

BYD(1211.HK)

Driving a Green Revolution

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Executive Summary



OVERVIEW

We recommend buying BYD with a **6-month target price of HKD304**

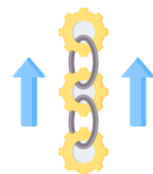
THESIS

BYD is **undervalued by the market by 29%** with the target price keeping the 3 drivers in mind

UPSIDE DRIVERS



Strong demand from **China** reopening and export opportunities



Vertical integration and diversified new energy products



Well-established **sustainability framework** aligns with China's 'go-green' ambition

SUMMARY

Valuation

Target price derived from **SOTP approach**

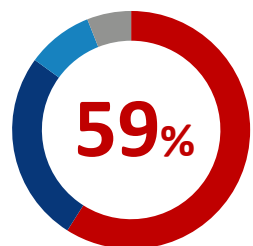
Downside Risks

- **Fiercer competition** in the EV market
- Sustainability-related **reputational risk**
- **Product** recall concern

Industry Overview

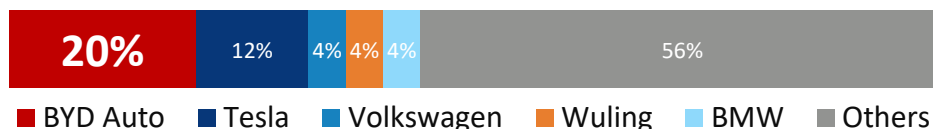


MARKET LANDSCAPE



Mainland China was the largest EV market in 2022, with **BYD Auto** being the most significant player in Q4

■ China ■ Europe ■ US ■ Others



DEMAND DRIVERS

Favorable **climate change** policies in China

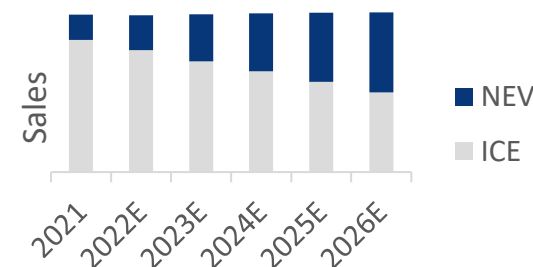
Abundant **export** opportunities to foreign countries

KEY TRENDS

Macro-economic Level

- **Rebounding economic growth** after China's reopening
- **Price war** in the auto market rises competition

Market Level



- **Increasing consumer preference** in New Energy Vehicles (**50.6% penetration rate in 2026**)
- NEVs are expected to **exceed fuel vehicles** in sales volume

Product Level

Greener and smarter technology advancement

Falling price of Lithium Carbonate (raw material of EV batteries)

Source: Prospectus of ZHEJIANG LEAPMOTOR TECHNOLOGY CO., LTD 2022 (Industry Overview), Counterpoint Technology Market Research, BYD Annual Report 2022

Company Overview

VISION & MISSION

Technological Innovations for a Better Life

To change the world by creating a **complete, clean-energy ecosystem** that reduces the world's reliance on fossil fuels.

BUSINESS DESCRIPTION



Devoted to leveraging innovations



Leading in electronics, automotives, renewable energy, and rail transit



Expansive zero-emission solutions for energy generation and storage

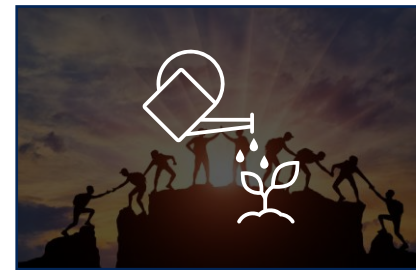
COMPETITIVE ADVANTAGES



**Renewable and diverse
product portfolios**



**Scalable and streamline
vertical integration**



**Harmonious and sustainable
management operation**

Source: BYD Official Website, BYD 2022 Annual Report

There are three main features that makes BYD stands out from its peers

Strong Product Development

- 1 Sustainable innovation
- 2 Diversified business and products
- 3 Strategic partnership with eco-friendly firms and green investment

Vertical Integration

- 1 Self-reliant supply chain with investment on upstream producers of metal

Sustainability Practices

- 1 Emission reduction
- 2 Water pollution control
- 3 Waste gas management
- 4 Clean energy source

