

# How China promotes new energy vehicles: Historically, now, and in the future

Expert Workshop: International Best Practices to Promote Eco-friendly Cars,  
International Transport Forum

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January 25, 2021

Beijing, China

# About ICCT

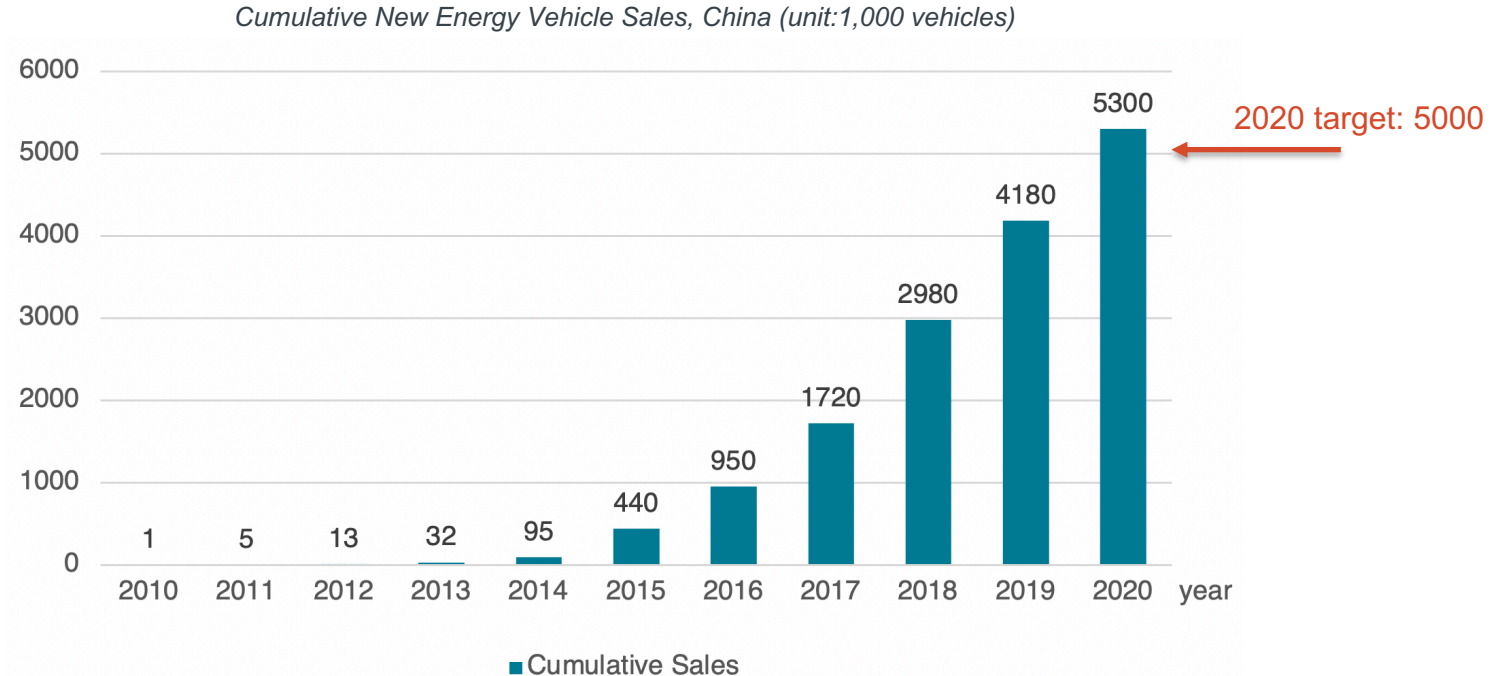
The International Council on Clean Transportation (ICCT) is an independent nonprofit organization founded to provide first-rate, unbiased technical research and scientific analysis to environmental regulators. Its mission is to improve the environmental performance and energy efficiency of road, marine, and air transportation to benefit public health and mitigate climate change.

