

Update on Hainan's transition to electric vehicles through 2020

Prepared by Jin Li and Hongyang Cui

Hainan province of China has some of the most ambitious vehicle electrification targets in the world. In 2019, this tropical island province released a roadmap via which it is seeking to progressively phase out new sales of gasoline and diesel vehicles by 2030.¹ The roadmap is one of Hainan's key strategies to achieve world-leading air quality.² Because the year 2020 marked a major milestone of Hainan's vehicle electrification roadmap, this briefing provides an update on the electric vehicle market and policy developments in Hainan through the end of 2020. We consider battery electric vehicle (BEV), plug-in hybrid electric vehicle (PHEV), and fuel cell electric vehicle (FCEV) technologies and do not examine non-plug-in hybrid electric vehicles.

ELECTRIC VEHICLE MARKET DEVELOPMENTS

After analyzing the best-available vehicle sales data, the following two things stand out.

HAINAN LEADS THE NATION IN THE TRANSITION TO ELECTRIC VEHICLES

As shown in the top graph of Figure 1, Hainan's electric share of new passenger vehicle sales reached 21.1% in 2020 and it ranked first in all provincial-level jurisdictions of China with a share nearly four times the national average.³ Hainan also ranked near the top in terms of light-duty truck electrification. As shown in the bottom graph of Figure 1, the electric share of Hainan's new light-duty truck sales was 4.2% in 2020. That was

- 1 Hongyang Cui and Hui He, *Hainan's Clean Energy Vehicle Development Plan (2019-2030)*, (ICCT: Washington, DC, 2019), <https://theicct.org/publications/hainan-clean-energy-vehicle-plan>
- 2 Hongyang Cui, Hui He, Zhihui Huang, and Junfang Wang, *Policy recommendations to reduce pollution from Hainan's on-road vehicle fleet: Benchmarking with international best practices*, (ICCT: Washington, DC, 2021), <https://theicct.org/publications/pollution-policy-hainan-fleet-oct21>
- 3 China has 34 provincial-level jurisdictions. Figure 1 shows the data of 22 provinces, 4 provincial-level cities, and 5 provincial-level autonomous regions. The data for the remaining three provincial-level jurisdictions—Taiwan province, Hong Kong special administrative region, and Macau special administrative region—are not available.

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enough to rank fourth among all provincial-level jurisdictions of China and its share was almost three times the national average.

