Asia Insight SparX

Environmental, Social and Governance

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DBS Group Research . Equity

22 June 2021

Moving towards sustainable mobility

- **Global automakers are at the front of the race to integrate climate-related issues into their business strategies; sustainable investing rewards EV automobile companies with higher valuation multiples and easier access to the green bond market**
- **Chinese automakers are stepping up to improve their sustainable mobility initiatives and climate-related financial disclosures**
- **The global EV industry is expected to require new investments of US$200-300bn during 2021-2025 to support rising vehicle electrification, and about half will be in China. By 2040, China is expected to achieve c.20m EV sales, representing c.40% of global sales**
- **BYD (1211 HK), Guangzhou Auto (GAC; 2238 HK) and Great Wall Motor (GWM; 2333 HK) stand out among Chinese peers as EV market leader and improving climate-related disclosure on mid-term EV development and sales ratios**

HSI: 28,489

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Recommendation & valuation

Company	Price HK$	Target Price HK$	Recom	Mkt Cap US$m	PE 21F x
BYD Company 1211 HK	232.60	280.00	BUY	99,758	107.8
Great Wall Motor 2333 HK	24.60	31.30	BUY	51,757	21.6
Guangzhou Automobile 2238 HK	6.94	9.80	BUY	16,186	6.9

Source: Thomson Reuters, DBS Bank (Hong Kong) Limited ("DBS HK")

Based on closing prices as at 21 Jun 2021

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Table of Contents

Investment summary

The aim of this environmental, social and governance (ESG) report (third series of DBS's Climate Change report) is to study the impact of climate related issues on the global automobile industry and its readiness to transit to a low carbon emission environment. We have studied 16 automakers across Asia (China, Korea, and Japan), Europe and the US to analyse whether the Chinese automakers are ready to transit to low carbon or zero emissions mobility compared to global peers.

Governments across these regions have prioritised green mobility as an important goal. By and large, some of the developed nations have even set deadlines to ban fossil-fuel vehicle usage/sales by 2025-2030.

In Europe, automakers are required to meet high CO2 emission standards after the implementation of the World Harmonised Light Vehicle Test Procedure (WLTP), which supposedly more accurately measures vehicle CO2 emissions. This year, the EU Commission has set a target at 95g/km CO2 emissions and more reductions are expected in the coming years. In China, the government has set new energy vehicle credit ratios and the corporate average fuel consumption (CAFC) standard under the dual credit system to pave the way to carbon neutrality by 2060. To reduce CO2 emissions, the Chinese government has come up with a long-term development plan (2021-2035) and set a new energy vehicle (NEV) sales-to-total passenger car sales ratio at approximately 20% by 2025.

As global decarbonisation races ahead, automakers are accelerating their vehicle electrification pace in the next five years and we estimate industry players need to invest some US$200-300bn from 2021-2025 to develop the EV ecosystem to journey to a low carbon environment. We anticipate more automakers to tap the green bond market to finance their EV projects as well as demonstrate their commitment to invest in clean transport and EVs. The auto green bond market is relatively young but is expected to flourish in the coming years. Several global automakers have tapped the green bond market to fund their EV projects, including Daimler (1bn euros), Volkswagen (2bn euros), Volvo Car (500m euros), and Hyundai/Kia (US$1bn). Governments can also develop a financing framework which is consistent with the pathway towards achieving a low-GHG (greenhouse gas) emissions transport sector.

Against this backdrop, we have analysed the major automakers' (global and Chinese automobile companies) transition plans and scope on climate related financial disclosures in determining their transition risk exposure. In our analysis, we have applied research methodology from Transition Pathway Initiative (TPI), which covers carbon performance and management quality. The global and Chinese automakers have performed relatively well on carbon intensity measurement, with most meeting the CO2 emission reduction targets in the respective markets in which they operate. Those with high exposure to the EV market have the best carbon intensity measurement. The overall strong achievement was also attributable to various governments' stringent CO2 emissions policy and incentives.

Using the 19 indicators under TPI's management quality framework to map these auto companies' management according to five levels of measurement (Level 0 being the lowest while Level 4 has the highest commitment to climate-related issues), we found that the results were rather diverse.

The global automakers have high ratings on the management quality framework (Level 3 and above) as they have made green mobility an integral part of their business strategy. They have committed to the Paris Agreement Pledge and made comprehensive disclosures of their historical CO2 emission data, long-term plans on CO2 emissions reduction targets and others according to the guidelines set by the Task Force on Climate-Related Financial Disclosure (TCFD)

on information related to climate change. They have also identified potential risks and opportunities when considering such green practices.

On the other hand, the Chinese automakers are centred primarily around Level 1 of the management quality framework, as they are in the early stages of adopting the new green practices. Most Chinese automakers disclose scope 1 & 2 emissions or total green-house gas emissions, but trail in complying with TCFD recommendations on climate-related issues, detailing their CO2 emissions reduction targets, and analysing the opportunities and risks on their operations.

Interestingly, a third group of automobile companies which are involved in EV production and sales, such as Tesla, BYD and the new generation of EV makers in China have relatively low scores under the TPI management quality measurement. Perhaps these companies are perceived as strong contenders in low carbon transportation and hence their transition risk is low compared to the traditional automakers. Going forward, EVs will only become cleaner as electricity generation to charge EVs become greener over time.

In summary, mobility and sustainability can co-exist. Automobile companies' transition to low carbon transportation in reducing CO2 emissions should cover the entire lifecycle of the vehicles (supply chain, production, use phase). Many developed nations target to achieve carbon neutrality by 2050 and China by 2060. To achieve this dream, green mobility forms part of this journey.

Transition picks

BYD has the lowest transition risk among the Chinese automobile groups given its high exposure to the EV market. It has chalked up NEV credits of more than 3m points over the past five years, one of the highest in the industry. The company has established a strong EV eco-system especially in critical components and parts such as EV battery and automobile chips. But the company needs to improve on its financial disclosure according based on TCDF guidelines on the long-term integration of climate-related issues into its business strategy.

Among the traditional Chinese automakers, Guangzhou Auto Group Co (GAC) has made remarkable improvements on environmental disclosure. The "Green Low-carbon for Achieving Sustainable Success" initiative was launched to steer the Group to achieve its green goals, including achieving full electrification of its self-brand new vehicle models and EVs to account for c.20% of group vehicle sales by 2025.

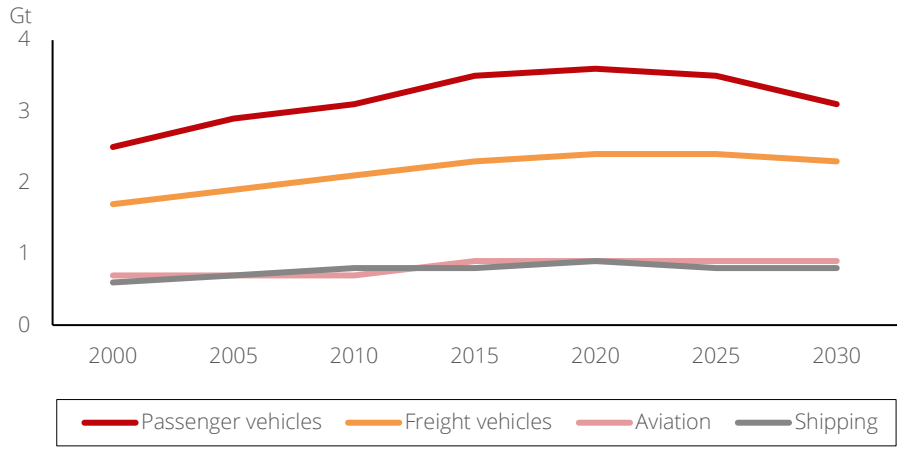
Great Wall Motor (GWM) launched the Green Intelligent Future Technology (GIFT) last year, aiming to uphold the low carbon environment across the whole value chain and plans to invest heavily into the development of green and clean energy. The company intends to spend Rmb30n (approximately US$4.6bn) in the next five years to build a global R&D system. GWM has improved its corporate average fuel consumption level by c.22% from 2016-2020 through new technology development.

Overview: Global climate-related issues impacting mobility

A) Climate change is a challenge for the global automobile industry

Global transport emissions increased marginally in 2019 (vs around 2% annually since 2000), due to vehicle fuel efficiency improvements and higher adoption of electrification. However, transportation accounted for 24% of direct CO2 emissions in 2019, of which road vehicles (cars, trucks, buses, etc) took up around three-quarters of transport CO2 emissions, according to IEA release. Road transport CO2 emissions are projected to peak by 2025 before trending down as electrification rate rises.

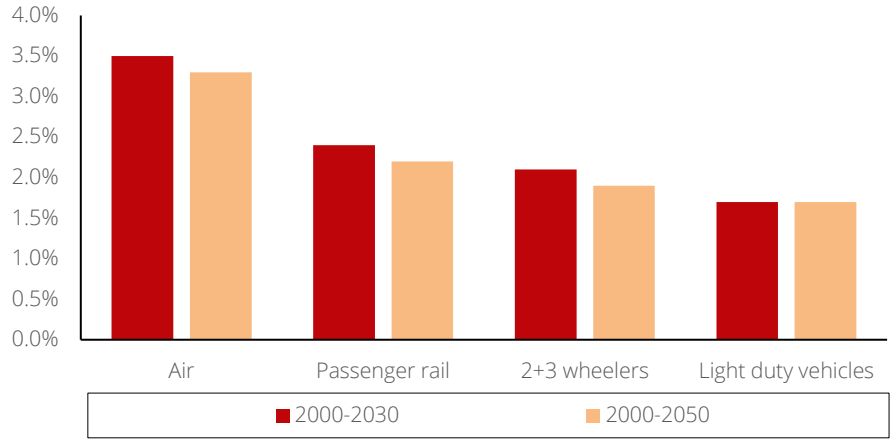
Transport sector CO2 emissions by mode



Source: IEA

Transport demand is projected to grow at 2-3% per annum across the various modes through 2050. Given that direct CO2 emissions in the transport sector is projected to rise, there is urgent need for the global automobile industry to invest in new vehicle technology to transit towards a decarbonisation path.

Transportation (by mode) - long-term growth projections

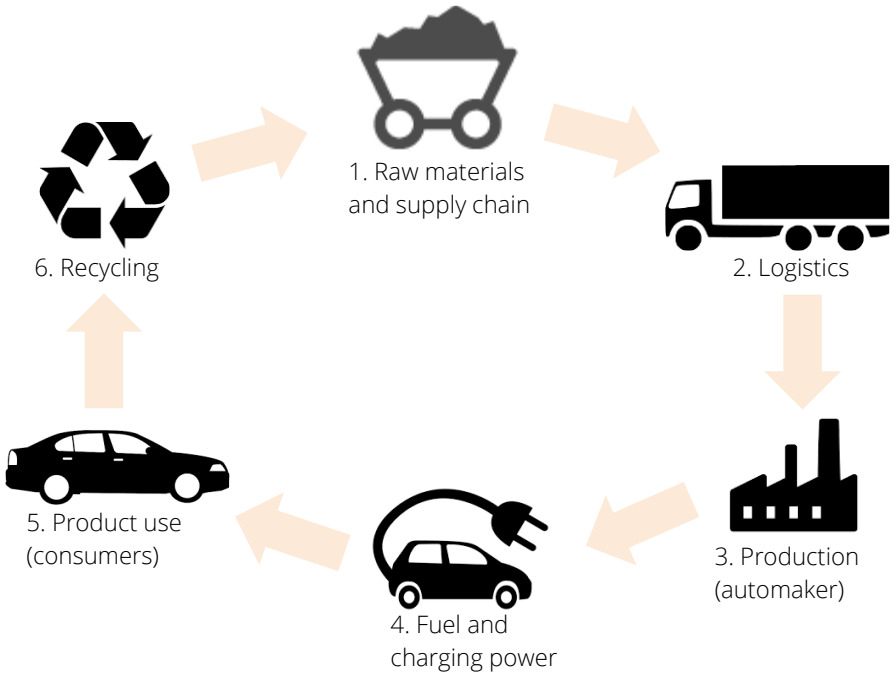


Source: World Business Council for Sustainable Development, Mobility 2030: Meeting the Challenges to Sustainability, 2004

Under this backdrop, automobile companies are facing growing pressure to address climate-change across the entire value chain, from procurement of raw materials to production, distribution to operation of vehicles, energy consumption and finally recycling of end of life vehicles. There is rising urgency to reduce emissions through new technologies and innovations, renewable energy use and other measures. Automobile companies need to understand the risks and opportunities related to low-carbon transition and integrate these into their business strategy. Companies which are not prepared to transit along the decarbonisation path could face two major challenges: 1) transition risks (which

result from stricter policies and regulations, higher technology investments, heightened market competition and reputation damages); and 2) physical risks (such as extreme weather conditions that may affect the supply chain). At the same time, climate change could also heighten changes in customer behaviour and expectations, leading to greater demand for energy efficient mobility.

CO2 emissions along the automobile lifecycle



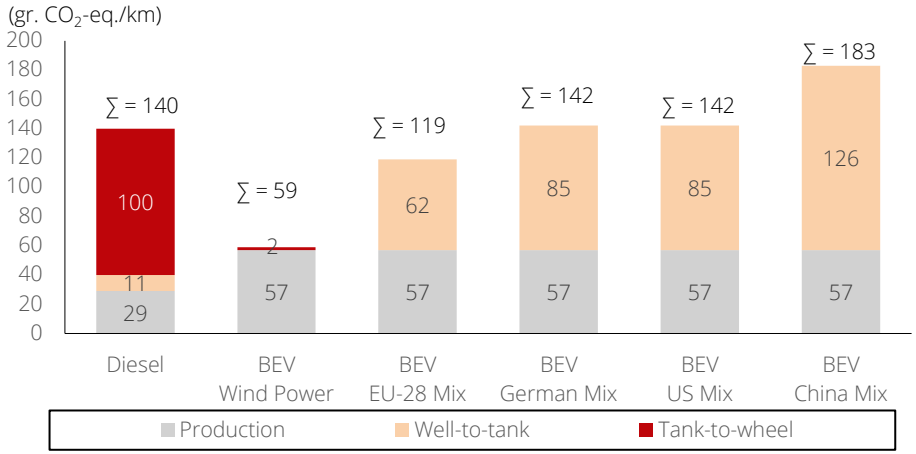
Source: DBS HK

Currently, automobiles still depend largely on fossil fuel for energy, which has been linked to climate change due the emission of greenhouse gases (GHG).

Higher adoption of electric vehicles (EV) can contribute to the energy transition in the automotive industry by reducing the use of fossil fuel for transport needs.

Depending on the power mix, the amount of CO2 emissions from a battery electric car using wind power could be approximately 40% that of a diesel car during the vehicle lifecycle as shown in the chart below, based on estimates from Volkswagen Golf model.

Power mix impact on CO2 emissions from a Golf model



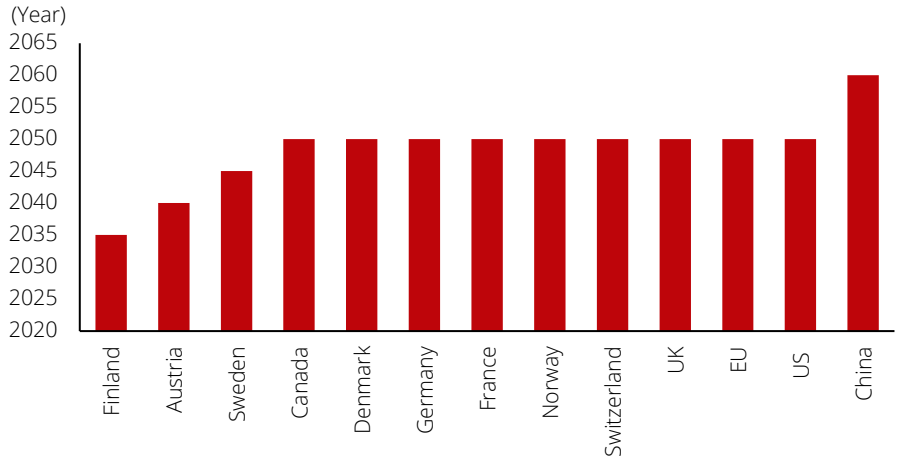
Source: Volkswagen

B) Transition related risks faced by automobile companies

More stringent policy on transport CO2 emissions reduction. Governments around the world are placing great emphasis on climate change and this has led to the birth of the Paris Agreement in 2015. The goal is to limit global warming to well below 2-degrees Celsius, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. As such, most of the developed countries have set to

achieve carbon neutrality by 2050, and China by 2060 as shown in the chart. To achieve their carbon neutral goals, Governments are rolling out stringent CO2 emissions regulations to cut GHG emissions from the transport sector, and automobile industry players are expected to adhere to these new regulations. For example, the European Union implemented the 95g/km CO2 emissions in 2021 (vs about 110g/km in 2020), forcing automobile companies in Europe to accelerate their vehicle decarbonisation pace.

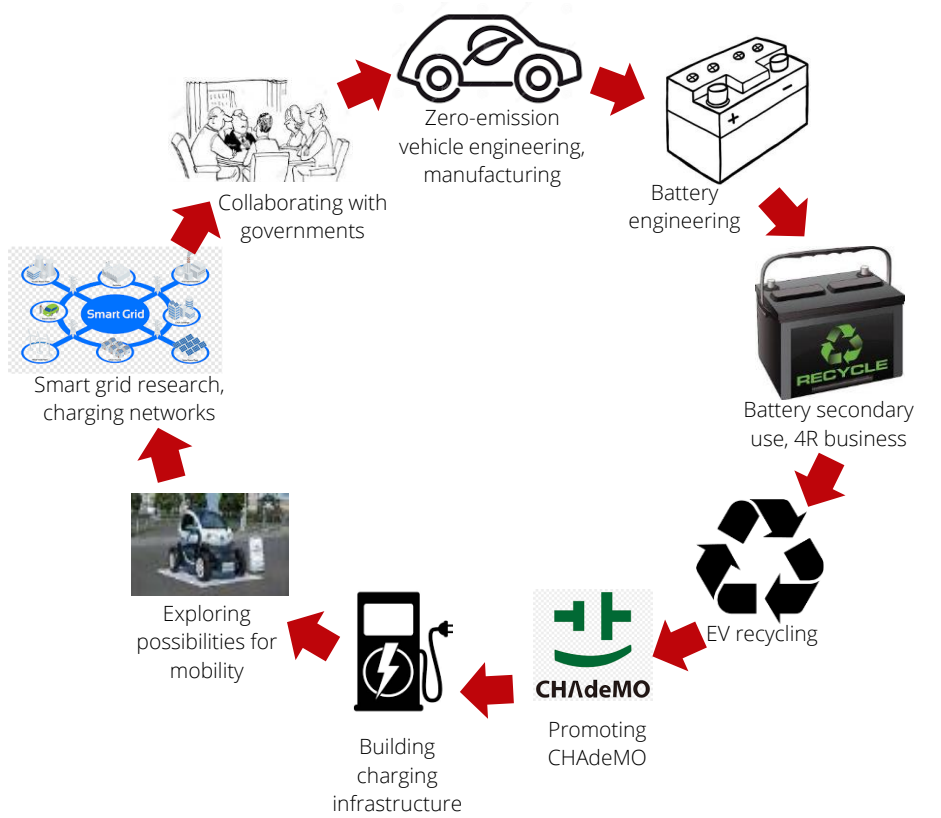
Carbon neutrality targets by region



Source: Climate Home

Technology advancement and consumer preference shift may affect vehicle sales. To reach a low-carbon economy goal, widespread use of electric vehicles is an effective way towards a sustainable society. Not only manufacturing cars, automobile companies would need to participate in a comprehensive range of green initiatives, including development of electric car batteries, recycling, and vehicle charging infrastructure to move into the low carbon economy. This means electrification is the answer, and governments are expected to implement various strategies to influence shift in consumer car buying habits to achieve CO2 emissions reduction targets in the long-term. For instance, China has made great strides in vehicle electrification over the last decade through various policies and incentives to encourage electric vehicle adoption.

Moving towards a zero-emission society

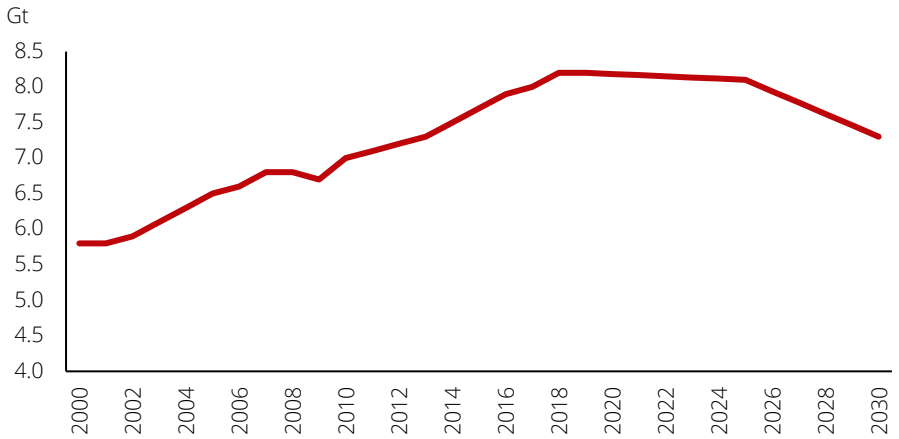


Source: DBS HK

According to International Energy Agency (IEA) estimates, a more significant pace of CO2 emissions reduction is expected to take place post 2025. By 2030, total direct CO2 emissions is projected to decline by about 10% from 2025 levels to approximately 7.3 GT, attributable to rising vehicle decarbonisation.

Therefore, automobile companies that are not prepared for a transition to vehicle electrification could potentially face various challenges such as relevance and their market positioning.

Transport sector - direct CO2 emissions projections (2000-2030)

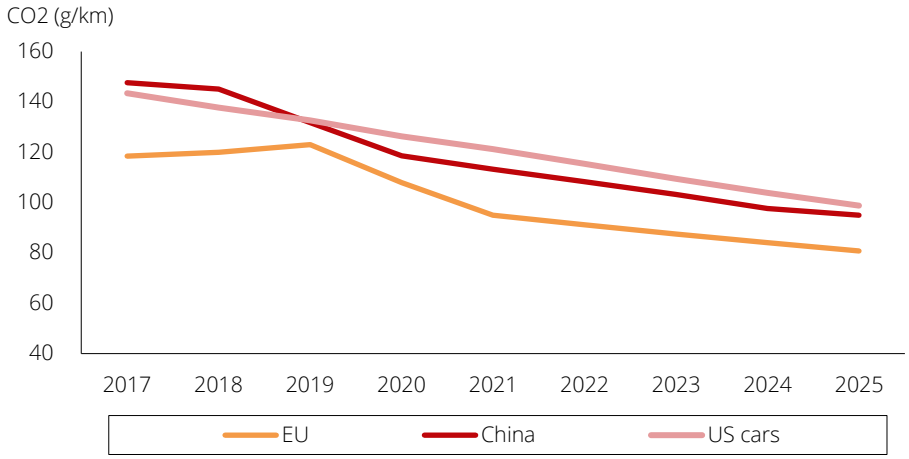


Source: IEA

NEDC measurement to track CO2 emissions reduction. We have applied the New European Driving Cycle (NEDC) as the standard measurement of vehicle CO2 emissions across all markets through 2025 for comparison purpose, as illustrated in the chart below.

Based on the target CO2 emissions reductions set by governments across the major automobile markets or implied fuel-efficient vehicle and NEV mix, we arrived at the conclusion that NEDC is projected to decline by 4-6% per annum through 2025 compared to 2020. Hence, there is growing need for automobile companies to incorporate these climate related issues in steering their business strategies to meet the new challenges in the different markets in which they operate. In the EU, the stringent CO2 emissions targets means automobile companies have to accelerate their EV development in the coming years.

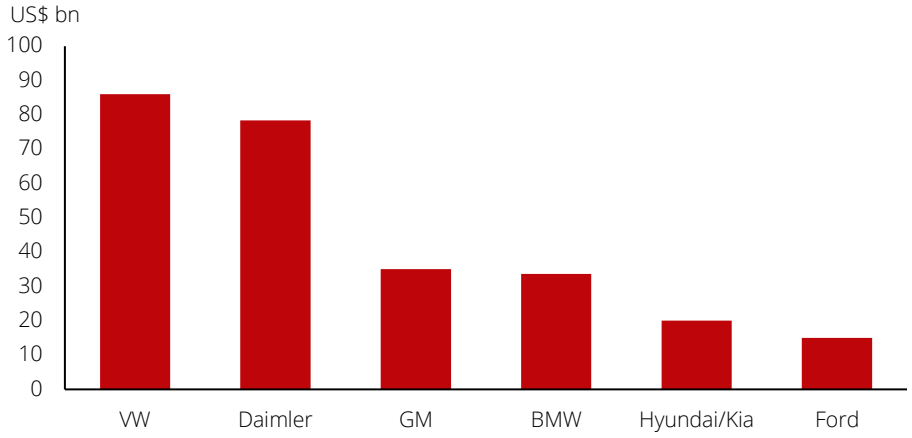
NEDC comparison and future trends



Source: US -US Environmental Protection Agency; DBS HK

Global automakers are increasing their investments in vehicle electrification to meet the rising challenges from the climate-related issues. Judging from the major automobile companies' budgets on EV developments, we estimate the EV industry will attract US$200-300bn worth of new investments through 2025.

