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China Automotive Value Pools 2030

Ways to play and investment
opportunities



Several disruptive forces will shape the Chinese automotive industry in the years up to 2030

The most extensive disruption over the coming years will be seen in **software-based services** and **battery electric vehicles**

As the **Chinese market becomes increasingly mature**, demand for **financial services products** will grow

Well-funded start-ups have emerged rapidly, focusing on new value pools and **challenging the status quo**

Strategic partnerships are vital to survival of the fittest automotive players and **success** in this **dynamic environment**

The **geo-political climate demands that** global automotive players strike a strategic balance between **portfolio risks and regional risks**

Chinese market snapshot by 2030

Expected annual BEV unit sales:

~ 10 Mio

Additional annual spending on financial services:

~ 863 bn USD

Additional annual spending on mobility services:

~ 121 bn USD

Number of autonomous vehicles (L4) on the roads:

























~ 1 Mio

Chinese market share of global vehicle sales:

~ 25%

New value pools are emerging and growing strongly in the Chinese automotive market as a result of evolving market trends

Value pool segmentation

Value pools	Description	Key developments	CAGR '21-'30	Segments	
 Components	Supply of car components <i>e.g. Autonomous driving</i>	<ul style="list-style-type: none"> Increased demand for batteries and storage Increased connectivity and feature set 	4.2%	<div>Vehicle batteries</div> <div>ADAS technology </div>	<div>Infotainment & Connectivity</div> <div>SW platforms & enablers </div>
 Production and sales	Manufacturing to vehicle sales <i>e.g. ICE¹⁾ & NEV²⁾ trends</i>	<ul style="list-style-type: none"> Shift from ICE to NEVs Decreasing number of parts in NEVs 	7.8%	<div>New vehicle sales ICE</div> <div>Platform sales & licensing</div> <div>Used vehicle sales NEV </div>	<div>New vehicle sales NEV </div> <div>Used vehicle sales ICE</div>
 Financial services	Monetizing financing models <i>e.g. Financing of new vehicles</i>	<ul style="list-style-type: none"> Trend towards financing and leasing Emergence of alternative business models 	10.4%	<div>Financing </div> <div>Insurance</div>	<div>Leasing </div>
 Usage / operation	Car operating functions <i>e.g. Function on demand</i>	<ul style="list-style-type: none"> Renewable energy creation for NEVs On-demand in-car services 	13.1%	<div>In-car/on-demand services </div> <div>Data / Information</div>	<div>Electricity (grid, storage) </div>
 Mobility services	Supplementary mobility offering <i>e.g. Ride hailing services</i>	<ul style="list-style-type: none"> Development of fully autonomous vehicles Increasing usage of real-time data 	9.3%	<div>Subscription </div> <div>Robo Taxi </div> <div>Micro Mobility </div>	<div>Ride Hailing</div> <div>Sharing </div> <div>Public Transport</div> <div>Rental (long/ short term) </div>
 Aftermarket sales/ services	Provided following car sales <i>e.g. NEV accessories</i>	<ul style="list-style-type: none"> Different maintenance requirements of NEVs Growing accessory business 	8.4%	<div>Parts (repair/maintenance) </div> <div>Merchandising</div>	<div>Labor (repair/ maintenance) </div> <div>Accessories</div>
 Refurbishing/ recycling	Battery recycling/reuse/resell <i>e.g. Second-life battery use</i>	<ul style="list-style-type: none"> Recycling or repurposing of old batteries Sustainable raw material procurement 	34.1%	<div>Battery reuse/ resale </div>	<div>Battery recycling/upcycling </div>

The traditional automotive industry faces disruptive trends such as digitalization & electromobility, leading to new and growing value pools

Key developments in Chinese automotive value pools

Traditional value pools

↑ + 1,360 bn USD*

Components

- **Vehicles** are turning increasingly into ever more **connected devices**, **accelerating ADAS** and **software uptake**
- **The main driver** is the **accelerated adoption** of NEV, mainly **battery electric vehicles** by Chinese customers

Production and Sales

- The **trend from ICE towards NEV** remains the most critical driver of automotive transformation
- In addition, **sales and licensing of software and platforms** become more relevant as connectivity increases
- New **sales strategies & customer access** play a decisive role

Aftermarket sales & services

- Trend towards **electric vehicles** is reflected in **aftermarket components and services** through declining demand per NEV
- **NEVs** require fewer **components** and **maintenance**, while the overall **installed base is increasing** in size
- **Customer satisfaction** threshold has **risen** as expectations increase

Growing value pools

↑ + 1,000 bn USD*

Financial services

- Growing **customer trend towards sharing** leads to higher uptake of **financing** and **leasing** products
- **Consumers crave flexibility & uninterrupted access** to their functioning vehicle – **promoting** conventional **financing models**

Usage/ operation

- Customers demand **in-car services**, **navigation** and **charging infrastructure** among **vehicle operations**
- On-demand car use offers **new revenue opportunities**

Mobility services

- Growing trend towards **subscription** and **sharing models**
- Consumers seek more convenient **pay-as-you-go** services as well as **reduced fixed costs**