Source: BYD Official Website, BYD 2022 Annual Report

Renewable And Diverse Product Portfolio – Sustainable Innovation



'Dual-Mode; Dual-Drive' Technology

The 'FIRST' to drive a vehicle with an engine and an electric motor

- ✓ Energy-efficient and Environmental-friendly



e-Platform 3.0

A highly integrated platform exclusive to pure electric vehicles

- ✓ Increase the thermal efficiency by up to 20% and Reduce energy loss



Game-changing blade battery

- ✓ **Long battery life** with over 5000 charge and discharge cycles
- ✓ Higher volume efficiency - **Volume utilization rate** of the blade battery is **increased by 50%** compared with traditional battery system



'DM-i Super Hybrid'

1.5L High-efficiency engine with fuel consumption of 3.8L/100km only

- ✓ Achieve higher thermal efficiency conversion and fuel saving



Bi-directional Charging/Discharging Technology

The 'FIRST' to allow **direct connections** between power grid and vehicles

- ✓ More diverse, Safer, Optimize power grid's efficiency

Source: BYD official website: Innovation At BYD

Renewable and Diverse Product Portfolio – Diverse Business



PRODUCTS OFFERING

Main Business

- Manufacture, assembly, and retail of EVs
- Urban rail transit
- Rechargeable batteries & semiconductors

Side Business

- Consumer electronics
- New intelligent products
- Mobile handset components

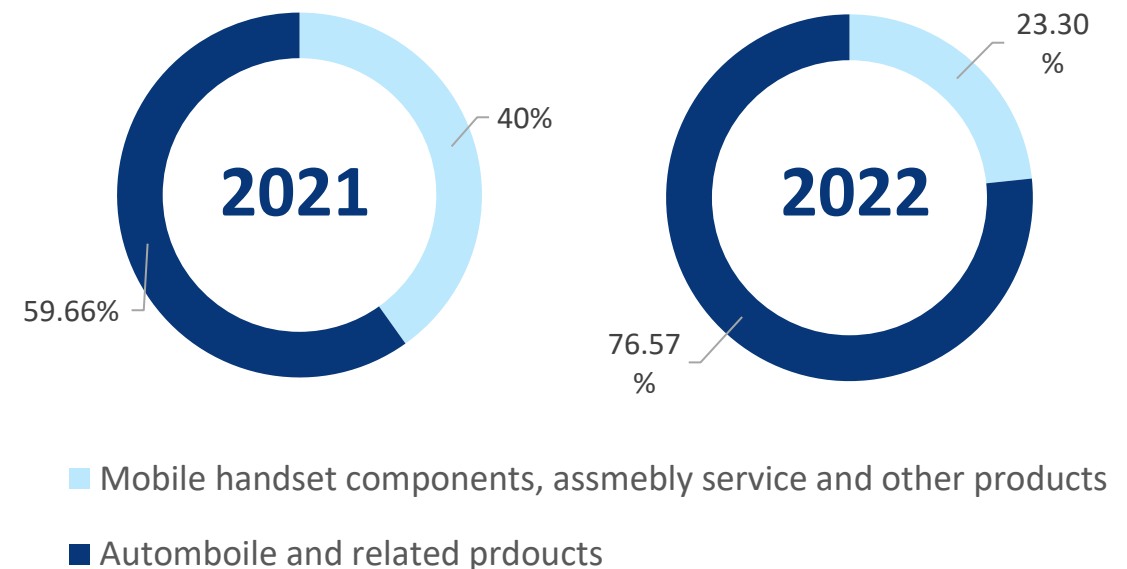
7+4 Full Market Strategy

To replace all fossil fuel consumption in the road transport field with electricity

- 7 conventional fields: bus, coach, taxi, various vehicles
- 4 specialized fields: mining sites, harbors, warehouses, airports

REVENUE BREAKDOWN

Revenue Breakdown BY Product Categories



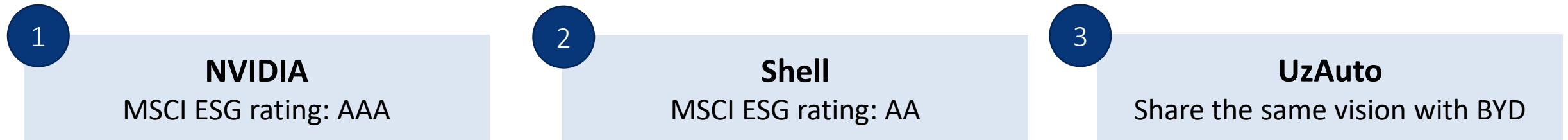
Shows BYD ambitions on its R&D capability, diversified product portfolio & strong financial performance