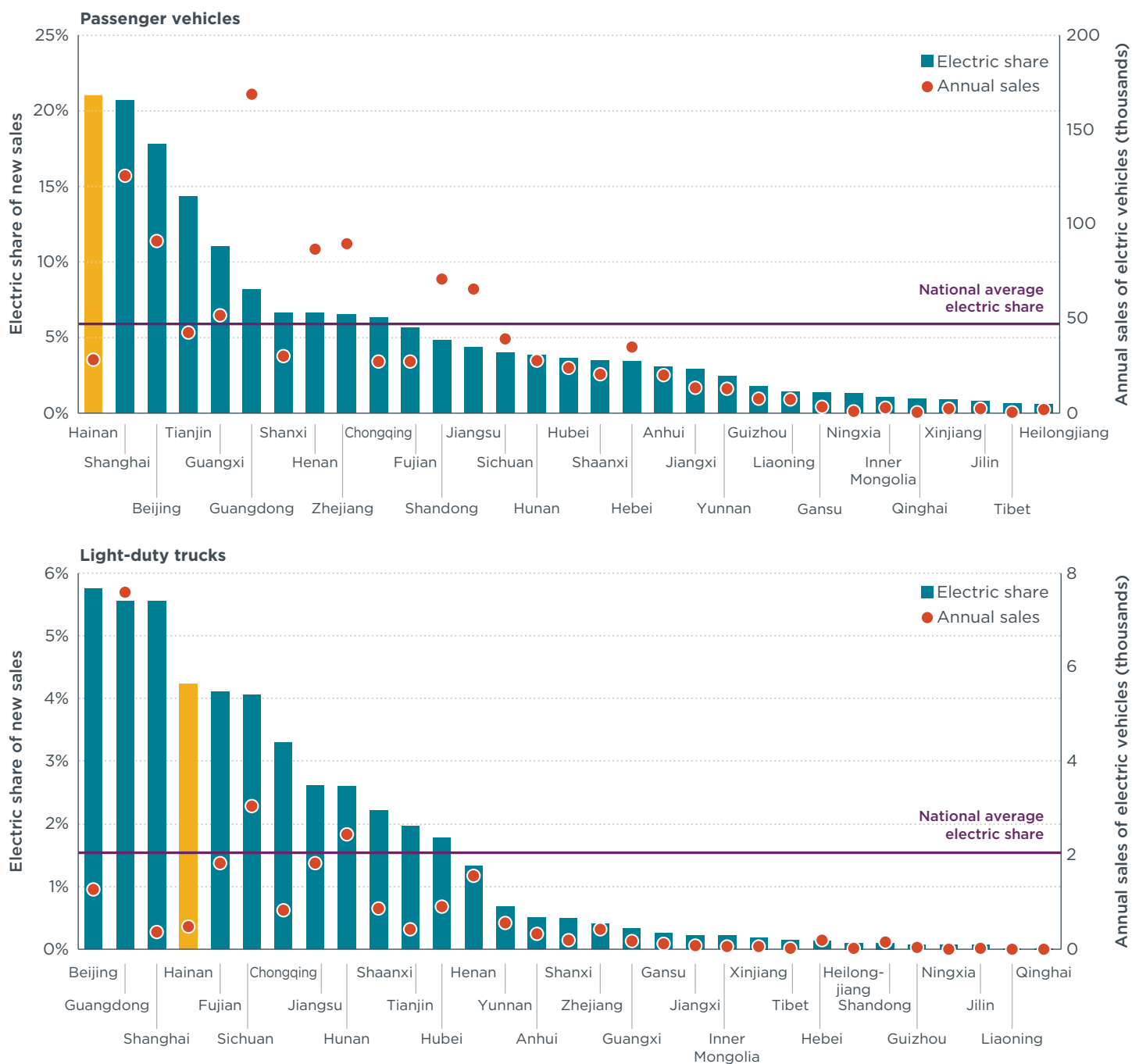


Figure 1. Annual sales of electric vehicles and electric share of new vehicle sales in different provincial-level jurisdictions of China in 2020 for the passenger vehicle (top) and light-duty truck (bottom) segments.

Additionally, Hainan’s two core cities—Haikou and Sanya—were both at the frontier of vehicle electrification nationwide. In 2020, the electric share of new passenger vehicle sales in Sanya and Haikou was 26.8% and 19.6%, respectively, enough to rank second and fifth among the more than 300 Chinese cities (Figure 2). Haikou also appeared on

ICCT's list of *Global Electric Vehicle Capitals*; with around 20,000 electric passenger vehicles sold in 2020, it ranked 22nd among all cities globally.⁴