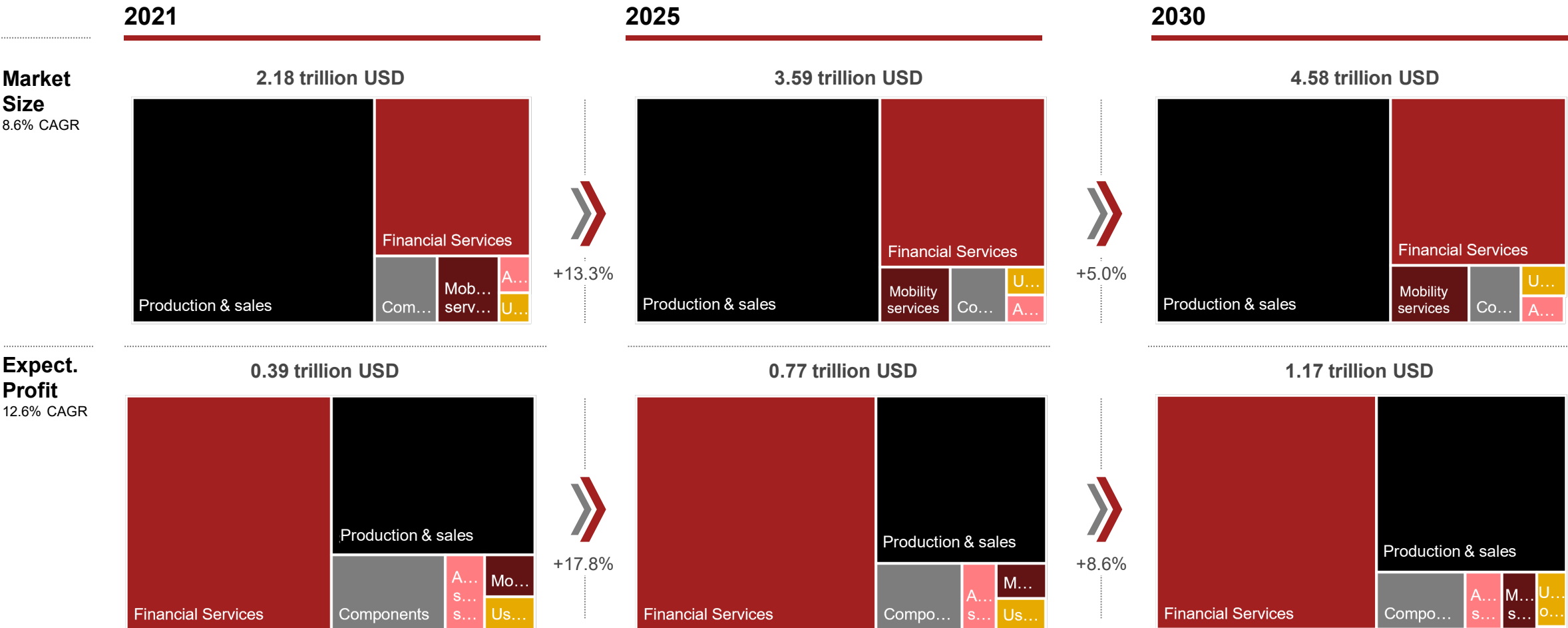
Refurbishing/ recycling

- Growing trend towards **battery recycling** and **upcycling**
- Access to **rare-earth minerals** is becoming a critical factor
- Increased **regulatory pressure** driven by **ESG**