Renewable and Diverse Product Portfolio – Strategic Partnership

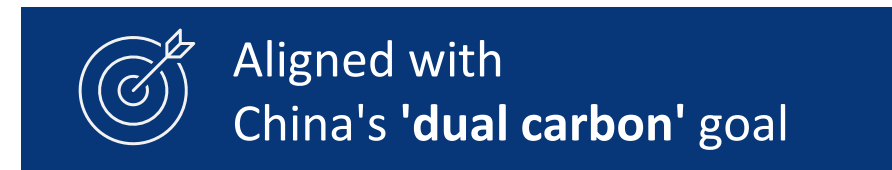
Collaboration & Investment



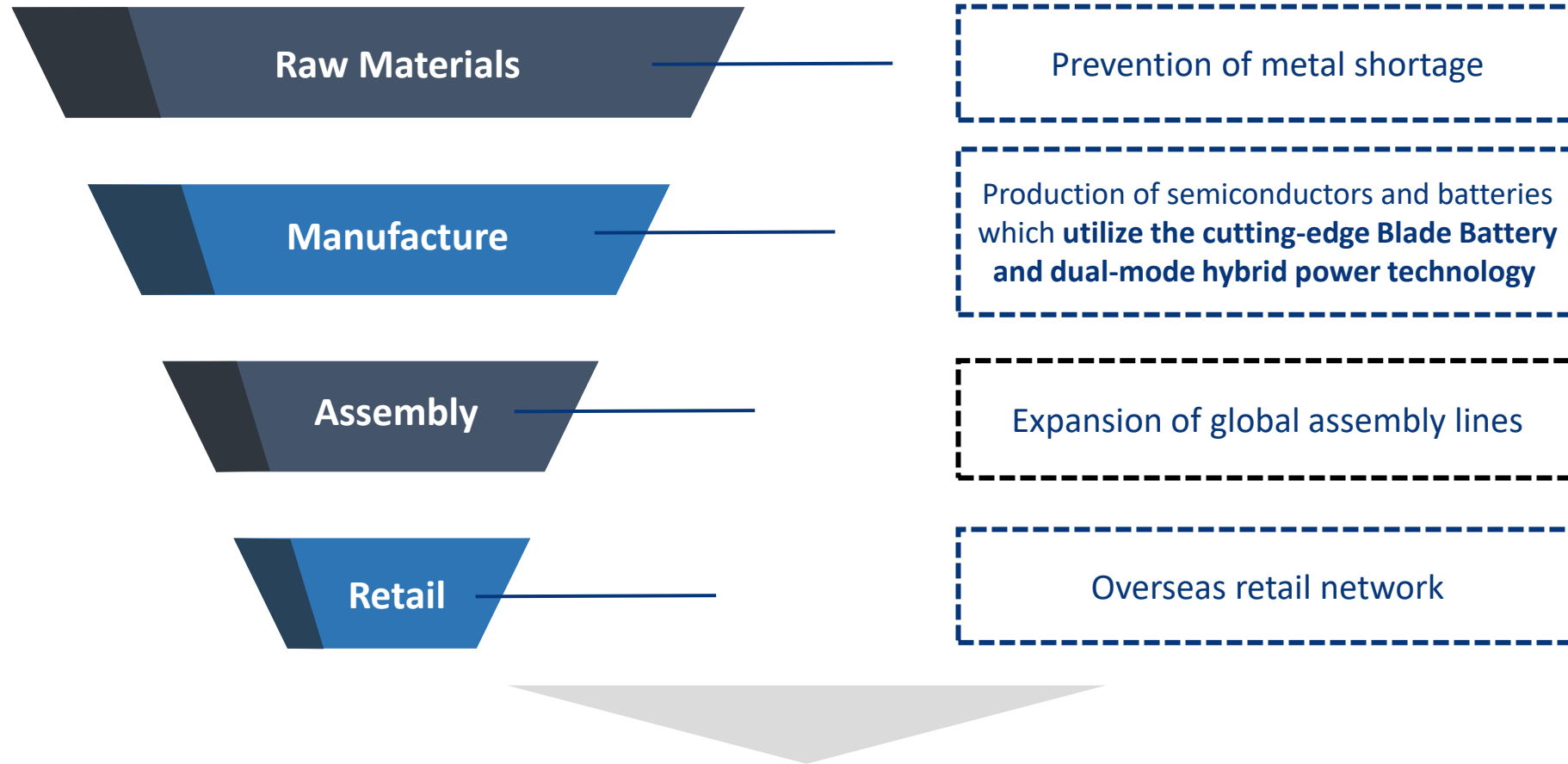
Involving Parties



Targets



Streamline Vertical Integration



Such a **self-developed and self-produced** management style helps BYD builds up its market-leading position

MEASURES TAKEN



Achieved ISO50001 **Energy Management System** Certification



Established dedicated energy management departments at **every operation level**




Real-time monitoring + Energy audit & internal review



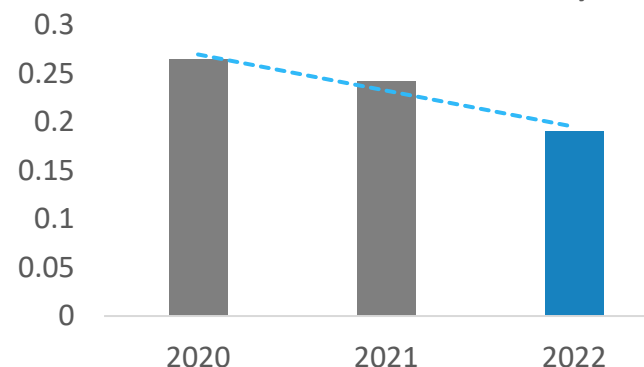
Optimization of operating parameters + Regular energy-saving technology **upgrade**

MORE NEW ENERGY PROJECTS

2021	43 projects	3,332 tons standard coal saved	13,370 units CO2 emission reduced
 2022	48 projects	8,248 tons standard coal saved	21,444 units CO2 emission reduced

RESULTS

GHG Emission Intensity



BYD **reduced** greenhouse gas emission intensity by **28%** in 2 years

REDUCE

- **Set quota** on water consumption for each unit