Major automobile companies' investments into EV sector



Source: Company

Transition readiness measured by carbon performance and management quality

Sustainable mobility readiness. Since the automobile sector is highly dependent on ecosystem services for their business growth, the impact on the environment is substantial. We have analysed 16 automobile manufacturers across various brands (American, European, Chinese, Japanese and Korean) to study their transition strategies under the climate-change environment.

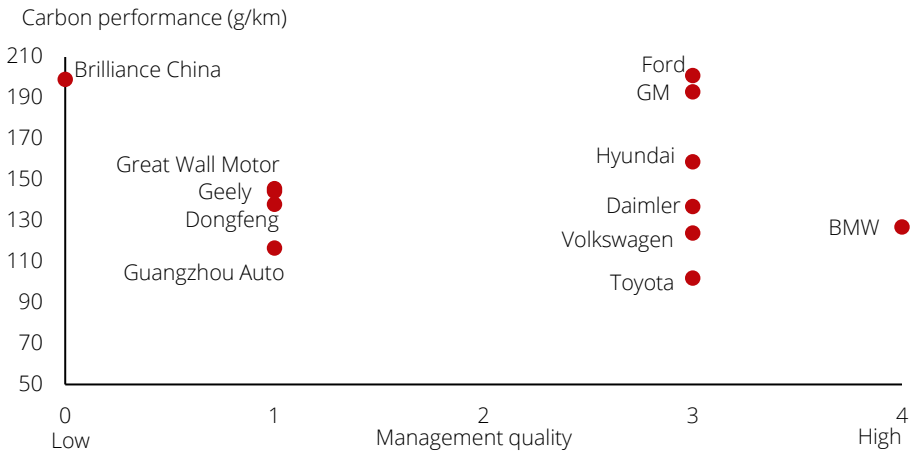
We conducted an assessment on carbon performance and management quality with respect to climate-related financial disclosure on our coverage. The two parameters used for our analysis are based on research methodology from Transition Pathway Initiative (TPI) and we also have included the conclusions of the global automakers based on TPI's assessments for comparison purpose.

We looked at their past carbon performance and future plans on CO2 emissions reduction targets to analyse how well the Chinese automobile companies are integrating climate-related issues into their business strategy to meet green mobility. Our aim is to assess the readiness of Chinese automakers' transition path to achieve sustainable mobility.

CO2 emissions measurement. To measure these automobile manufacturers carbon intensity, we have used the automobile company's passenger car fleet average NEDC data as a standard comparison yardstick across these markets. NEDC measures CO2 emissions and fuel consumption from a vehicle tailpipe in a laboratory setting. While Europe has adopted the "Worldwide Harmonized Light Duty Vehicles Test Procedures" (WLTP) among its member states, the NEDC is still being used concurrently. The WLTP is said to capture more accurate CO2 emissions and fuel consumption values, as it uses test data throughout the world and the test cycle supposedly shows a more realistic reflection of real-world driving behaviour, factoring in the weight of the vehicle, aerodynamics and rolling resistance, etc. Since September 1, 2018, all new vehicles are tested in accordance with WLTP within the EU.

Management quality criteria. To compare each manufacturer's management quality in handling climate related issues (based on 19 questions by TPI on management quality framework), we have looked at the companies' strategies in vehicle electrification and CO2 reduction targets and climate-related financial disclosure according to the Task Force on Climate-related Financial Disclosure (TCFD) guidelines. For the detailed TCFD criteria used for comparison, please refer to appendix I & II. Generally, a more comprehensive TCFD plan implies the automobile company has considered the importance of green mobility, to integrate climate-related issues into their business strategy and set long-term quantitative targets on reducing GHG emissions. The companies also tend to align their senior executives' remuneration to climate change performance. The chart below summarises the management strategy and carbon performance of various global and Chinese automakers.

Management strategy and carbon performance evaluation



Source: Companies; DBS (HK); TPI

Note: Based on TPI 2019 report for comparison purpose

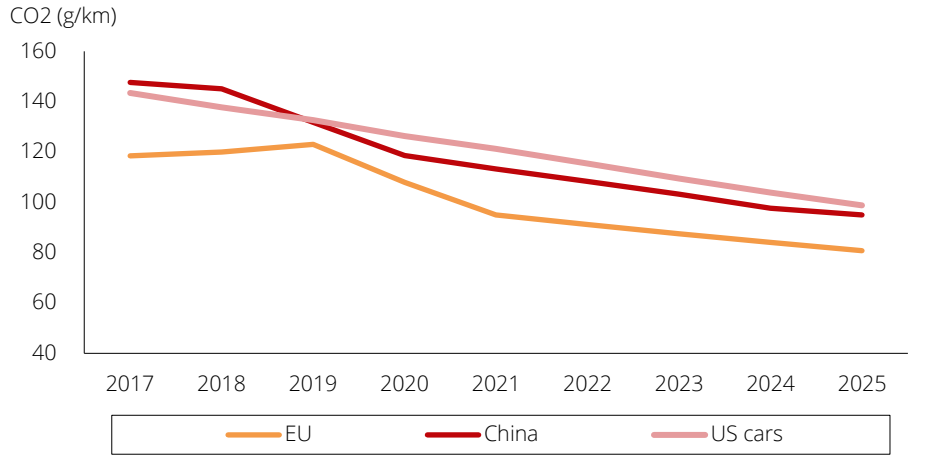
A) EU leading in carbon performance

EU has stringent policy on CO2 emissions. Based on past NEDC data, EU's carbon performances from passenger vehicle fleet is better compared to other markets. Since the NEDC standard was last updated in 1997, EU automobile companies have been improving their vehicle exhaust gas emission technology, which is helping the EU to take a lead in the vehicle decarbonisation path.

China has set stringent fuel consumption policy to curb carbon emissions. We believe China's improvement was largely due to the Chinese government's stringent requirement on new energy vehicle (NEV) sales ratios as well as high fuel-efficient vehicle standards after the implementation of the dual-credit system in 2018.

Going into 2025, the gap between China and the EU is expected to narrow, attributable to the recent 2021-2035 NEV long-term development plans announced by the Chinese government to push the vehicle electrification rate higher, to account for 20% of all new passenger vehicle sales by 2025.

NEDC comparison



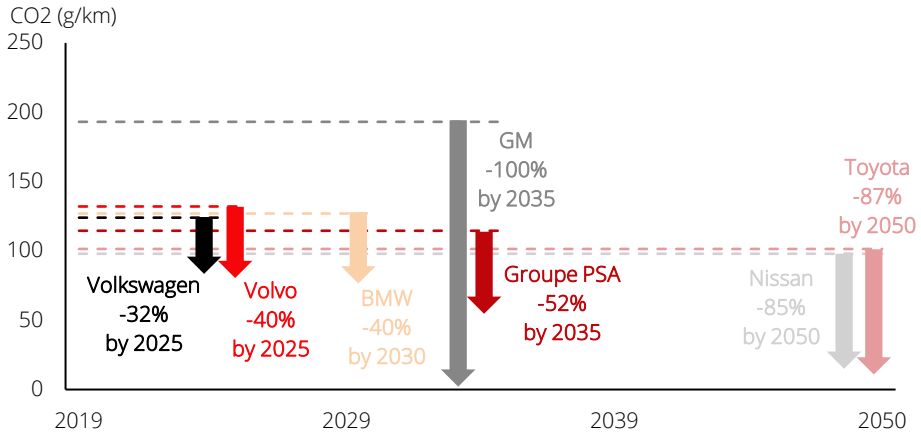
Source: US - US Environmental Protection Agency, MIIT, ACEA; DBS HK

B) Global automakers show better management quality and have incorporated decarbonisation strategy into their business plans

Global automobile companies' strong commitment to climate related issues. In terms of management quality score on climate change, many global automobile companies (e.g. Volkswagen, BMW AG, Daimler, General Motors, Toyota, Hyundai Motor etc) have set out clear CO2 emissions reduction targets as illustrated in the chart below (please refer to the Appendix IV for the full details). These global automakers have comprehensive climate-related transition strategies given their significant presence in many overseas markets like the US and Europe and

China.EU CO2 emissions standard of new vehicle fleet is among the strictest and most ambitious worldwide. In fact, global automobile companies like BMW have carried out scenario analysis of impact of climate related issues on their business and disclosed climate related risks and opportunities in their long-term strategy, including measures to address the environmental risks during the transition phase, one of which is vehicle electrification targets.

Global automobile companies' decarbonisation strategy



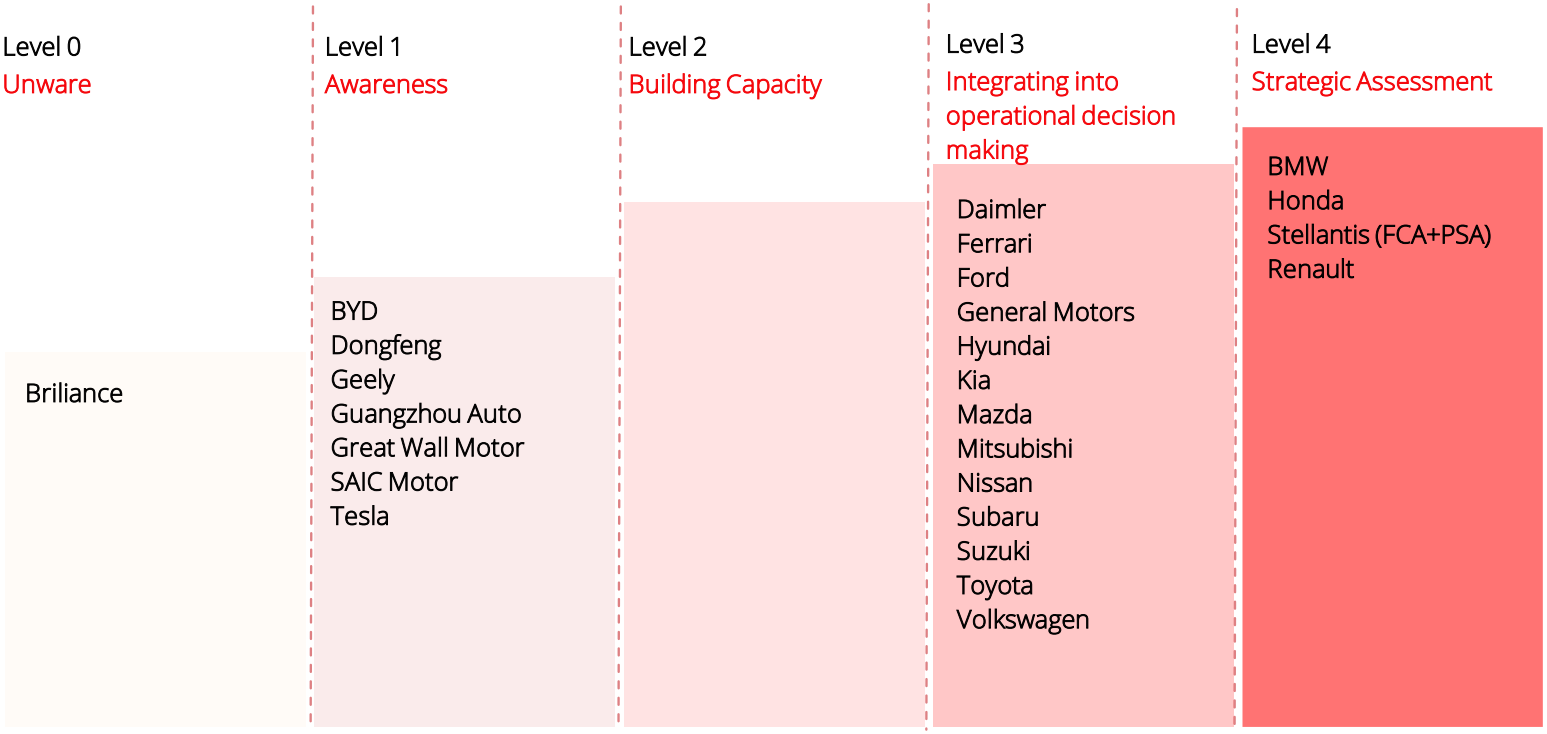
Source: Company disclosures

Note: Groupe PSA has merged with Fiat Chrysler Auto

Room for Chinese automobile companies to make improvements on management quality. On the other hand, most of the Chinese automobile companies are at the lower quadrant, i.e. they recognise that climate change has an impact on their business but have yet to set any long-term GHG emission reduction targets. While they have acknowledged that climate change is important to their business, they have yet to reveal their climate-related policies and performance or address environmental issues in their business strategy, including potential risks and opportunities and financial disclosures. Therefore, under TPI management quality framework assessment, most Chinese automobile companies fall under Level 1 compared to the global automakers which are generally in Level 3-4 under the TCDF guidelines.

However, we have noticed certain China automobile companies such as Guangzhou Auto Group and Great Wall Motor has made efforts to disclose slightly more details on its future green vehicle strategy by setting broad mid-term targets on vehicle electrification rates, NEV sales ratios and investment budget. However, as climate change gains worldwide attention and China targets to achieve carbon neutrality by 2060, we believe more Chinese automobile companies will start considering the importance of integrating their business strategy decision with more disclosures on decarbonisation plans in the coming years.

Automakers' management quality assessment



Source: DBS HK; TPI

Factors that could accelerate sustainable mobility

While sustainable mobility is gaining importance and there is increasing urgency to address climate change, there are several factors that could lift the pace towards sustainable mobility as listed below.

A) Government financial support and directives

Favourable policy to support EV market development. To achieve vehicle decarbonisation goals, governments would need to roll out supportive policies specifically tailored to the automobile industry for zero-emission mobility to become a reality, and to encourage higher adoption of EVs.

The Chinese government believes that to accelerate vehicle electrification, long-term government support is required, and such measures may involve large investments like subsidising EV car consumption and establishing the charging infrastructure (charging points and re-fuelling stations) to speed up vehicle electrification. Therefore, a sustainable and economically viable scheme is required to incentivise both car buyers and automakers.

Based on market estimates, the Chinese government has spent over US$10bn in NEV subsidies and financial incentives in the last ten years to encourage NEV sales. The country is looking to shift its focus from subsidising electric car buyers to supporting the charging network operators. The 2021-2035 long-term NEV plan will further steer the industry towards higher NEV adoption rates.

China NEV subsidy scheme (2021)

Car Type	Private-owned (Rmb 000)	Public-owned (Rmb 000)
Pure EV subsidy	13.0-18.0	16.2-22.5
Plug-in hybrid subsidy	6.8	9
Electric coaches/buses (non-fast charge)	20.0-72.0	22.5-81.0
Electric coaches/buses (fast charge)	16.0-52.0	18.0-58.5
Plug-in hybrid coaches/buses	8-30.4	9.0-34.2
Electric trucks	14.4-40.0	18.0-49.5
Plug-in hybrid trucks	16.0-25.2	18.0-31.5

Source: Chinese Government

Many EU member states are also providing purchase incentives for electrically chargeable vehicles (ECV), and we have showed those with the highest amount of purchase incentives in the table below.

Top Europe countries with highest ECV purchase incentives

	Incentives	Tax benefits	
	Euros	Acqusition	Ownership
Romania	11,500	N	Y
Croatia	9,200	Y	Y
Germany	9,000	Y	Y
Poland	8,350	Y	N
Slovakia	8,000	Y	Y
Slovenia	7,500	Y	N
Hungary	7,350	Y	Y
France	7,000	Y	N
Greece	6,500	Y	Y
Italy	6,000	N	Y

Source: ACEA

In the US, California State has also approved incentives under the clean vehicle rebate project to encourage electric car purchases.

US California State and Federal Electric Vehicle incentive scheme

EV Type	Standard Rebate	Increased Rebate
Fuel cell	$4,500	$7,000
Battery electric	$2,000	$4,500
Pluy-in hybrid	$1,000	$3,500

Source: California Air Resources Board

B) Better infrastructure network

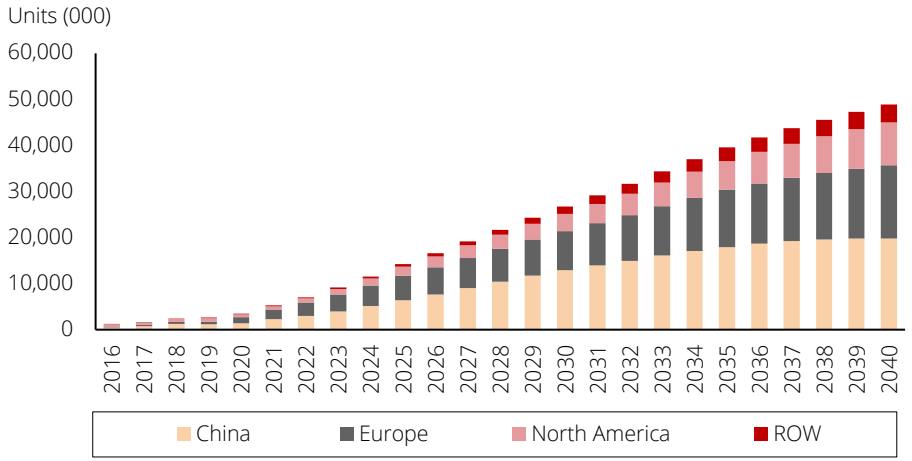
Infrastructure support is key to raise EV adoption. The lack of infrastructure is one of the key obstacles to lifting the EV adoption rate. For instance, there are about 200,000 charging points across the EU, and according to the European Commission estimates, some 2.8m ECV charging points will be needed by 2030, a 14-fold increase over 11 years. China has a large EV market, partly attributable to rapid installation of charging infrastructure networks. As of end March 2021, China has almost 1.8m units of charging piles, translating to approximately one charging pile to support three NEVs.

C) Consumer shift towards sustainable mobility

Global EV market sales projections. A shift in consumer buying preferences to EVs is a big step forward towards CO2 emissions reduction. According to IEA estimates, approximately 89% of total energy consumption within the transport sector is from the road mode. Hence, a higher adoption of EVs could help cut energy consumption, leading to lower CO2 emissions. We anticipate EV adoption would increase as consumers opt for sustainable mobility.

Hence, a comprehensive promotion plan covering financial incentives, charging infrastructure, and favourable policies (e.g. Beijing raised its NEV licence quota to encourage car buyers to opt for EVs) would help to drive a higher EV adoption rate. We estimate global EV market to grow at a CAGR of c.12% from 2021-2040 to approximately 49m units worldwide. By then, China and Europe are expected to be the two major EV markets in the world.

Global EV market annual sales projections



Source: ACEA; DBS HK; CAAM;

Consequences of non-compliance with emissions standards

Severe financial penalties. In recent years, several major non-compliance cases have erupted in the automobile industry, and they were fined by US officials under the Clean Air Act violations.

In 2017, Volkswagen AG pledged guilty to charges and agreed to pay some US$4.3bn in US penalties for its scheme to deliberately rig hundreds of thousands of US diesel vehicles to cheat on emissions tests. The incident had reportedly cost the company some US$33.3bn in fines, penalties, financial settlement and buyback of the affected vehicle fleet.

In 2019, Fiat Chrysler Automobiles (FCA) was ordered to pay some US$800m in fines and costs related to charges that it used illegal software to dupe emission tests, and that some of its diesel-powered vehicles had violated the clean air rules.

Last year, Daimler, parent of Mercedes Benz, had agreed to pay US$2.2bn to the US authorities to settle the class action brought by the US consumers to avoid lengthy court actions with respective legal and financial risks.

Carbon tax. Apart from penalties from regulatory agencies, automobile manufacturers may have to buy carbon credits to fulfill their carbon emissions reduction requirements.

In Europe, policy makers have set a penalty of 95 euros per gram of excess CO2 being emitted. Volkswagen could potentially be fined over 100m euros for missing EU carbon emissions reduction targets on its 2020 passenger car fleet. With the stricter 2021 CO2 emission standard set at 95g, major automakers could face an uphill task to meet the requirement. Market estimates suggest this could potentially result in billions of euros of fines for carmakers, ranging between 15bn and 20bn euros from missing CO2 emission targets for 2021.

Climate-related financial disclosures gaining importance

A) Implications of climate related financial disclosures

Market expects auto industry to follow TCFD guidelines. Financial markets have always placed accurate and timely financial disclosures as top priority in capital allocation decisions. As environmental issues and climate change are becoming crucial, financial markets are starting to place greater attention on climate-related disclosures. Automobile companies are expected to disclose the risk-return profile on climate-related issues, comprising both transition risks and physical risks related to transition to a low carbon economy as recommended by the Task Force on Climate-related Financial Disclosures (TCFD).

Global automakers have comprehensive climate-related financial disclosures compared to Chinese auto companies. The commitments from the automobile companies are huge to transit down the low carbon path, meeting stringent climate policies as well as to develop new vehicle technologies. However, any delay in response to climate-related issues could lead to transition risks, especially when various governments are implementing additional policies and regulations for a decarbonised society, increase in R&D efforts and changes in market demand or damage to corporate reputation, and physical risks such as an increase in abnormal weather and rising sea levels may lead to cost increases and decline in vehicle sales.

So far, the global automakers have crafted comprehensive climate related financial disclosures on their long-term EV development budget and scenario analysis, showing the potential impact of climate related issues on their business. And they are also prepared to spend billions of dollars to beef up their electrification and digitalisation plans in the medium-term. The table below shows examples of global automobile companies with strong disclosures in accordance with the TCFD guidelines.

Global automobile companies' climate-related financial disclosures

Company name	Decarbonisation path	Milestone
BMW AG	Company pledged to Paris Agreement. One architecture fits all powertrain derivatives from 2021. After 2025, will have a new BEV centric architecture. The rollout of the 5th generation BMW eDrive technology in BMW iX3 series. Recycling of battery cell under its "from cradle to grave" approach for electric car battery.	25 electrified models by 2023, including at 13 fully electric cars. Electrified cars roadmap for its European new vehicle fleet: 25% electrified by 2021; 33% electrified by 2025 and 50% electrified by 2030. Substantial CO2 reduction: By 2030, about 40% CO2 reduction per vehicle vs 2019 under the use phase; 80% substantial CO2 reduction per vehicle vs 2019 under the production phase

Source: Companies

Global automobile companies' climate-related financial disclosures (continued)

Company name	Decarbonisation path	Milestone
Daimler	Company pledged to Paris Agreement. Electric portfolio expansion: 2021 (>5 BEV & >20 PHEV); 2025 (>10 BEV & 25 PHEV); and 2030 (>20 BEV & <25 PHEV). By 2030, xEV share >50% with very high flexibility. Company has developed the EQ vehicle architecture platform to develop the new generation of battery electric vehicles.	Ambition 2039 on carbon reduction 2022: Carbon-neutral production globally 2030: Over 50% of EV share 2039: Carbon-neutral company Reduction in variants of combustion engines; 2025 reduced by 40% and by 2030 down by 70%
Volkswagen	Company pledged to Paris Agreement Planned to have 70 new BEV and 60 PHEV models by 2029. 2025: approximately 20% BEV share of group deliveries (up to 3m units). 2030: over 30% BEV share of group deliveries. 2030: 100% share of renewable energies (except China which is currently under evaluation). MEB vehicle architecture: The ID. Family will provide the net-climate neutral mobility choice to all customers. Volkswagen will supply MEB platform to Ford (modular electric toolkit (CV) under a US$10-20bn deal)	"Go to zero" transformation: Carbon-neutral by 2050 2025: reduce passenger car fleet total life-cycle carbon footprint by 30% vs 2015. 2020: reduce greenhouse gases emission at production facilities in Germany by 40% per vehicle produced vs 2010 baseline.