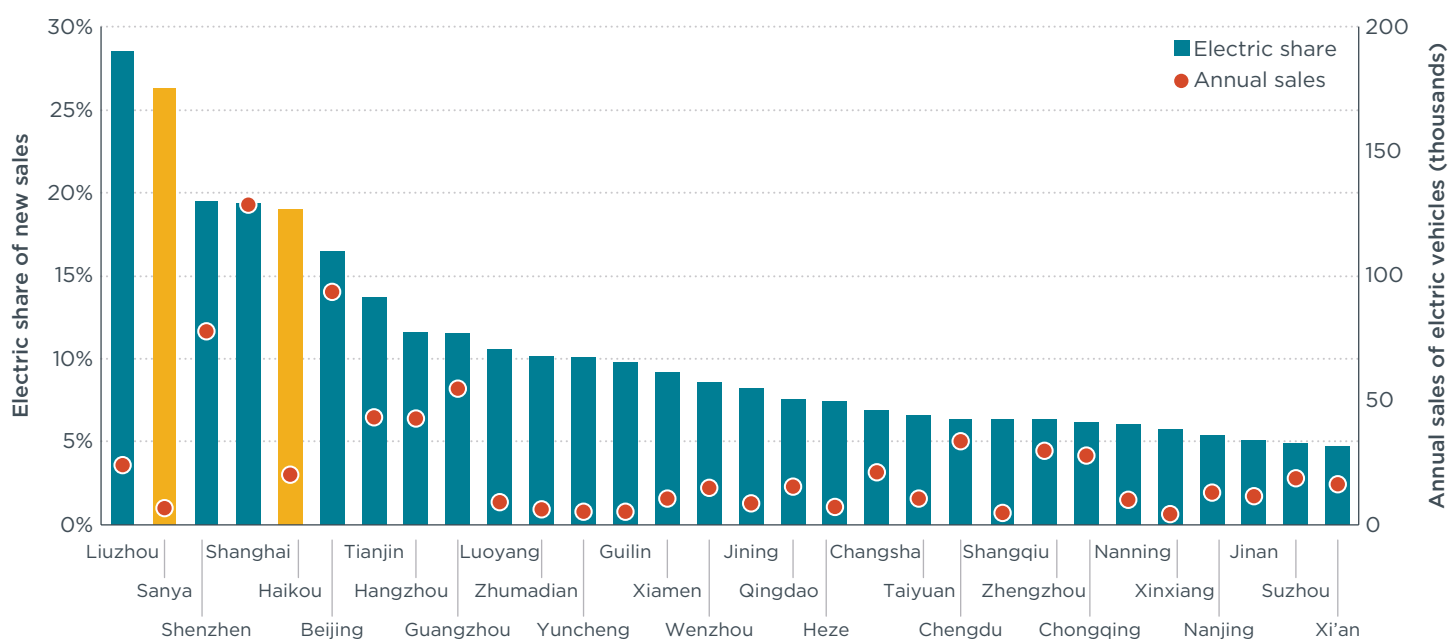


Figure 2. 2020 sales of new electric passenger vehicles and the electric share of new passenger vehicle sales in the 30 Chinese cities with the highest electric share of new passenger vehicle sales in 2020.

HAINAN'S PROGRESS LAGS BEHIND ITS AMBITIOUS TARGETS

Despite the nation-leading performance described above, there was still a large gap between Hainan's progress and the ambitious targets set in its vehicle electrification roadmap. The one exception was buses.

As shown in Figure 3, Hainan's electric share for new sales of private cars, vans, and sanitation trucks in 2020 were all far from the policy targets. Hainan aimed to achieve a 50% electric share of new sanitation trucks by 2019 and a 100% electric share of new vans by 2021. However, almost all of Hainan's new sanitation trucks in 2020 were still internal combustion engine (ICE) vehicles and only 20.3% of new vans were electric vehicles in 2020. Concerning private cars, which account for the majority of vehicle sales, Hainan's target was to gradually increase the electric share of new sales to 40% in 2020, 80% in 2025, and 100% in 2030. However, only 12.7% of new private car sales in Hainan were electric vehicles in 2020. The progress on bus electrification, meanwhile, was much smoother. Hainan achieved a 100% electric share of new buses in 2020, 1 year earlier than its target.

⁴ Marie Rajon Bernard, Dale Hall, Hongyang Cui, and Jin Li, *Electric vehicle capitals: Accelerating electric mobility in a year of disruption*, (ICCT: Washington, DC, 2021), <https://theicct.org/publications/evs-capitals-dec21>