- Regular maintenance to **lower the leakage rate**

RECYCLE

- Establish a **reclaimed water recycling system**
- **Backflow valves** to overflow water in the cleaning lines

REUSE

- Use **Treated wastewater** for **washroom rinsing**, industrial park landscaping and road cleaning

REGULATE

- Water Pollution Prevention and Control Law
- ISO14001 environmental management system



The Reclaimed Water Recycling System

Water consumption structure is optimized to improve the way BYD uses water and minimize waste

Sustainability Practices - Waste Gas Management



Pollution Prevention and Control Facilities

- Follow the “Three Simultaneities” requirements
- Products must be designed, constructed, and put into use simultaneously with the production projects

Improve and optimize management regulations on waste

Vehicle Coating Plant Renovation

- Invested RMB 600 Million
- Upgrade 3C2B coating process into B1B2 coating process

Notably reduce solid waste and pollutant emissions

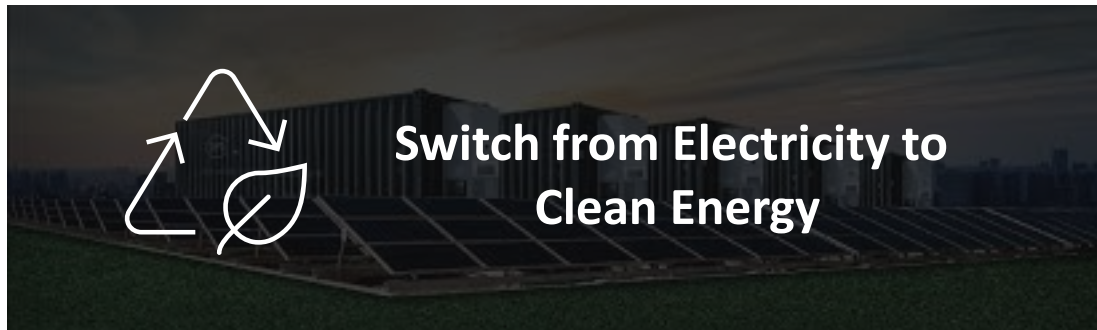
Upgraded Organic Waste Gas Treatment Facilities