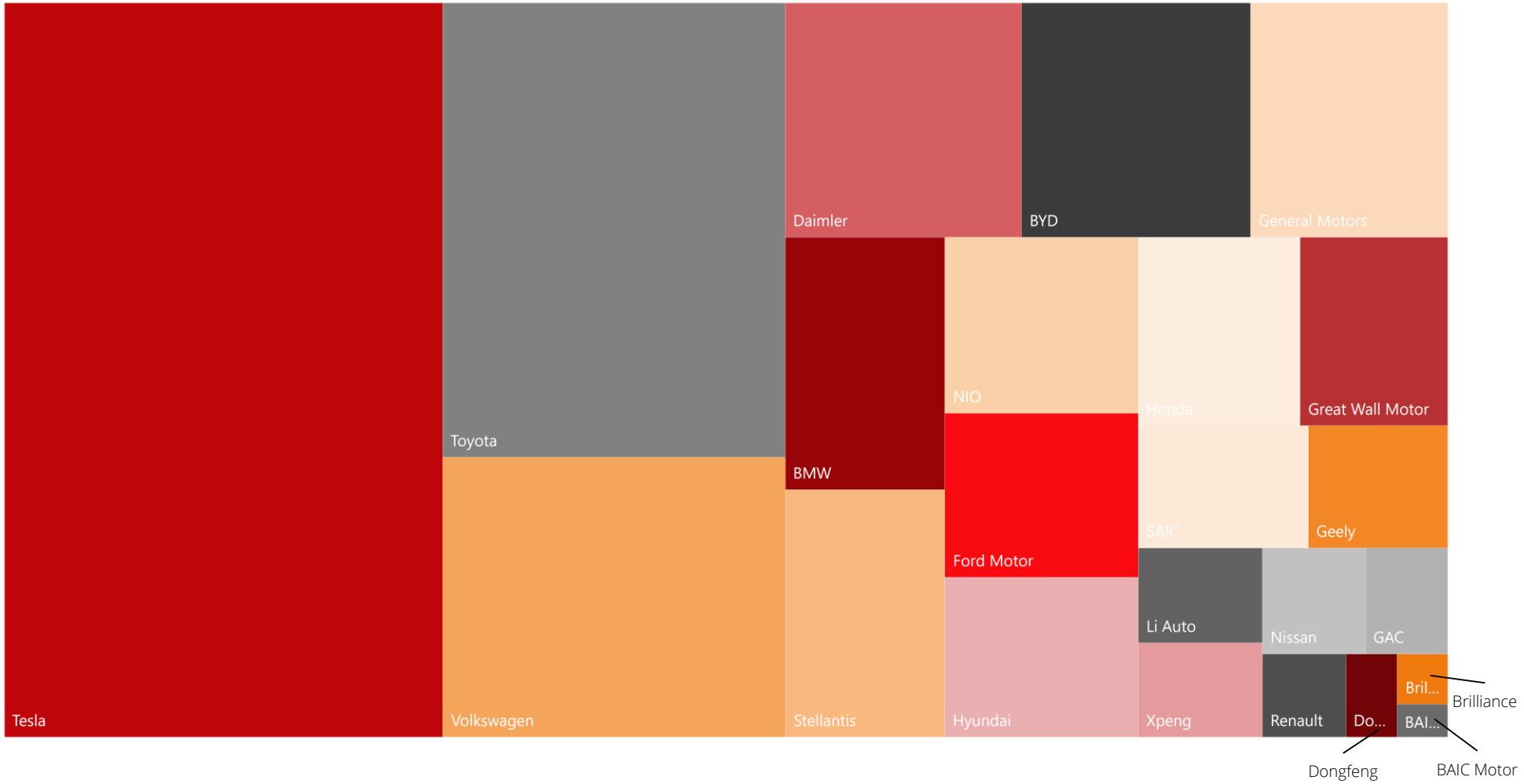
Source: Companies

On the other hand, almost all Chinese automakers have yet to follow TCFD guidelines on assessing the impact of climate change on their business, identifying the potential climate-related risks and opportunities and the impact on their business operations. Currently, majority of the Chinese automobile companies disclose environmental data related to emissions (scope 1 and 2), consumption of resources (like energy, water etc) and waste material handling.

B) Impact on market capitalisation

The following chart shows the market capitalisation of selected major automobile manufacturers. Due to the growing concerns of climate change, investors are shifting their portfolio towards companies with a strong EV market presence. Tesla's market capitalisation is about 2x larger than the world largest traditional car maker – Toyota. In fact, the market capitalisations of the Chinese EV players BYD, NIO, Li Auto, XPeng Auto also are larger than some of the global and Chinese automobile companies. This implies the investment market prefers automobile manufacturers with long-term visions to leverage on the potential shift in consumer car buying habits, whereby vehicle electrification becomes an important strategic business decision.

Market capitalisation by automakers



Source: Thomson Reuters

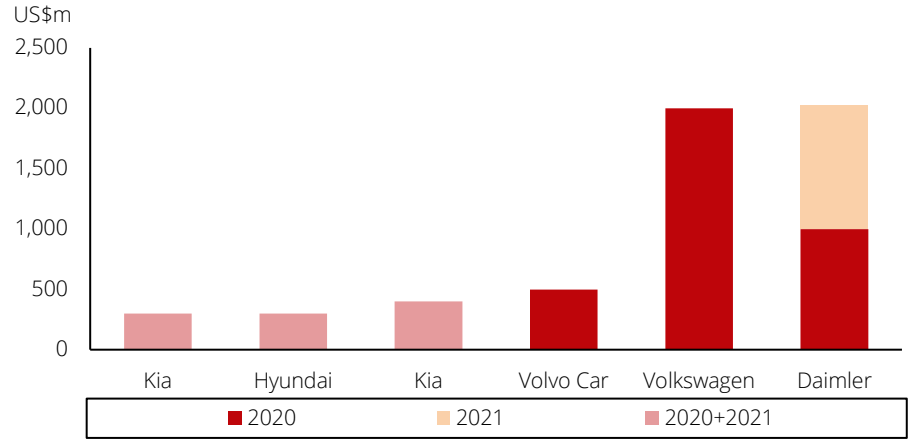
C) Access to the flourishing green financing market

Not only are investment markets backing green investing, financial markets are also transiting to support green industries and corporations, trending along a low carbon emission pathway. By using green financing tools such as green bonds, auto manufacturers can further demonstrate their commitment to invest in clean transport and EVs. Green bonds can be used to finance electric vehicle manufacturing, charging points rollout, and production and recycling of car batteries.

Car companies are starting to access the green bonds market. Several global automobile companies have issued green bonds to finance their ambitious carbon reduction plans, including Volkswagen Group, Daimler, Volvo Cars under their green finance frameworks.

In 2019, non-financial institutions raised US$59.3bn (vs US$29.5bn in 2018) from the green bond market, of which transport accounted for 20% of the total. As the pace of global vehicle electrification speeds up, the automobile green bond market is expected to experience rapid growth. Total investment into the global EV sector could potentially amount to US$200-300bn during 2021-2025. The chart below illustrates some of the green bond issuances by global automakers to support their green car initiative.

Automobile companies green bond issuance



Source: Company

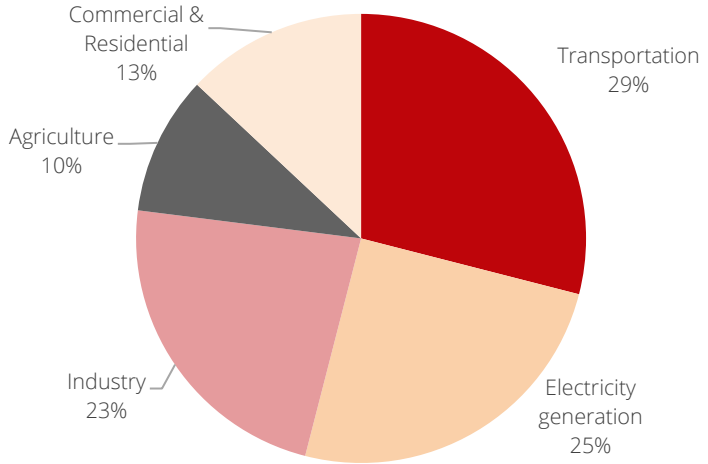
While global automakers are key participants in the green bond market, we anticipate the Chinese automobile companies to follow suit, as China EV market is huge and investment funding requirement is substantial as the country progresses along the 2021-2035 EV development plan.

North America: Returning to the Paris Agreement

Re-entering Paris Agreement to address climate-change related issues. The new US administration has pledged to become a carbon-free economy by 2050. Federal agencies are to procure carbon pollution-free electricity and clean zero-emission vehicles under a US$400bn budget for renewables, batteries and electric vehicles.

This could be an important development given that the US GHG emissions totalled some 6.56bn MT in 2019, approximately 1.7% lower on year, according to the US Environmental Protection Agency (EPA). Among which, transportation accounted for about 29% of total GHG emissions, or approximately 1.8bn MT. Hence, migration to greener transport options is required.

Carbon emissions breakdown by industry sectors (2019)

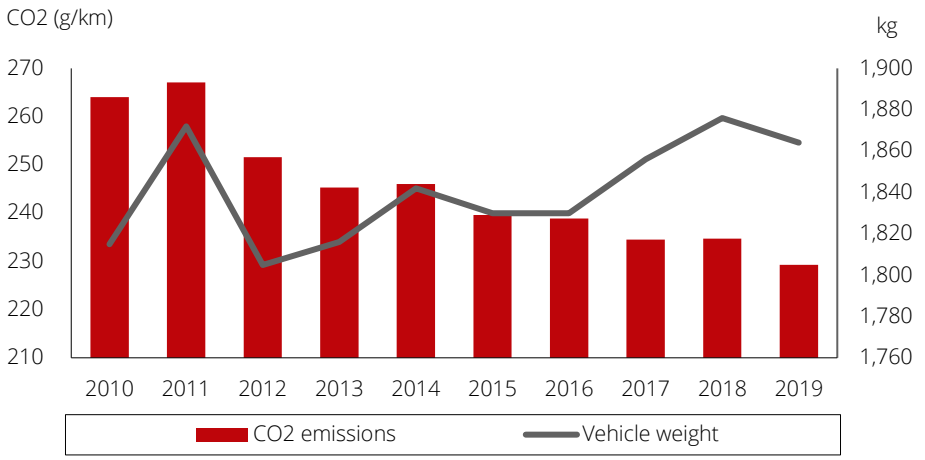


Source: US EPA

US CAFÉ system to regulate GHG emissions. In the US, fleet values are regulated by the Greenhouse Gas Standards (GHG) and the Corporate Average Fuel Economy Standards (CAFÉ). Separate target values are set for cars and light trucks for each manufacturer. There are penalties for manufacturers that do not meet the CAFÉ fleet value for each model year. For every 0.1 mile per gallon below the specific limit, the manufacturer is required to pay a fine of US$14 per vehicle produced for sale in the US.

The chart below shows carbon emissions have fallen while the average weight of vehicles remained relatively unchanged. This is because passenger cars which used to account for about 80% of the total has declined to about half by 2019, and larger vehicles such as SUV cars and SUV trucks are accounting for a higher percentage. But due to advancement in technology, average new vehicle fuel economy has improved, which has offset the weight issue.

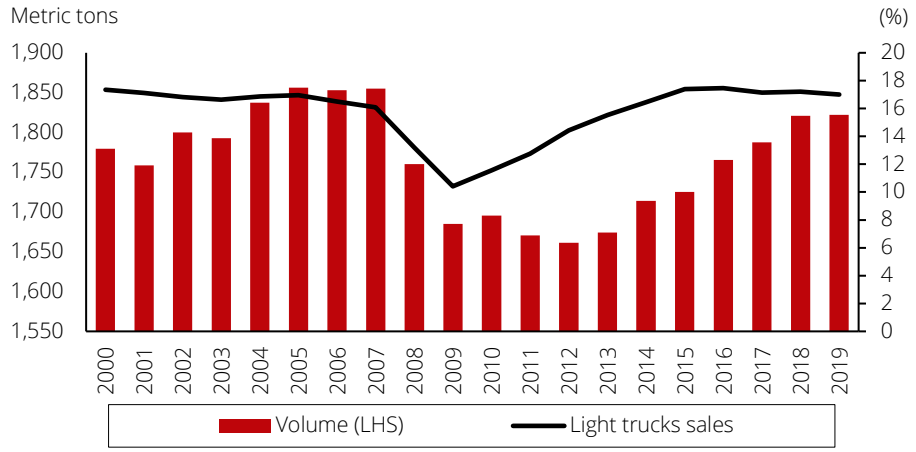
US carbon emissions and vehicle weight per vehicle



Source: US EPA

However, as total vehicle sales in the US have been on a strong recovery track after the global financial crisis, total CO2 emissions from the transport sector has been on a rising trend.

US transport total CO2 emissions largely driven by auto sales recovery

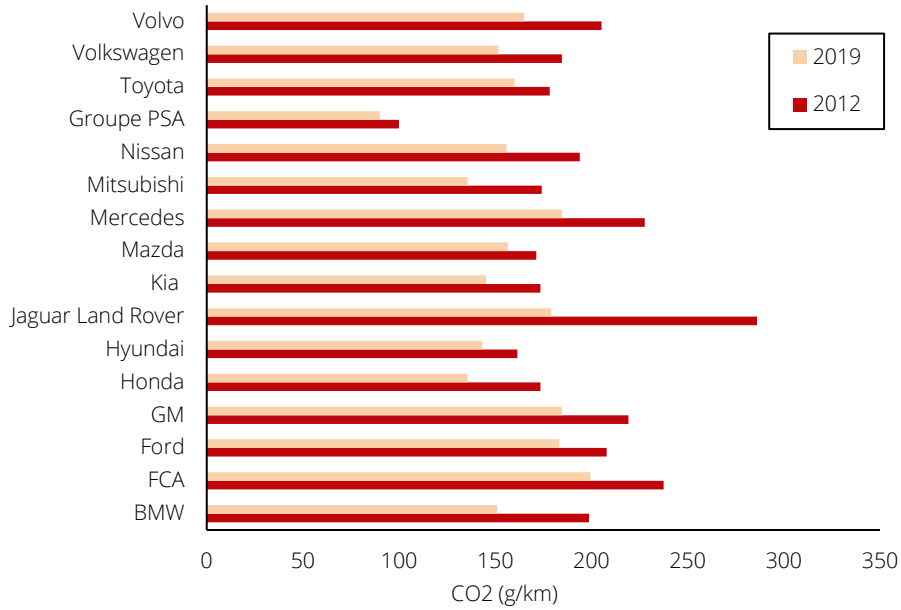


Source: US EPA

The zero-emission vehicle (ZEV) was initiated in California and was subsequently adopted by a number of other states. From 2009-2011, the ZEV ratio was set at 11%, raised to 12% during 2012-2014 and further to 14% from 2015-2017. The aim is to reduce vehicle emissions with higher adoption rate of ZEV.

Based on EPA assessments, the automakers in the US had generally reduced their CO2 emissions in 2018 compared to 2012 levels. This is made possible with technology advancements to improve vehicle fuel efficiency.

CO2 emissions performance in 2019 compared to 2012

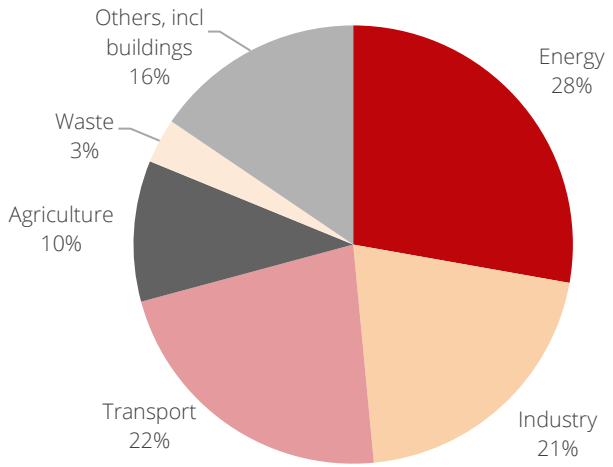


Source: EPA; Companies

Europe – Tightening CO2 emissions standard

Policy pertaining to CO2 emissions. In the European Union (EU) zone, transport sector accounts for 22.3% of total greenhouse gases (GHG) emissions, and of which road transport represents c.21.1% of total transport CO2 emissions.

EU: share of GHG by sector



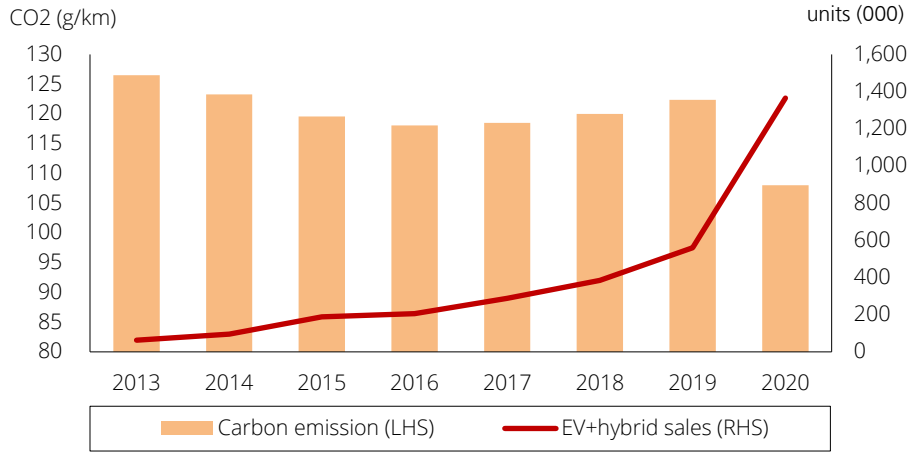
Source: European Environment Agency

EU has set its long-term goal of achieving climate neutrality by 2050 and the EU automobile industry is supportive of this move. Out of its annual R&D budget of 60.9bn euros, a large part is dedicated to decarbonisation. As a result, sales of battery electric cars in Europe have risen from 135,775 units in 2017 to 728,602 in 2019.

The European Commission (EC) and the United Nations Economic Commission for Europe (UNECE) are the two main regulatory bodies on emissions. Each automobile maker must meet a sales-weighted fleet average target for C02 emissions that is related to its vehicle weight. This regulation sets an industry fleet average target of 95g CO2/km starting in 2020 for passenger cars and 147g CO2/km for light commercial vehicles (LCV).

The chart below shows CO2 emissions have been largely under controlled within the 110-120 g/km range, helped by rising number of new energy vehicle sales.

CO2 emissions and sales of electrically charged vehicles



Source: ACEA; EEA, DBS HK

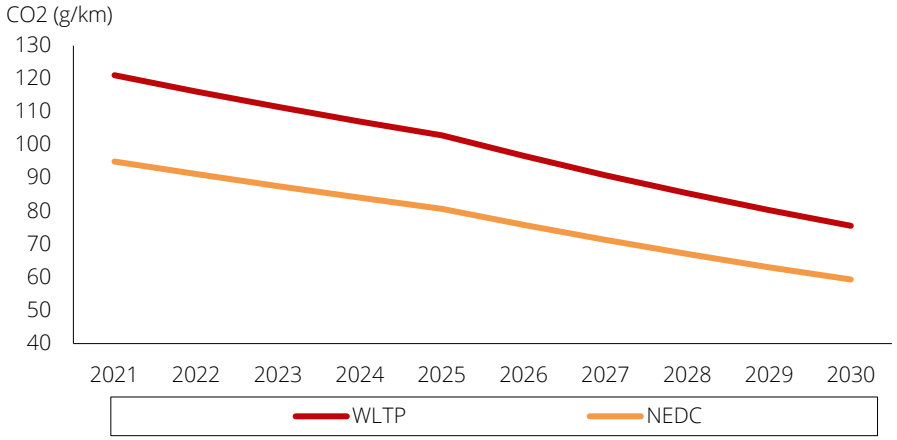
Note: include BEV, PHEV and HEV

Implementation of WLTP aims to more accurately measure CO2 emissions; expect to accelerate EV development. A new regulatory test procedure under the World harmonized Light vehicles Test Procedure (WLTP) was approved, aiming to provide CO2 emissions and fuel consumption data that are more representative of real driving conditions. Under the new policy, the CO2 emission reductions regulation is one of the most stringent in the world. It means carmakers would have to accelerate their vehicle electrification rate to

meet the new standard. By 2025, the aim is to cut emissions by 15% from 2021 levels on all passenger cars and light commercial vehicles (LCV) registrations. The goal is to achieve a 37.5% reduction for passenger cars and 31% on LCV by 2030 vs 2021 levels.

Using the 2021 NEDC target of 95 g/km as the baseline for new cars, this would translate to 80.8 and 59.4 g/km respectively in 2025 and 2030. However, the change from NEDC to WLTP means CO2 emissions is expected to increase by 20-30% before coming down in later years.

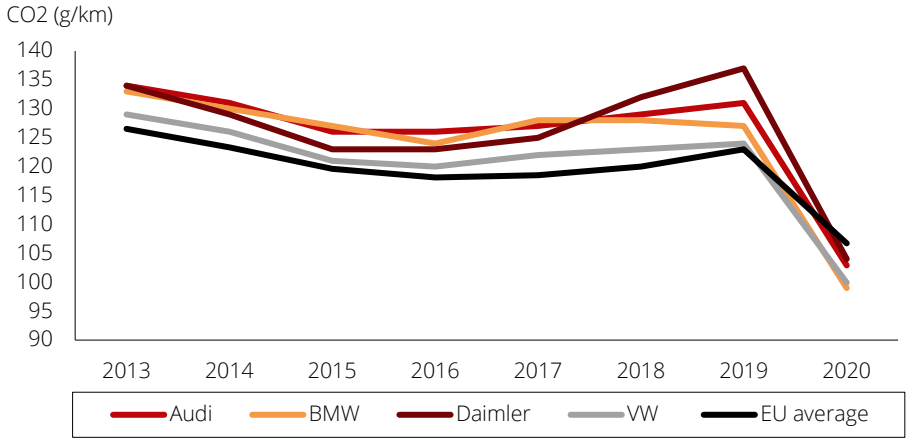
WLTP vs NEDC targets for 2025 and 2030



Source: ACEA; DBS HK

CO2 compliant. The chart below shows the European automakers' CO2 emissions trends from 2014-2020. Generally, companies with a high vehicle electrification rate tend to achieve better NEDC scores vs the industry average.

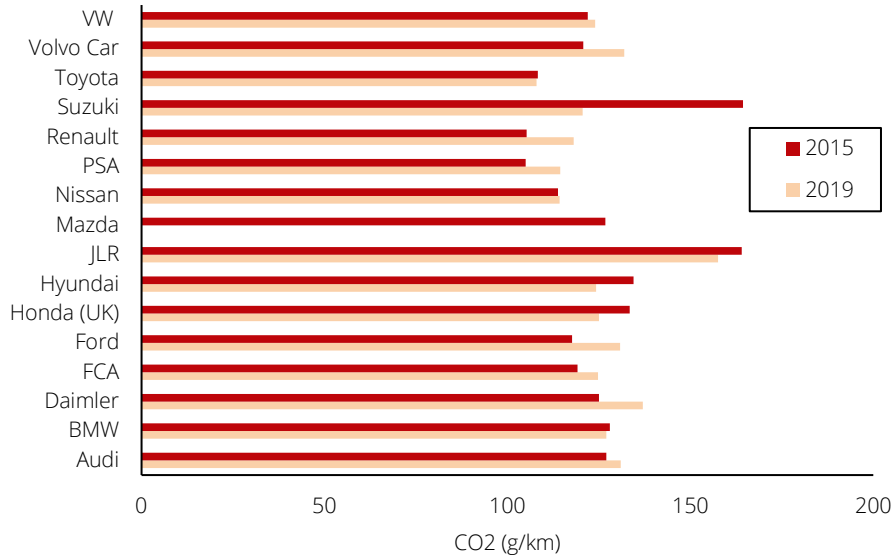
EU automakers CO2 performance against industry average



Source: Company; ACEA

The following chart shows mixed performance of the automakers based in Europe. We believe the change is attributable to their electrification rate and size of the vehicles. Sport utilities vehicles are heavier compared to sedans, leading to higher fuel consumption.

Manufacturers' CO2 performance (2019)

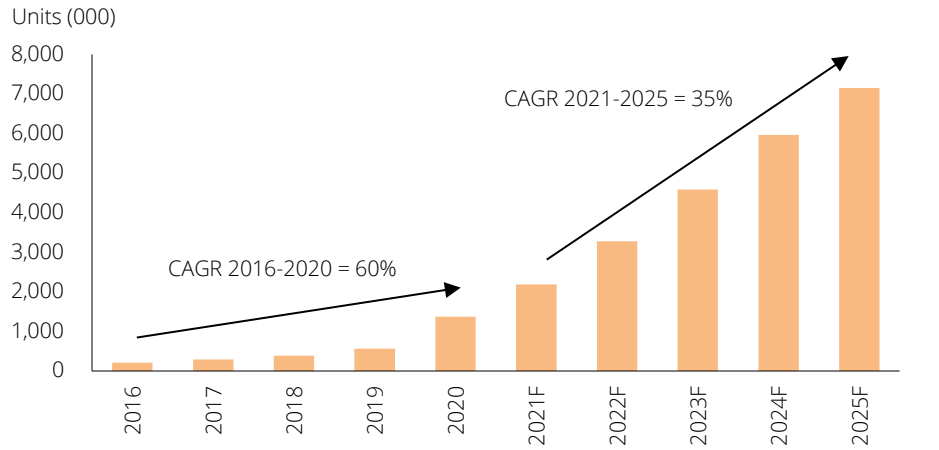


Source: EPA; Company

CO2 financial penalty structure. Since 2019, passenger car manufacturers have to pay 95 euros for each g/km exceeding the target while light commercial vehicle producers face a 120 euro fine for each g/km that exceeds the target.

EV market outlook. Sales of electric vehicles (including battery operated and plug-in hybrid and hybrid) are expected to surge in order to meet 2025 and 2030 CO2 targets. As such, automakers in Europe are accelerating the roll out of EV and cleaner fuel portfolios to ramp up zero and low-emission vehicles. From 2015-2020, automobile companies in Europe have invested over 300bn euros and huge investments are anticipated in the future.

Electric vehicle new registrations projections

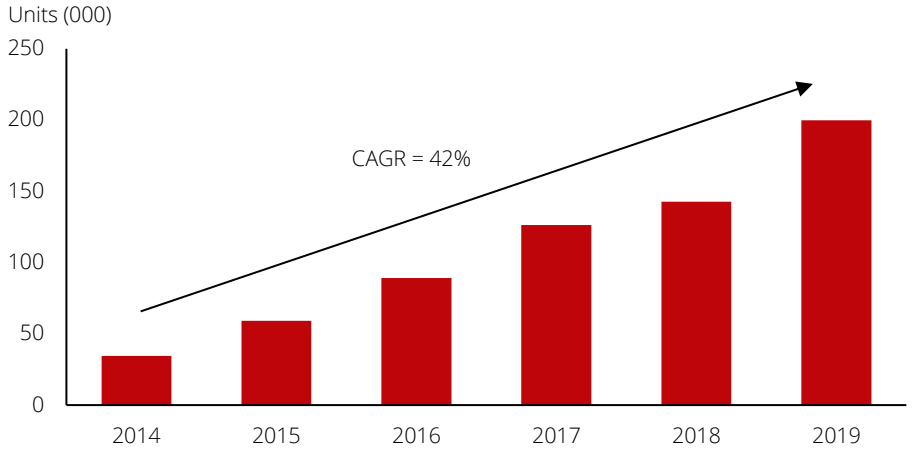


Source: ACEA; DBS HK

Rapid rollout of charging network needed to raise EV sales. In the EU, total number of charging points was just shy of 200,000 units in 2019. From 2014 to 2019, the number of charging points increased at an annual rate of c.42%. Based on conservative estimates by the European Commission, approximately 1m/3m units of ECV charging points will be needed by 2024/2029. This translates to a 15-fold jump in just under a decade, which could be a challenge to fulfil. Besides, just 1 in 7 charging points is a fast charger. However, the rich EU countries (the Netherlands, Germany, France and the UK) accounted for more than 75% of all EV charging points in the EU.