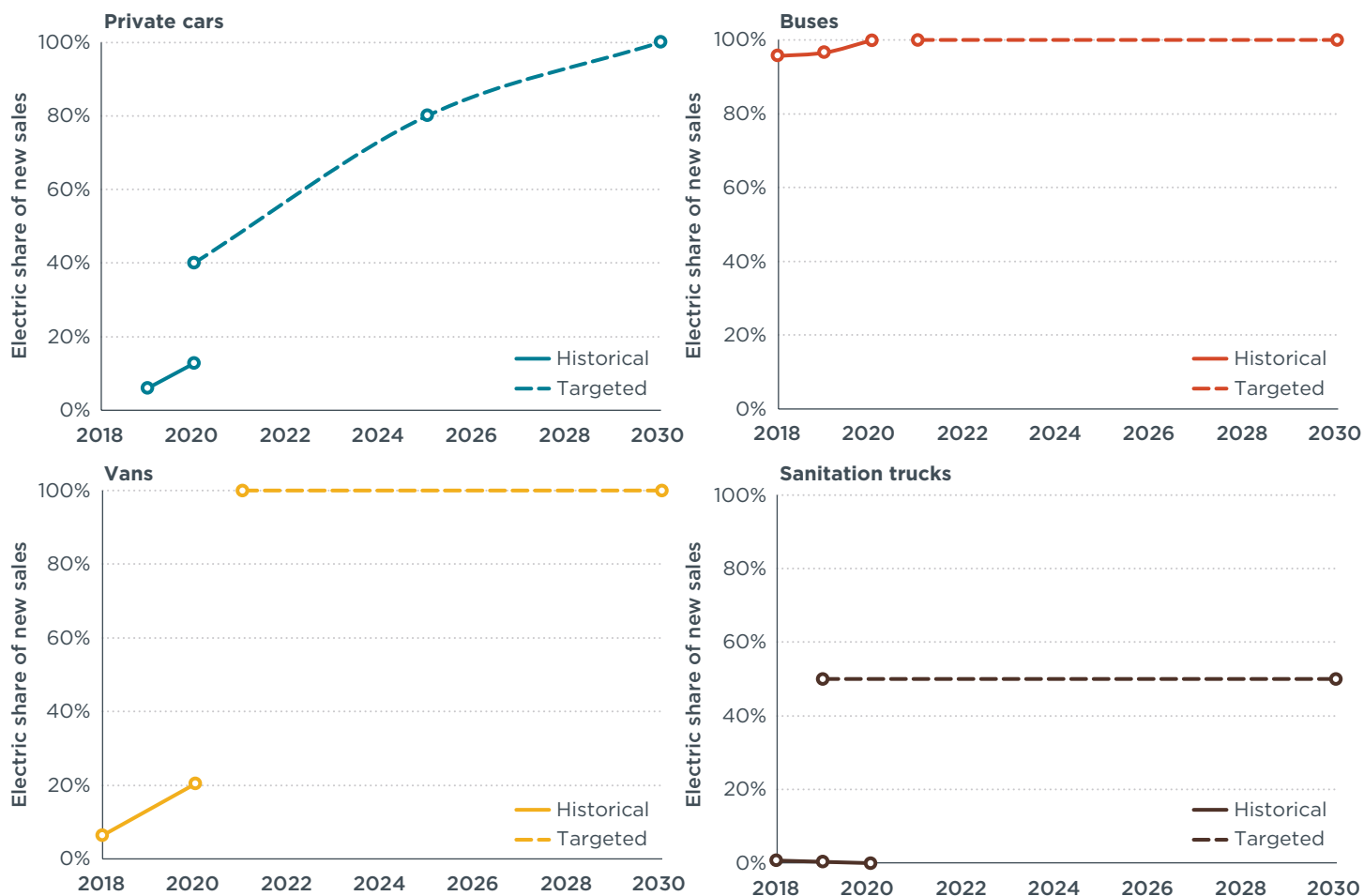


Figure 3. Historical and targeted electric shares of new vehicle sales in Hainan by segment.

ELECTRIC VEHICLE POLICY DEVELOPMENTS

After rolling out its vehicle electrification roadmap in 2019, Hainan developed annual action plans for electric vehicle promotion each year, and these have included specific annual goals on electric vehicle deployment and infrastructure development.⁵ The annual action plans serve an essential role in securing funding and ensuring collective and coordinated efforts from different government authorities in promoting electric vehicles. A wide range of local-level policies, on top of the financial incentives at the national level, have been adopted in Hainan to stimulate local electric vehicle uptake. This section details these local-level policies.

ELECTRIFICATION OF FLEETS

According to Hainan's annual action plans on electric vehicle promotion, all new vehicles purchased by governments, government-affiliated institutions, and state-owned companies in Hainan are to be electric from 2019 onward. Also, from 2019 onward, 100% of new rental cars, postal vehicles, and urban logistics trucks, and 50%

⁵ General Office of Hainan Provincial People's Government, 海南省清洁能源汽车推广2019年行动计划 [2019 action plan of Hainan province on clean energy vehicle promotion], (2019), <https://www.hainan.gov.cn/hainan/szfbgtwj/201903/cf79f296465e409db16cccc30aff6cfb.shtml>; General Office of Hainan Provincial People's Government, 海南省清洁能源汽车推广2020年行动计划 [2020 action plan of Hainan province on clean energy vehicle promotion], (2020), <https://www.hainan.gov.cn/hainan/szfbgtwj/201903/cf79f296465e409db16cccc30aff6cfb.shtml>; General Office of Hainan Provincial People's Government, 海南省清洁能源汽车推广2021年行动计划 [2021 action plan of Hainan province on clean energy vehicle promotion], (2021), <https://www.hainan.gov.cn/hainan/tingju/202103/2c7e2327668348e2ac8b5126c471ed93.shtml>

of new sanitation trucks, are to be electric in Hainan.⁶ All purchases of new buses and ride-hailing vehicles, as well as 80% of new taxis, are to be electric beginning in 2021.⁷