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# New Energy Vehicle (NEV) Market trend

NEV share in 2020: 5.4%



# Drivers behind China's rapid NEV growth: Strategies, plans, and policies

## National strategies and plans

Birth of China's early NEV strategy: "863" NEV project (10<sup>th</sup> Five-Year Plan)

## Industrial plans and goals

- *By 2015:*  
500 thousand BEV & PHEV sales (cumulative)
- *By 2020:*  
5 million NEV sales (cumulative)
- *By 2025:*  
20% NEV sales (annual)

## Central policies

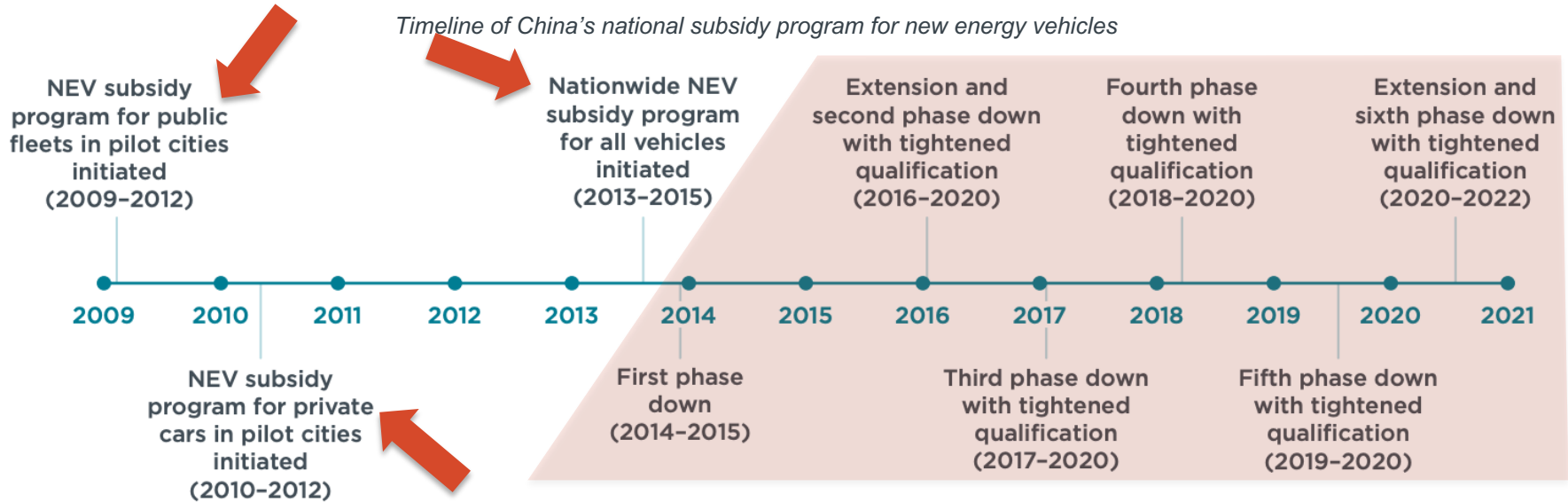
- "Ten-City-Thousand EV" pilot program (2009)
- Purchase subsidies, tax breaks, and sales mandate for NEV, government procurement requirement, and infrastructure subsidies

## Local policies

- Policies tailored to local conditions, e.g. the license plate incentives in mega cities like Beijing and Shanghai, road access privileges, parking incentives, etc.

