extended Producer Responsibility System (2021) Pilot Program for automobile products**
  - *Implementation plan by the State Council and Ministries*

Funding for Tech & Standards

- **National Key Laboratory for Remanufacturing (2003)**
  - *Investment in specialist skills for remanufacturing*
- **Smart Remanufacturing Action Plan (2018-2020)**
  - *To fund the establishment of high tech-enterprises and R&D centers and facilitate technological breakthroughs*
- **Official Certificate for Remanufactured Products**
  - *Issued by MIIT to ensure functionality and quality, promoting market adoption*

International Cooperation

- **Partnerships with Organizations like UNIDO**
  - *Participation in standardization efforts ensures global collaboration and technological progress*
- **Bilateral Agreements**
  - *Agreements with nations like the US facilitate knowledge transfer and market access, contributing to global industry standards and growth*

Source: Ellen MacArthur Foundation (2022); Frost & Sullivan (2023); Kojima (2022); VRW (2022)

EPR Implementation in China: Regulatory Environment

How it all started

- **January 2017:** State Council launched the **Extended Producer Responsibility (EPR) System Implementation Program**, which included a **pilot program** specifically for **automobiles**.
- **Early 2017:** Ministry of Industry and Information Technology established an **EPR working team within the automobile industry** to develop pilot programs and evaluation systems in support of the EPR initiatives.
- **2021:** Ministry of Commerce **revised the Measures on Administration of End-of-Life Vehicles (ELVs)** to enhance resource utilization from ELVs.

Objectives

- By 2023, accelerate the establishment of an automotive product producer responsibility extension system to enhance **resource utilization, achieve high recycling rates, and promote green development in the automotive sector**.

Key Strategies of EPR

- Emphasis on the **role of production enterprises throughout the lifecycle of automotive products**
- Prioritize **recycling and resource efficiency**

Encourage car manufacturers to establish *or collaborate on ELV recycling, improve information sharing with recycling enterprises, promote renewable materials and second-hand parts, optimize dismantling for value, and enhance overall resource utilization efficiency.*

- **Market-oriented approach** with **innovative incentive policies**
- Emphasis on **technological innovation** and its supportive role

Source: China Ministry of Industry and Information Technology; Ministry of Science and Technology, Ministry of Finance Ministry of Commerce (2021)

EPR Implementation in China: Regulatory Environment

Automotive EPR Pilot

- **Organization and Management:**
- **Product Scope:** Limited to domestically sold and used automobiles
- **Pilot Duration:** Runs for 2 years

Pilot Content

- Establishment of **recycling systems by automotive production enterprises**
- Promotion of **comprehensive resource utilization**, including remanufacturing and reuse
- Implementation of **green supply chain management**
- Strengthening of **information transparency and public awareness**

Work Procedures

- **Identification of Pilot Enterprises:**
  - Local and central authorities organize applications
  - Submission of implementation plans to MIIT by August 31, 2021
- **Organization and Implementation:**
  - Pilot enterprises execute plans, ensuring quality and progress
- **Acceleration of the standard system establishment:**
  - Publicity and training strengthening
  - Mid-term progress reports to MIIT
  - Evaluation, acceptance, and promotion of successful models by MIIT

Safeguards

- **Organization and leadership enhancement:** Coordinate ministries for effective oversight; Provinces to supervise and manage pilot projects
- **Policy support strengthening:** Boost support for innovation and qualification acquisition; Strengthen financial and technological aid
- **Standardization:** Develop standards for green practices and focus on components evaluation, recycling, dismantling, reuse, and remanufacturing
- **Promotion & Training:** Use media for green advocacy and implement information disclosure and training programs

Source: China Ministry of Industry and Information Technology; Ministry of Science and Technology, Ministry of Finance Ministry of Commerce (2021)

Worldwide EPR Implementation

Germany

- Implements **stringent regulations** to achieve high ELV recovery rates, incentivizing the **establishment of old automobile recovery enterprises**
- Results in **compliance with EU directives** and **competitive remanufacturing prices**

The United States

- Relies on **market dynamics**, with manufacturers and vendors **sharing liability for product defects**
- Fosters a **robust ELV recovery industry** worth billions of dollars and contributing significantly to the circular economy

Japan

- Enforces specific regulations to ensure ELV recovery, with **manufacturers responsible for reclaiming materials** and **car owners contributing to recycling costs**
- Leads to **high ELV resource recyclability** and **material reusability rates**

South Korea

- Implements **phased ELV recovery requirements and pilot programs**, driving **collaboration between manufacturers and recovery enterprises** to achieve high ELV recoverability rates
- Plans to further enhance recovery efforts in the future

Source: China Automotive Technology and Research Center Co., Ltd. Automotive Data Center (2018)

Other Key Automotive Circular Economy and Sustainability Policies in China

Promotes green manufacturing and implements the EPR system.

