# Comparing Electric Vehicle Policies in China and the United States

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**Abstract.** The paper compares EV policies in China and the United States. Their aim is to get more people driving electric, but they push in different ways. China works top-down: Beijing sets big targets and timetables, and cities pile on perks-license plate favors, factory support, fast-track chargers. That combo builds the full chain from batteries to assembly and brings costs down fast. The U.S. leans on the market. Federal tax credits help at the checkout, and the infrastructure law funds chargers, while stricter emissions rules nudge automakers. But states pull in different directions, so progress can feel uneven-California sprints; others jog. Using government stats, policy texts, and major market reports, the study reviews tools, results, and global standing. The takeaway: steady state backing in China built strong manufacturing and quick adoption. The U.S. shines in innovation and branding-think autonomous software and smart systems-but policy uncertainty slows momentum. That mix hints at which tools work best and how both countries can still push wider climate and clean-tech goals.

**Keywords:** Electric Vehicle Industry; Policy; Comparative Analysis

## 1 Introduction

Global warming is a pressing worldwide problem and has gained wide attention in recent years. It means the rise of the Earth's climate system and is driven mainly by human activity, such as burning fossil fuels, cutting forests, and industrial emissions. These actions raise the concentration of greenhouse gases—carbon dioxide, methane, and nitrous oxide—in the air. Too many of these gases trap heat and keep it in the atmosphere, so temperatures keep rising. The reports state that human activity is "extremely likely," with a probability above 95%, to have caused most of the increase in the global average surface temperature since the 1950s. So far, the average global temperature has increased by about 1.2°C. This seemingly small temperature increase has already triggered a series of severe consequences, including the melting of ice sheets, rising sea levels, an increase in extreme weather events, and the disruption of ecosystems. The impacts of global warming are not limited to the natural environment; they also pose significant threats to various areas of human society, such as food security, water supply, public health, and economic development [1]. Against the backdrop of accelerating climate change, understanding the causes, current status, and potential


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risks of global warming, and promoting coordinated action among the international community, has become one of the urgent core tasks to be addressed today. Carbon emissions keep rising, so clean energy isn't optional anymore. That urgency is pushing EVs forward. Put simply, China and the United States set the pace for the global EV market. In 2023, their combined EV sales were close to 60% of the world total; China alone was almost 60%, while the U.S. was about 9–10%. Because both are also top carbon emitters, their EV choices carry extra weight. The policies they pick—tax credits, production targets, and big charging-network builds—can cut emissions faster, speed up clean-tech progress, and even reshape supply chains for batteries, materials, and finished cars. This paper examines the underlying policy frameworks in both countries—China's centralized industrial planning versus America's decentralized, market-driven approach—and evaluates empirical outcomes such as production scale, infrastructure deployment, and competitiveness dynamics. This paper relies exclusively on data from internationally recognized and government-affiliated sources to ensure authority and reliability. Our purpose is not only to describe differences, but also to distill actionable lessons for policymakers seeking to accelerate EV deployment and industrial transition in their own contexts [2].

## 2 Current Situation Analysis

Overall, China adopts a top-down management models to promote the EV industry, it is divided into three main aspects, which are subsides, planning and local incentives. Above all, subsides is the most successful method. Since 2009, China has implemented a series of subsidy policies, complemented by industrial planning and regional support, gradually establishing a relatively complete EV industry chain. Overall, China has adopted a top-down management model to advance the EV industry, which mainly includes three aspects: subsidies, industrial planning, and local incentives. Among these, subsidy policies are the most successful and influential means. Since 2009, China has implemented a series of subsidy policies, supplemented by industrial planning and regional support, and gradually formed an industrial development pattern guided by policies, led by enterprises, and driven by the market [3]. First, in terms of subsidies, the Chinese government strongly supported new energy vehicles in the early stage through the model of "central financial subsidies + supporting subsidies from local governments". For example, the "Ten Cities, Thousand Vehicles" demonstration project launched in 2009 provided financial subsidies to major cities to support the demonstration application of new energy vehicles for public transport, taxis, and special-purpose vehicles. This policy effectively stimulated the enthusiasm of local governments and enterprises. Second, in terms of industrial planning, China has issued a number of important policy documents. It clearly sets the target for the sales volume of NEVs to account for the vehicle sales by 2025, and puts forward specific development requirements in many areas. Third, regarding local incentive policies, cities such as Shanghai, Shenzhen, Guangzhou, and Xi'an have successively introduced differentiated policies, including preferential treatment for license plate quotas, subsidies for car purchases, opening of road rights, and support for the construction of charging facilities. To a certain extent, these measures have reduced consumers' car purchase costs, improved the convenience of use, and promoted the popularization of new energy vehicles in first-tier and second-tier cities [4]. In terms of results, driven by these policies, China has become the world's largest new energy vehicle market. According to data from the China Association of Automobile Manufacturers (CAAM), the sales volume of China's new energy vehicles accounted for nearly 60% of the global sales volume in 2023, and a relatively complete industrial chain has been formed in key links such as power batteries and charging piles. At the same time, Chinese brands such as BYD, NIO, and XPeng have developed strong international competitiveness. The policy in China outlines development goals. For new energy vehicle, the tax production amount does not exceed 15000 yuan. Also, Local governments, such as those in Shanghai, Shenzhen, and Xi an have introduced policies including license plate incentives, purchase subsides, and support for charging infrastructure [5].