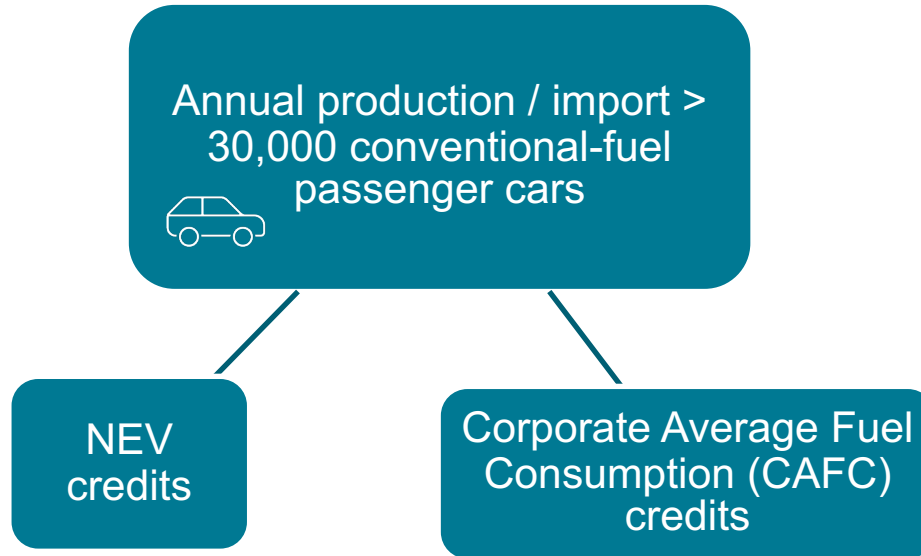


# Central policies: Purchase subsidies



The most important element of China's subsidy policy is that the size of the subsidy depends on technical features of the vehicles, such as electric range, battery size, efficiency, and battery density. Over time, China continues to lift the minimum qualification of NEVs for the subsidies to promote advanced electric vehicle and battery technologies. **The minimum all-electric range qualification: 100 km in 2016, 300km in 2020**

# Central policies: NEV mandate (revised in 2020)



# Central policies: NEV mandate (revised in 2020)

NEV deficit  
 ↓  
 Actual NEV credits < NEV targets

- Purchase BEV credits from other companies.
- Use **banked NEV credits from own company.**

CAFC deficit  
 ↓  
 Actual CAFC credits < CAFC targets

- Use banked CAFC credits from own company.
- Use **banked** or current year NEV credits from own company.
- Transfer CAFC credits from **affiliated companies.**
- Purchase BEV credits from other companies.

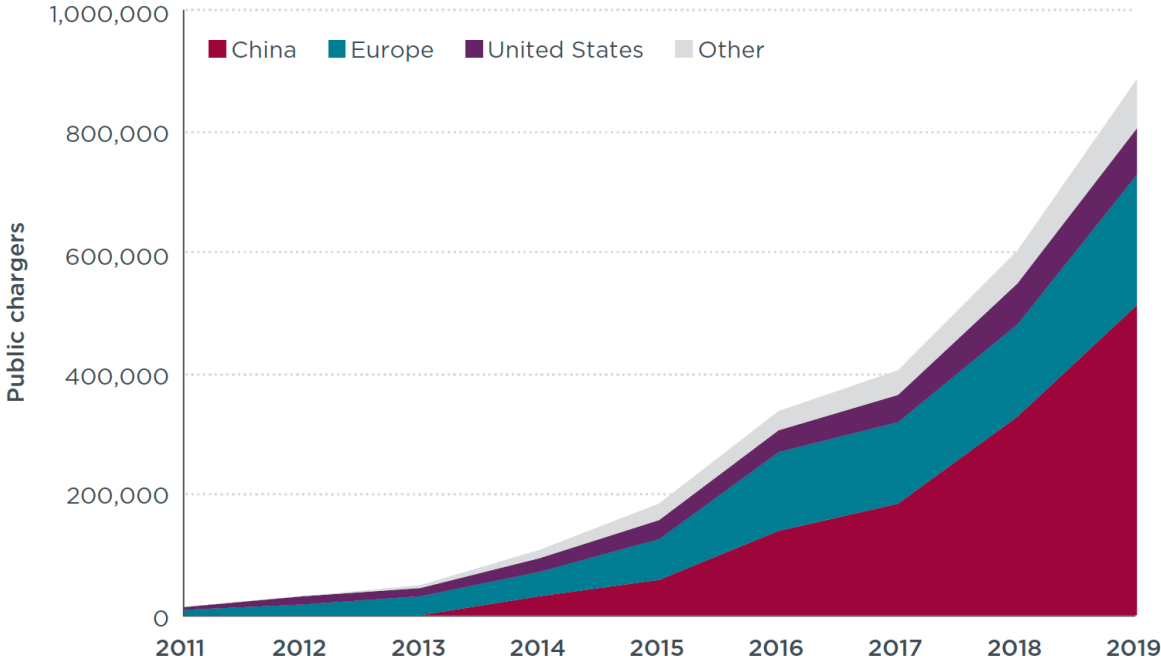
Government	Target year	Percentage of NEV credits	ICCT estimate of percent of NEV sales
China	2020	12%	~ 4%
	2023	18%	5 -10%

