Proceedings of ICEMGD 2026 Symposium: The Role of Blue Economy in Promoting Human Sustainable Development
DOI: 10.54254/2754-1169/2026.GT34919

An Analysis of the Revenue Structure of Mercedes-Benz in the Chinese Market

Yifei Liu

Xi'an University of Finance and Economics, School of Statistics and Data Science, Xi'an, China
fei005117@outlook.com

Abstract. As China's NEV (new energy vehicle) penetration rate in the passenger car market (the penetration rate) passed 50%, Mercedes-Benz, a traditional luxury carmaker, lags behind in electrification. This paper takes Mercedes-Benz as an example, focusing on its revenue structure in China. Using descriptive statistics, the gradient descent and the SIR model, it explores the reasons and risks behind the slow electrification transformation and offers recommendations. This study found that Mercedes-Benz's revenue structure in China is highly imbalanced: fuel vehicles accounted for 97% of its revenue, while electric vehicles (EVs) made up only 3%. This contrasts sharply with the market trend. The main reasons were that changing core technology and adhering to safety standards both slowed down electrification. Meanwhile, multiple risks were building up: an imbalanced revenue structure, continuous loss of market share to NEV brands, and higher compliance costs due to the dual-credit policy. The response strategy should be phased. In the short term, the company should strengthen its hybrid line as a transition. In the long term, it should prioritize electrification, set up an independent EV unit, and follow NEV policy incentives. The challenges of Mercedes-Benz show that electrification is irreversible, and traditional carmakers must follow the trend. Companies facing similar transformation difficulties should first clarify their position and then make a clear strategic plan.

Keywords: Mercedes-Benz, the Chinese market, revenue structure, electrification transformation, NEV

1. Introduction

A review of the existing literature on NEV shows that current research mainly focuses on the following aspects. The first is breakthroughs in electrification technology [1], such as batteries and electronic control systems. The second is intelligent driving [2], which aims to enhance the market competitiveness of vehicles. The third is environmental responsibility and Environmental, Social, and Governance (ESG), which have become closely tied to recent policy changes [3]. Based on existing literature, research has concentrated on the macro market [4] and advanced technological breakthroughs. However, concrete analyses of how a single traditional carmaker can cope with the difficulties of electrification transformation remain rare. Therefore, this paper takes Mercedes-Benz as an example. From the perspective of a power source, this paper analyzes Mercedes-Benz's revenue structure in the Chinese market, presents its main revenue sources and shares, then

DOI: 10.54254/2754-1169/2026.GT34919

examines the reasons behind this revenue structure, and finally identifies the risks and offers corresponding suggestions. Regarding research methods, this paper mainly uses descriptive statistics, the gradient descent method, and a SIR model. First, this paper uses descriptive statistics to identify Mercedes-Benz's main revenue sources and shares in the Chinese market. Second, the gradient descent method is applied to determine the reasons behind this structure. Finally, an SIR model is used to simulate competitive risks. As a representative of traditional luxury carmakers, Mercedes-Benz's revenue structure in the Chinese market is very classic. The risks and suggestions analyzed in this paper not only provide valuable references for Mercedes-Benz's own strategic adjustments, but also offer lessons for other traditional carmakers facing similar transformation difficulties.

2. The revenue structure of Mercedes-Benz in the Chinese market

According to data from the China Passenger Car Association (CPCA), the penetration rate surpassed 50% in 2025 and remained around that level for nearly a year. As Figure 1 shows, although the penetration rate experienced a noticeable fluctuation from December 2025 to February 2026, this was mainly due to short-term factors such as year-end policy changes and the Chinese New Year holiday. Excluding these disturbances, the penetration rate has generally stayed at or above 50%. This means that NEV has become mainstream in China's auto market, while the market space for fuel vehicles has been significantly squeezed.