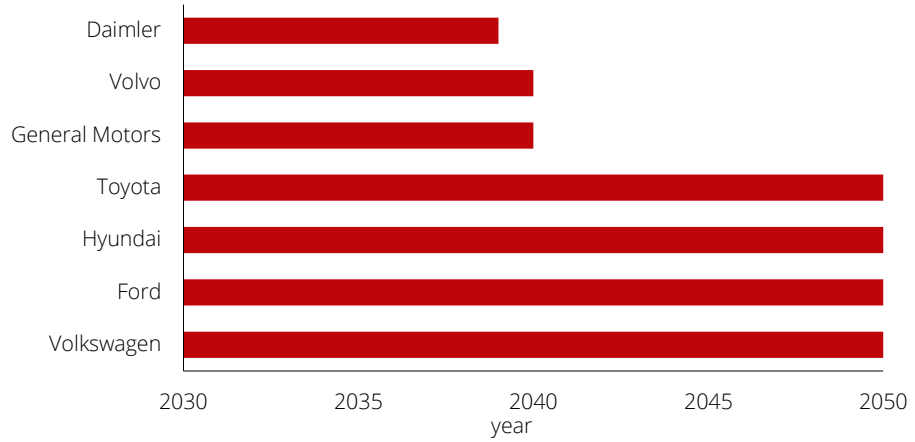
A strong infrastructure network is a pre-condition for consumers to switch to zero-emission vehicles.

EU ECV charging points



Source: ACEA

EU automakers carbon neutral timeline targets



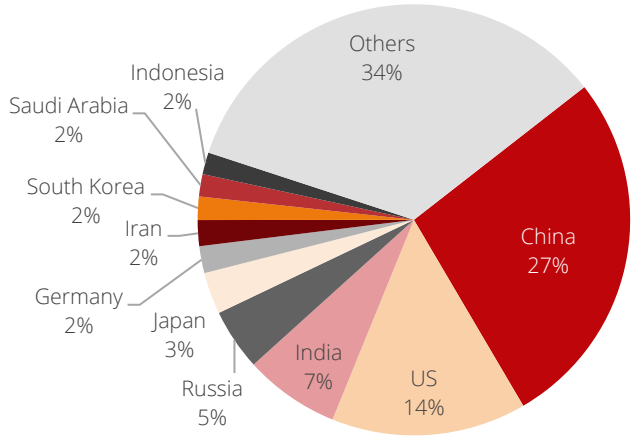
Source: Company

China – Aims for carbon neutrality by 2060

A major step forward for China to set carbon neutrality target by 2060. During the September 2020 United Nations General Assembly, Chinese President Xi Jinping announced China's plans to achieve carbon neutrality by 2060. This is a major step for the mainland on climate-related issues. Under this backdrop, China CO2 emissions is expected to peak before 2030.

China was responsible for about 27% of the world's total CO2 emissions in 2018 (approximately 10 GT), followed by the US at c.14% (approximately 5.4 GT).

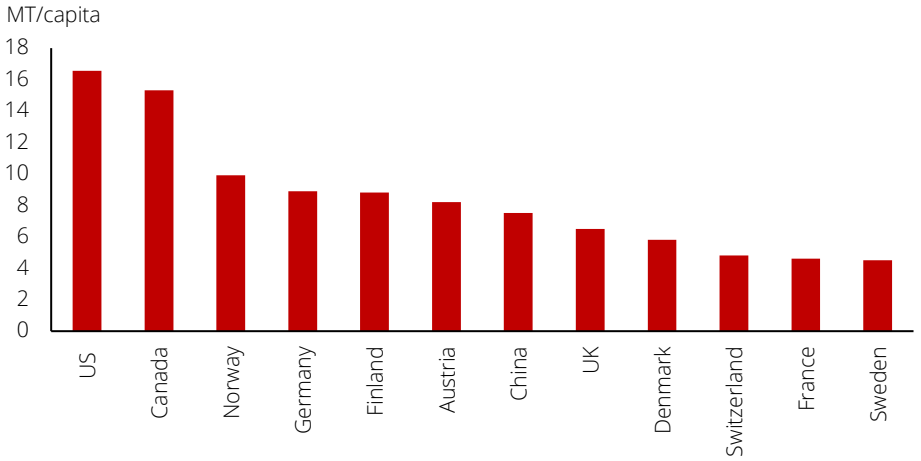
Top ten countries with the most CO2 emissions (2018)



Source: Union of Concerned Scientists

While China accounted for a large portion of the world's total CO2 emissions, it was behind many developed countries on a per capita basis.

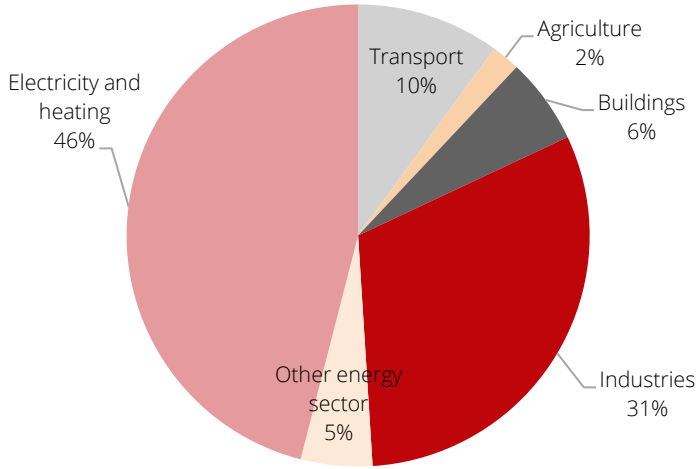
Per capita CO2 emissions ranking (2018)



Source: Union of Concerned Scientists

Transport share of CO2 emissions on the rise in China. In 2018, transportation sector accounted for about 10% of total CO2 emissions, compared to about 5% 10 years ago. This is attributable to rising motorisation rate in the mainland from a growing middle-income group.

Share of CO2 emissions by sector in China



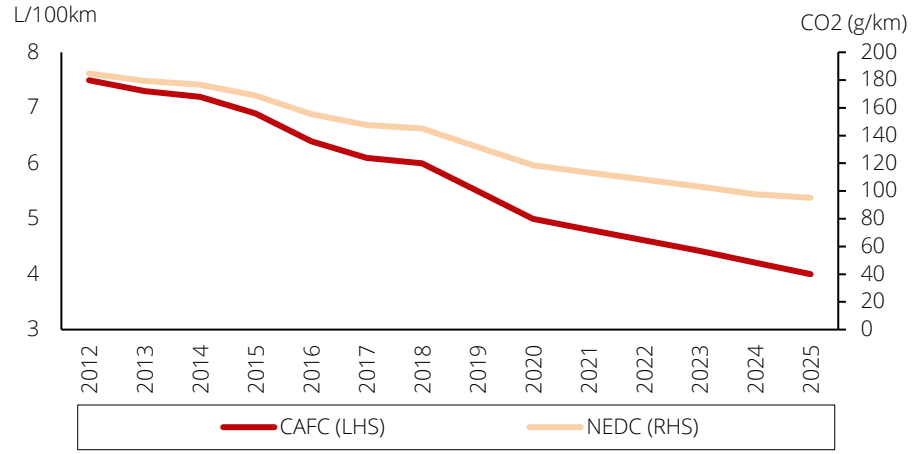
Source: Climate Transparency Organisation (2018)

As such, the Chinese government is taking action to address the rise in CO2 emissions from urban passenger vehicles. Clean fuel, higher adoption of new energy and fuel-efficient vehicle are some of the measures implemented to contain a rapid rise in CO2 emissions in the future.

Stringent China 6 fuel standard implementation. China rolled out the China 6a fuel standard in July 2020, with China 6b thresholds to be met by July 2023. Certain Chinese cities such as Shanghai, Guangzhou, Shenzhen, Yangtze River Delta and Pearl River Delta, Chengdu, Chongqing, Tianjin have implemented the China 6b standard in 2019 while Beijing introduced this policy in 2020.

Dual credit system determines future carbon emission trends. The implementation of the dual credit system in 2018 sets the stage for China government to monitor and regulate the carbon emission (CO2) of vehicles. The dual credit system policy has gone through some refinements over the years, with the latest announced on 22 June 2020 and taking effect from 1 January 2021. In essence, the Chinese government has set new energy vehicle (NEV) credit ratios and the corporate average fuel consumption (CAFC) standard under the dual credit system to pave the way to meet the long-term goal on CO2 reduction.

CAFC targets and NEDC equivalent



Source: MIIT; DBS HK

Based on the above targets set by the government, the CAFC of 5L/100km and 4L/100km for 2020/2025 effectively translate to approximately 119 g/km and 95 g/km of CO2 emissions. Using 2020 as the base, the stringent CAFC requirement is estimated to reduce CO2 emissions by approximately 34.5m tons from 2020-2025, based on government estimates.

Policy tailored to boost NEV market. Under the 2021-2035 NEV development plans, the Chinese government intends to lift NEV sales to 20% of total PV sales by 2025 as a mid-term target. And by 2035, pure electric technology will dominate NEV sales. This lays down a clear long-term development pace for the Chinese NEV market and domestic automakers have to meet the regulations.

Apart from the long-term development plans, the government has extended the electric vehicle subsidies scheme till end 2022. To further boost NEV adoption rate, the government is also promoting NEV to the lower tier cities. In the future, the government will focus on its policy support on infrastructure rollout, such as expanding charging network and battery swap centres, which could encourage consumers to switch to electric cars.

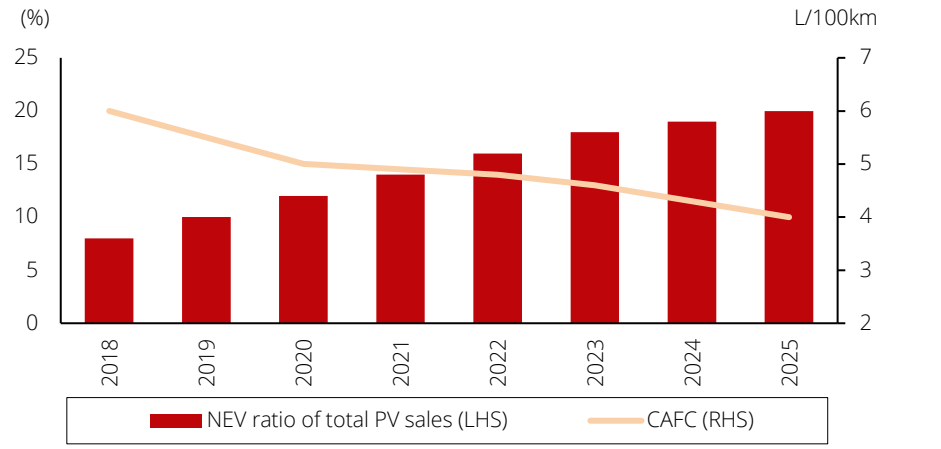
China NEV subsidy scheme (2021)

Car Type	Private-owned (Rmb 000)	Public-owned (Rmb 000)
Pure EV subsidy	13.0-18.0	16.2-22.5
Plug-in hybrid subsidy	6.8	9
Electric coaches/buses (non-fast charge)	20.0-72.0	22.5-81.0
Electric coaches/buses (fast charge)	16.0-52.0	18.0-58.5
Plug-in hybrid coaches/buses	8-30.4	9.0-34.2
Electric trucks	14.4-40.0	18.0-49.5
Plug-in hybrid trucks	16.0-25.2	18.0-31.5

Source: China Government

Hence, with the dual credit system in operation, the Chinese government can effectively control CO2 emissions as automakers are required to comply with both policies. As shown in the table below, the CAFC per car is expected to decline by 20% in 2025 compared to 2020 levels.

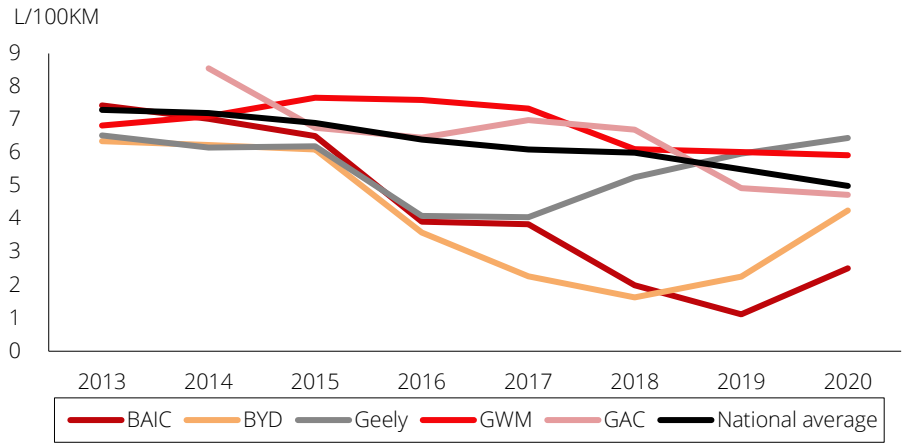
Higher NEV ratio impact on CAFC



Source: MIIT; DBS HK

Chinese automakers' CO2 compliance is largely mixed. Based on statistics from 2013-2019, Chinese automakers have generally reduced their CAFC ratios over this period. However, the results are mixed when we analyse their CAFC ratios against the national standard. We have segregated them into Chinese self-brand, premium brand and Sino-foreign brand categories. We picked major Chinese and Sino-foreign brands for this analysis.

Chinese self-brands CAFC ratios

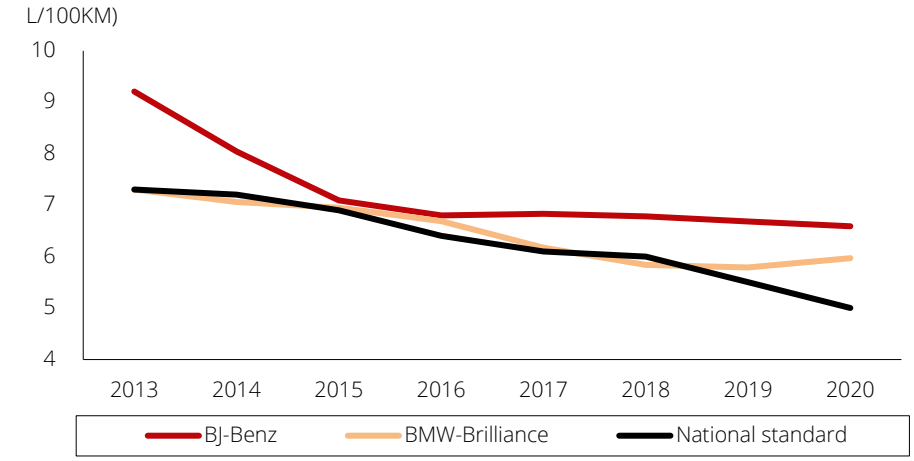


Source: MIIT

From the above chart, companies with a high portion of NEV production and more fuel-efficient vehicles stand to achieve better CAFC ratios. Both BYD Auto and BAIC Group have done relatively better. However, due to the product mix change and larger engine capacity vehicles being produced, Geely Group and Great Wall Motor (GWM) CAFC ratios have been higher than the national standard. Based on a report issued by International Energy Agency (IEA), SUVs on average consume about a quarter more fuel than medium-size cars.

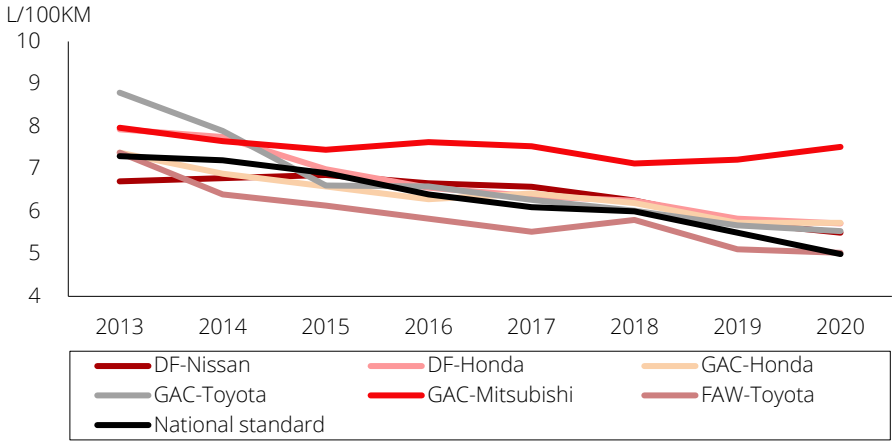
On the other hand, the premium and Sino-foreign branded cars have slightly higher CAFC ratios compared to national average, largely attributable to their larger engine capacity size.

Premium brands CAFC ratios



Source: MIIT

Sino-foreign JV CAFC ratios



Source: MIIT

Transition path assessment under climate change environment

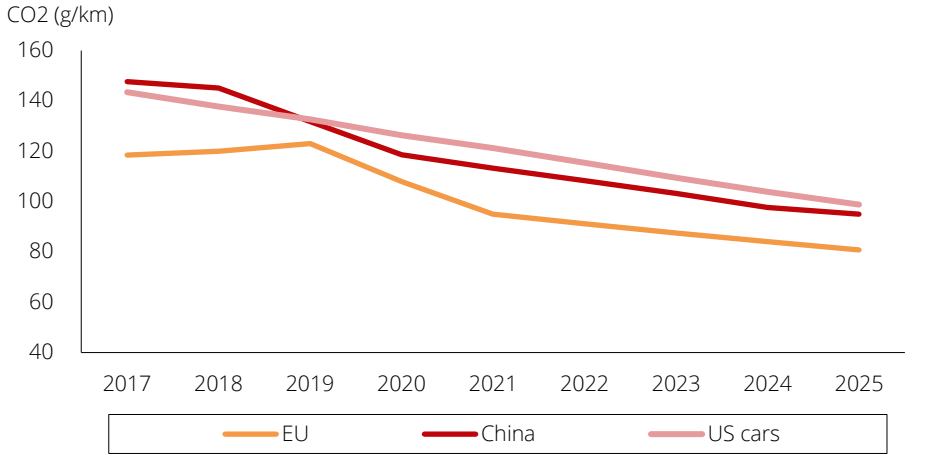
The main difference between the Chinese automakers and global automobile companies is their approach to climate-related issues. Generally, the Chinese companies are aware and have acknowledged that climate-related issues are important to their business and they need to pay greater attention to climate change. However, what are lacking is 1) a long-term comprehensive plan on CO2 emissions reduction targets and strategy to achieve the goals, 2) financial disclosures on climate-change risks and impact on financial planning (e.g. OPEX, CAPEX, M&A, debt, etc); and 3) incorporating climate-related issues as part of corporate governance, remuneration and policy systems to ensure ESG initiatives are followed through and properly monitored.

Will Chinese automakers face transition risk? We have looked at the large Chinese automobile companies' transition risk exposure based on the following criteria. Our conclusion is since Chinese players and the government have invested huge amounts into new technologies and products in recent years to meet the stringent policy on CO2 emissions, they should be able to address policy and legal risks relatively well.

A) NEDC performance

The Chinese automobile companies' NEDC performance (for comparison purpose, we had converted CAFC into NEDC equivalent) has been improving in the recent years. Because Chinese automakers are required to meet the stringent regulations on fuel efficiency and NEV ratio targets, they are more willing to invest in new EV models and fuel-efficient engines. Moving forward, based on the China government's target NEV sales ratio and CAFC requirements, by 2025, the Chinese automakers are expected to reduce their CO2 emissions by c.20% from 2020 levels.

NEDC comparison across major automobile markets

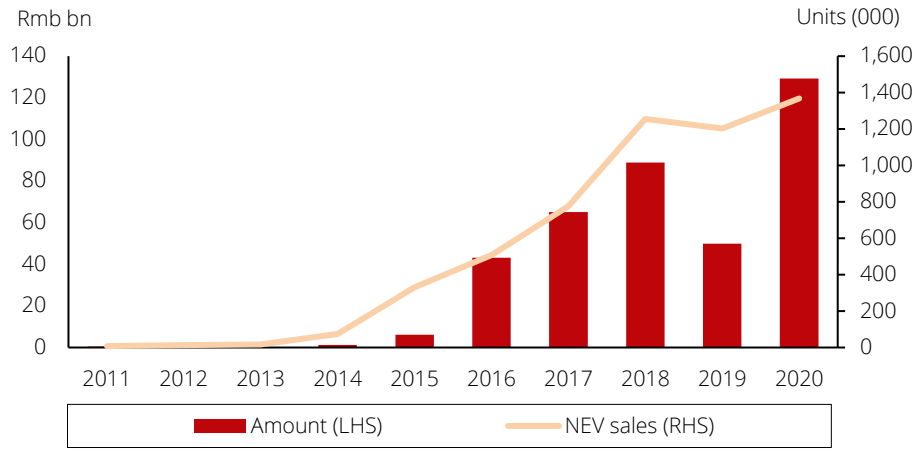


Source: ACEA; EPA; MIIT; DBS HK

B) NEV investments at record levels

Since 2011, the NEV industry had raised a total of over US$50bn from the market to finance the development. In fact, the amount raised last year was at a record level, +159% on year. Given the huge growth potential in China, industry players are investing heavily into the NEV sector to ride on the anticipated rapid industry growth. NEV volume sales have also increased multiple fold over the period.

China NEV sector fund raising trend

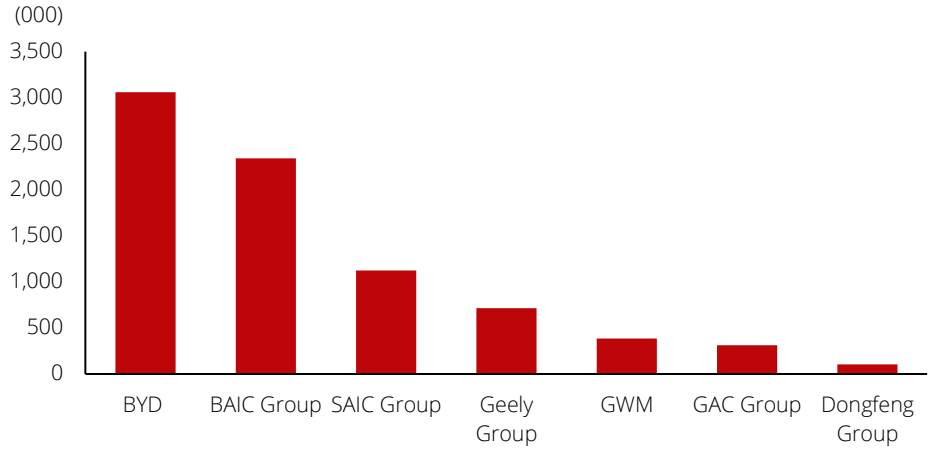


Source: Qi Cha Cha

C) NEV credit points cash conversion potential

Among the Chinese automobile companies, BYD has generated the most NEV credit points from 2016-2020, based on the aggregate of all the operating units within the individual automobile group. This implies that companies with high NEV credit points have the ability to keep pace with the vehicle electrification trends and should be able to transit down the low carbon transport environment.

NEV credit points ranking (2016-2020 cumulative)



Source: MIIT

Chinese companies can improve on climate related financial disclosure. Many Chinese automobile companies' have limited financial disclosure based on TCFD guidelines, and only a couple have released scope 1 & 2 emissions data series. In fact, majority have released their total GHG numbers, energy & power consumption as well as waste discharge statistics. Compared to global automobile companies, the disclosure level could improve, especially details of their long-term environmental action plans and sustainable path, defining the targets and strategy in their long-term climate change plans.

On the other hand, many global automakers have a detailed governance system that encompasses targets and goals and working in partnership in each region

they operate. Hence, the Sino-foreign Joint Ventures generally would follow the foreign partners' systems in their sustainability path.

Our selection of Chinese companies based on their vehicle electrification plans and scope in climate related disclosure. Based on the above transition assessment criteria of the Chinese automobile companies and the scope of their financial disclosure under TCFD guidelines, we have selected the following companies which we believe have stood out among the peers. While some companies have better CAFC scores because of their high NEV business exposure (e.g. BYD), we have also evaluated other criteria in making our selection, as we believe companies with improving framework on Transition Pathway Initiatives (TPI) are better prepared for transition to a low carbon economy.

1. Companies' readiness in improving financial disclosure on climate related risks and opportunities;
2. Commitments to reduce CO2 emissions with climate-related issues incorporated into their business strategy; and
3. Relatively lower financial risk in transiting to a low carbon economy.