Made in China 2025 (2015 May)

- Manages hazardous substance use and recoverability of passenger vehicles.
- Requires annual reports on green development and hazardous substance use in the auto industry.

Management Requirements on Hazardous Substances of Vehicles and Recoverability (2015 June)

Implements EPR system for end-of-life product disposal.

Overall Plan on Ecological Civilization System Reform (2015 September)

Law on the Prevention and Control of Environmental Pollution by Solid Waste (revised in 2015)

Holds product producers, sellers, importers, and users responsible for solid waste prevention and control.

Initiative to Guide the Shift toward Circular Development (2017 April)

- Improves EPR laws and regulations.
- Conducts EPR pilots in various sectors including automotive.
- Releases regular reports on EPR implementation.

Source: China Automotive Technology and Research Center Co., Ltd. Automotive Data Center (2018)

Leading Automotive Remanufacturing Players in China

Volvo Construction Equipment

- **1st company** in China to import remanufactured engines from **Volvo's factory in Sweden**
- Possible due to new policies allowing **pilot programs in free trade zones**

Stellantis unit Automobiles Peugeot

- Owns 32 % stake in Miracle Oruide
- Collaborates with Miracle Automation on **auto parts recycling and remanufacturing initiatives**

Weichai Power (Weifang) Remanufacturing Company

- One of the first 14 automotive components **remanufacturing enterprises recognized by China's NDRC**
- Specializes in engine and parts remanufacturing

Yuchai

- **Leading Chinese engine manufacturer**
- **Pilot Qualification**: First recipient of national auto parts remanufacturing qualification from the National Development and Reform Commission

Yuan Planet

- Aims to be **China's largest supplier of used auto parts**
- Building a **nationwide network for remanufacturing and sales**
- Product range includes **engines, gearboxes, interiors, and motors**

Mercedes-Benz Parts Manufacturing & Services Ltd. (MBPM)

- Shanghai's Lingang Area, **1st factory outside Europe**
- Remanufacturing engines and transmissions
- Plans to **extend the production portfolio** and **establish a local remanufacturing supplier base**

Leading Automotive Remanufacturing Players in China

Shanghai Jinchi Automotive Parts Remanufacturing Co., Ltd

- Operates a **one-stop center** for **recycling, remanufacturing, services, and technology**
- A unique business model, "**from insurance to insurance**," partnering with major **domestic insurance companies**
- Produces **16 types** of remanufactured products across **7 categories**, with over **5,000 pieces** for various **luxury car brands**

Miracle Automation Engineering

- Focusing on automotive remanufacturing, auto parts recycling, and power battery recycling
- ***Miracle Oruide (Subsidiary of Miracle Automation)***
  - ➢ *Specializing in remanufacturing auto parts, with a capacity for remanufacturing 50,000 car engines annually*
  - ➢ *Expanding into gearboxes, new energy batteries, and motors*

Guangzhou Huadu Worldwide Transmission

- **Transmission boxes** for power and automotive applications
- **Remanufacturing Pilot**: One of the first 14 companies in the 2008 program by the NDRC
- **10 repair centres, 3 service centres**, and a factory producing **35,000 remanufactured units annually**

PICO (ChangShu) Auto Motor Remanufacturer

- **Remanufacturer** of automobile starters and alternators since 1988: Sold **480,000 units** with a return rate below **0.1%**
- NDRC designated remanufacturing pilot company in 2008
- Remanufacturing products for various **brands and diesel engines**

Other leading remanufacturing players: Baike (Changshu) Motor Co., Ltd. (Hong Kong invested), BHSS, BorgWarner, Bosch, CAT, Cummins, Delphi, Guangzhou, Huadu Worldwide Automatic Transmission Co., Ltd. (Investments of overseas Chinese), manufacturing plant of Shanghai Volkswagen, Sinotruk Jinan Fuqiang Power Co., Ltd., WABCO, ZF, etc.