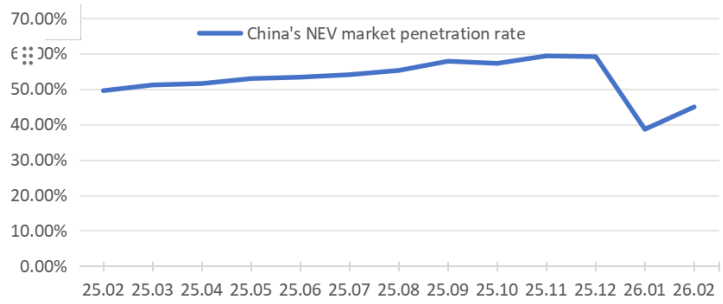

Figure 1. China's NEV market penetration rate trend (Feb. 2025-Feb. 2026)

Under this market backdrop, has Mercedes-Benz seen corresponding changes in its revenue structure? The following section will analyze this in depth from the perspective of power source.

2.1. Analysis of model classification and sales proportions

The vehicle sales data in this paper are mainly sourced from the Autohome website. To verify its reliability, we first summed up the sales of each model on Autohome over the past year and then compared the total with the 2025 passenger car sales in China reported on Mercedes-Benz's official website. The results show that the two figures are largely consistent, and the small differences come from the fact that the official data include ultra-high-end models such as Maybach. This suggests that the Autohome sales data are reasonably reliable and can be used for further analysis. The classification results are shown in Table 1, where models are divided into fuel vehicles and electric vehicles based on power source. Using this classification, the sales shares of Mercedes-Benz's fuel and electric vehicles in China over the past year are presented in Figure 2. Fuel vehicles account for 97% of sales, while electric vehicles constitute only 3%.

DOI: 10.54254/2754-1169/2026.GT34919

Table 1. Mercedes-Benz main model classification

Category	Main Models
Fuel Vehicles	GLC, E, C, GLB, A,GLA
EVs	EQE, EQE(SUV), EQB, EQA

Note: 48V mild hybrids are still powered mainly by fuel, so they are classified as fuel vehicles

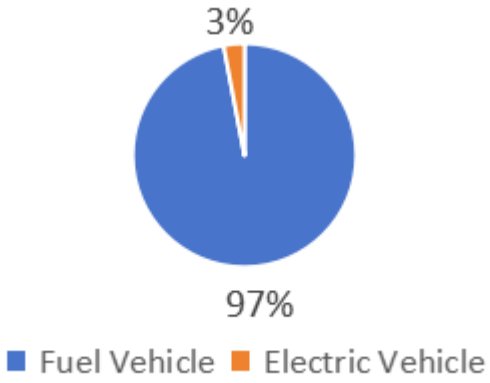

Figure 2. Sales share of fuel and electric vehicles of Mercedes-Benz in China (Feb. 2025-Feb. 2026)

3. Analysis of the reasons behind Mercedes-Benz's slow electrification transformation

There is a notable issue reflected in Figure 1 and Figure 2. As new energy vehicles dominate China's auto market, why does Mercedes-Benz still rely heavily on fuel vehicles for its revenue? What factors hinder its electrification transition? This chapter analyzes the problem from both theoretical and practical perspectives.

3.1. Quantitative analysis based on the gradient descent method

The gradient descent is a widely used optimization algorithm that iteratively drives the objective function toward its minimum value. This paper frames Mercedes-Benz's electrification transformation as a gradient descent problem to reduce the proportion of fuel vehicle business via iterative calculation. The update rule is as follows:

$$\omega_{K+1}=\omega_K-\alpha\cdot\nabla f(\omega_K) \tag{1}$$

In this formula, ω_{K+1} and ω_K stand for the updated and current proportion of fuel vehicles, respectively. α refers to the learning rate, reflecting Mercedes-Benz's investment in electrification in China, while $\nabla f(\omega_K)$ denotes the gradient, representing the growth of market electrification.

Based on previous data, the initial proportion of fuel vehicles ω_0 is set at 97% and the learning rate α at 3%, consistent with the current share of electric vehicles. Referring to CPCA reports, China's new energy penetration rate for passenger cars rose by 10% from 2024 to 2025, so $\nabla f(\omega_K)$ is defined as 10%.