MONETARY INCENTIVES

On top of China's national-level subsidies, Hainan offers additional subsidies for purchasing electric vehicles. Even though these subsidies were eliminated in June 2019, when local governments were urged by the Chinese national government to incentivize charging infrastructure development instead of electric vehicle purchasing, in April 2020, Hainan revived the local-level subsidies (CNY 10,000 per vehicle maximum) as a part of its recovery efforts in response to COVID-19.⁸ Figure 4 illustrates the maximum subsidies, both national and local, that consumers could enjoy when purchasing electric passenger vehicles in Hainan from 2016 to 2021.

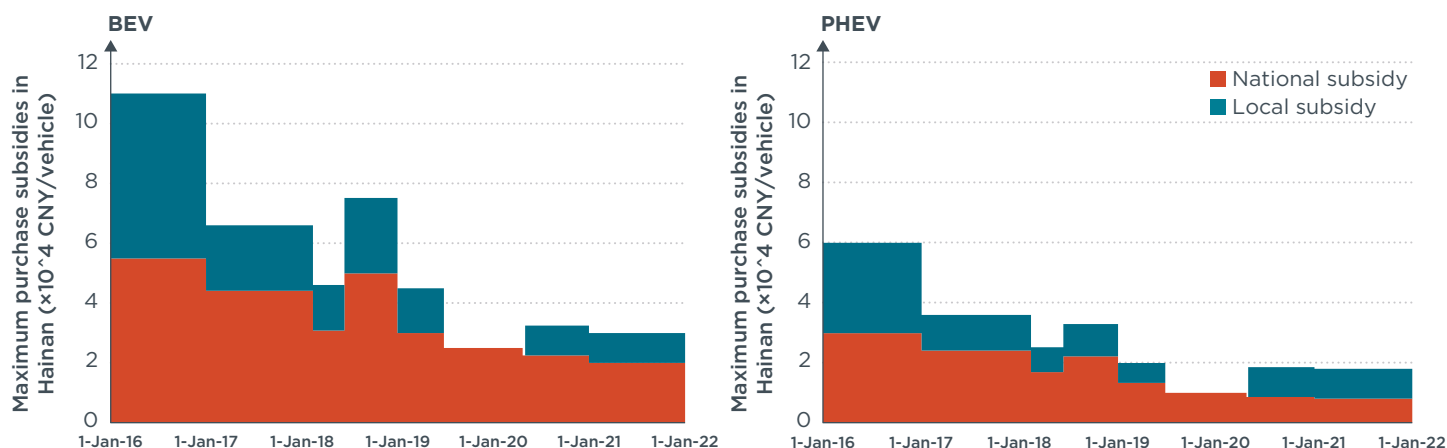


Figure 4. Maximum subsidies consumers could enjoy when purchasing battery electric (left) and plug-in hybrid electric (right) passenger vehicles in Hainan from 2016 to 2021.

During the vehicle use stage, there are also some monetary incentives offered in Hainan. For example, Haikou, the capital city of Hainan province, waives parking fees for electric vehicles in public parking lots (e.g., stadiums, libraries, schools) and offers free 30-minute parking in non-public parking lots (e.g., shopping centers).⁹ Additionally, road maintenance fees in Hainan are collected through a surcharge added to fuel prices instead of road tolls,¹⁰ and that means that electric vehicles are automatically exempted from road maintenance fees.