Summary of our top picks

Top in CAFC score with lowest CO2 emissions

BYD (1211; BUY; HK$280)

- Topped CAFC score since 2016; accumulated 3m credit points at end December 2020 which could be tradeable for cash in the future;
- Strong R&D capability in the Chinese NEV value chain, especially in EV battery and EV chipsets development, which will give the company better control of its production cost structure; and
- The company has rapidly expanded its NEV operating scale and entered into electrification of public transport fleet, and the rollout of electrified sky buses is part of its initiative to drive its green business in the long-term.

Strong potential in ramping up green initiatives and management disclosure scores

Great Wall Motor (2333 HK; BUY; HK$31.3)

- First Chinese automakers to join the Corporate Social Responsibility – Europe and its affiliate Drive Sustainability in January 2021 to commit to sustainability mobility;
- Launched the Green Intelligent Future Technology (GIFT) in 2020, aiming to uphold the low carbon environment across the whole value chain and plans to invest heavily into the development of green and clean energy; and
- Intends to spend Rmb30n (approximately US$4.6bn) in the next five years to build a global R&D system in its journey towards green transport development.

Guangzhou Automobile Group (2238 HK; BUY; HK$9.8)

- One of the first few Chinese automakers that aim to achieve full electrification of all its new models by 2025 under the self-brand business unit and NEV sales to account for c.20% of total passenger vehicle sales, under its "Green Low-carbon for Achieving Sustainable Success" initiative;
- Developing a new energy industrial park to engage in NEV and related business development as a long-term investment program to assist its transition to a low carbon business model; and
- Partners of its Sino-foreign JVs have set long-term CO2 emissions reduction targets, including Toyota, Honda and Fiat Chrysler Auto, with higher vehicle electrification rate for new models.

Source: Company DBS HK

Appendix I: Methodology

We have adopted the assessment methodology used by Transition Pathway Initiative (TPI), as well as the framework recommended by Task Force on Climate-related Financial Disclosures (TCFD), in evaluating transition risk of companies and how well-prepared these companies are for low-carbon transition.

Established in January 2017, TPI is a global initiative led by asset owners and supported by asset managers who jointly represented more than US$19tn assets under management as of December 2020. It aims to evaluate what the transition to a low-carbon economy looks like for companies with a high impact on climate change, such as power generators, oil & gas producers, metal miners, automobile manufacturing etc. Companies are evaluated by management quality and carbon performance.

Management quality

We evaluate the quality of a company's governance and management of their greenhouse gas emissions and of risk and opportunities related to the low-carbon transition through 19 questions / indicators (see Appendix II). The results are then ranked on five levels, with level 0 having the least and level 4 having the highest acknowledgement of climate change as a business issue. The assessment is based on the information disclosed in the latest sustainability or social responsibility report.

Carbon performance

We evaluate carbon performance of stocks under our coverage in the automobile sector by comparing carbon intensity. The main measurement of new vehicle carbon emissions is in units of grams of CO2 equivalent per kilometre (g CO2/km). Besides, carbon emissions during the production phase is included in the measurement of carbon intensity. Thus, total carbon emissions would include energy for buildings and factories, transportation, use of products sold, etc, classified as emissions under scope 1, 2 and 3.

Stock profile

The discussion in the stock profiles is based on the framework recommended by TCFD, which was established by Financial Stability Board to develop recommendations for more effective climate-related disclosures that could promote more informed investments or credit decisions. This will also enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector. The four areas structured in the framework represent core elements of how companies operate:

- Governance: the company's governance around climate-related risks and opportunities;
- Strategy: the actual and potential impacts of climate-related risks and opportunities on the company's businesses, strategy and financial planning;
- Risk management: the processes used by a company to identify, assess and manage climate-related risks;
- Metrics and targets: the metrics and targets used to assess and manage relevant climate-related risks and opportunities.

Recommended disclosures

Governance:

- Describe the board's oversight of climate-related risks and opportunities;
- Describe management's role in assessing and managing climate-related risks and opportunities.

Strategy

- Describe the climate-related risk and opportunities the company has identified over the short, medium and long term;
- Describe the impact of climate-related risks and opportunities on the company's businesses, strategy and financial planning
- Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2 degrees Celsius or lower scenario.

Risk management

- Describe the company's processes for identifying and assessing climate-related risks;
- Describe the company's processes for managing climate-related risks;
- Describe how processes for identifying, assessing and managing climate-related risks are integrated into the company's overall risk management.

Metrics and targets

- Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process;
- Disclose scope 1, scope 2, and if appropriate, scope 3 greenhouse gas emissions, and the related risks;
- Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.

Source: Transition Pathway Initiatives

Appendix II: Assessment methodology on management quality

- Level 0 – Unaware of (or not acknowledging) climate change as a business issue.
- Level 1 – Acknowledging climate change as a business issue: The company acknowledges that climate change presents business risks and/or opportunities, and that the company has a responsibility to manage its greenhouse gas emissions. This is the point at which companies adopt a climate change policy.
- Level 2 – Building capacity: The company develops its basic capacity, its management systems and its processes, and starts to report on practice and performance.
- Level 3 – Integrating into operational decision-making: The company improves its operational practices, assigns senior management or board responsibility for climate change and provides comprehensive disclosures on its carbon practices and performance.
- Level 4 – Strategic assessment: The company develops a more strategic and holistic understanding of risks and opportunities related to the low carbon transition and integrates this into its business strategy decisions.

Appendix III: Regulatory requirement on disclosure of climate change risks

Regional regulations on climate-related financial disclosures

Country	Regulations on climate-related financial disclosure
China	From end-2017 onwards: • MUST disclose: Environmental information such as 1) info on pollutant emissions; 2) construction and operation of pollution prevention facilities and self-monitoring programs; 3) emergency plans for environmental issues of "key pollutant-discharging entities" listed out by Ministry of Ecology and Environment (MEE). • Comply or Explain: Abovementioned environmental info for other companies not in MEE's list. From end-2020 onwards: • More detailed environmental disclosure for all A-share companies is expected to be compulsory.
Hong Kong	From July 2020 onwards: • MUST disclose: 1) Board's oversight of environmental issues including evaluation process and management strategy; 2) information on standards, methodologies, assumptions and/or calculation tools and the source of conversion factors used, for reporting emissions/energy consumption. • Comply or Explain: 1) pollutant emissions data and policies; 2) efficiency in the use of natural resources; 3) climate-related risk identification, mitigation, and potential impact.
European Union	From June 2019 onwards: • Six guiding principles on disclosure are material (financial and environmental & social), fair, balanced and understandable, comprehensive but concise, strategic and forward looking, stakeholder-oriented and consistent and coherent. Generally, the disclosure encompasses governance processes addressing climate-related risks and opportunities, how climate change is incorporated into the strategy and risk management processes, and Scope 1 and Scope 2 GHG emissions. • MUST disclose: 1) Board's oversight of environmental issues including evaluation process and management strategy; 2) information on standards, methodologies, assumptions and/or calculation tools and the source of conversion factors used, for reporting emissions/energy consumption. • Comply or Explain: 1) pollutant emissions data and policies; 2) efficiency in the use of natural resources; 3) climate-related risk identification, mitigation, and potential impact

Source: CSRC, HKEx, EU

Appendix IV: Global automakers: decarbonisation strategy

Global automakers: decarbonisation strategy

Company name	Decarbonisation path	Targets
BMW AG	• Company is committed to the Paris Agreement • One architecture fits all powertrain derivatives from 2021. After 2025, will have a new BEV-centric architecture. • Rollout of the 5th generation BMW eDrive technology in BMW iX3 series. • Recycling of battery cell under its "from cradle to grave" approach for electric car batteries.	• 25 electrified models by 2023, including at 13 fully electric cars. Electrified cars roadmap for its European new vehicle fleet: 25% electrified by 2021; 33% electrified by 2025 and 50% electrified by 2030. • Substantial CO2 emissions reduction: By 2030, about 40% reduction in CO2 emissions per vehicle vs 2019 under the use phase; 80% CO2 emissions reduction per vehicle vs 2019 under the production phase. • Agreement with US State of California to reduce emissions by 3.7% per year between 2022 to 2026.
Daimler	• Company is committed to the Paris Agreement. • Electric portfolio expansion: 2021 (>5 BEV & >20 PHEV); 2025 (>10 BEV & 25 PHEV); and 2030 (>20 BEV & <25 PHEV). By 2030, xEV share >50%. • Company has rolled out the EQ vehicle architecture platform to develop the new generation of battery electric vehicles. • Expected to spend 70bn euros (2021-2025) for ongoing transformation towards electrification and digitalization of vehicles.	• Ambition to achieve carbon reduction targets by 2039, including the following: • 2022: Carbon-neutral production globally • 2025: Up to 25% of unit sales from electric strategy • 2030: Over 50% of EV share • 2039: Carbon-neutral company for its vehicle entire lifecycle for its new passenger cars • Reduction in variants of combustion engines; 2025 - reduced by 40% and by 2030 - down by 70%
Volkswagen	• Company is committed to the Paris Agreement • Plans to have 70 new BEV and 60 PHEV models by 2029. 2025: approximately 20% BEV share of group deliveries (up to 3m units). • 2030: over 30% BEV share of group deliveries. • 2030: 100% renewable energy (except China which is currently under evaluation). • MEB vehicle architecture: The ID. Family will provide the net-climate neutral mobility choice to all customers. • Volkswagen will supply MEB platform to Ford (modular electric toolkit (CV) under a US$10-20bn deal)	• "Go to zero" transformation: Carbon-neutral by 2050, supported by the following initiatives: • 2020: reduce greenhouse gases emission at production facilities in Germany by 40% per vehicle produced vs 2010 baseline. • 2025: reduce passenger car fleet total life-cycle carbon footprint by 30% vs 2015.

Source: Companies

Global automakers: decarbonisation strategy (continued)

Company name	Decarbonisation path	Targets
Ford Motor	• Company is committed to the Paris Agreement • Offers a mix of highly efficient and electrified vehicles with low CO2 emissions, including MHEVs, HEVs, PHEVs and FHEVs. • 2022: Investment of US$11bn to bring 16 fully electric vehicles into the market, out of a global portfolio of 40 electrified vehicles. • Adopts a flexible architecture to lower development costs of future e-models	• Carbon-neutral strategy by 2050 including the following: • Ford aims to reduce CO2 emissions by 30% per vehicle produced 8 years ahead of their goal. • 2030: plans to end sales of combustion engine vehicles in Europe, every new passenger car model will have electric and plug-in electric option by 2026. • Total electrification strategy will cost approximately US$22bn by 2025.
General Motors	• Company is committed to the Paris Agreement • 2025: To invest US$27bn in EV development to launch 30 new EVs into the global markets. Approximately 40% of the company's US deliveries will be battery electric vehicles.	• To build an all-electric vehicle portfolio and achieve zero carbon emissions • Plans to achieve zero emissions from new light-duty vehicles by 2035 and carbon neutral by 2040 for its global production and operations.
Hyundai Motor	• 2024: Adopt new EV architecture development system. • 2030: reduce GHG emissions by 26% compared to 2016. • Develop more EV models such as IONIQ Electric, Kona Electric and Nexo FCEV.	• Carbon-neutral by 2050, and plans include: • 2025: Aim to achieve electric vehicle sales of 560,000 units. • 2040: Zero ICE production; 8-10% share in EV market.
Honda	• Focus on developing more advanced carbon-free technology, i.e. powertrain electrification. Will enhance the lineup of EVs on a global scale. • Utilising resources efficiently via multiple-path strategy: Electricity generated by using renewable energy can be fed to battery electric vehicles and plug-in hybrid vehicles; possible to convert electricity into hydrogen for fuel cell vehicles. • Triple ZERO approach: Zero CO2 emissions using renewable energy, zero energy risk, and zero resource & disposal risk.	• 2020: Reduce CO2 emissions intensity of automobiles by 30% from 2000 levels. • 2030: Two-thirds of global automobile sales are electrified. • 2050: Cut total product life-cycle CO2 emissions by half from 2000 levels.

Source: Companies

Global automakers: decarbonisation strategy (continued)

Company name	Decarbonisation path	Targets
Nissan	• CO2 emissions from new vehicles (global) has fallen from 100 (carbon index) in 2000 to 67 in 2018 (measured by CAFÉ). In China, CAFÉ was 5.8L/100km, down from 6.8L/100km in 2014. • Plans to have eight new EVs by FY2022 and achieve annual sales of 1m battery electric and e-power vehicles. • Awareness of the transition and physical risks induced by climate change and aim for carbon neutrality.	• Nissan Sustainability 2022 - path to realisation of a zero-emission society by establishing an entire ecosystem around EVs. • Nissan Green Programme 2022 has four key aspects - climate change, resource dependency, air quality and water scarcity. Product CO2 emissions reduction of 40% from new cars vs FY2000; reduce new natural resource usage by 30% per vehicle. • Long-term goal 2050: Achieve 90% reduction of CO2 emissions from new vehicles by 2050 vs FY2000 levels; and 80% CO2 emissions reduction. •
Toyota	• 2030: To achieve annual global sales of more than 5.5 million electrified vehicles, including more than 1 million battery electric vehicles and fuel cell electric vehicles, which will help reduce CO2 emissions from new vehicles by 35% or more vs 2010 levels. • Provide all models in the Toyota and Lexus lineups worldwide to be available either as an electrified model or with an electrified option, by around 2025. • To set up 30 model facilities to treat and recycle of end-of-life vehicles.	• <u>Development plan 2030:</u> • To reduce CO2 emissions from global plants by 35% vs 2013 baseline. • Reduce CO2 emissions by 25% or more throughout the entire vehicle life cycle vs 2013 levels. <u>Long-term plan 2050:</u> • Global production to achieve zero CO2 emissions and eliminate all CO2 emissions throughout the entire vehicle lifecycle. • Reduce global average CO2 emission from new vehicles by 90% compared to 2010 levels.

Source: Companies

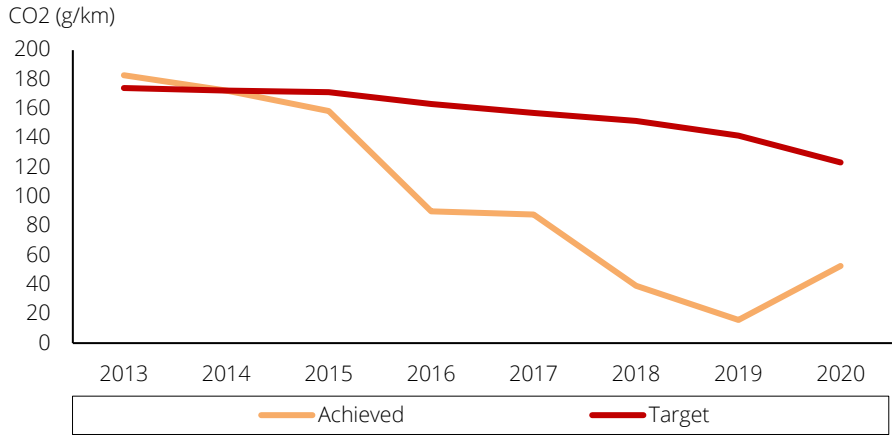
Appendix V: Details of assessment results of Chinese automakers

Details of assessment results

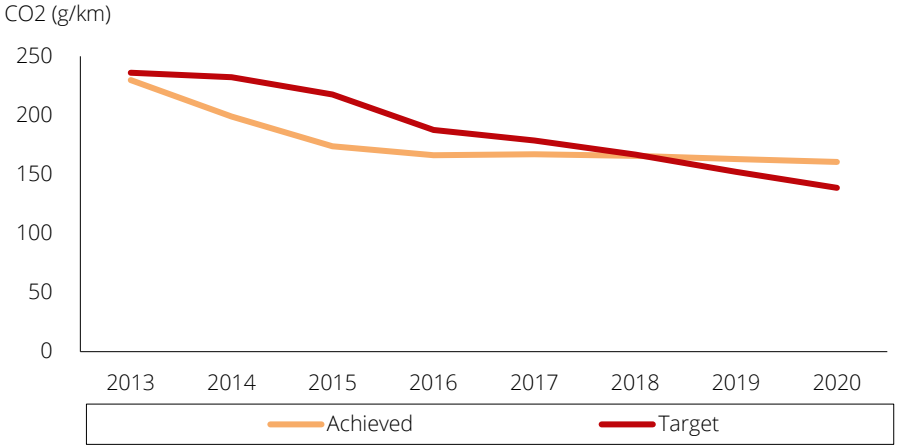
		Questions	BAIC Motor	BYD	Dongfeng Motor	Geely	Great Wall Motor	Guangzhou Auto
Level 0	1	Does the company acknowledge climate change as a significant issue for the business?	Yes	Yes	Yes	Yes	Yes	Yes
Level 1	2	Does the company recognise climate change as a relevant risk and/or opportunity for the business?	Yes	Yes	Yes	Yes	Yes	Yes
	3	Does the company have a policy (or equivalent) commitment to action on climate change?	Yes	Yes	Yes	Yes	Yes	Yes
Level 2	4	Has the company set greenhouse gas emission reduction targets?	No	No	No	No	No	No
	5	Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?	Yes	Yes	No	Yes	Yes	Yes
Level 3	6	Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?	Yes	Yes	Yes	Yes	Yes	Yes
	7	Has the company set quantitative targets for reducing its greenhouse gas emissions?	No	No	No	No	No	No
	8	Does the company report on Scope 3 emissions?	No	No	No	No	No	No
	9	Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?	No	No	No	No	No	No
	10	Does the company support domestic and international efforts to mitigate climate change?	Yes	Yes	Yes	Yes	Yes	Yes
	11	Does the company disclose its membership and involvement in trade associations engaged in climate issues?	No	No	No	No	Yes	No
	12	Does the company have a process to manage climate-related risks?	No	No	No	No	No	No
	13	Does the company disclose materially important Scope 3 emissions?	No	No	No	No	No	No
Level 4	14	Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?	No	No	No	No	No	No
	15	Does the company's remuneration for senior executives incorporate climate change performance?	No	No	No	No	No	No
	16	Does the company incorporate climate change risks and opportunities in their strategy?	No	No	No	No	No	No
	17	Does the company undertake climate scenario planning?	No	No	No	No	No	No
	18	Does the company disclose an internal price of carbon?	No	No	No	No	No	No
	19	Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?	No	No	No	No	No	No

Source: Company disclosure

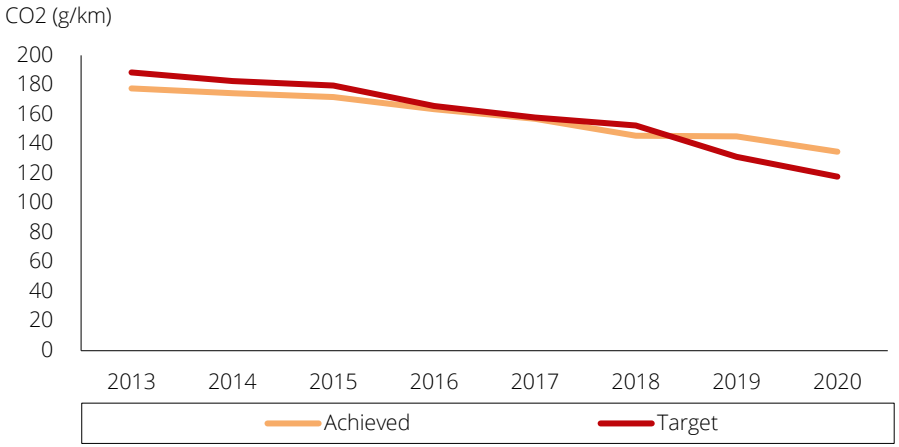
Achieved and target NEDC – BAIC Motor Corp



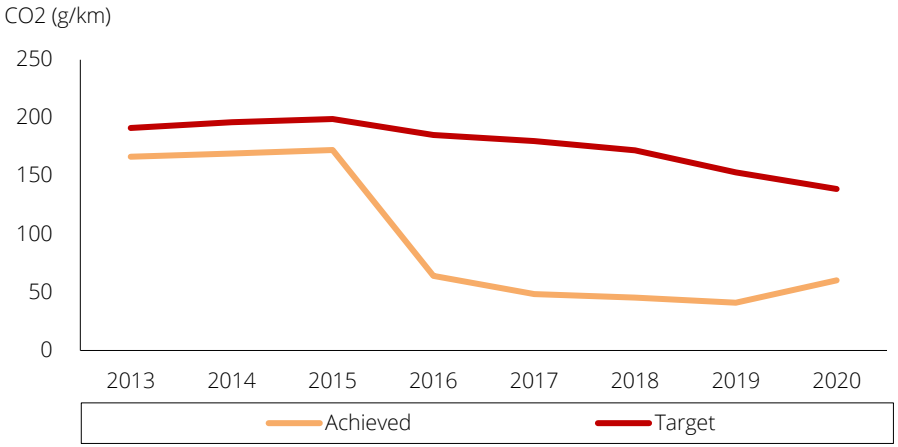
Achieved and target NEDC – Beijing-Benz Automotive Ltd



Achieved and target NEDC – Beijing Hyundai Motor

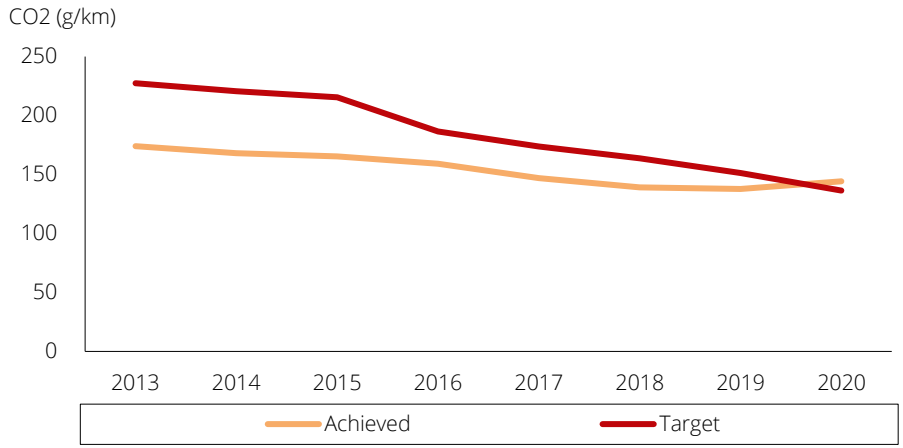


Achieved and target NEDC - BYD

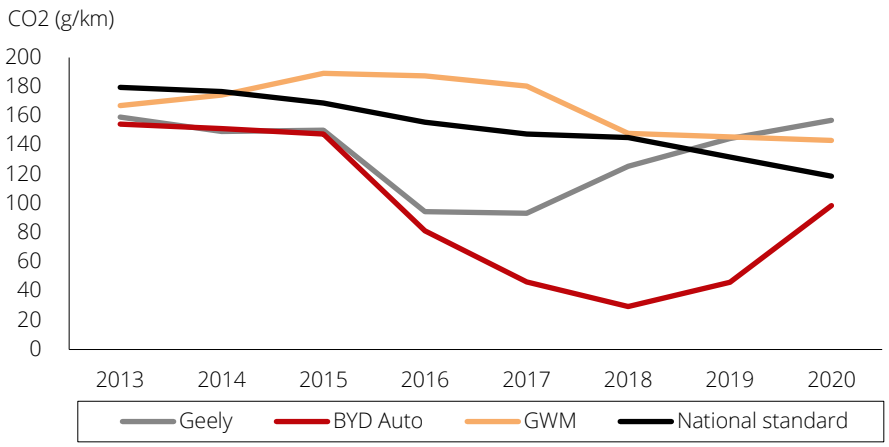


Note: based on average data of BYD Auto Industry and BYD Automobile
Source: MIIT

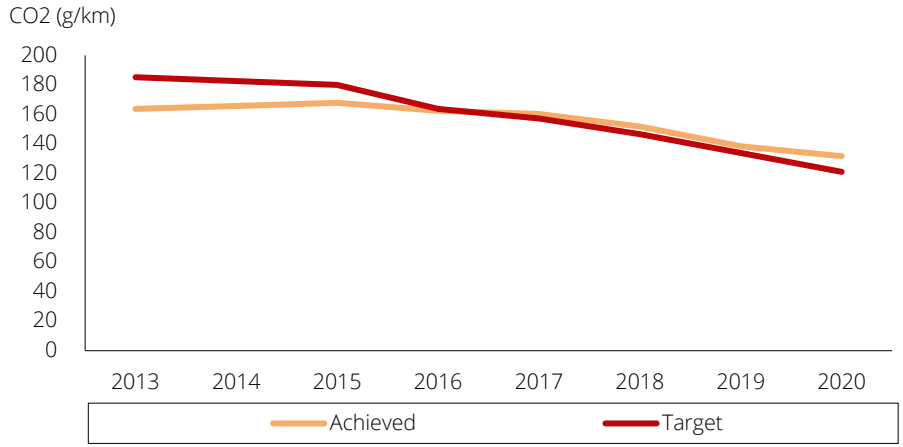
Achieved and target NEDC – BMW-Brilliance Automotive Ltd