After ten iterations with these parameters, the share of fuel vehicles only drops by 3%. It proves that the low learning rate is the theoretical cause of the brand's sluggish electrification transition.

DOI: 10.54254/2754-1169/2026.GT34919

3.2. Comprehensive analysis based on realistic factors

Mercedes-Benz's slow electrification transformation is tied to its major shift in production technology. Initially, it mainly adopted the fuel-to-electric conversion approach. Starting from 2025, the company has fully focused on developing and manufacturing vehicles based on dedicated electric platforms, including MMA, MB.EA and AMG.EA.

Mercedes-Benz defined 2025 as a period for technical and product preparation to build momentum for its product rollout in 2026 and 2027. The first model built on the MMA platform, the new CLA, has been unveiled, while the high-performance AMG.EA platform is set for mass production in 2026 [5]. The carmaker has recognized the drawbacks of fuel-to-electric conversion and aims to address fundamental issues. The 3% merely represents a temporary bottom.

Nevertheless, the transformation also brings costs. The preparation phase leads to a longer cycle from R&D to launch, and product quality risks have emerged. As reported, around 16,100 Mercedes hybrid and electric vehicles were recalled repeatedly over battery safety hazards, exposing flaws in its electrification technology system [6].

Oliver Thöne, head of Mercedes-Benz R&D in China, stated that the company always upholds its strict standards and prioritizes safety. It takes a prudent attitude toward new technologies to ensure they meet genuine customer demands, choosing not to rush new features but guaranteeing quality once products are launched [7].

Mercedes-Benz strives to balance quality control and electrification expansion, but has failed to strike a proper balance so far, resulting in vehicle recalls. This dilemma lies at the core of its current difficulties in electrification.

4. Risk analysis of the slow transformation of Mercedes-Benz's electrification

4.1. The risk of unbalanced revenue structure

Figure 2 reveals a severe imbalance in Mercedes-Benz's revenue structure in China, with EVs accounting for merely 3%. This has become its major internal challenge amid the booming NEV market.

Its traditional fuel vehicle business is facing continuous decline, and Figure 1 shows that market is shrinking at an accelerating pace. As fuel vehicles take up a dominant share of its revenue, the company is heavily reliant on a declining sector. Meanwhile, its electrification business cannot yet deliver solid revenue support. Results from the gradient descent model indicate that its electrification progress lags far behind market growth, and early electric products also suffered quality problems.

In short, the shrinking fuel vehicle revenue cannot be offset by the slow-growing electric vehicle business in the short term. Failure to capture opportunities in the electric vehicle market amid the retreat of fuel vehicles will expose the company to potential financial risks.

4.2. Competitive risk

After analyzing the internal risk of an unbalanced revenue structure, the next risk comes from competition posed by NEV brands.

The expansion of NEV brands in the Chinese market can be compared to the spread of an epidemic. The competitiveness of NEV brands acts like a virus spreading among potential

DOI: 10.54254/2754-1169/2026.GT34919

customers, while Mercedes-Benz's own pace of electrification is like the speed at which the immune system produces antibodies.

Thus, this paper borrows the conceptual framework of the SIR epidemic model and divides consumers in the market into three groups: Susceptible (S)—potential customers who may still buy a Mercedes-Benz; Infectious (I)—users who have already switched to NEV brands; and Recovered (R)—those who have already bought a car and will not change it again in the short term. From the above, it is clear that the current "virus" is spreading much faster than the "antibodies" are being produced.

Under this framework, the spread of the "epidemic" is hard to control: the infected group keeps expanding, while Mercedes-Benz's potential customers keep shrinking. This means that unless Mercedes-Benz significantly speeds up its electrification transition, its market share will continue to be eroded by NEV brands, making the competitive risk extremely high.

However, realistic data show an even more severe situation. According to the April monthly report from the CPCA, the passenger car market in that month showed the following features: overall sales under pressure, and sharp structural divergence, with "cold fuel vehicles, hot new energy" becoming the main focus. The core reason for the decline in domestic retail sales was the "collapse of fuel vehicles". The retail penetration rate of new energy vehicles reached 61.4% (the first time it has exceeded 60% in history), and the speed of electrification substitution exceeded expectations [8].