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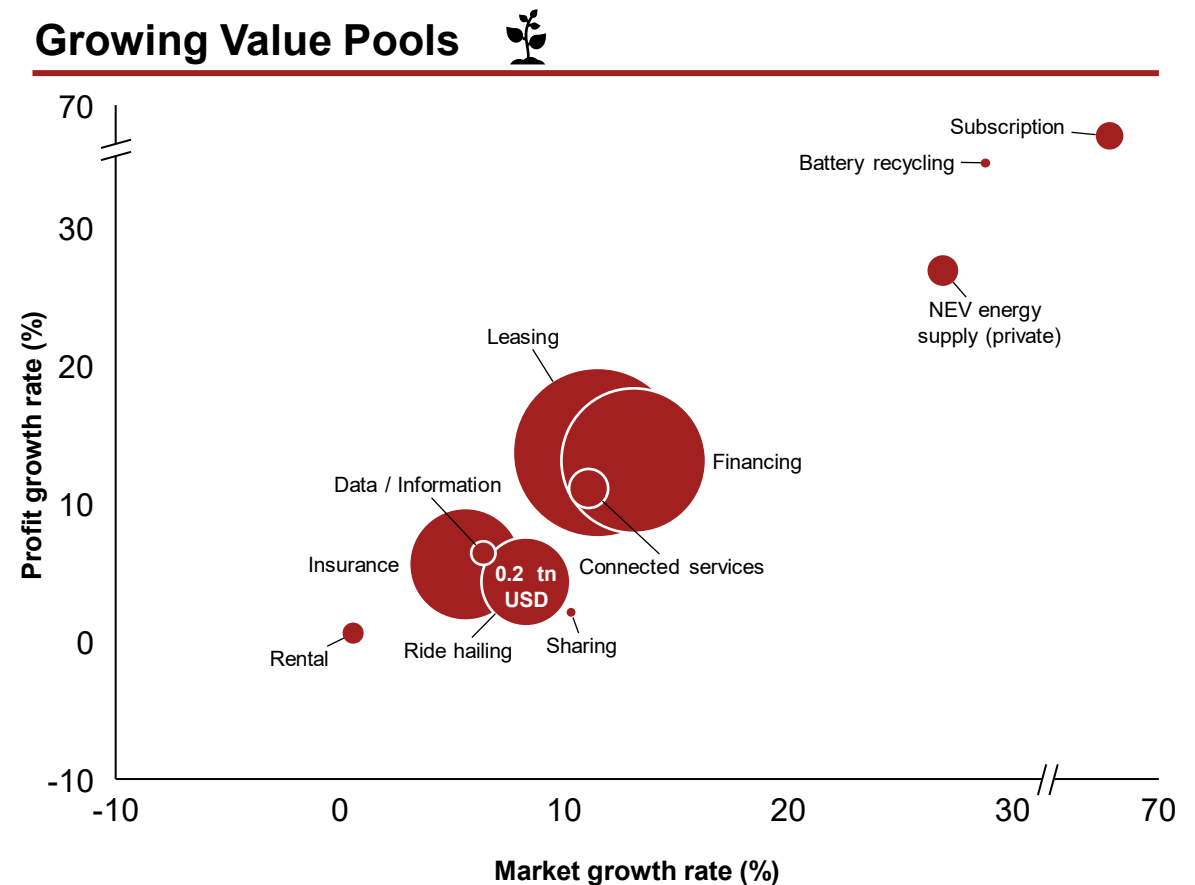
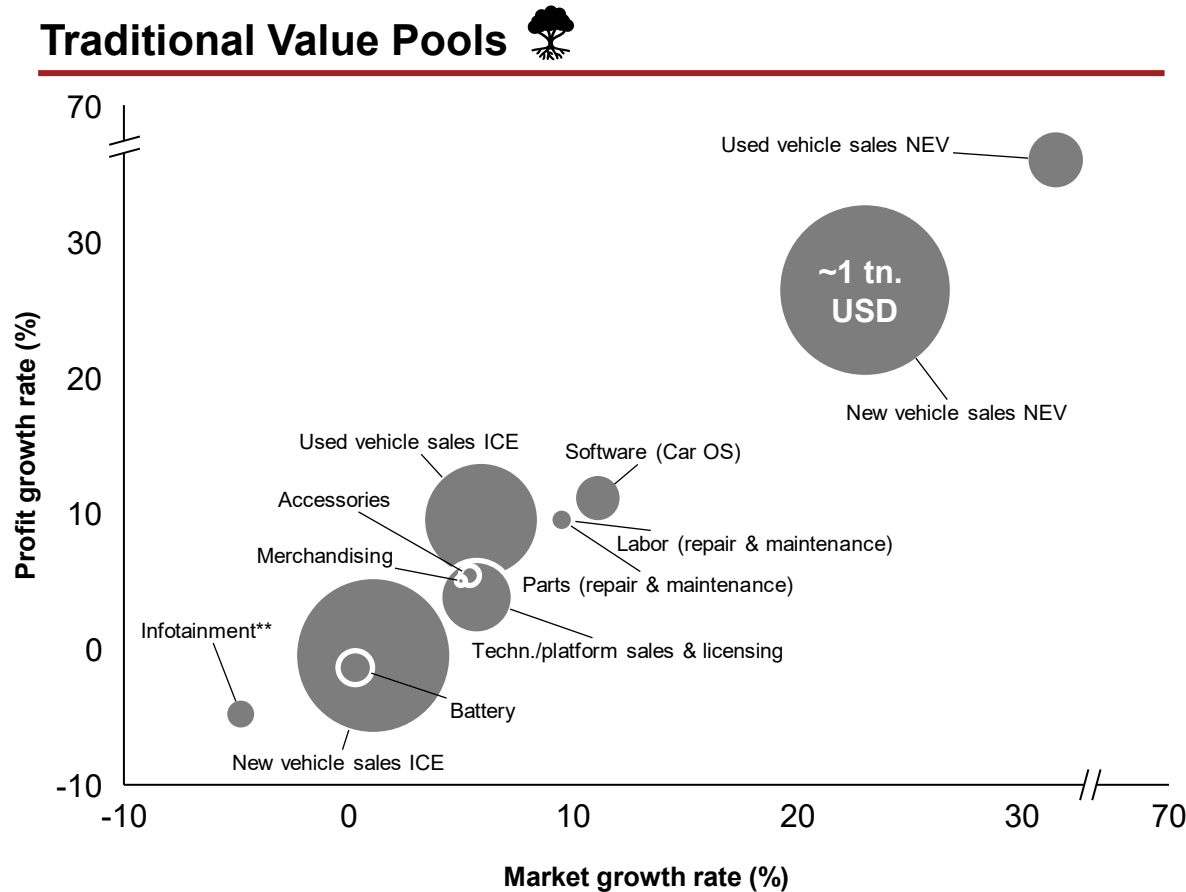
Progression of value pools reveals dominant position of production & sales and financial services as well as healthy overall growth rates

Market size & profit by category in 2021, 2025, 2030



There is a broad spectrum of value pools to tap into – traditional value pools remain big while emerging value pools are growing rapidly