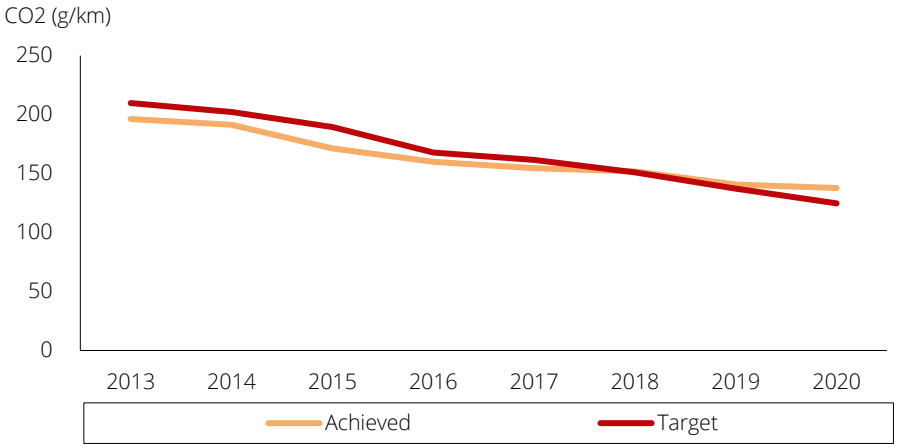
Chinese automakers (Achieved NEDC) comparison



Achieved and target NEDC – Dongfeng Motor Co Ltd

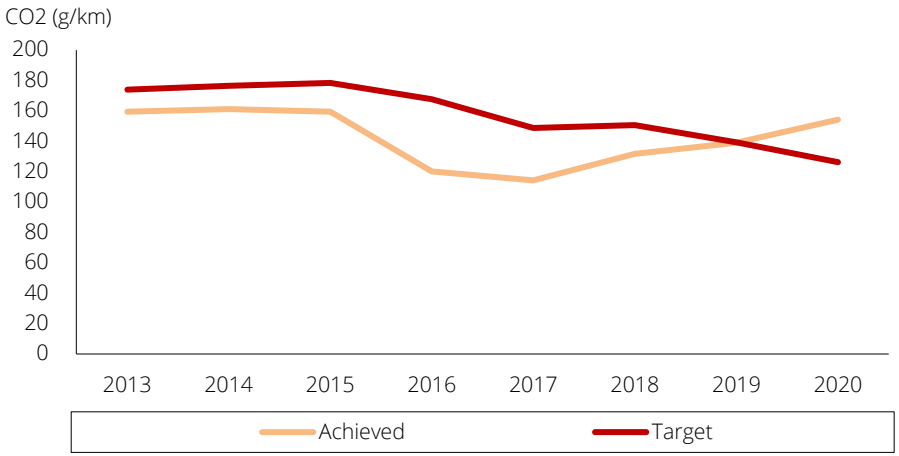


Achieved and target NEDC – Dongfeng Honda Automobile Co

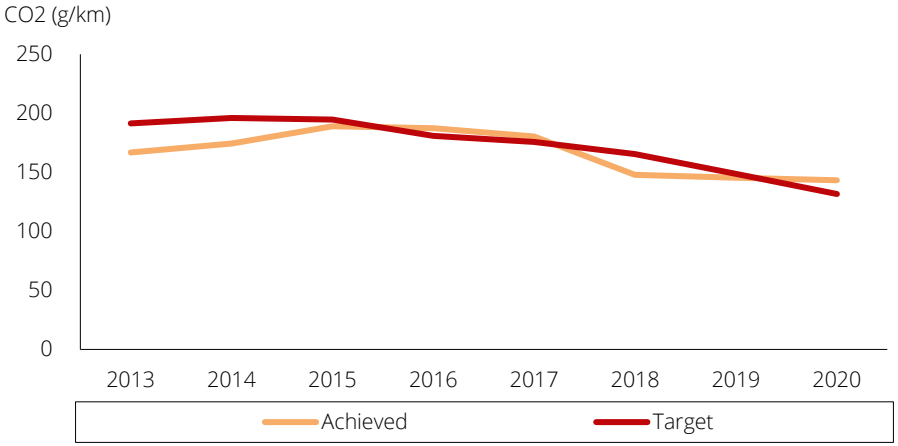


Source: MIIT, DBS HK

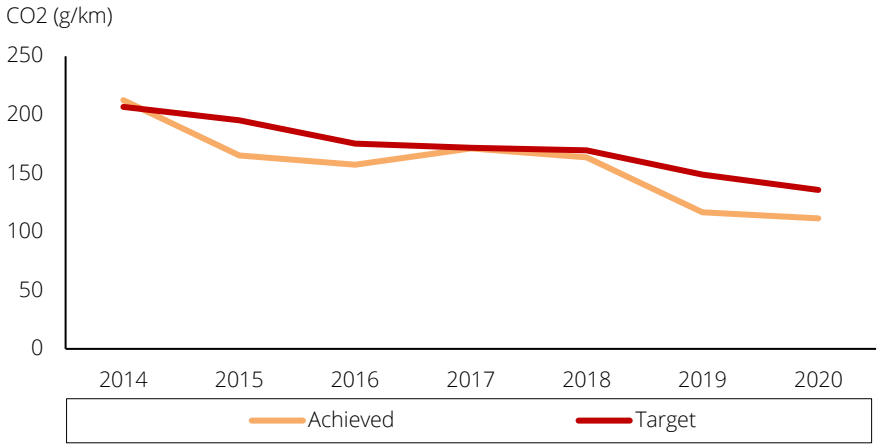
Achieved and target NEDC – Geely Group



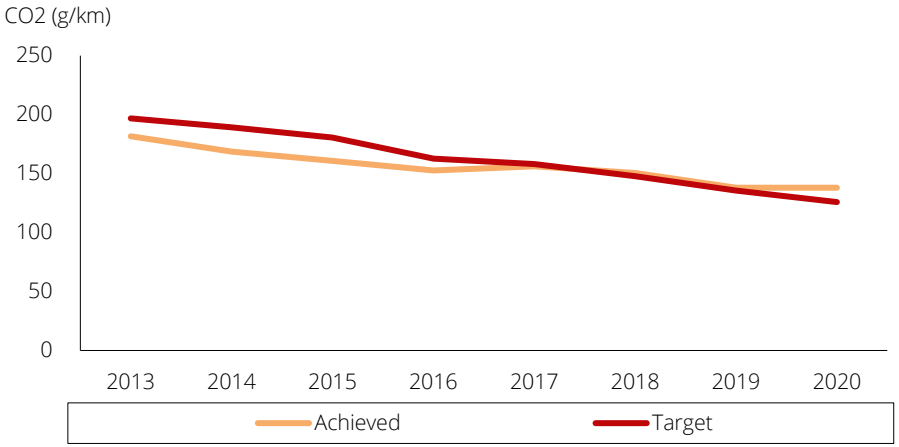
Achieved and target NEDC – Great Wall Motor



Achieved and target NEDC – GAC Motor Co

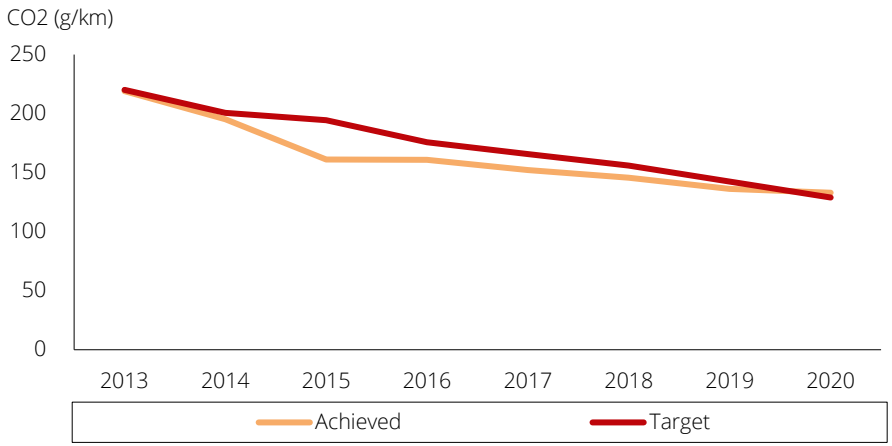


Achieved and target NEDC - GAC Honda Automobile Co

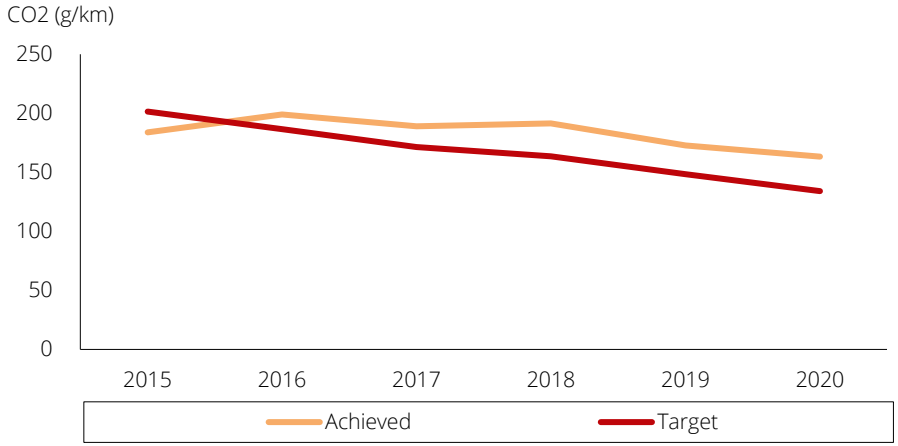


Source: MIIT

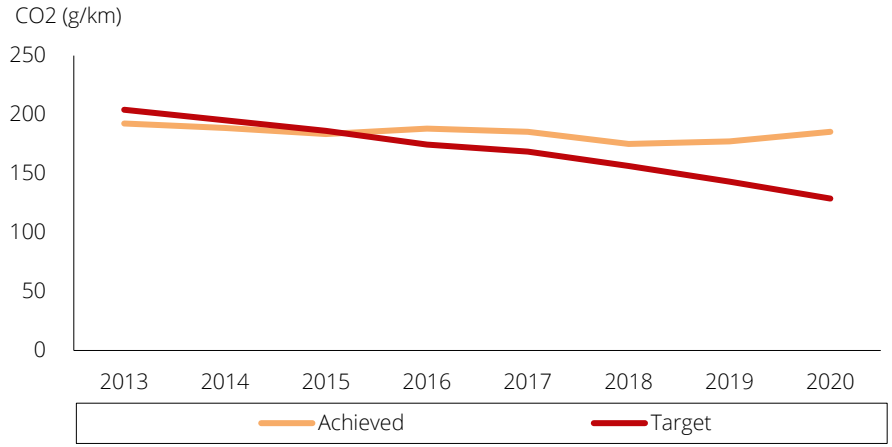
Achieved and target NEDC - GAC Toyota Motor Co



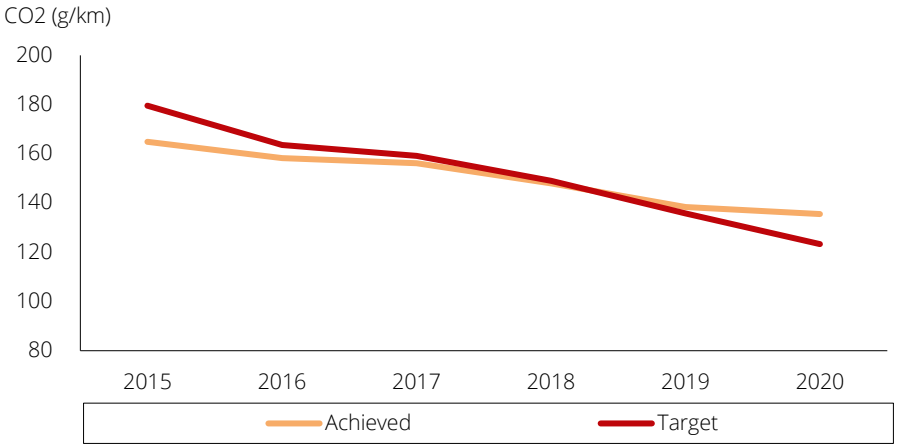
Achieved and target NEDC - GAC Fiat Chrysler Automobiles Co



Achieved and target NEDC - GAC Mitsubishi Motors Co

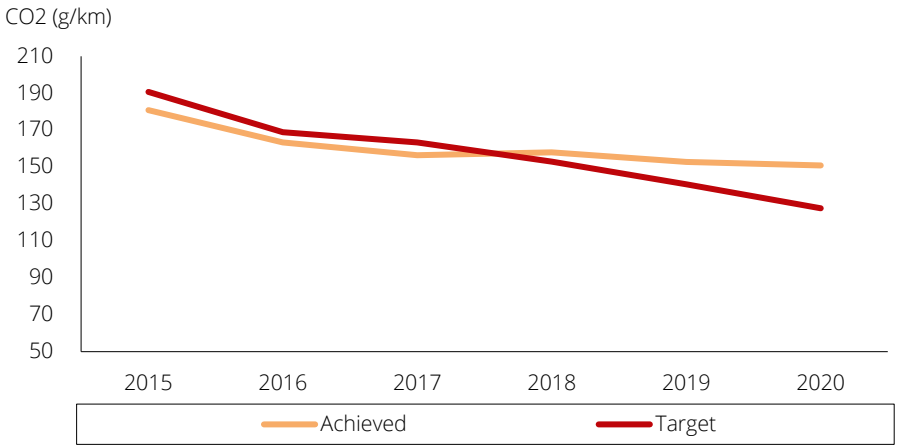


Achieved and target NEDC - SAIC Volkswagen

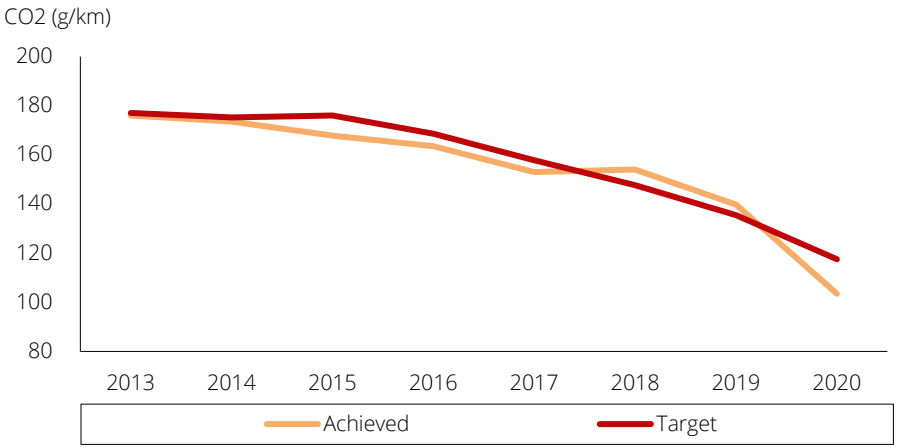


Source: MIIT

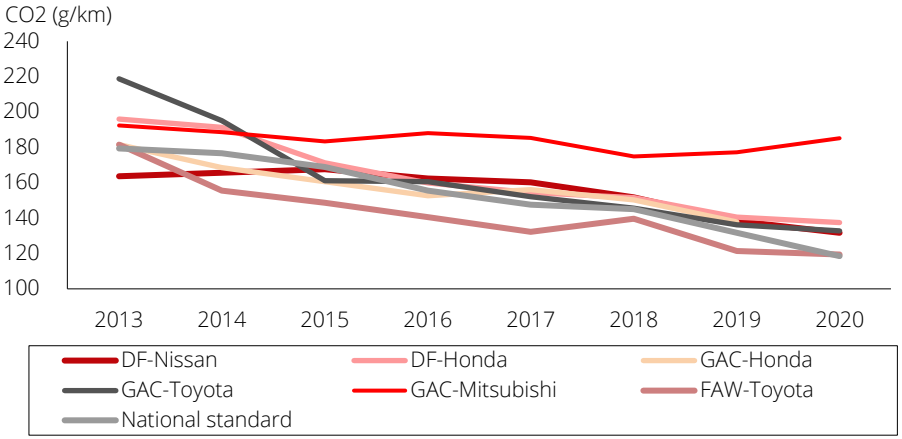
Achieved and target NEDC - SAIC General Motors Corp



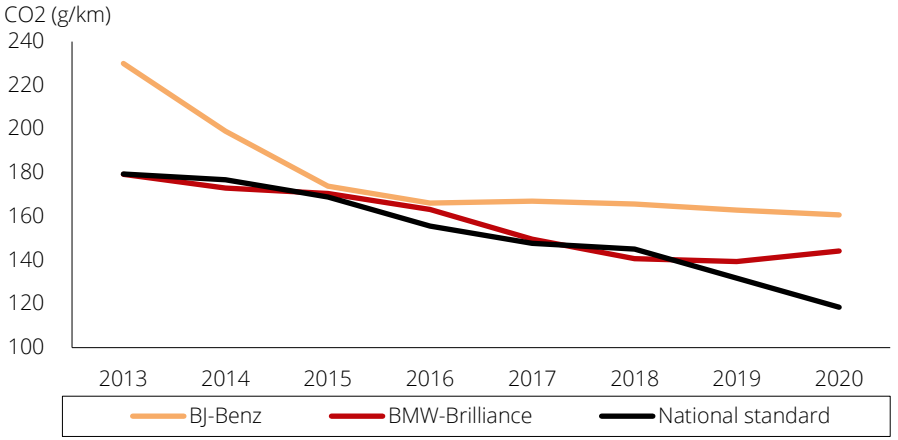
Achieved and target NEDC - SAIC-GM-Wuling Automotive Co



Sino-foreign NEDC comparison (Japanese brands)

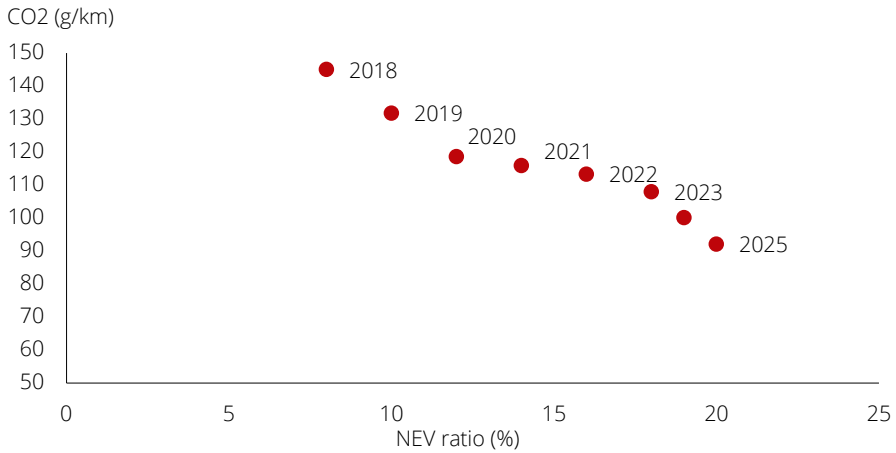


Domestic-made premium brands

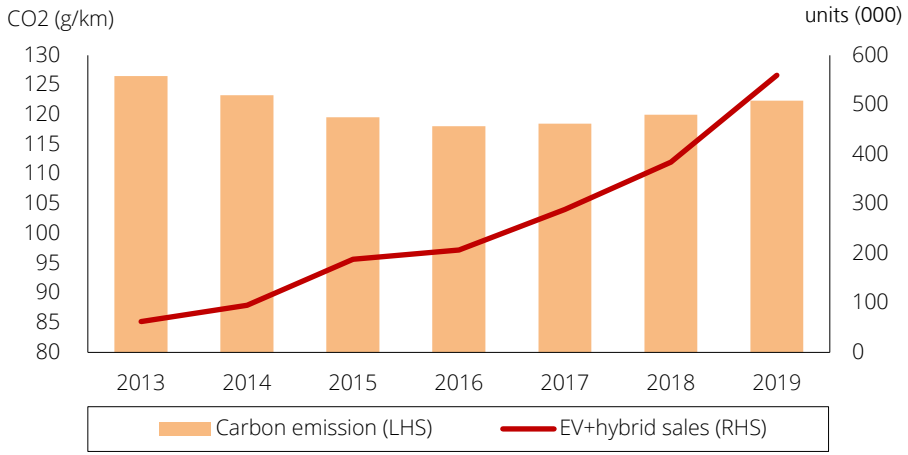


Source: MIIT, Companies

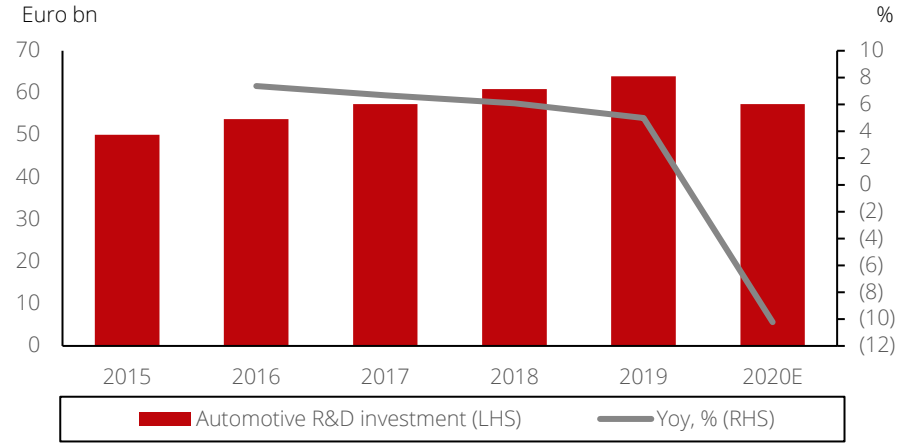
China target NEDC and NEV ratios



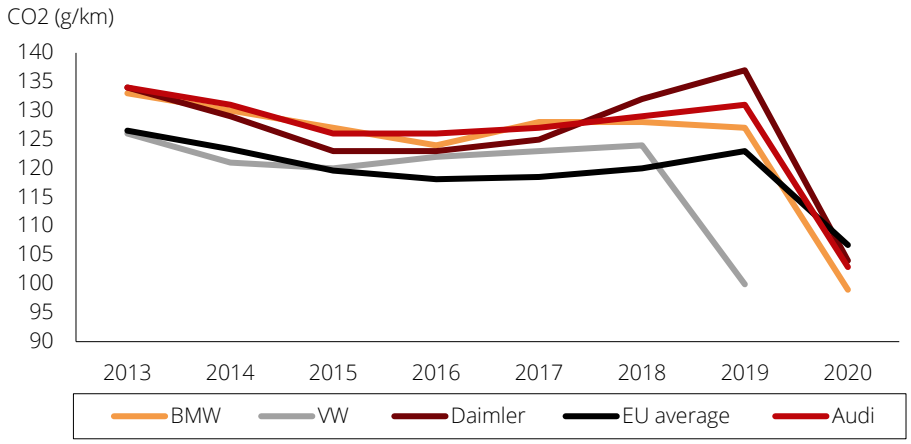
European Union carbon emission and alternative fuel vehicles



European Union spending on automotive innovations

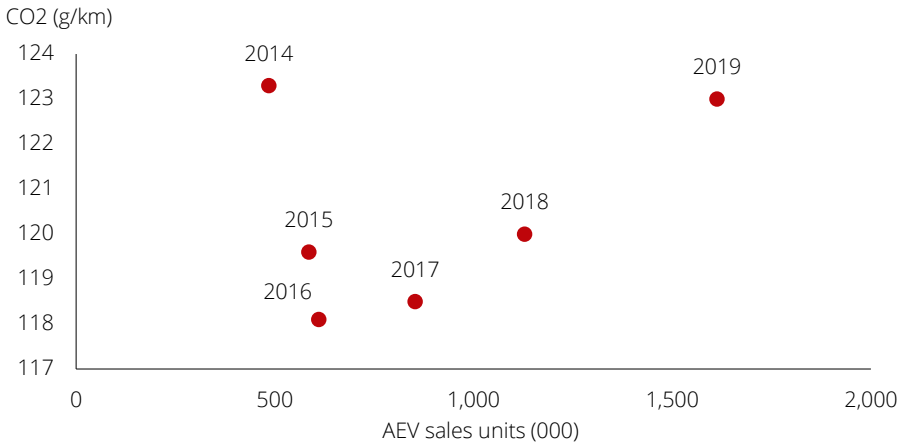


EU makers against benchmark

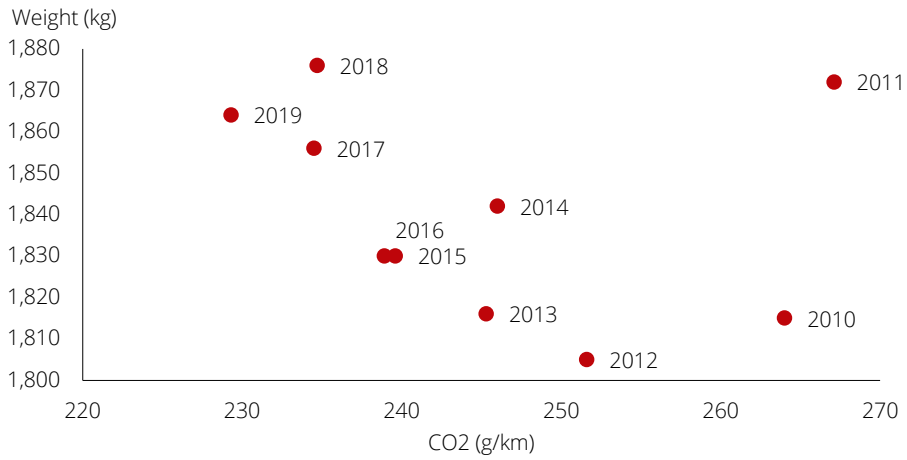


Source: Chinese Government, EU

EU NEDC performance vs NEV sales



US CO2 emissions vs weight of vehicles



Source: EU, EPA (US)

STOCK PROFILES

BAIC Motor Corp Ltd (1958 HK)

HOLD

Last Traded Price (21 Jun 2020):HK$3.00 (HSI: 28,489)
Price Target 12-mth:HK$3.00 (0% upside)

Analyst
Rachel MIU +852 36684191, rachel_miu@dbs.com

Forecasts and Valuation

FY Dec (RMB m)	2019A	2020A	2021F	2022F
Turnover	175,410	176,973	195,087	210,157
EBITDA	30,088	31,409	33,851	34,714
Pre-tax Profit	22,155	20,430	23,461	24,085
Net Profit	4,884	1,917	3,245	4,031
Net Pft (Pre Ex) (core	4,884	1,917	3,245	4,031
Net Profit Gth (Pre-ex) (%)	13.1	(60.8)	69.3	24.2
EPS (RMB)	0.61	0.24	0.40	0.50
EPS (HK$)	0.74	0.29	0.49	0.61
EPS Gth (%)	11.2	(60.8)	69.3	24.2
Diluted EPS (HK$)	0.74	0.29	0.49	0.61
DPS (HK$)	0.21	0.10	0.15	0.18
BV Per Share (HK$)	7.53	7.69	8.10	8.58
PE (X)	4.1	10.4	6.1	4.9
P/Cash Flow (X)	0.6	0.8	0.7	0.7
P/Free CF (X)	0.8	1.4	1.1	1.1
EV/EBITDA (X)	0.5	0.5	0.3	0.1
Net Div Yield (%)	6.8	3.2	4.9	6.1
P/Book Value (X)	0.4	0.4	0.4	0.3
Net Debt/Equity (X)	CASH	CASH	CASH	CASH
ROAE (%)	9.9	3.8	6.2	7.3
Earnings Rev (%):			Nil	Nil
Consensus EPS (RMB)			0.40	0.52
Other Broker Recs:		B:4	S:5	H:13

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

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Beefing up electric vehicle strategy; loss-making operation need to be addressed.
BAIC Group acknowledges that climate change is becoming a critical issue and has started to integrate green initiatives as part of its business strategy. Now that the company has revamped its self-brand operations, future investments will focus largely on electrifying its traditional oil-powered fleet under the Beijing Brand, namely pure electric passenger vehicles, to ride on the government's long-term NEV plans (2021-2035). The NEV market is very competitive and the company has to intensify its vehicle electrification rate with more NEV models on the new vehicle platforms. There are plans to launch four rounds of product upgrades in the coming three years (including Level 3 autonomous vehicles) to ensure compliance with the CAFC requirement in China. We estimate capex to maintain at over Rmb10bn per year in the foreseeable future to support the NEV development and improve the product profile to turnaround the loss-making business.