4.3. Strategic and policy risk

In 2021, Mercedes-Benz set a goal of going fully electric by 2030. But in June 2025, CEO Ola Källenius revised this to a "fuelandelectric" parallel strategy [9]. This strategic shift within five years not only slows down electrification but also puts Mercedes-Benz in a passive position regarding policies in the Chinese market.

Learning about how China's carbon trading market supports the NEV economy [3], this paper finds two policies putting the company in a more passive condition.

The first is the Dual-Credit Policy, which sets standards for fuel consumption and NEV credits. Producing fuel-hungry cars creates negative fuel credits; failing to produce enough NEVs creates negative NEV credits, and all negative credits must be cleared each year [3]. Based on Mercedes-Benz's current situation and official data [10], Beijing Mercedes-Benz has high levels of both negative fuel credits and negative NEV credits.

5. Suggestions for the electrification transformation of traditional carmakers

In a configurational analysis of 42 typical traditional carmakers, Du Yushen and his colleagues identified two transition pathways, classifying these companies into two types: history-constrained and opportunity-oriented [4]. Different types of firms, therefore, call for different transition strategies. This chapter initially offers recommendations for Mercedes-Benz based on the risks discussed above, and then extends these insights into broader suggestions for the entire industry.

5.1. Accelerate the speed of electrification and optimize the produce structure

First, as a century-old luxury brand, Mercedes-Benz has mounted abundant R&D experience in traditional fuel vehicles. Therefore, Mercedes-Benz falls into the former category. For such companies, the literature suggests a strategy of low product innovation and diversified product

DOI: 10.54254/2754-1169/2026.GT34919

offerings [4]. In Mercedes-Benz's case, this means using hybrid models as a transition. To its credit, the company is moving in that direction: at the 2025 Guangzhou Auto Show, several core hybrid models, including the C-Class, E-Class, and S-Class, were announced with upgraded versions [5].

Then, differentiate the product lineup by region. For example, in areas with well-developed charging infrastructure and high consumer acceptance, Mercedes-Benz should focus on its all-electric EQ series. In other regions, hybrid series should take the lead to meet local needs.

In contrast, "opportunity-oriented" carmakers, which have no legacy fuel-vehicle business, can enter the pure electric market directly based on their own financial and technological capabilities, without needing a hybrid transition phase.

5.2. Clarify the strategic priority

One important reason for Mercedes-Benz's slow electrification progress is its repeated strategic shifts. In 2021, the company proudly declared a goal of full electrification by 2030; by 2025, it changed course to a "fuel-and-electric" parallel strategy. This wavering scattered resources and caused execution confusion. To address this, three actions are recommended:

(1) Under the parallel strategy, the company should clarify priorities for the next five years. If electrification comes first, set specific missions, such as raising the EV share to a certain level by 2027. If both tracks are equally important, allocate resources clearly to avoid falling short on both sides.

(2) Draw up a detailed transformation roadmap. The company should break long-term goals into annual tasks, specify targets for product launches, capacity building, and market share each year and use concrete metrics to push internal progress.

(3) Establish an independent EV business unit. How new businesses are organized is a key factor for transformation success. Separating electrification from the traditional system can prevent inertia from the fuel-vehicle business from holding it back. Even if full independence is not yet possible, create dedicated teams and separate performance evaluations to give electrification room to grow [4].

For most traditional carmakers, strategic wavering is actually a common problem. No matter which path they choose, clear phased goals and organizational support are essential. The cost of wavering is far greater than the cost of choosing the "wrong" path.

5.3. Adapt to China's NEV policies

Instead of spending heavily on purchasing credits from other automakers, Mercedes-Benz should accelerate electrification fundamentally. Otherwise, it will face high compliance costs and fail to benefit from lower financing costs and brand premium brought by improved ESG ratings, as BYD does. The company needs to shift from passive compliance to active management. A dedicated department for new energy and ESG business should be established to oversee credit management, green power procurement and battery recycling, and integrate ESG into its core strategy. Enhanced ESG capabilities will help eliminate negative credit pressure and build a virtuous cycle featuring better ratings, lower financing costs and growing market share. For enterprises striving to seize market opportunities, a focused all-electric layout helps gain advantages under ESG and dual-credit policies. It is advised to set up a special team as early as possible to turn ESG from a cost burden into a competitive edge.