Growth trends and market sizes* from 2021 to 2030



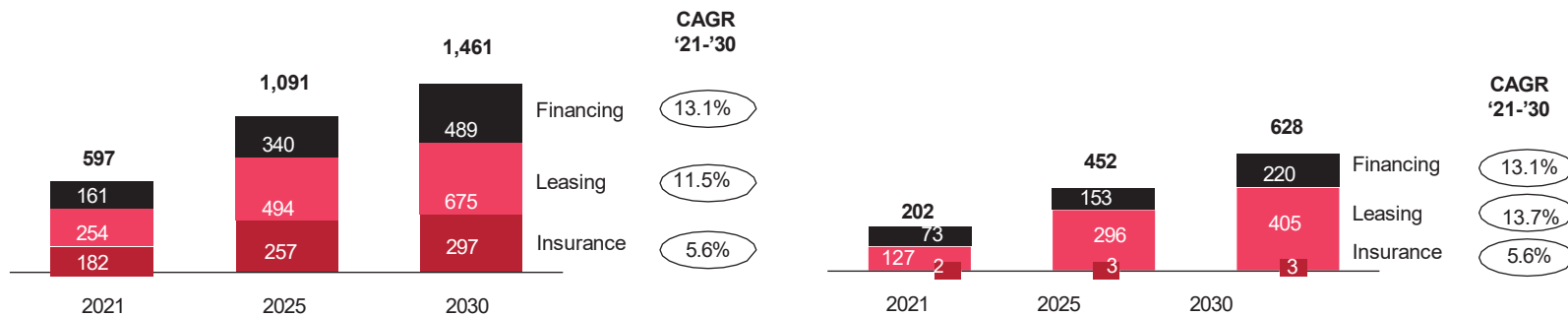
The financial services sector is growing rapidly as more Chinese consumers buy vehicles and make use of financing products

Snapshot on financial services

Value pool size and profit

Revenue by segment in bn USD

Profit by segment in bn USD



Value pool description

Financial services comprise three segments: financing, leasing and insurance.


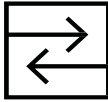

Main drivers

The usage of financial products is still underdeveloped in China compared to Western markets.

Increasing sensitivity and demands to secure the vehicles' residual value through these services as well as mounting "Westernization" will drive the financing and leasing market in the long-term.

Savings as a percentage of household income has historically been high in China, peaking at more than 38% in 2010, compared to 6% in the US. This savings ratio has declined in recent years.

Top players by segment

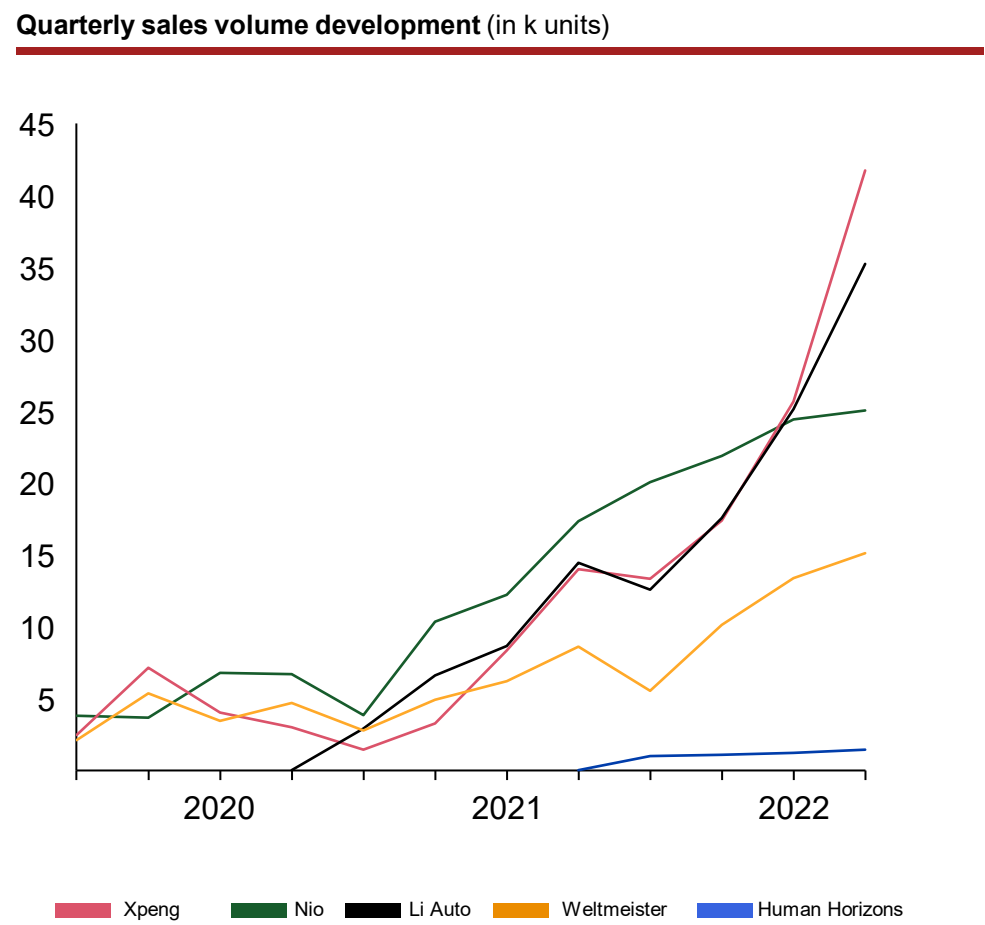
 Financing	Bank of China
	FAW-VOLKSWAGEN
	SAIC GMAC
 Leasing	HERALD LEASING
	VOLKSWAGEN FINANCE
	YIXIN GROUP
 Insurance	Pingan
	CPIC
	PICC