NON-MONETARY INCENTIVES

An important non-monetary incentive that Hainan offers is vehicle registration privilege. This is also the key driving force behind the success of electric private car uptake in many of the leading Chinese cities.¹¹ Specifically, Hainan imposes an upper limit on annual new car registrations to reduce urban congestion and air pollution, and

6 General Office of Hainan Provincial People's Government, 海南省清洁能源汽车推广2019.

7 General Office of Hainan Provincial People's Government, 海南省清洁能源汽车推广2021.

8 Hainan Bureau of Industry and Information Technology, 关于海南省2021年促进新能源汽车消费综合奖励申报的通知 [Notice of Hainan Province on declaration of comprehensive incentives for promoting new energy vehicle consumption in 2021], (2021), <http://iitb.hainan.gov.cn/iitb/bmwjji/202105/057d49c5ca344599b4a4f0dc3d8d4c05.shtml>

9 Haikou Development and Reform Commission, 关于海口市各类停车设施新能源汽车车辆停放服务收费标准的通知 [Notice on charging fee for new energy vehicles in different parking space of Haikou], <http://drc.haikou.gov.cn/xxgk/zcwj/flfg/202009/P020200915422395963195.pdf>

10 Hainan road trip safety and information, accessed on October 14, 2021, http://en.explorehainan.com/sitefiles/hnly_en/html/tsxl/loverstour/15169.shtml

11 Hui He, Lingzhi Jin, Hongyang Cui, and Huan Zhou, *Assessment of electric car promotion policies in Chinese cities*, (ICCT: Washington, DC, 2018), <https://theicct.org/publications/assessment-electric-car-promotion-policies-chinese-cities>

electric cars are exempted.¹² New gasoline car owners must enter a lottery or auction system to be able to obtain a license plate to complete registration. In 2020, the odds of winning that lottery in Hainan were roughly one in three.¹³ Comparatively, new electric car owners could directly obtain a new license plate.

Another common non-monetary incentive is referred to as road access privilege. In Haikou, ICE vehicles, especially ICE trucks, are restricted from driving on certain roads at certain times of the year and day (e.g., during rush hours or when severe air pollution arises); this is to help reduce congestion and vehicle emissions.¹⁴ Electric vehicles are exempted from these traffic restrictions.

CHARGING INFRASTRUCTURE DEVELOPMENT

Hainan has been continuously expanding and improving its electric vehicle charging infrastructure network through various policy efforts. For example, Hainan offers subsidies for both the construction of and the operation of charging stations. The construction subsidy is based on the rated power of the charger (CNY 200/kW) and the operation subsidy is based on energy discharged (CNY 0.2/kWh), each with a limit on the total subsidy. Moreover, Hainan developed a mobile app, “Hainan Chargers,” which includes details of the public chargers of most operators and makes it easier for electric vehicle drivers to find the closest chargers.¹⁵

Electric vehicle-ready building codes are another tool Hainan leverages to improve its charging infrastructure network. Hainan mandates that all parking spots in new residential buildings be equipped with chargers or be “electric vehicle ready” with appropriate electric wiring and capacity. The requirements are 25% for public spots in new office buildings, 20% in commercial buildings, 20% for public parking spaces, 15% for public buildings such as hospitals and stadiums, and 20% for existing public parking spaces.¹⁶

By comparison, improving charging convenience in existing residential areas remains a challenge. There are multiple reasons for this, and they include a limited number of parking spaces, insufficient grid capacity, and unclear authority. To address this, the relevant government agencies of Hainan province are collaborating with key stakeholders such as charging infrastructure operators, grid companies, and property management companies to seek practicable and innovative solutions through field surveys and demonstration projects.¹⁷