Barriers to Automotive Remanufacturing in China

Regulatory and Policy

- **Missing national remanufacturing industry development plan, lack of relevant policies, and frequent policy changes** create uncertainty, hindering investments
- **Limited government support** and more **EV subsidies** weaken the market
- **Remanufacturing parts classified as waste**, blocking import/ export and restricting international trade
- **Regulations mandating the destruction of major components** limit access to used parts

Market and Demand

- Chaotic markets flood reputable remanufacturers with **unqualified products**
- Demand for remanufactured engines is squeezed by **low-cost byproducts and disassembled parts**
- Chinese consumers are **less aware of remanufactured products**, leading to lower demand compared to Western markets
- **Preference for new or cheaper alternatives** limits the growth of the remanufactured product market in China

Quality and Standards

- **Inconsistent quality and standards** erode customer trust in remanufactured products
- **Poor quality** of some used parts and **high remanufacturing** costs due to limited component reuse reduce profit margins and competitiveness

Source: Shao et al. (2020)

Barriers to Automotive Remanufacturing in China

Technical and Operational

- Remanufacturers primarily serve their parent companies, **limiting industry collaboration** due to varying product standards and technical patents
- **Inadequate alignment** between new and remanufactured product production
- **Reliance on foreign technologies** without local adaptation **increases costs and inefficiency** in remanufacturing
- **Underdeveloped return logistics** create bottlenecks

Financial and Economic Constraints

- **Remanufacturing enterprises struggle to offset VAT**, and the lack of tax incentives makes the business less financially attractive
- **Limited evidence of financial and environmental benefits** from circular business models hampers funding for remanufacturing enterprises

Source: Shao et al. (2020)

Key Strategies and Policies for Advancing Remanufacturing in China

Policy and Regulatory Support

- **Policy Support:** Set standards, tax incentives, and financial aid to foster remanufacturing growth
- **Government Interventions:** Tailor regulations to address pollution and promote eco-friendly practices
- **Legislation and Regulation:** Enhance legal and regulatory frameworks to support remanufacturing and direct reuse

Industry and Operational Guidance

- Develop **higher requirements for DfX practices**
- **Industry Guidance:** Offer subsidies, tax breaks, and promote environmental responsibility for small to medium remanufacturers

Market and Consumer Strategies

- **Supplier Strategy:** Initially target cost-conscious, knowledgeable group buyers such as businesses, expand into lower-end consumer segments later
- **Market Expansion and Innovation:** Embrace market mechanisms and innovative technologies to drive remanufacturing breakthroughs. Collaborate with government for support and promotion of eco-friendly practices
- **Consumer Perception:** Improve perceived benefits and minimize risks of remanufactured products through factors like product knowledge, brand reputation, and warranties to increase consumer confidence and sales

Resource Management and Efficiency

- **Resource Productivity Indicators:** Implement indicators to evaluate industrial process efficiency and resource productivity
- **ELV Collection System:** Establish systems for collecting and diverting End-of-Life Vehicles (ELVs) to improve resource recovery

Source: Sar (n.d.); Shao et al. (2020); Chinen et al. (2022); Liu et al. (2018); Ye (2021)

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Opportunities and Future Outlook: Automotive Remanufacturing in China

Remanufacturing Benefits: Remanufacturing restores defective parts to like-new performance, enhancing product lifespan while supporting economic, ecological, and socio-cultural sustainability.

China’s Automotive Industry Evolution: From modest beginnings to global leader, China’s automotive sector has grown substantially, driven by state policies, joint ventures, and a strong focus on NEVs and EV technology.

Aftermarket Expansion: Projected to reach €249 bln by 2025 and €281 bln by 2030, with maintenance and repair as key segments.

Emerging Trends in the Automotive Aftermarket: Electrification and autonomous driving are reshaping the aftermarket; investment in technology and global partnerships is crucial for future success.

Circularity Challenges in the Automotive Sector: China faces challenges with low ELV recovery rates and fragmented practices. Overcoming these issues is key to unlocking the full potential of automotive remanufacturing.

Addressing Circularity Challenges: China advances remanufacturing through targeted policies and support, including the Circular Economy Law and the 14th Five-Year Plan. Key actions involve setting quality standards, offering subsidies, and fostering international cooperation to enhance the sector’s growth and global competitiveness.

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Remanufacturing Challenges: The sector faces hurdles such as regulatory uncertainty, quality inconsistencies, limited consumer awareness, and financial constraints.

Strategic Focus: To strengthen the remanufacturing sector, efforts should focus on improving policy support, fostering industry collaboration, advancing technology, and enhancing regulatory frameworks.

“China’s automotive remanufacturing sector is advancing rapidly through supportive government policies, stringent quality controls, and international collaborations, positioning itself as a global leader in sustainable automotive solutions. Moving forward, overcoming regulatory and market challenges while leveraging technological innovation will be crucial for China to fully capitalize on its growth potential and set new industry standards.”

Thank you!

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driving circularity to success

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