ICE incumbents are under huge pressure – New EV players focussing on overall user experience have registered a strong sales uptake

Incumbent challengers from Far East

Product	Nio	Weltmeister	Human Horizons
Sales 2021	91,429 units	44,157 units	3,742 units
Business model	<ul style="list-style-type: none"> New vehicle sales Battery as a Service 	<ul style="list-style-type: none"> New vehicle sales Function on demand 	<ul style="list-style-type: none"> New vehicle sales Commercializing smart cities
Design focus	<ul style="list-style-type: none"> User experience, lifestyle brand Human-machine interaction Battery swapping 	<ul style="list-style-type: none"> User experience User customization China chic 	<ul style="list-style-type: none"> Customer centricity User experience, lifestyle brand Select differentiating features
Expansion	Europe, starting in Norway 2021	Focus on China	Europe & North America ¹⁾
Attack on:	Tesla, Xpeng, VW, Audi, BMW, Daimler	Nio, Tesla, Xpeng, VW	Daimler, BMW, Audi, Porsche

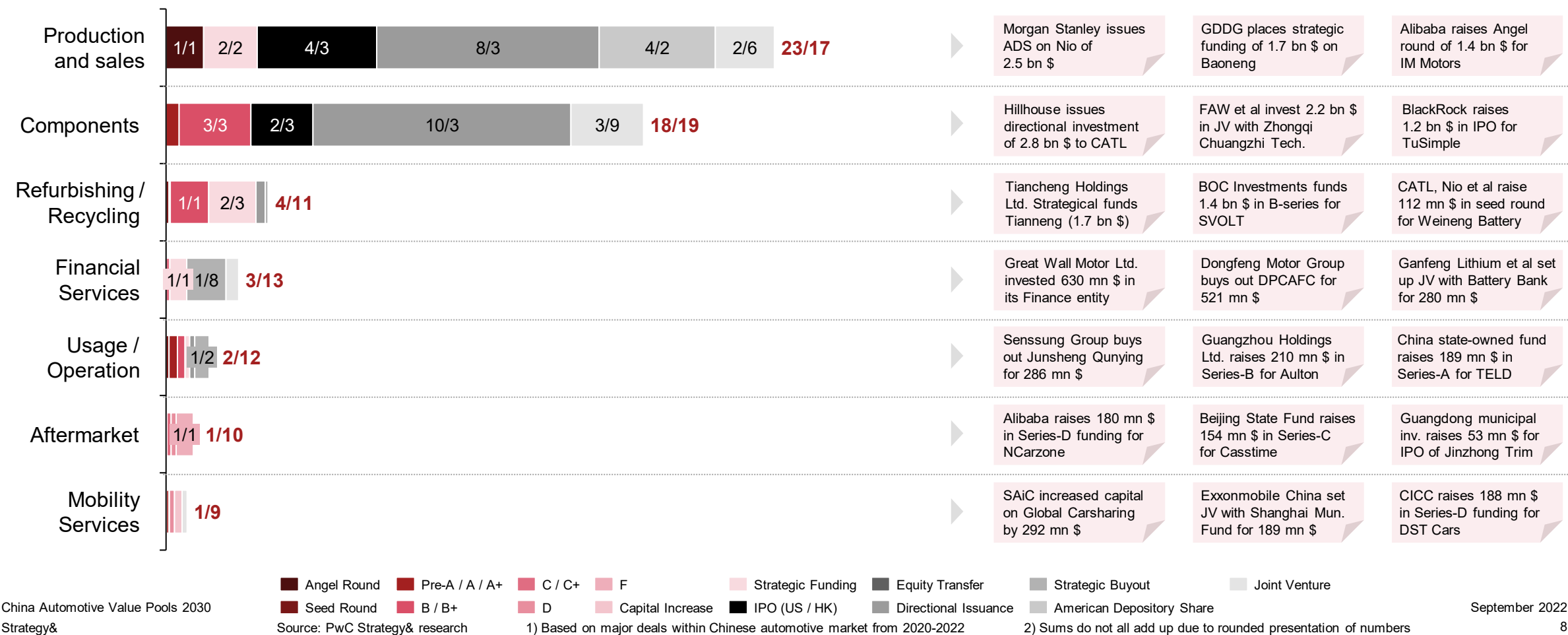
1) Subject to market development in China and company funding
Source: Company information of Nio, WM Motors and Human Horizons, PwC Strategy& research



In addition, there has been a major increase in deal activity in the past 2 years across all value pools

Deals perspective¹⁾ on Chinese automotive value pools

Deals across value pools²⁾ [bn USD / # of deals]