- 12 Hainan Provincial People's Government, 海南省小客车保有量调控管理办法（试行） [Car stock control regulation of Hainan province (for trial implementation)], (2019), <https://www.hainan.gov.cn/hainan/tjgw/201807/d28497341544486e9f7b2387f0554de0.shtml>; Hainan Public Security Bureau, 关于2019—2020年全面放开新能源小客车指标申请资格条件和数量的通告 [Notice on application requirements of new license plates of new energy vehicles in 2019-2020], <http://ga.hainan.gov.cn/sgat/0400/201907/13e1eab058e043cb94a555bb715d0109.shtml>
- 13 Haikou Bendibao, 2021海南小客车摇号个人中签率汇总表 [A summary of odds of winning Hainan's car license plate lottery through 2021], accessed in October 14, 2021, <http://m.haikou.bendibao.com/live/42196.shtml>
- 14 “下周起海口恢复执行货车限行措施 [Haikou's traffic restrictions on trucks will revive next week],” (May 24, 2020), http://www.haikou.gov.cn/zfdt/hkyw/202005/t20200524_1510450.html
- 15 “海南交控：完善“海南充电桩”App使用功能 [Hainan Transportation Investment Holding Company: Improving functions of “Hainan Chargers” app],” (September 10, 2021), <https://evcharge.hainanjk.com/#/latest-info/detail?newsType=1&newsSeq=227>
- 16 Hainan Development and Reform Commission, 海南省电动汽车充电基础设施运营暂行管理办法 [Electric vehicle charging infrastructure operation regulation of Hainan province (for trial implementation)], (2019), <https://www.hainan.gov.cn/data/zfgb/2019/09/4587/>
- 17 Hainan Bureau of Industry and Information Technology, “实地调研充电桩进小区情况 [Field surveys on installing chargers in residential areas],” (September 18, 2019), <http://iitb.hainan.gov.cn/iitb/zwdt/201909/49eaae907d68420ab2312d05ab468b88.shtml>; Hainan Bureau of Industry and Information Technology, “关于印发“充电桩进小区”示范项目建设实施方案的通知 [Implementation plans of “installing chargers in residential areas” demonstration projects],” (June 10, 2019), <http://iitb.hainan.gov.cn/iitb/66934/201906/68f6c89dd60a4887bbe61e469e9e0a3.shtml>

CONSUMER AWARENESS CAMPAIGNS

With support from multiple stakeholders, Hainan has initiated many educational and advertising campaigns to improve consumer awareness and acceptance of electric vehicles. For example, the “New Energy Vehicles to the Countryside” campaign was held in Haikou in 2020. Many leading Chinese electric vehicle manufacturers, including BYD, exhibited their electric models to consumers living in Haikou’s rural areas and offered test drives.¹⁸ Other efforts included hosting the World New Energy Vehicle Conference (WNEVC) and the new energy vehicle-targeted Grand Challenge.¹⁹ These high-profile events were effective in increasing the visibility of electric vehicles among potential consumers.

FINAL REMARKS

Hainan has been steadfast in making the transition to electric vehicles since releasing its vehicle electrification roadmap in 2019. Recently, on December 1, 2021, the People’s Congress of Hainan Province passed an amendment to the *Vehicle Emission Prevention and Control Regulation of Hainan Province*,²⁰ and Article 6 of the amendment says that Hainan will gradually ban the sales of gasoline and diesel vehicles. This legislative progress further solidified Hainan’s determination to embrace an electric future.

Thanks to the policy efforts made through 2020, Hainan has already achieved substantial progress on electric vehicle deployment and is leading the way on vehicle electrification nationwide. China’s newest pledge on climate change mitigation, to achieve peak CO₂ emissions by 2030 and carbon neutrality by 2060, is expected to give a powerful boost to Hainan’s transition to electric vehicles. Still, it will not be easy for Hainan to hit its ambitious targets as planned. The huge gap between current progress and announced targets suggests it will be necessary for the province to introduce more comprehensive, powerful, and innovative policy measures to further boost electric vehicle uptake. This calls for in-depth and continuous tracking of progress and evaluation of the impacts of various policies.

18 China Association of Automobile Manufacturers, “绿色、智能、安全，开启乡村出行新阶段—新能源汽车下乡第3站海南海口启动 [New Energy Vehicles to the countryside program launched in Haikou of Hainan province],” (October 24, 2020), http://www.caam.org.cn/chn/1/cate_16/con_5232206.html

19 “2020世界新能源汽车大会发布共识 [2020 World New Energy Vehicle Conference Consensus Released],” (September 29, 2020), http://www.gov.cn/xinwen/2020-09/29/content_5548332.htm; “海南东风风行新能源“谁是节能王”挑战赛圆满落幕 [Hainan Dongfeng Fengxing “The most efficient vehicle” Grand Challenge successfully held],” (September 22, 2021), <https://www.163.com/dy/article/GKH44JRR0527AV5H.html>

20 Standing Committee of the People’s Congress of Hainan Province, 海南省机动车排气污染防治规定 [Vehicle Emission Prevention and Control Regulation of Hainan Province], (2021), <https://www.hainanpc.net/hainanpc/xxgk/xfsd/2021122410583366212/index.html>