Similar to other Chinese automobile companies, the group has only disclosed certain climate-related indicators like Scope 1 & 2 CO2 emissions and resource consumptions from FY17-20. Detailing its CO2 emissions reduction targets (encompasses electrification rates and timetable) would further enhance its green score against domestic players. On the other hand, the JVs tend to adopt their foreign partners' green strategy and CO2 emissions reduction targets, electrification rates and decarbonisation path, are disclosed.

Price Relative

Climate-related financial disclosure

Element	Comments
Governance Improving	A proper reporting structure to monitor ESG • BAIC Motor's (BAIC) board of directors (BOD) is the top decision-making body responsible for environmental awareness. Recently, there were some changes to the senior management team, and the new management team may need some time to set the new direction for the company's future development, given the rapidly changing operating environment. • An environmental, social and governance (ESG) working group was established to assist the BOD in promoting ESG related matters as well as to set up an ESG index system. The working group provides regular updates on progress to the BOD. To ensure compliance within the set framework, all departments and subsidiaries within the Group are responsible for specific work and regularly report on ESG work performance. • Under the guidance of corporate culture of sustainability, the company implemented ESG guidelines on various aspects including corporate strategy, overall governance, green development, customer satisfaction and employee development. BAIC Motor places high priority on materiality to shareholders and the Group for product quality and safety, transition to smart electric vehicles to address the climate-related issues. • Reduction in energy consumption and carbon emission as well as active participation in environmental protection become an important focus for the board. The company comply strictly with emission regulations and standards, as the company will evaluate all its departments' the emissions on a quarterly and annual basis. • On the other hand, the Sino-foreign JVs tend to adopt the foreign partners' HQ guidelines on environmental protection programmes. The foreign partners also tend to have more long-term goals on carbon emissions reduction targets, and these are applied across markets in which they operate.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Strategy

Good

Daimler aims for carbon neutrality by 2039

- Daimler (partner to Beijing-Benz) has laid down its fuel roadmap, including compliance with the very challenging EU targets for 2021. The goal is to achieve CO2 neutral mobility by 2039 for its new passenger car fleet. To support this goal, Daimler targets to have over 50% of its passenger car sales from plug-in hybrids and battery-operated cars by 2030. This should help to reduce CO2 emissions by over 40% from 2019.
- Through the EQC platform, more electrified vehicles will be launched in the coming years. The goal is to reduce the variant of combustion engines by 40% by 2024 and down 70% by 2030 vs 2020 levels. It has started producing new passenger vehicle on the EQC platform under the JV.

Hyundai driven by hydrogen energy

- Hyundai (BAIC's partner under the Beijing-Hyundai JV) is developing the more advanced technologies like fuel cell and silicon-type solar roof for its eco-friendly models, in addition to electrification of its existing vehicle fleet. Hyundai plans to have 44 eco-friendly vehicle models by 2025 and achieve annual global sales of 1.67m unit sales, a sharp increase from 15 and 1.01m units in 2018 respectively. Some of Hyundai's more advanced electrified vehicle models are likely to be introduced to the Chinese consumers as well.
- By 2030, Hyundai targets to reduce greenhouse gas (GHG) emissions by 26% from 2016's level and achieve carbon neutral status by 2050.

BAIC Motor's green initiative needs to be beefed up

- Reducing weight of vehicles, energy recycling and emission management are innovative green solutions that form the core of BAIC's environmental protection strategy, which focus on green production and low-carbon operations. But transition to low carbon transport using its own proprietary technology could be an uphill task and more R&D activities are needed to beef up its NEV portfolio, which is not as competitive as industry peers. The Group is aware of the need to comply with the stringent corporate average fuel consumption (CAFC) and NEV credit ratio targets set by the Chinese government. Failure to comply with such targets could potentially result in repercussions on the Group's operations. BAIC plans to roll out more fuel-efficient and green new vehicle models to protect the environment.
- Through strengthening its environmental equipment construction and technology transformation, the company has made progress on reducing waste gas emissions, wastewater discharge, waste discharge and non-hazardous waste within its various production plants.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Risk management

Awareness of climate change risks

- The board of directors is the top decision-making body of the Group in ESG related matters such as evaluating and determining ESG risks, making decisions on material ESG issues, and integrating its ESG philosophy with development strategies and operational management. BAIC is managing its climate-related risks and ensures that BAIC Motor and its JVs comply with local laws and regulations, including Environmental Protection Law, Prevention and Control of Atmospheric Pollution, Solid Waste and Water Pollution in the operations of their production factories.
- To leverage on the rising vehicle electrification trend and consumer shift towards electric cars, BAIC is working with its parent in this field to integrate EV development as part of its future development. The Group believes the risk is high if it is unable to meet product quality and safety standards in its transition to NEV development.
- Sound supply chain management is an important part of its business, and this is achieved by cooperating with industry automotive parts leaders to develop strong technology, and a competitive supplier system.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Metrics and targets

Improving

More innovative green solutions needed to address climate-related issues

- By 2022, BAIC target to reduce the weight of vehicles by 70kg, by using aluminium-magnesium alloy.
- Scope 1 and 2 disclosures (2018-2020) show decent improvements. The company posted annual reduction rate of .19% in scope 1 CO2 emissions and c.10% in scope 2 emissions from 2018-2020. Similar to other Chinese automakers, BAIC Motor has yet to set targets on future reduction in scope 1 and scope 2 emissions as well as identify potential risks and opportunities related to climate-change issues and set financial budgets to meet these goals.
- Wastewater discharge was cut by c.14% per annum from 2018-2020. Energy savings is also part of its plans to cut CO2 emissions. By upgrading the production facilities at its various workshops, energy consumption was cut by c.9% p.a. in 2020 compared to 2018.
- The company CAFC performance in the past few years has been remarkable, due to strong performance of its NEV business. Given the rising pressure to meet the stringent environmental policy, the company plans to intensify its vehicle electrification rate with more NEV models on the new vehicle platforms. There will be four rounds of product upgrades (including some Level 3 autonomous vehicles) in the coming three years to ensure compliance with the CAFC requirement in China.

Sino-foreign JVs have set clear targets to meet climate-related challenges

- Daimler has set goal to achieve CO2 neutral mobility by 2039 for its new passenger car fleet. To support this goal, Daimler targets to have over 50% of its passenger car sales from plug-in hybrids and battery-operated cars by 2030. This should help to reduce CO2 emissions by over 40% from 2019.
- Hyundai plans to have 44 eco-friendly vehicle models by 2025 and achieve annual global sales of 1.67m unit sales, a sharp increase from 15 and 1.01m units in 2018 respectively. By 2030, Hyundai targets to reduce greenhouse gas (GHG) emissions by 26% from 2016's level and achieve carbon neutral status by 2050.

Source: Company, DBS HK

BYD Company Ltd (1211 HK / 002594 CH)

H: BUY

Last Traded Price (H) (21 Jun 2021):HK$232.6 (**HSI :** 28,489)
Price Target 12-mth (H):HK$280 (20.4% upside)

A: HOLD

Last Traded Price (A) (21 Jun 2021):RMB242.58(**CSI300 Index :** 5,090)
Price Target 12-mth (A):RMB187 (22.9% downside)

Analyst
Rachel MIU +852 36684191, rachel_miu@dbs.com

Forecasts and Valuation

FY Dec (RMB m)	2019A	2020A	2021F	2022F
Turnover	121,778	153,469	188,090	221,742
EBITDA	15,828	22,497	23,520	27,912
Pre-tax Profit	2,431	6,883	9,017	11,855
Net Profit	1,357	4,018	5,115	6,701
Net Pft (Pre Ex) (core profit)	1,357	4,018	5,115	6,702
Net Profit Gth (Pre-ex) (%)	(46.6)	196.2	27.3	31.0
EPS (RMB)	0.50	1.47	1.79	2.34
EPS (HK$)	0.60	1.78	2.16	2.83
EPS Gth (%)	(46.6)	196.2	21.4	31.0
Diluted EPS (HK$)	0.60	1.78	2.16	2.83
DPS (HK$)	0.07	0.18	0.22	0.28
BV Per Share (HK$)	25.12	25.17	36.65	39.36
PE (X)	387.5	130.8	107.8	82.3
P/Cash Flow (X)	35.7	11.6	29.9	25.1
P/Free CF (X)	100.8	13.3	381.5	110.5
EV/EBITDA (X)	37.6	25.3	24.6	20.9
Net Div Yield (%)	0.0	0.1	0.1	0.1
P/Book Value (X)	9.3	9.2	6.3	5.9
Net Debt/Equity (X)	1.0	0.6	0.2	0.2
ROAE (%)	2.4	7.1	7.1	7.4
Earnings Rev (%):			Nil	Nil
Consensus EPS (RMB)			1.74	2.37
Other Broker Recs:		B:23	S:6	H:4

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

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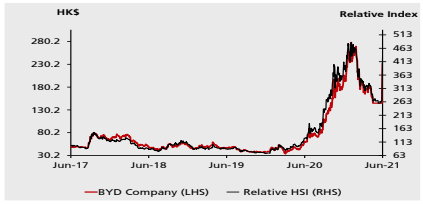
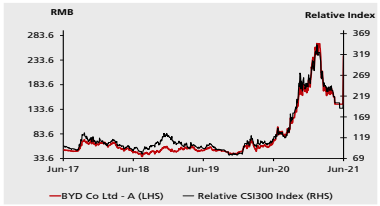
Best positioned on decarbonisation strategy. As an early adopter of vehicle electrification among the Chinese automakers, BYD has over the years widened its decarbonisation coverage to include more transport segments into the rail transit domain. Going forward, the company will continue to focus on establishing a strong electrification ecosystem, especially in the development of electric vehicle batteries, automotive chips, and more advanced electric cars. The JV with Toyota to develop battery electric vehicles highlights BYD's strong product development capabilities. From 2017-2020, BYD has generated over 3m NEV credit points under the Chinese dual-credit system, the highest in the industry. BYD's green strategy goes beyond electric vehicles to include renewable energy sources, which has also contributed to its low-carbon strategy. As the Chinese government pushes forward its carbon neutral goal by 2060, BYD is well prepared for the climate change transition path, given that it has achieved a high score under the dual-credit system and its focus on developing a green transport strategy.

However, as disclosure of climate-related issues is a relatively new approach in China, there is room for improvement in this aspect, especially in setting long-term targets and goals. The company started to disclose scope 1 & 2 GHG emissions in FY20 (previously only total) and has made efforts to reduce resource consumption and strengthened recycling and reuse of resources. Due to the heavy investments to support its green strategy (we estimate per annum of some c.Rmb10-15bn), it has decided to spin-off certain businesses to finance its decarbonisation strategy.

Price Relative





Climate-related financial disclosure

Element	Comments
Governance 	Decision-making mechanism • BYD has a strict decision-making mechanism with regular self-evaluation processes for effective internal control. Critical decisions are made through collective negotiations and reviewed and approved by the President, who is also responsible for the big picture, planning new projects and future development of the company. • In view of growing importance of climate-related issues, BYD has formed a dedicated committee to formulate Corporate Social Responsibility (CSR) management regulations and work plans. The CSR programs are facilitated and organised by the CSR committee. The CSR community groups share relevant information, enhance internal exchange and push social responsibilities forward as a company. • Greenhouse gas (GHG) management is an integral link in BYD's operations. Emissions have been effectively reduced by their (GHG) Quantification and Reporting Management Procedures. BYD have set objectives to continuously reduce greenhouse gas emissions. The company's performance is regularly reviewed. In particular, five subsidiary legal entities in Shenzhen are audited by third party organizations for carbon emissions. This is a constant process of monitoring and improvement, and their technologies and products are developed with environmental protection in mind. Meanwhile, BYD is working hard to reduce its own carbon footprint through energy conservation and clean production. Total carbon emissions of BYD in 2020 was approximately 4.1m tons, an increase of 20% (CAGR) from 2018's level, largely because the company has expanded its green business scope. • While BYD has taken a strong stance on social and environmental responsibilities and appointed specific executive representatives to ensure that all operations and products abide by applicable laws, regulations and client demands, to reduce operational risks, there is a need to include climate related issues in management's KPIs to better measure their performance, especially in CSR.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Strategy

Strong

Leadership in green transport initiatives

- BYD is in the forefront in dedicating to lowering global energy consumption with green products, thus reducing the direct impact on the environment. The company is one of the earliest Chinese companies to embark on green business development, covering new energy vehicles, energy storage products, solar products, SkyRail and SkyShuttle.
- In its green car initiative, the company has set the "542" standard in automobile performance safety and fuel efficiency. The "5" means accelerating from stationary to 100kmph within 5 seconds; "4" stands for 4-wheel electric drive; and "2" stands for a fuel efficiency of 2 litres per 100km. This standard has been applied to multiple BYD car models since June 2015. New energy vehicle is BYD's answer to the global pollution issue. Currently, BYD products have covered the entire market, including 7 conventional transportation areas (passenger vehicles, taxis, buses, coaches, logistics vehicles, construction vehicles, sanitation vehicles) and 4 specialized areas (warehouses, harbour, airports and mines).
- BYD embodies green manufacturing as well, by constantly improving its energy efficiency and reducing energy consumption and carbon emissions in production. As a leader in the renewable energy sector, the company is making manufacturing more eco-friendly with their own green products, such as electric automobiles, energy storage stations, solar arrays, electric forklifts, and LED lighting. In terms of gasoline and diesel consumption, the company recorded notable reductions of 8% and 45% in 2020.
- Solar energy is a fundamental solution to the world's energy crisis and saves the increasingly deteriorating environment. It's a sustainable answer to health and development issues troubling mankind. By the end of 2019, BYD has shipped over 10 GW of solar components, widely used in solar power plants, distributed power plants, and solar-powered streetlamps. Their products are well received by consumers in the US, UK, France, Germany, Brazil, Australia, Japan, and India.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Risk management

Well prepared for climate-related issues and changing consumer behaviour

- The board has in placed a risk management system, which is responsible for evaluating and determining the nature and magnitude of the business risks assumed by the company, covering financial, market and operations, in view of rising environmental concerns.
- At present, the company has eight research institutes and over 20,000 engineers in hardware, software, and testing of new materials, automobiles and rail transit to keep abreast with the technology advancement. The number of new patents being awarded in the past five years increased from 1,350 in 2015 to 2,231 in 2020. Accumulated patents amounted to 9,283 over the same period.
- BYD has been developing its EV eco-system to ensure critical components supply risks is kept at low levels. For instance, it has successfully rolled out its latest blade battery technology and this is being incorporated into its "Han" EV series. Besides, the company also produces certain automotive chips to ensure smooth vehicle productions especially under the current automotive chip supply shortage environment.
- To support green production, the company upholds its green procurement strategy. Its production factories have green suppliers, green material tracking system as part of its environmental production measure.
- Based on the various initiatives, it shows the company is well prepared to meet rising challenges from the technology front as well as consumer needs. This also helps to the company to face tightened environmental regulations too.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Metrics and targets

Improving

Carbon emissions and energy consumption controls

- The company has set a high bar on consumption and emissions objectives, although these are not officially disclosed. BYD is continually making an effort to reduce environmental impact through innovative energy management system, renewable energy sources, and eco-friendly technology and management controls. The company measures utilities consumption (water, electricity, natural gas, gasoline and diesel), CO2 emissions and packing materials consumed as part of its monitoring and control process. Based on the past three years from FY17-20, there were improvements in certain categories, such as reducing water, natural gas, gasoline and diesel consumption. The company also has started to disclose Scope 1 & 2 GHG emissions in FY20 (previously only total).
- The company has spent over Rmb1bn (FY19-20) on projects related to environmental protection and technology / equipment upgrades as part of its effort to manage resources efficiently. Natural gas, gasoline and diesel consumption declined by 1-45% y-o-y in 2020 but electricity and water consumption rose c.4% each during the same period.
- BYD is one of the earliest enterprises to embark on green technology strategy and is one of the largest NEV players in China. Given that the company is a leader in the NEV industry, its ongoing efforts to roll out more advanced NEV models is one of the metrics to measure its performance. Due to the high NEV sales ratio, BYD has accumulated a huge amount of carbon credits of some 3.1m points from 2017-2020, topping the dual credit system chart. These credit points are tradable for cash.
- The group's solar energy business is a fundamental solution to the world's energy crisis and save the environment as well. Its technological innovation using proprietary silicone dual glass components has helped to improve power generation efficiency and has a long-life cycle of 50 years. By end 2020, BYD has delivered over 1GWh of energy storage projects in almost 300 cities around the world, and these projects cover solar power plants, solar-power streetlamps etc.
- Similar to other Chinese automakers, BYD does not disclosed its long-term CO2 emissions reduction target and vehicle electrification pipeline. But the company will hire a third party every year to check the carbon emissions of the five legal companies in Shenzhen with the aim to improve GHG emission performance.

Source: Company, DBS HK

Geely Automobile Holdings Ltd (175 HK)

BUY

Last Traded Price (21 Jun 2021):HK$25.05 (HSI: 28,489)
Price Target 12-mth:HK$30.00 (19.8% upside)

Analyst
Rachel MIU +852 36684191, rachel_miu@dbs.com

Forecasts and Valuation

FY Dec (RMB m)	2019A	2020A	2021F	2022F
Turnover	97,401	92,114	111,253	125,347
EBITDA	13,261	11,724	16,009	18,119
Pre-tax Profit	9,636	6,441	11,104	12,788
Net Profit	8,190	5,397	9,610	11,086
Net Pft (Pre Ex) (core	8,190	5,397	9,610	11,086
Net Profit Gth (Pre-ex) (%)	(34.8)	(34.1)	78.1	15.4
EPS (RMB)	0.90	0.56	0.98	1.14
EPS (HK$)	1.09	0.68	1.19	1.37
EPS Gth (%)	(35.5)	(37.4)	74.2	15.4
Diluted EPS (HK$)	1.08	0.68	1.19	1.37
DPS (HK$)	0.27	0.21	0.25	0.28
BV Per Share (HK$)	6.78	7.61	8.63	9.81
PE (X)	23.0	36.7	21.1	18.3
P/Cash Flow (X)	15.0	124.2	17.6	15.2
P/Free CF (X)	19.5	nm	25.3	19.7
EV/EBITDA (X)	13.4	15.9	11.7	10.0
Net Div Yield (%)	1.1	0.8	1.0	1.1
P/Book Value (X)	3.7	3.3	2.9	2.6
Net Debt/Equity (X)	CASH	CASH	CASH	CASH
ROAE (%)	17.1	9.7	15.0	15.2
Earnings Rev (%):			Nil	Nil
Consensus EPS (RMB)			0.87	1.10
Other Broker Recs:		B:35	S:4	H:4

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

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Blue Geely Action Plans to support sustainable development. Geely acknowledges the challenges posed by climate change and has a vision to develop a sustainable business model and transition to a low carbon future. The company strives to reduce CO2 emissions and improve fuel economy of its vehicles in response to the regulatory requirements. The new Blue Geely Action Plans aims to reduce vehicle carbon footprint through energy-saving, low-carbon, and zero emission products. The future direction is towards efficient powertrains, weight reduction, vehicle safety, quality, increased use of renewable materials and innovative options to meet rising consumer demand as well as cater to different regulatory requirements in markets that it operates in. Geely has set up a sustainability committee which should lead to improvements on its ESG initiatives (long-term plans and strategy) as well as financial disclosures as recommended by TCFD.

In February 2021, Geely entered into several major projects with Volvo Cars to merge the powertrain business as well as deepen its vehicle electrification strategy, leveraging on the new platforms to accelerate the rollout of NEV models. In fact, Volvo Cars has a rather comprehensive plan, including to reduce CO2 emissions by 40% by 2025 and about half of its global sales to come from battery operated vehicles. Its long-term goal is to become carbon neutral by 2040. Geely could leverage on Volvo Cars' strengths to incorporate climate related issues into its business strategy in the e-mobility drive.