- Upgraded to “zeolite rotor + RTO” to purify waste gas
- Apply new treatment facilities which enhance treatment efficiency

Comply with emission standards + reduce Volatile Organic Compounds emissions

In the future, BYD will comprehensively upgrade its existing emission collection and treatment procedures in a wider range of its production areas

PRACTICE 1



- Has their **own green power supply system** by laying solar panels on all the available roofs
- Built their own integrated **solar energy storage system** to guarantee electricity supply for production purposes

PRACTICE 2



- Each Green Certificate represents 1,000 kWh (1 MWh) of electricity generated from renewable energy has been put on the grid or consumed locally
- Bought **104,707 GEC green certificates** in the Shenzhen-Huizhou region
- Reduced CO₂ emissions **by 91,294 tons**

**The energy structure has been effectively reshaped to clean energy.
In the future, more green certificates will also be purchased**

Investment Thesis



DIRECTION

Macroeconomic & Industry Tailwinds

MOMENTUM

China reopening after pandemic

UNDERLYING REASONS

- Anticipated **strong local demand** in China
- **Export** opportunities to foreign countries

Competitive Advantages

Vertical integration & diversified products

- Manufacturing of **rechargeable** batteries and Automobiles
- Different series **target different markets**
- **R&D - cooperation** with NVIDIA , Shell, UzAUto

Strategy & Management

Well-established sustainability framework

- Align with China's '**go-green**' ambition
 - Match with China's "**dual carbon**" goals by **suspension of fuel car production**
 - Peaking carbon emissions by 2030
 - Achieving carbon neutrality by 2060

1.Favourable Policies in China



Extended the period of exemption
of vehicle purchase tax on NEVs to 31 Dec 2023

Simulate the sales of NEVs



Feb 2022

Nov 2022

Sep 2022

The Notice on Organizing the Pilot Project for
the Full Electrification of Vehicles in the
Public Sector 《關於組織開展公共領域車輛全面
電動化先行區試點工作的通知》

Increase the penetration rate of NEVs



Issued the Budget for Energy Conservation
and Emissions Reduction Subsidies in 2023

**Promote the application of NEVs
+
the construction of charging infrastructure**

The government **fully support** the sustainable and quality development of the new energy vehicle industry and **encourage green travel**

2. Favorable Policies in Oversea Markets



Spain:

From 1/1/2023:
Enforcement of low emission
zones & Eco-stickers to classify
cars' emissions

BYD Pure-Electric Vehicles
debuted in Spain on 31/3/2023



Europe:

28/3/2023:

Stricter CO2 emission performance
standards for new cars and vans



Australia:

Emissions reduction law on
1/7/2023:
Cut emissions by 43% by 2030

BYD exported Yuan Plus
to Australia in Feb 2022

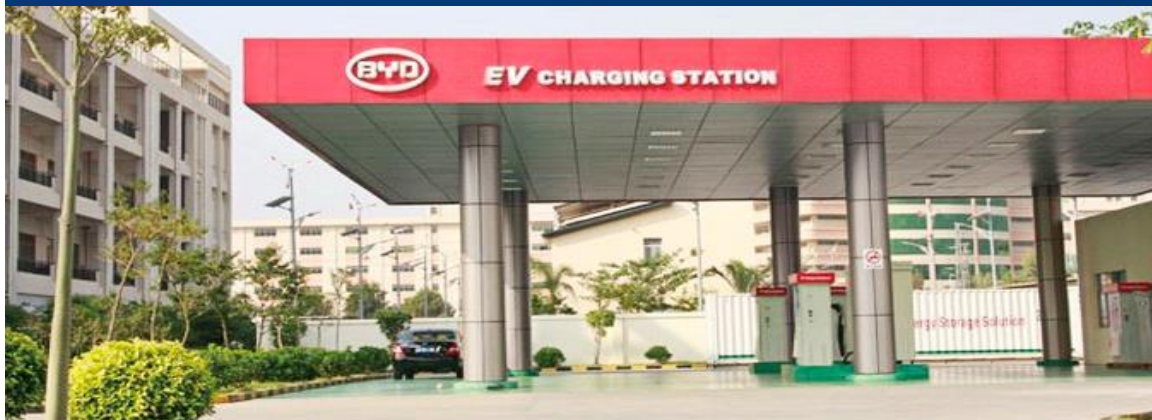


BYD is now contributing to energy conservation and emissions reduction and the “carbon neutrality” vision worldwide