Although these policies bring massive convinces to our life. There are several issues with the policies: First, the policies are complicated and lack uniformity and standardization. Second, they may cause some unequal competitions among taxpayers. Third, some policies are outdated and cannot adapt to economic development. Fourth, they are difficult to operate, increasing the burden on both enterprises and tax authorities. Fifth, the beneficiary groups do not match expectations, failing to truly benefit the targeted groups. There are some problems with these policies. The rules are too complicated and not the same everywhere, so they are hard to understand. They can also cause unfair competition between taxpayers because the standards are different. Some policies are old and do not match today's economic situation. It is also hard to carry out these policies, which gives more work to both companies and tax offices. In the end, the people who get the benefits are not always the ones who really need them [6].

Different from China, The United States is the most developed capitalist country on earth, U.S. policy is market-driven, focusing on tax benefits and infrastructure investment. The 2022 Inflation Reduction Act offers up to $7,500 in tax credits for new EV purchases, with similar benefits for used vehicles and charging equipment. Additionally, environmental regulations have pushed automakers toward electrification. Compared to China, U.S. policies emphasize technological R&D and involve less direct market intervention. Unlike China, the United States, the world's most developed capitalist country, centers its electric vehicle (EV) industry policy on market-driven principles, with a primary focus on tax incentives and infrastructure investment. In terms of tax policies, the U.S. provides incentives for the development of the EV industry through a series of legislations. Similar incentives apply to used EVs and to home-charging equipment. They aim to lower buyers' costs, boost demand, and push firms to upgrade. For infrastructure, the United States set aside $7.5 billion under the Bipartisan Infrastructure Law to build a national charging network. The plan targets about 500,000 public chargers in the next few years to ease range anxiety, improve user experience, and expand adoption [7]. For technology and regulation, U.S. policy leans toward innovation. The federal government urges firms to invest in advanced batteries, fast-charging systems, and autonomous driving. At the same time, rules such as California's Zero-Emission Vehicle mandate press automakers to electrify faster. U.S. brands, including Tesla, General Motors, and Ford, have built a leading research and production base. In general, the United States uses market tools to upgrade the industry, keeps direct intervention limited, and supports private innovation through tax credits, infrastructure spending, and regulatory guidance [8].

## 3 Comparative Analysis

China and the United States set EV policy in very different ways. The gap comes from how each country is run, what each economy wants, and how rules are made. China uses a central plan with clear orders and long-term goals. The United States uses a looser, incentive-based plan that depends on markets and on what each state decides. These two paths show how governments can shape the speed, the size, and the direction of the EV shift [9]. China's EV sector has followed top-down programs for more than ten years. It started with the 2009 "Ten Cities, Thousand Vehicles" pilot. The Chinese government plan sets sales goals—20% by 2025 and 40% by 2030—and pushes full electric transit. It also asks for better battery energy density, stronger safety, and smarter driving, and it helps firms grow into global players.

Enforcement uses the Dual Credit Policy, which ties fuel-economy rules to EV output. Since 2018, carmakers must earn credits by selling new energy vehicles or take penalties. For each gasoline car sold, makers must balance emissions by building a set number of EVs, plug-in hybrids, or fuel-cell cars. This is a hard production rule that, unlike cash subsidies, does not rely on buyer demand or market swings. Foreign brands, like Tesla, must meet the quota to sell in China's market [10].