Price Relative

Climate-related financial disclosure

Element	Comments
Governance 	Vision on sustainable development • The board of directors established the sustainability committee in December 2020 to further enhance ESG governance structure., which consists of the board of directors, the sustainability committee, ESG working group and supervisory department, and the ESG related departments. The sustainability committee is responsible for assisting the board of directors in overseeing the group's development in ESG and providing guidance in the implementation of related measures. It is also the responsibility of the sustainability committee to ensure ESG measures and review procedures are well executed and all climate change related matters are reported to the board on a regular basis. • The board of directors is responsible for all matters of the group, including investment plans, annual budgets, sales performance and sustainability. The board believes that putting a high priority on developing energy-saving and environmental-friendly products will eventually enable the group to meet CO2 emissions reduction targets. The board has set up the Department of Social Responsibility (DSR) to take charge of corporate social responsibility and sustainable development. The key responsibilities of the DSR are to identify environmental, social and governance related risks, analyse policies and trends of sustainable development in the automotive industry, and formulate sustainable development strategic plans. The board will give final approval and permission on major issues. In addition, the Office of Safety and Environmental Protection, logistics centre and the ME Centre manufacturing planning departments will help to monitor GHG emissions related data and formulate corresponding energy conservation and emission reduction measures. • Geely believes it has the responsibility to reduce emissions and practise energy conservation to ensure sustainable development. Hence, the group's business strategy will include areas that would help meet its sustainable development targets, such as construction of green factories and production lines and environmental protection. Therefore, the board will periodically evaluate its policies and internal controls to ensure sustainable and robust development and refine its governance structure with checks and balances to uphold its vision.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Strategy Good	Green driving strategy through deepening EV development • The group highly recognises global climate change's risks and opportunities and formed "Two Blue Geely Action Plans" to promote intelligent energy-saving and hybrid vehicles as well as intelligent electric vehicles. A special task force has been set up to formulate and implement the action plans and integrate them in the company business strategy. In addition, the group has divided its development plans into four phases: 2021-2025 (short-term); 2026-2035 (mid-term); and 2036-2060 (long-term) to develop its business strategy accordingly to meet the risk and opportunities that arise during these phases. • The Group's new energy vehicle strategy encompasses four technological pathways (hybrid, pure electric, alternative fuel and hydrogen fuel cell technologies). Geely takes a responsible approach on its vehicle development, including efficient powertrains, weight reduction, vehicle safety, quality, increased use of renewable materials and innovative options to meet rising consumer demand as well as to cater to different regulatory requirements to contribute to the goal of transitioning to a low-carbon future. Maximising powertrains efficiency is part of the group's strategy to reduce vehicle CO2 emissions and improve fuel economy. • Geely has been increasing its investment in technological innovation and product improvements, particularly in the areas of powertrain technology, in-car air quality, vehicle safety and new energy. Going forward, the group will accelerate the development small displacement engines, lightweight vehicle bodies, better fuel-efficient products to comply with the European emissions standards. Besides, the group has launched several new vehicle platforms to support long-term goal of producing zero emission pure electric vehicles. Also, smart manufacturing plays an important role under the environmental, allowing the business to co-exist with the environment. • To build up its NEV capability and scale, Geely has recently announced a series of actions for its long-term sustainable growth. It will collaborate with Volvo Cars on vehicle electrification to develop next generation EV architecture. The aim is to share electrification technologies (including battery packs and electric drive systems) and intelligent connectivity and joint procurement to reduce costs. Besides, it will also merge the powertrain unit with Volvo Cars to focus on the development of next generation dual-motor hybrid systems applicable for both hybrid and plug-in hybrid vehicles to serve the global markets. At the same time, the company recently set up a new EV brand – Zeekr to further strengthen its NEV business and green strategy. • Overall, the Blue Geely Action Plan + green production + green value chain aim to support China's goal of carbon neutrality before 2060.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Risk management

Management systems in place to trace and monitor risks

- Based on the risk management framework, the management established risk management policy and internal control procedures to identify, evaluate and manage risks. In evaluating climate-related risks, the company considers existing and emerging regulatory requirements, future technologies and techniques, market changes etc.
- Risk management is an important part of an integrated business environment and the group strives to achieve a balance between growth and the greater good of mankind. Therefore, the management will assess all risks and opportunities. Its business strategy has considered various risks, markets, policy, technology, reputation and supply chain especially in the construction of green factories, which have in place measures and controls to handle environmental concerns.
- In fact, through a management system, the group aims to identify and evaluate both internal and external risks in advance. Hence, risk prevention and control, under the climate-change environment, would allow Geely to incorporate environmental, social and governance aspects into its business strategy. One important division that oversees sustainable development is the Department of Social Responsibility (DSR), which is tasked with analysing policies and trends of sustainable development in the automotive industry, formulating sustainable development strategic plans and identifying critical issues. The DSR reports to the Board who will give the final approval for and permission to major matters, such as adjustment of sustainable development strategy.
- Geely has also developed a national regulation database and information management systems to aid, prevent and control risks of violating related laws, regulations and compliance managements. At the same time, the company also carries out regular internal audits on climate-related issues such as energy-saving and emissions reduction.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Metrics and targets

Improving

Action plans to meet dual credits requirements

- Geely group chalked up negative average fuel consumption credits (c.1.4m points) and new energy vehicle credits (c.107,160 points) during 2020, largely due to reduction in sales of NEVs and high proportion sales of SUVs which generally consume high fuel.
- The management plans to expedite the planning of future products under the Blue Geely Action Plans to address the potential climate-related risks. The management intends to develop more competitive intelligent pure EVs built on its latest Sustainable Experience Architecture (SEA) vehicle platform. In addition, the second generation of HEV to be launched in 2021 is expected to achieve fuel-saving of 45% to satisfy the dual credit policy. To enhance its capabilities in NEV development, Geely has created a system on new energy powered smart engines, covering four main technologies – electric, hybrid, combustion replacement and hydrogen fuel batteries technologies.
- In recent years, the company has reduced vehicle weight (will effectively reduce energy consumption) by more than 50kg for 25 products. This is made possible through technological advancement.
- Geely is looking at a systematic approach to set future targets and CO2 emission reduction is a good starting point in its climate change transition process. Based on 2018-2020 disclosures on scope 1 and 2 of total GHG emissions data, the trend was on the rise (at 7% and 9% CAGR respectively) over the period on higher proportion of productions and sales of larger-sized vehicles like SUVs.
- Green factories are another important goal for the group. The proportion of renewable energy in vehicle plant's energy consumption improved from 4.95% in 2018 to 8.68% in 2020. The long-term (2036-2060) goal is to achieve 100% renewable energy and electricity and 100% green factories.
- Geely will be paying greater attention on climate related disclosures based on recommendations by TCFD, covering governance, strategy, risk management and metrics and targets. The set up of a sustainability committee is expected to better incorporate climate-related issues into its business strategy in the future.

Source: Company, DBS HK

Great Wall Motor (2333 HK / 601633 CH)

H: BUY

Last Traded Price (H) (21 Jun 2021):HK$24.6(**HSI :** 28,489)
Price Target 12-mth (H):HK$31.30 (27.2% upside)

A: HOLD

Last Traded Price (A) (21 Jun 2021):RMB44.23(**CSI300 Index :** 5,090)
Price Target 12-mth (A):RMB38.60 (12.7% downside)

Analyst
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Forecasts and Valuation

FY Dec (RMB m)	2019A	2020A	2021F	2022F
Turnover	96,211	103,308	124,834	147,127
EBITDA	9,374	11,502	14,731	17,364
Pre-tax Profit	5,101	6,227	10,154	12,717
Net Profit	4,497	5,362	8,631	10,810
Net Pft (Pre Ex) (core	4,497	5,362	8,631	10,810
Net Profit Gth (Pre-ex) (%)	(13.6)	19.2	61.0	25.2
EPS (RMB)	0.49	0.59	0.95	1.18
EPS (HK$)	0.59	0.71	1.14	1.43
EPS Gth (%)	(13.6)	19.2	61.0	25.2
Diluted EPS (HK$)	0.59	0.71	1.14	1.42
DPS (HK$)	0.30	0.34	0.55	0.70
BV Per Share (HK$)	7.19	7.58	8.39	9.27
PE (X)	41.4	34.7	21.6	17.2
P/Cash Flow (X)	13.3	35.9	10.4	15.8
P/Free CF (X)	25.9	nm	18.9	49.4
EV/EBITDA (X)	19.1	16.5	12.4	10.5
Net Div Yield (%)	1.2	1.4	2.2	2.8
P/Book Value (X)	3.4	3.2	2.9	2.7
Net Debt/Equity (X)	CASH	0.1	CASH	CASH
ROAE (%)	8.4	9.6	14.3	16.2
Earnings Rev (%):			Nil	Nil
Consensus EPS (RMB)			0.90	1.17
Other Broker Recs:		B:27	S:5	H:4

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

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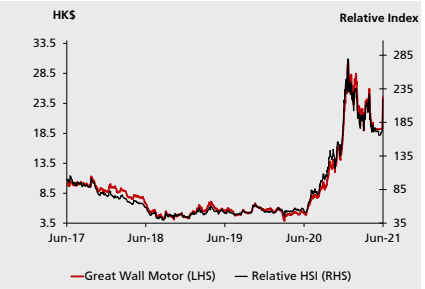
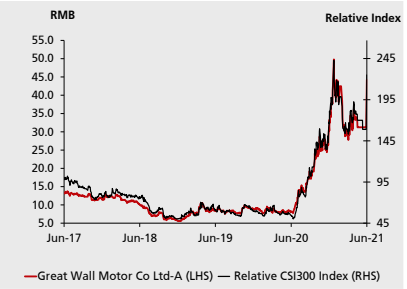
Setting five-year NEV investment budget to deal with climate-related risks and opportunities. Great Wall Motor's (GWM) is the first Chinese automaker to join the Corporate Social Responsibility – European (CSR – Europe) and its affiliate Drive Sustainability in January 2021 to further commit to sustainable mobility, engaging in low carbon and environmental protection during each phase of the vehicle cycle. Its investment in the NEV segment – car battery, EV and PHEV developments - demonstrates its goal to make cleaner vehicles for green travel. The company has committed to spend Rmb30bn in the next five years on a global R&D system to strengthen its journey on green transport initiative, and is ramping up new technologies development in all its new vehicle models to enhance the EV and PHEV portfolio and to improve product quality.

GWM has been improving on its CAFC in the past five years to slightly below 6L/100km in 2020, despite SUV accounts for c.75% of vehicle sales mix. The roll out of more NEV models (covering both PV and CV) is GWM's goal to achieve higher vehicle electrification rate, through new technologies such as the GWM LEMON (hybrid DHT engine) and GWM COFFEE Intelligent Driving (digital smart technology).

The company has set a mid-term vehicle sales and net earnings CAGR of c.30% through 2023 under its latest share option scheme. There is room to include more disclosures on climate related risks and opportunities as well as its long-term vehicle electrification rate and CO2 emission reduction targets.

Price Relative





Climate-related financial disclosure

Element	Comments
Governance 	Key personnel in decision-making process • The Executive Directors of the board are responsible for the company's strategy and development. Both Chairman and Vice Chairman play an active role in formulation of the company's green targets such as new investments into NEV development. The board is committed to accelerate digitisation and clean energy transformation to meet climate change requirement. • A social responsibility working group has been set up to centrally manage various climate related issues, covering environmental, economic, social and product responsibility. The main duties include formulating energy environmental management and sustainable development solutions such as low pollution and low energy consumption, and adhering to all laws and regulations. GWM has identified some 20 material issues which are of important to the company. • The board has placed climate related environmental issues as a high priority. NEV development is a long-term and it has a collaboration with major global automaker, BMW AG. • To further commit to sustainable mobility, engaging in low carbon and environmental protection during each phase of the vehicle cycle, GWM joined the Corporate Social Responsibility – European (CSR – Europe) and its affiliate Drive Sustainability in January 2021 as its pledge on transiting to a low carbon footprint and working with global industry partners. • The recent share option scheme to align company and staff interests is an important step to enhance its corporate governance.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Strategy Good	New investments into new energy vehicles and technology to address stringent CO2 emission standards • GWM is the first Chinese automaker to join the Corporate Social Responsibility – European (CSR – Europe) and its affiliate Drive Sustainability in January 2021 to further commit to sustainable mobility, engaging in low carbon and environmental protection during each phase of the vehicle cycle. A long-term strategic collaboration with battery-maker CATL is another crucial step in its green transport journey. • To address the growing concerns of the impact of climate change on the automobile industry, GWM is planning to make targeted R&D investments to develop energy-efficient and environmental-friendly products such as new energy vehicles. At the same time, active promotion of renewable clean energy for production and business operations will also help to reduce electricity demand. • Low-carbon development and energy savings for sustainable development is a step to reduce CO2 emissions. In this aspect, GWM will focus on clean energy, intelligence, interconnection and high-performance products going forward. The company is ramping up its new technologies such as the GWM LEMON (hybrid DHT engine) and GWM COFFEE Intelligent Driving (digital smart technology) to strengthen its EV and PHEV portfolio in all its new vehicle models to enhance product quality. • In the new energy vehicle products and clean technology space, the company is concurrently engaged in the development of electric vehicle and hybrid electric vehicles. It will also carry out research into hydrogen-fuelled vehicles. To enable this to take place, the company has invested in new vehicle platforms – Pi4 and ME for PHEV and EV respectively. Moving forward, a 48V HEV platform and a fuel cell vehicle are in the pipeline. • To bring these R&D efforts into fruition, GWM established a separate EV brand – ORA - as part of its NEV strategy to reduce CO2 emissions. The collaboration with BMW to set up an equal-share JV to produce new energy vehicles will further assist in meeting the future NEV 2021-2035 targets set by the government. • In 2020, the company rolled out a new corporate culture, featuring the mission and vision to Rock the World with our GIFT (Green Intelligent Future Technology) as its commitment on low carbon business strategy.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Risk management

Compliance with regulations on environmental protection

- GWM has established a global compliance manual and management system to ensure its operations meet all the rules and regulations in countries in which it has a presence, especially environmental protection and pollution controls. Key considerations including compliance with laws and regulations and ensure high product quality.
- There are management systems to ensure compliance with various regulatory laws both in China and overseas such as Environmental Protection Law of the PRC and the Law on Prevention and Control of Water Pollution of the PRC. A screening system platform was also set up to cater for laws and regulations on export control and economic sanctions, especially the company has operations in Thailand, Russia and Europe.
- Broadly, the company is aware of the importance in raising its technology standards to prepare for climate-change, as headwinds from NEV is huge and consumer needs will shift as a result, if GWM is unable to meet such challenges. GWM has started to disclose annual GHG emissions (Scope 1 & 2), hazardous waste produced, use of resources (electricity, water, fuel etc) in its Corporate, Social and Responsibility 2020 Annual Report as part of monitoring its climate related risks and exposure. At the same time, the company has also met the targets in the environmental and regulatory policy in terms of handing of waste discharge, CO2 emissions and national fuel standards (China fuel VI standard).
- Overall, the company also has a comprehensive system to uphold its social responsibility governance, covering product, employees, social and environmental. More importantly, the company is aware its business strategy has to consider energy-efficient, environment-friendly and sustainability to address the rising climate change concerns and the need to invest in R&D more vigorously to meet the new challenges.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Metrics and targets Improving	Achieved some progress based on historical environmental performance • Expanding its NEV business and scope via investments into new vehicle platforms and e-models. A dedicated platform for electric vehicles would assist the company to further reduce GHG emissions in the coming years. From 2018-2020, GWM has achieved c.70% CAGR in new energy vehicle volume sales. As GHG emissions control is important within the environmental framework, GWM has also reported improvement in total GHG emissions. From 2018-2020, total GHG emissions reduced by c.3% p.a. to approximately 1.3m tonnes as the company made concerted efforts to manage its environmental performance indicators. • In usage of other resources, GWM has also achieved meaningful milestones. As of 2020, the company has contracted a total of 160MW of solar photovoltaic power generation systems. But electricity consumption intensity per unit of production in 2020 increased 1.3% y-o-y to 9,864 kWh/unit as total production increased on strong vehicle demand. It also has established a reclaimed water reuse system to reuse water of 950,000 tonnes annually. • Since the launch of its first light-duty pickup model that meets China VI standard, the company was able to leverage on this technical edge to rollout more diesel-powered China VI pickup models and sales have so far been encouraging, demonstrating that market is receptive to green vehicles. • Through new vehicle platform development, several GWM vehicle models have been able to meet the national emission regulation requirements for 2023 in advance, especially its diesel pickup trucks. Improving the combustion efficiency of engines will help to reduce fuel consumption and meet China VI emission standards. Initial results of its latest 4N20 engine technology show that fuel consumption is c.15% down. • While GWM's CAFC performance has been improving since 2015, its average fleet fuel consumption was higher than certain peers, largely because of its product mix (more SUVs and pickup trucks sales) which tends to be heavier and hence consume more fuel. At end 2020, its corporate average fuel consumption was 5.93L/100km compared to 7.6L/100km at end 2016. From 2016-2020, GWM has clocked up a total of 387,410 NEV credit points. But it recorded approximately 369,000 negative average fuel consumption points at end of 2020. • The company has committed to spend Rmb30bn in the next five years on a global R&D system to strengthen its journey on green transport initiative. In addition, it has laid down a mid-term growth targets in vehicle volume sales and net earnings by c.30% each p.a. through 2023 as part of its staff option scheme to encourage staff contributions to the company's growth.

Source: Company, DBS HK

Guangzhou Automobile (2238 HK / 601238 CH)

H: BUY

Last Traded Price (H) (21 Jun 2021):HK$6.94(**HSI :** 28,489)
Price Target 12-mth (H):HK$9.80 (41.2% upside)

A: HOLD

Last Traded Price (A) (21 Jun 2021):RMB11.9(**CSI300 Index :** 5,090)
Price Target 12-mth (A):RMB11.60 (2.5% downside)

Analyst
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Forecasts and Valuation

FY Dec (RMB m)	2019A	2020A	2021F	2022F
Turnover	59,704	63,157	67,922	75,481
EBITDA	10,630	10,090	14,190	16,405
Pre-tax Profit	6,292	5,692	8,634	10,095
Net Profit	6,616	5,964	8,483	9,893
Net Pft (Pre Ex) (core profit)	6,616	5,964	8,483	9,894
Net Profit Gth (Pre-ex) (%)	(39.3)	(9.9)	42.2	16.6
EPS (RMB)	0.65	0.58	0.83	0.97
EPS (HK$)	0.78	0.70	1.00	1.17
EPS Gth (%)	(39.4)	(9.9)	42.2	16.6
Diluted EPS (HK$)	0.78	0.70	1.00	1.17
DPS (HK$)	0.24	0.22	0.30	0.35
BV Per Share (HK$)	9.46	9.95	10.69	11.53
PE (X)	8.9	9.9	6.9	5.9
P/Cash Flow (X)	nm	nm	33.8	17.1
P/Free CF (X)	nm	nm	nm	nm
EV/EBITDA (X)	4.0	4.7	3.7	3.3
Net Div Yield (%)	3.5	3.2	4.3	5.0
P/Book Value (X)	0.7	0.7	0.6	0.6
Net Debt/Equity (X)	CASH	CASH	CASH	CASH
ROAE (%)	8.4	7.2	9.7	10.5
Earnings Rev (%):			Nil	Nil
Consensus EPS (RMB)			0.77	0.97
Other Broker Recs:		B:29	S:0	H:7

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

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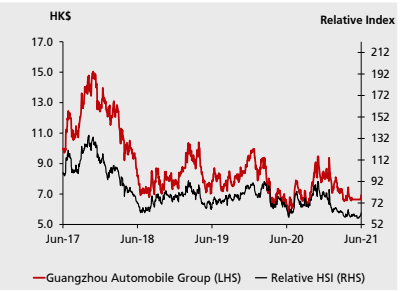
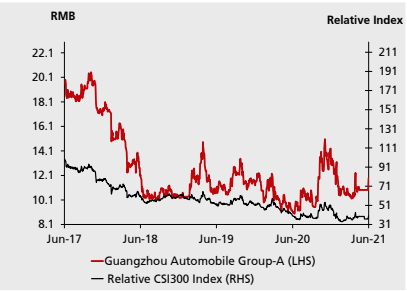
Well prepared to get onto climate change transition path with improving disclosure on vehicle electrification strategy. Guangzhou Auto Group Co (GAC) is one of the few Chinese automakers that aims to achieve full electrification of all new models (self-brand) by 2025 and achieving 20% of its total vehicle sales from NEV segment, implying the company is well prepared in the transition to low carbon strategy, advocating energy conservation and CO2 emissions reduction. Besides, the various Sino-foreign JVs have also indicated a strong intention towards decarbonisation, especially with their long history in developing fuel efficient and green cars. The foreign partners have set stringent CO2 emissions reduction targets, and these will be applied globally, hence benefiting the Chinese JVs as well. We see GAC as one of the leading players in the climate change transition path, based on its latest disclosure.

With the increase in sales of fuel efficient and electric cars, GAC's CAFC performance either had met or exceeded targets. With more investments pouring into the vehicle electrification process, there is room for further improvements going forward, especially towards 2025, when full electrification is expected to materialise. GAC started to disclose its Scope 1 & 2 CO2 emissions for FY19-20.

With the NEV strategy in placed, the group has set a mid-term (2021-2025) and long-term (2026-2035) growth phase, where vehicle volume sales are projected to reach 3.5m and 5m units respectively. Supported by an expanded volume sales, revenue is estimated to reach Rmb600bn and Rmb1tr respectively.

Price Relative





Climate-related financial disclosure

Element	Comments
Governance Good	Starting at the top when devising long term plans • The board plays an important part in formulating long-term business plans, by integrating climate change initiatives into its strategy, especially in embracing sustainable development practices within the group, covering conservation and environmental protection. An example would be setting up an industrial park for intelligence and connected new energy vehicles and launching the ADIGO ecosystem some years ago. On hindsight, these plans show that the board is moving in tandem with new industry trends. The Chairman and CEO are the important decision makers in this process. The board places high emphasis on energy savings and emissions reduction, green transport, cooperation with suppliers and partners etc. • The goals and targets will guide the board to govern and monitor its progress on climate-related issues. The board also keeps abreast with technology innovation, especially when budgeting for electrification, intelligence, connectivity and digitalisation. For example, the Rmb4.7bn NEV production hub in Guangzhou is part of the green strategy the board has rolled out to demonstrate its commitment in reducing CO2 emissions. • The Sino-foreign JVs also have their respective boards to ensure climate related issues are integrated into their strategies. For example, GAC-Honda's management has established a management system covering product designs and development, manufacturing, and product usage by consumers. At every stage, management takes into account energy conservation and CO2 emissions reduction to ensure strong product life cycle quality.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Strategy

Good

Self-brand revamp strategy to comply with greater environment responsibility

- To accelerate NEV development and increase sales, the Group has launched an independent NEV brand - AION - as well as established a global modular platform (world leading 2nd generation pure electric vehicle platform GEP2.0) to roll out more fuel efficient and new energy vehicle models. AION will be positioned as a high-end NEV brand within the Group.
- As part of the group's 14th five-year plan development, electrification, intelligence, connectivity and ride-sharing are the four areas of focus. By 2025, GAC hopes to achieve full electrification of its new vehicle models.

JVs have aggressive plans to address climate change issues

- Several of its foreign JVs are rolling out new initiatives for the Chinese market, benchmarking to the foreign partners' green strategies. These include investments in new platforms, technologies and e-models. For instance, GAC-Toyota has a brand-new programme – Toyota New Global Architecture - to support future e-model launches while both GAC-Honda and GAC-Mitsubishi will be launching more e-models to reduce CO2 emissions. For instance, Toyota has a target to reduce CO2 emissions from global production plants by 35% vs 2013 baseline. By 2050, Honda aims to cut total product life cycle CO2 emission by half from 2000 levels through vehicle electrification and greater use of renewable energy. FAC has budgeted to spend 9bn Euros over the next five years on its electrification plan.

Overall plans

- GAC's development path to address climate related issues is to develop NEVs, build advanced, environmental-friendly, energy-saving green plants, and intensify investments in energy conservation and emissions. Its investment in a new energy industrial park, including a Rmb4.7bn NEV production hub, has commenced operations and will aid the Group to meet environmental targets.
- In 2020, the group decided to incorporate "reduce, reuse and recycle" principles as part of its efforts to control environmental risks and reduce wastes across the various business units.
- The group is building its business resiliency to achieve high-quality sustainable development through incorporating green initiatives into the overall group business plans.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Risk management

Establishing management systems to control climate change related risks

- GAC has established measures to monitor and control internal operation risks and creating a good corporate governance environment. For example, it has formulated the Comprehensive Risk Management Measures to deepen the risk control system to respond to various challenges. The aim is to help the group to identify, evaluate, prevent, tackle the risks so as to ensure the group's business objectives are fulfilled.
- The Group pays great attention to climate change and support a low-carbon economy. So far, the Group has completed its environmental management system, aiming to enhance energy savings and emissions reduction. It has established manuals, procedures, programmes, and policies within the GAC Group on pollutants control and management. As the local JVs tend to follow procedures and systems of the foreign partners (climate change strategy for global application), these operating units have procedures which cover market, policy technology, reputation and supply chain disruption risks.
- The Group has also revamped its NEV business under a stand-alone unit to better react to market changes and new technologies on vehicle electrification. This is reflected in its plans to achieve all full electrification of its new vehicle models by 2025, placing the Group in a strong position in the NEV industry as well as cater to potential shifts in market and consumer preferences.

Source: Company, DBS HK

Climate-related financial disclosure (continued)

Metrics and targets

Good

Setting the target on vehicle electrification

- Under the 14th five-year plan (2021-2025), GAC rolled out its "Green Low-carbon for Achieving Sustainable Success (GLASS) initiative this year to steer the group to achieve its green goals. Of which:
  1. Within the self-brands division (GAC Motor and GAC AION), GAC plans to expand NEV sales by about 30% in 2021, supported by enhanced smart features as well as broader range of product offerings to consumers. By 2025, GAC hopes to achieve full electrification of its self-brand new vehicle models. For a start, the Trumpchi brand will have its first full electric vehicle EMPOW55 on the new vehicle platform, which should support a faster rollout of future EV models given its modular design.
  2. By 2025, the Group target to achieve over 20% of its sales from the NEV segment (of which the self-brand segment is expected to achieve 36% share from NEV), as part of its green and low-carbon transformation strategy.
  3. Another important target milestone is the company plans to launch a large number of vehicles that will be enabled with Level-3 intelligent driving technology by 2023 as well as vehicles powered by hydrogen fuel cells.
- The Japanese auto partners are also active in setting their decarbonisation strategies. For instance, Toyota Group has laid down a comprehensive 2050 plan which includes achieving zero CO2 emissions at all its global production facilities and to eliminate all CO2 emissions throughout the entire vehicle life cycle. In addition, the Japanese automaker also aims to reduce CO2 emissions from new vehicles (global) by 90% compared to 2010 levels.
- GAC Honda target to reduce carbon emission by 25,732 tons by 2030 and carbon neutral by 2040 at its production factories. As for Honda, it has a 2-staged approach – two-thirds of global automobile sales to be electrified by 2030, and to cut total product life-cycle CO2 emissions by half by 2050 from 2000 levels.
- Based on GAC disclosure, sale of new energy vehicles under the self-brand soared c.43% y-o-y to 60,000 units and scored approximately 517,000 credit points in 2020 under the dual credit system. GAC CAFC was 4.17L/100km, representing a y-o-y decrease of about 7%. However, both GAC-Honda and GAC-Toyota had recorded negative average fuel consumption credits and NEV credits of c.368,600 and c.114,750 respectively in 2020, due to low NEV sales and higher proportion of high fuel consumption vehicle models.

Source: Company, DBS HK

DBS HK recommendations are based on an Absolute Total Return* Rating system, defined as follows:

STRONG BUY (>20% total return over the next 3 months, with identifiable share price catalysts within this time frame)

BUY (>15% total return over the next 12 months for small caps, >10% for large caps)

HOLD (-10% to +15% total return over the next 12 months for small caps, -10% to +10% for large caps)

FULLY VALUED (negative total return, i.e., > -10% over the next 12 months)

SELL (negative total return of > -20% over the next 3 months, with identifiable share price catalysts within this time frame)

**Share price appreciation + dividends*

Completed Date: 22 Jun 2021 14:40:38 (HKT)
Dissemination Date: 22 Jun 2021 19:02:15 (HKT)

Sources for all charts and tables are DBS HK unless otherwise specified.

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