Source: <https://ourspanishadventures.com/what-are-eco-stickers-for-driving-in-spain-and-how-do-you-get-one/>, Council of the EU (Press release), The Guardian

3. Accelerated Growth of NEV Infrastructure

Charging Infrastructure



- Domestic charging stations increased by **63200** units
- Public charging piles: increased by **89.3%** YOY
- Private charging piles: increased by **15.9%** YOY

China's Support

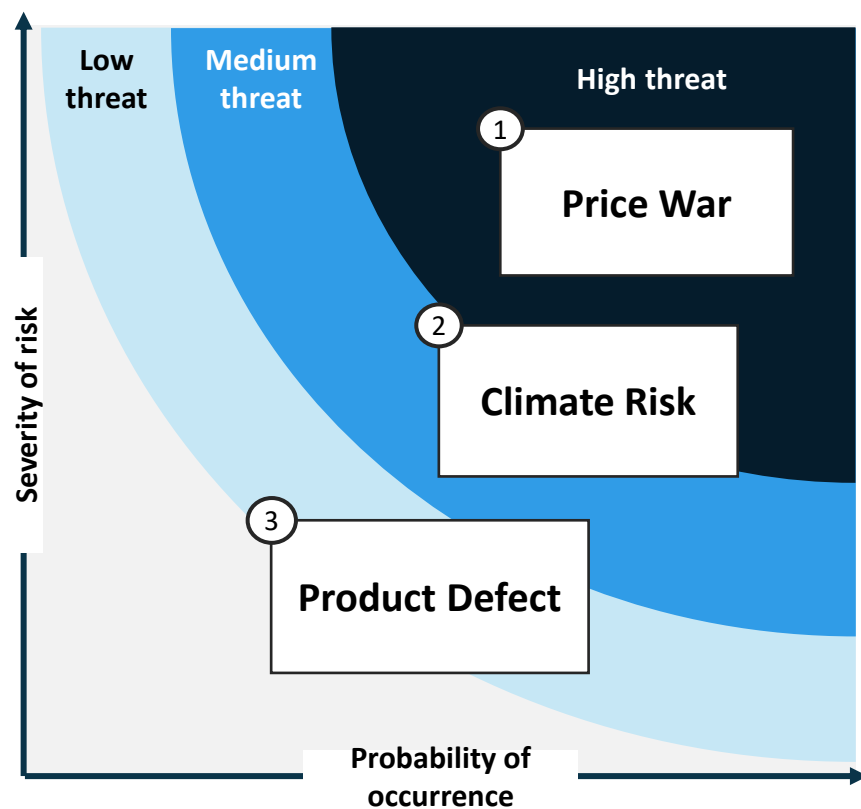


- During China's **'Two Sessions'**
- Highlighted the importance to increase the availability of **faster, cheaper charging infrastructure**
- Support the growth of NEVs

Accelerate the construction of charging facilities creates a solid foundation for EV development to continue its strong growth momentum

Source: <https://new.qq.com/rain/a/20230412A0AKEV00>, SCMP

Risk ranking



Risks Overview

1 Price War between fuel and new energy vehicles in China

- Price cut → Loss in profit margins
- Harm the long-term viability of BYD

2 BYD's MSCI Implied Temperature Rise = 3.1°C

- Misaligned with global climate goals
- **Reputational risk:** Damage brand image → Susceptible to greenwashing

3 High product recall rates for safety and health reasons (3.36% in 2022)

- Increase the amount of waste disposal
- Tarnish BYD's reputation and customers' loyalty → further lower sales

Mitigation

1. Cheaper EV battery materials
2. Government support

1. Signed **Zero-emission** Agreements
2. **Halt fossil fuel vehicle** production
3. Invest in R&D that is **sustainability & abatement oriented** technology

1. Strong **recall** system and **quality management** system with entrusted inspector
2. Replace battery packs for free to **eliminate potential safety hazards**

Source: BYD Annual Report 2022, MSCI Rating & Climate Search Tools, Yahoo Finance

VALUATION METHODOLOGY

We value the company using **Sum Of The Parts (SOTP)** approach by **separating BYD's main business and its equity stake in BYD Electronics**