Selected top-Deals



- Morgan Stanley issues ADS on Nio of 2.5 bn \$
- GDDG places strategic funding of 1.7 bn \$ on Baoneng
- Alibaba raises Angel round of 1.4 bn \$ for IM Motors
- Hillhouse issues directional investment of 2.8 bn \$ to CATL
- FAW et al invest 2.2 bn \$ in JV with Zhongqi Chuangzhi Tech.
- BlackRock raises 1.2 bn \$ in IPO for TuSimple
- Tiancheng Holdings Ltd. Strategic funds Tianneng (1.7 bn \$)
- BOC Investments funds 1.4 bn \$ in B-series for SVOLT
- CATL, Nio et al raise 112 mn \$ in seed round for Weineng Battery
- Great Wall Motor Ltd. invested 630 mn \$ in its Finance entity
- Dongfeng Motor Group buys out DPCAFC for 521 mn \$
- Ganfeng Lithium et al set up JV with Battery Bank for 280 mn \$
- Senssung Group buys out Junsheng Qunying for 286 mn \$
- Guangzhou Holdings Ltd. raises 210 mn \$ in Series-B for Aulton
- China state-owned fund raises 189 mn \$ in Series-A for TELD
- Alibaba raises 180 mn \$ in Series-D funding for NCarzone
- Beijing State Fund raises 154 mn \$ in Series-C for Casstime
- Guangdong municipal inv. raises 53 mn \$ for IPO of Jinzhong Trim
- SAiC increased capital on Global Carsharing by 292 mn \$
- Exxonmobile China set JV with Shanghai Mun. Fund for 189 mn \$
- CICC raises 188 mn \$ in Series-D funding for DST Cars

Numerous Chinese start-ups are world-leading pioneers in their field – some have already been acquired by Chinese technology firms

Profiles of top start-ups in selected core value pools

Financing

Ant Finance Group

Founding year: 2014
Valuation: ~ 120 USD bn
Sales Volume: ~ 18.2 USD bn
Segmentation: Digital payments
Differentiator: Subsidiary of Alibaba, pioneer of digital payments in the Chinese market

Leasing

Yixin Rental Group

Founding year: 2013 (as Bitauto)
Valuation: undisclosed
Sales Volume: undisclosed
Segmentation: Online vehicle platform
Differentiator: Subsidiary of Tencent, China's largest online automobile financing/trading/leasing platform

Electricity (grid, storage)

Meineng Energy

Founding year: 2011
Valuation: undisclosed
Sales Volume: undisclosed
Segmentation: Grid energy storage
Differentiator: First-of-a-kind flow battery, cooperation with utility companies and Anhui government

Data / Information

Autox Corp. Ltd.

Founding year: 2018
Valuation: undisclosed
Sales Volume: undisclosed
Segmentation: Autonomous driving
Differentiator: Leading in unmanned robotaxi, Largest robotaxi fleet in China - 1000+ vehicles*

Battery reuse/ resell

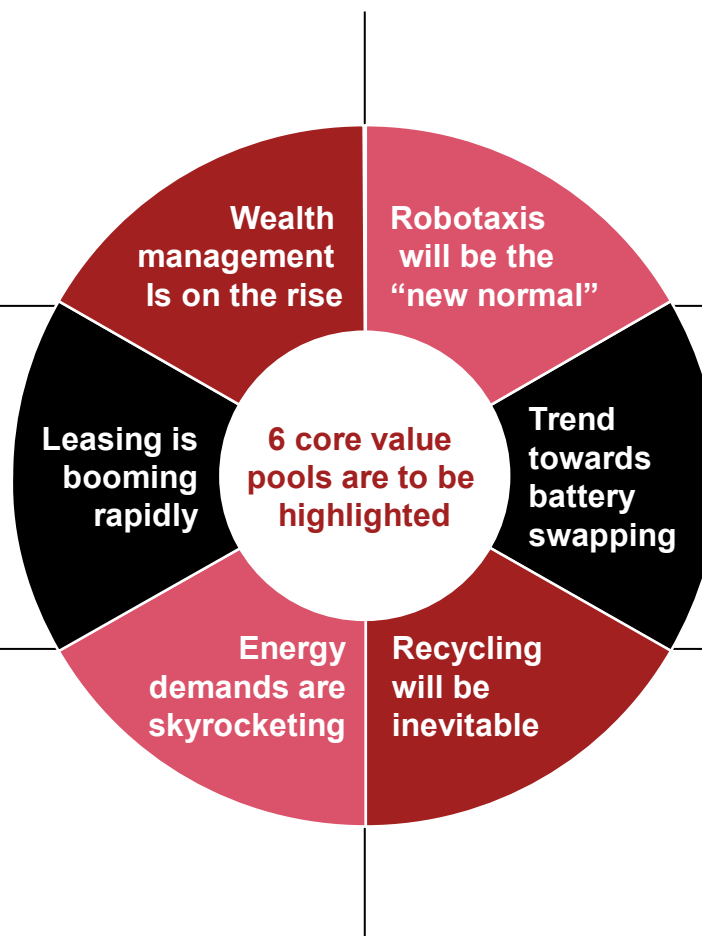
Aulton Group

Founding year: 2016
Valuation: undisclosed
Sales Volume: undisclosed
Segmentation: Battery swapping / reuse
Differentiator: extensive charging network, reuse of older batteries, cooperation with 13 OEMs worldwide

Battery re-/upcycling

BRUNP Group

Founding year: 2005
Valuation: undisclosed
Sales Volume: undisclosed
Segmentation: Battery recycling
Differentiator: Subsidiary of CATL, pioneer in battery recycling technologies



Strategy& has identified three key success factors for global decision makers seeking to capitalize on Chinese automotive value pools

Key success factors

1

Understand your own position

- › Who is in the market?
- › What do these companies do?
- › What is your differentiator?
- › Who could be a good fit as partner?
- › ...