In addition to national mandates, Chinese local governments offer differentiated support. Municipalities like Shanghai provide free license plates for EVs, while cities like Shenzhen subsidize charging infrastructure construction. In 2024–2025, provinces such as Guangdong and Jiangsu launched additional incentives for EVs using domestic operating systems, such as those integrated with Huawei's HarmonyOS, to accelerate digital convergence. This vertical coordination—from the State Council to local transport bureaus—ensures policy coherence and accelerates deployment, particularly for buses, taxis, and logistics fleets. By contrast, the United States governs EV policy through a patchwork of federal tax incentives, environmental regulations, and state-specific mandates. At the federal level, the Inflation Reduction Act (IRA) of 2022 represents the single largest EV-focused policy intervention to date. It restructured the Clean Vehicle Credit to offer up to $7,500 for new EVs and $4,000 for used EVs, contingent on strict eligibility criteria. These include North American and domestic sourcing of battery materials and components. The goal is to reduce dependence on Chinese supply chains and incentivize domestic investment [11].

The Bipartisan Infrastructure Law (BIL), passed in 2021, further allocates $7.5 billion for the construction of a nationwide energy vehicle charging network by 2030. However, rollout has been slow: as of mid-2025, fewer than 400 federally funded charging ports had become operational, despite over $635 million in grants distributed to 24 states. The federal government attributes delaying to permitting issues and contractor bottlenecks, while critics point to misalignment between state readiness and federal criteria. The U.S. government has also proposed new greenhouse gas emissions policies covering model years 2027 through 2032. These would effectively require 56% of all new car sales by 2032 to be EVs, aligning with the Biden administration's goal of reaching 50% EV penetration by 2030. Yet these rules face legal challenges and could be overturned under a different political administration.

In addition to federal actions, state-level policies play a decisive role. California's Advanced Clean Cars II regulation mandates 100% zero-emission vehicle sales by 2035, with interim targets ramping up each year. States such as New York, Washington, and Massachusetts have adopted similar rules. Some states, like Texas and Mississippi, offer no EV rebates and charge higher registration fee hikes. So the rules are uneven, which makes planning tough for carmakers and charging firms to follow [12]. But the difference is obvious. In China, carmakers follow one national rulebook with firm quotas and steady support, and central and local agencies coordinate tightly each day. In the United States, companies face mixed rules and shifting subsidy checks often. China's policy model puts weight on scale, uniform rules, and firm timelines, and it links ministries and cities to shared targets for batteries, vehicles, and charging. By contrast, the U.S. model leans on market competition, new technology, and consumer price relief, and it leaves many details to the states. Both paths have strengths and limits: China moves fast and builds capacity, but top-down orders can push output beyond demand; the U.S. sparks breakthroughs and strong brands, but scattered rules and shifting politics slow projects and raise planning costs.

## 4 Conclusion

China and the United States are central to the world's move toward electric vehicles. As large carbon emitters, their EV policies strongly shape emission cuts, clean-tech progress, and the way global supply chains for batteries, parts, and cars are organized. The paper compares the two countries' different policy frameworks-China's centralized industrial planning versus the United States' decentralized, market-driven approach-and analyzes practical results such as production scale, infrastructure development, and competitiveness. China has pursued a government-led, centralized management path, primarily driving industrial development through subsidies, industrial planning, and local support. As early as 2009, China launched the "Ten Cities, Thousand Vehicles" demonstration project, providing financial subsidies for urban public transport, taxis, and other vehicles, which drove the early application of NEVs. Later, the policy in China further clarified development goals, such as a significant high proportion of EV in new car sales by 2025, while accelerating the development of technologies like power batteries, charging piles, and autonomous driving. Local governments have also actively cooperated; cities including Shanghai, Shenzhen, and Xi'an have introduced policies such as license plate priority, car purchase subsidies, and support for charging facility construction. Benefiting from these measures, there are 2023 sales accounting for nearly 60% of global sales. Brands like BYD, NIO, and XPeng have gradually entered the international market. The United States, by contrast, has taken a market-driven path with relatively little government intervention, mainly promoting industrial development through tax incentives and infrastructure investment. For instance, the Inflation

Reduction Act of 2022 stipulates that consumers can enjoy a discount when purchasing a NEV, with similar benefits available for used electric vehicles and home charging equipment. Meanwhile, the government has invested to construct approximately 500,000 public charging piles nationwide, addressing the "difficulty in charging" issue for users. Additionally, the U.S. has other policies, which push automakers to accelerate electric vehicle production. Companies like Tesla, General Motors (GM), and Ford have already achieved technological leadership. In simple terms, China relies on centralized government planning, boasting fast development speed and a large market scale; the U.S. relies on market driving, with a greater focus on technological innovation and consumer choice. In the future, combining China's policy execution capabilities with the U.S.'s technological innovation will help accelerate the popularization of EVs, enabling industrial transformation and sustainable development.

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