Valuation to BYD's Main Business



P/E Valuation

Determining BYD's value by using **multiples and ratios**



Valuation to BYD's Stake in BYD Electronics



Proportion Method

Estimating the value based on the **forecasted market capitalization** of BYD Electronics and its proportion of stake owned by BYD

Key Assumption and Projection

Revenue Assumptions on Different Business Segments



Automobiles
+49%



Mobile handset components
+22%

Expenses Assumptions



R&D
+98%



Selling
+95%



Tax
15%

Valuation with Forward P/E	2023E
Revenue (CNYmn)	605023.85
Automobiles and related products sales revenue (CNYmn)	483807.81
Mobile handset components, assembly service and other products sales revenue (CNYmn)	121216.04
COGS (CNYmn)	481987.92
Gross Profit (CNYmn)	123035.93
R&D Expenses (CNY mn)	-36935.82
Selling, General & Admin Expenses (CNYmn)	-48882.69
Other Expenses (CNYmn)	-9494.16
Operating profit (CNYmn)	27723.26
Non-operating income (CNYmn)	779.92
Non-operating expenses (CNYmn)	-1899
Total profit (CNYmn)	26604.18
Income tax expenses (CNYmn)	-4158.489
Net Profit (CNYmn)	22445.691
Number of Shares Outstanding	2,907,928,000
EPS	7.718791868
P/E	30.44517899
Cur/Fwd	1.267179993
Target Price	297.7872983
Target Market Cap	8.65944E+11

Derive the implied Mkt Cap

Source: Bloomberg, BYD Annual Report, Team Analysis

Target Price



Valuation from BYD Electronic (International) Company Limited (0285.HK)

Percentage Owned by BYD Company Ltd (1211.HK)	34.24%
Average Target Price (HKD)	24.94
Number of ordinary shares issued	2,253,204,500
Market Capitalization (HKD)	56194920230
BYD's stake in BYD Electronic (International) Company Limited	19241140687

Valuation with P/E

Target Mkt Cap from BYD (HKD)	8.65944E+11
Target Mkt Cap from BYD Electronic (HKD)	19241140687
Total Mkt Cap(HKD)	8.85185E+11
Total Number of Shares Outstanding	2,907,928,000
Target Price Per Share (HKD)	304.4040855
Upside	29.53%

Key Takeaways

- We add the implied Mkt Cap to BYD' stake in BYD Electronics to derive our target price
- P/E ratios are used for valuation as the company is matured to generate profit

Our predicted price under SOTP approach is 304 (in HKD)

Source: Bloomberg, BYD Annual Report, Team Analysis, Consensus Estimate

Peer Comparison shows the financial edge of BYD

Company Name	Peer Comparison					
	Revenue (CNYmn)	Net Income (CNYmn)	Trailing P/E	P/S	Beta (5Y Monthly)	Gross Profit Margin
BYD Company Ltd (1211.HK)	424,060.64	16,622.45	34.18	1.34	0.66	17.04%
Changan (000625.SZ)	121,252.86	7,848.09	16.32	0.27	0.89	20.49%
Great Wall Motor (2333.HK)	137,339.99	4,834.35	9.87	0.59	1.27	19.37%
Geely (0175.HK)	147,964.65	2,150.47	19.77	0.68	1.21	14.12%
GAC Motor (2238.HK)	110,006.44	7,982.93	6.04	0.44	0.44	4.05%
SAIC Motor Corporation Limited (600104.SS)	744,062.90	9,714.70	12.26	0.22	-	11.79%
Average	280,781.24	8,192.16	16.41	0.59	0.89	14.48%
Median	142,652.32	7,915.51	14.29	0.52	0.89	15.58%

P/E

34.18

BYD has a higher historical PE multiple compared with its peer (**16.41**)

rendering **higher growth expectations** from the market

P/S

1.34

The 1.34x PS multiple indicates BYD is at a **fast-growing stage**

investors bid up the price in expectation of **future sales growth**

Beta

0.66

BYD has a **lower** historical beta (0.66) compared to its peer **0.89**

implying a **lower historical volatility**

Gross Profit Margin

17.04%

BYD enjoys a **higher gross profit margin** compared to its peers **14.48%**

demonstrating **outstanding cost control and booming revenue**

Source: Bloomberg, BYD Annual Report, Team Analysis, Yahoo Finance

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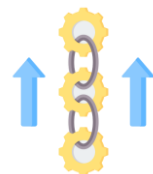
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- **Product** recall concern