>100

automotive brands on the Chinese market – i.e. international brands, small and large local brands

2

Prioritize where to play

- › What are the potential value pools?
- › Which value pool is the most attractive for your business?
- › How do you expand current value pools or tap into new ones?
- › ...

~70%

of moves into new value pools have failed badly due to an underestimation of the resulting complexity

3

Define your ways to play

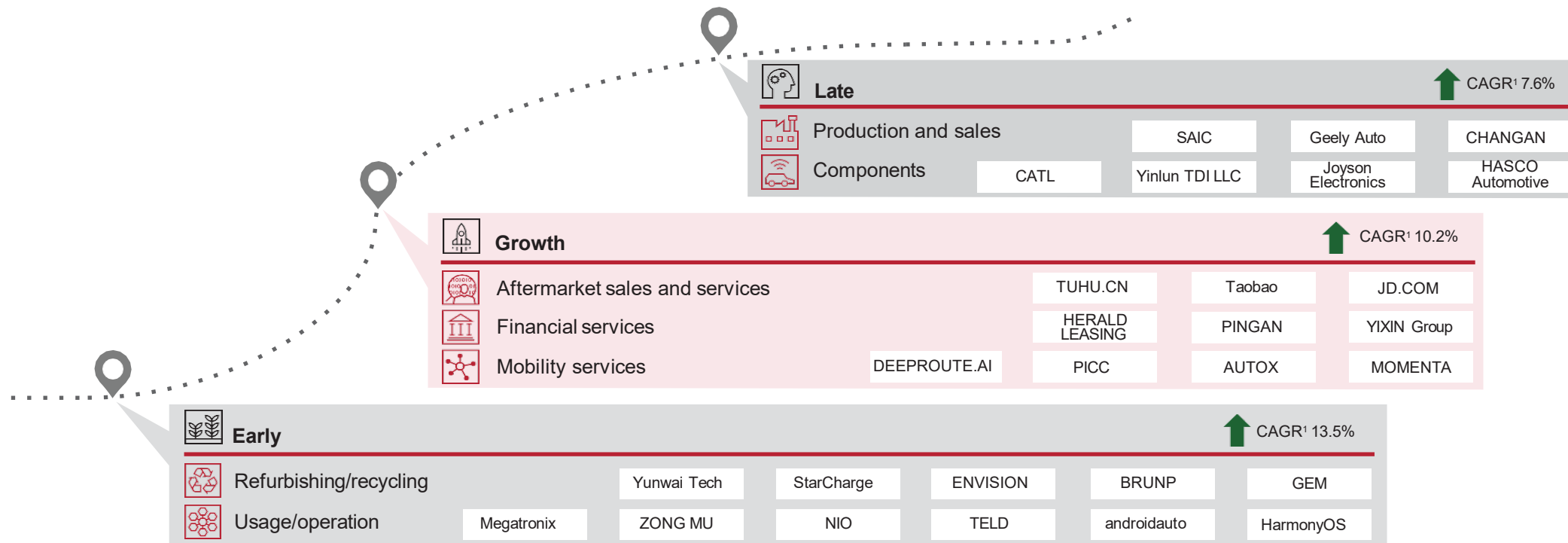
- › What is your core business?
- › What is your optimal transformation plan?
- › Who could act as a transformative partner and how?
- › ...

3

major ways to move forward on the Chinese market – i.e. stand-alone, partner or invest

There will continue to be a growing, and competitive, playing field of companies seeking to exploit automotive value pools in China up to 2030