DOI: 10.54254/2754-1169/2026.GT34919

6. Conclusion

Taking Mercedes-Benz as the research object, this paper explores its electrification transformation in China from the perspective of revenue structure, adopting descriptive statistics, the gradient descent method and a SIR model for analysis. The main conclusions are as follows.

(1) Its revenue structure is severely unbalanced. In 2025, fuel vehicles accounted for 97% of its sales, while EVs took merely 3%, when the penetration rate exceeded 50%. Mercedes-Benz obviously lags far behind the market. Simulation via the gradient descent method also shows that at the current pace, the proportion of fuel vehicles will only drop to 94% in a decade, failing to keep up with market changes.

(2) The slow transformation results from multiple factors. Strategically, the company adjusted its roadmap from full electrification by 2030 to a "fuel-and-electric" parallel strategy, leading to inconsistent goals. Technically, repeated recalls over battery safety issues reveal defects in its electrification technologies. Organizationally, strict adherence to its product standards has slowed down product iteration.

(3) Various risks are accumulating. The unbalanced revenue structure brings financial risks amid the decline of traditional business and the underdeveloped new energy business. Booming new energy brands keep eroding its market share. Besides, its poor performance on the dual-credit system in 2025 has pushed up compliance costs.

(4) Targeted phased strategies are required. In the short term, it needs to expand hybrid vehicle product lines for transition.

In the long run, the company should clarify strategic priorities, set up dedicated departments to improve execution and leverage ESG incentives to reverse the unfavorable situation. Electrification is an irresistible trend for traditional automakers, who shall learn lessons from Mercedes-Benz's experience.

References

[1] Lu, X. X., Chen, S., Ge, J., Ge, J. H., & Zhang, K. (2026). Research on the development and application of blade battery technology for new energy vehicles. Auto Time, (01), 139-141.
[2] Hu, J. F., Huang, L. J., Zhai, W., Yan, R. S., Li, C. L., Zheng, W. S., ... & Xiong, H. K. (2026). Large models for intelligent driving. Journal of Image and Graphics, pp. 1-19.
[3] Yang, X. Y., Yan, R., Gong, J. B., Wei, X., & Tan, Y. Q. (2026). Research on the driving effect of carbon trading market on the new energy vehicle economy and development strategies under the dual carbon goals. China Journal of Commerce, 35(01), 154-158.
[4] Du, Y. S., Xiao, Z. Q., Zhang, X. Y., & Bao, H. L. (2026). Multiple paths of technological transformation in traditional automobile enterprises: a combination of history, governance and strategy. Studies in Science of Science, 44(02), 270-280.
[5] Wang, P. (2025). Zhang Yan of Mercedes-Benz: Aligning with users through long-termism. China Automotive News, 038.
[6] Wu, D. (2025). Mercedes-Benz recalls 16, 100 vehicles. International Finance News, 013.
[7] Wang, P. (2025). Tong Oufu loves "China Speed" and abides by "Mercedes-Benz Standards". China Automotive News, 021.
[8] China Passenger Car Association. (2026). Analysis of the national passenger car market in April 2026. https: //www.cpcaauto.com/newslist.php?types=csjd& id=4207
[9] PCauto House. (2025). Mercedes-Benz adjusts 2030 electrification strategy: Fuel vehicles and electric vehicles will coexist for a long time. https: //www.zhuanlan.zhihu.com/p/1920430936090194044
[10] Ministry of Industry and Information Technology. (2026). Announcement on the average fuel consumption and new energy vehicle credit status of passenger car enterprises in 2025. https: //www.miit.gov.cn/jgsj/zbys/qcgy/art/2026/art_2c7e0c5537304eaba84dd777dc5b0d0a.html