Value pool maturity stages

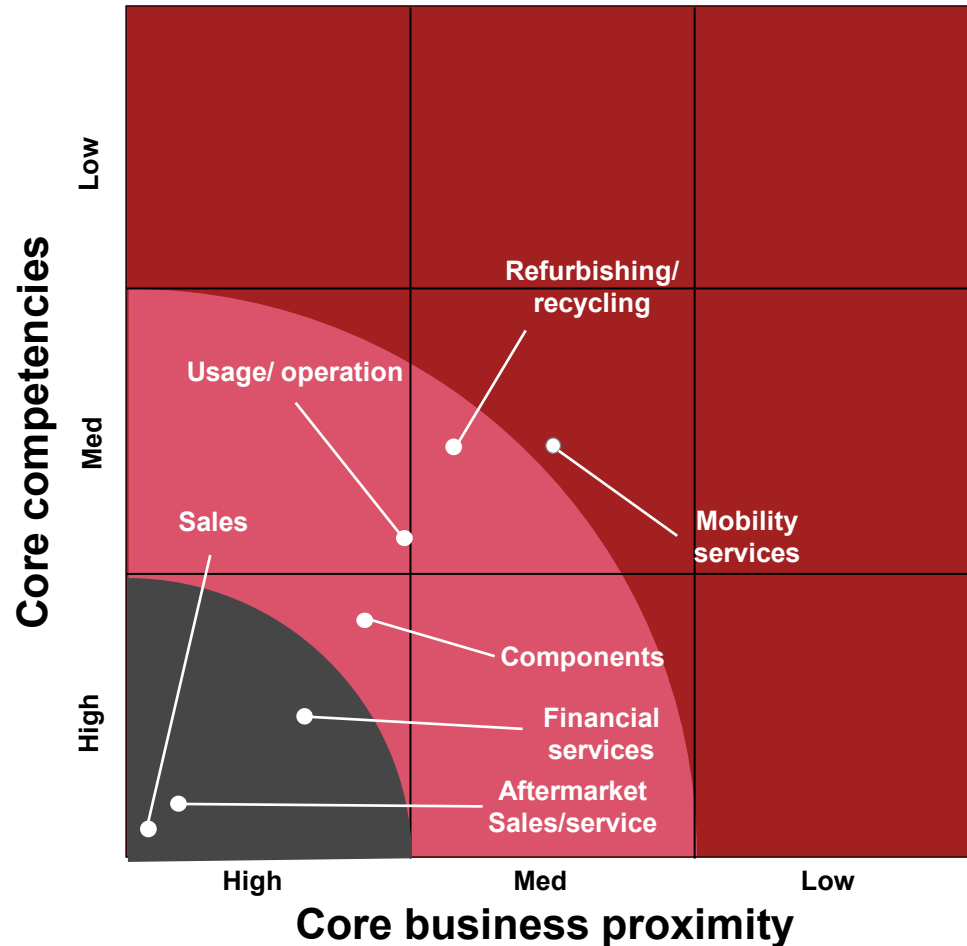


Within selected core value pools, some local players have already positioned themselves successfully. Multiple other players are still in the process of growth and upscaling in different value pool segments.”



Players need to adapt by shifting their core competencies to new demands, evaluating the attractiveness of new value pools

Business model assessment & potential ways to play












Ways to play

- Further enhance and scale core competencies, adapt them to market requirements in order to meet increasing market demand
- Identify main drivers and most relevant sub-segments to make full use of current capabilities
- Conduct in-depth analysis of value pool trends and relevant potential for own business
- Carry out risk assessment (e.g. due to regulations)
- Evaluate different investment strategies (e.g. partnerships, stand-alone investments) to leverage resources
- Conduct in-depth analysis of value pool trends
- Assess potential conflicts (e.g. due to cannibalization)
- Evaluate suitability of different forms of cooperation (e.g. partnerships, joint ventures) for participation in promising value pool segments

Players can capitalize through strategic partnerships or investments, although core value pools should be approached independently




Overview of strategic ways to play

	OEMs			Suppliers			Investment firms		
									
Components	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Investment	Investment
Production and sales	Stand-alone	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Investment	Investment
Aftermarket sales/ services	Stand-alone	Stand-alone	Partnership	Partnership	Partnership	Partnership	Investment	Investment	Partnership
Financial services	Partnership	Partnership	Stand-alone	Partnership	Partnership	Partnership	Partnership	Investment	Investment
Usage/ operation	Stand-alone	Stand-alone	Partnership	Partnership	Partnership	Partnership	Investment	Investment	Partnership
Mobility services	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Investment	Investment	Investment
Refurbishing/ recycling	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Partnership	Investment	Partnership



OEMs should consider both, partnerships and investments, for effective market positioning

Ways to play for OEMs (deep-dive)

				
Components	Partnership	Partnership	Investment	Components and the technology domain require increasing localization – therefore partnership with local start-ups are recommended
Sales	Stand-alone	Investment	Investment	Adapt current sales channels to current market trends (e.g., D2C sales model) to gain more customer access and insights
Aftermarket sales/services	Stand-alone	Stand-alone	Investment	Leverage existing capabilities in the aftermarket for the repair and maintenance of NEVs and stay abreast of customer demands
Financial services	Partnership	Partnership	Stand-alone	Local partnership or investment can exploit substantial leasing or rental value pool segments and break through local customer barriers
Usage/operation	Stand-alone	Stand-alone	Partnership	Partnership with provider of in-car services and charging infrastructure is recommended – preferably those with customer-centric software
Mobility services	Investment	Investment	Investment	Investment or partnership with a leading local player is recommended to gain market share rapidly and strengthen position
Refurbishing/recycling	Partnership	Partnership	Partnership	Due to volatile market size & growth conditions, an initial partnership in battery refurbishing/recycling is recommended to satisfy demand

Depending on the automotive player, different ways to play should be applied for successful future positioning in China

Outlook and next steps

- » **OEMs** should **adapt – shifting their core competencies** to new market demands and **evaluating** the attractiveness of **new value pools**
- » **Suppliers** should **take advantage of new value pools** to achieve differentiation, increased **customer exposure, market share** and **profit growth**
- » **Investors** should **balance risks with the potential for growth** and **profit in order** to arrive at the right investment decision and **portfolio strategy**
- » **All automotive players** must **evaluate** their **geo-political exposure** to any **global region** when making **strategic investment decisions**

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