# Central and local policies support charging facilities



- ~ \$ 670 Million of bonus from central government (cumulative) since 2014
- **By Dec. 2020:**  
555 battery swapping stations  
Public chargers: 807,000  
Private chargers: 874,000  
Source: China EV100 Forum, Jan. 2021

Global public electric vehicle charger stock from 2011 to 2019 by market

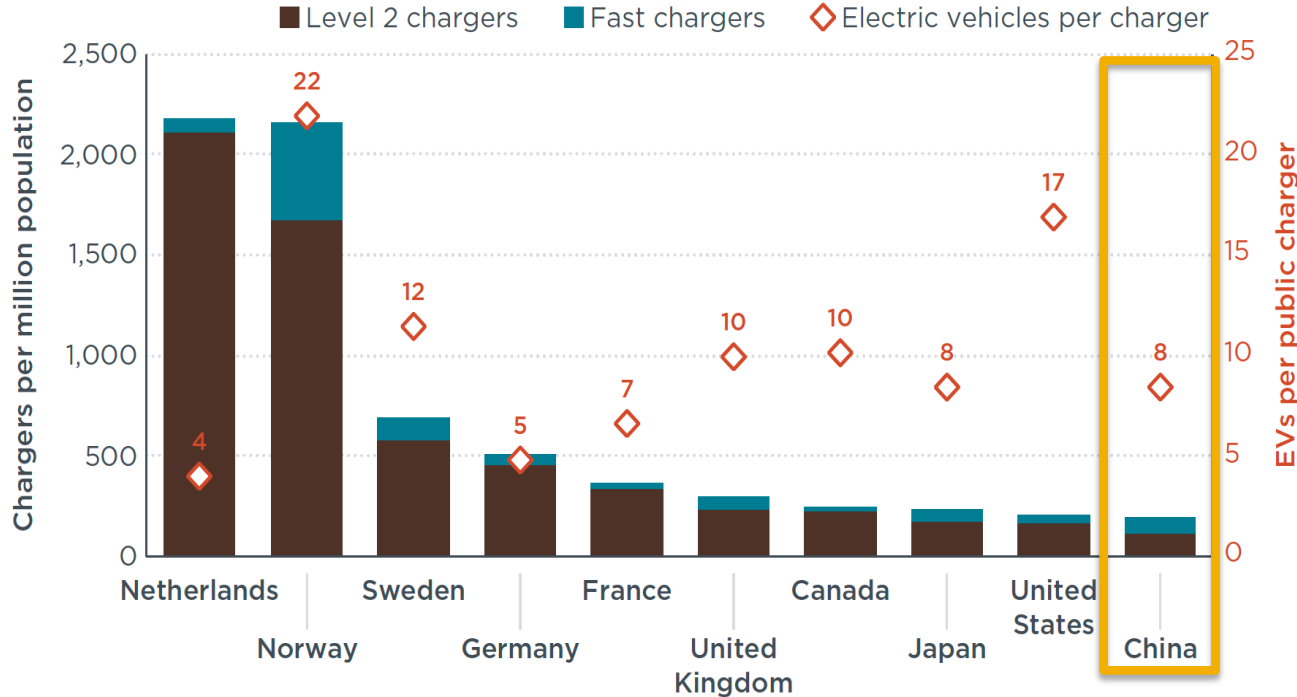




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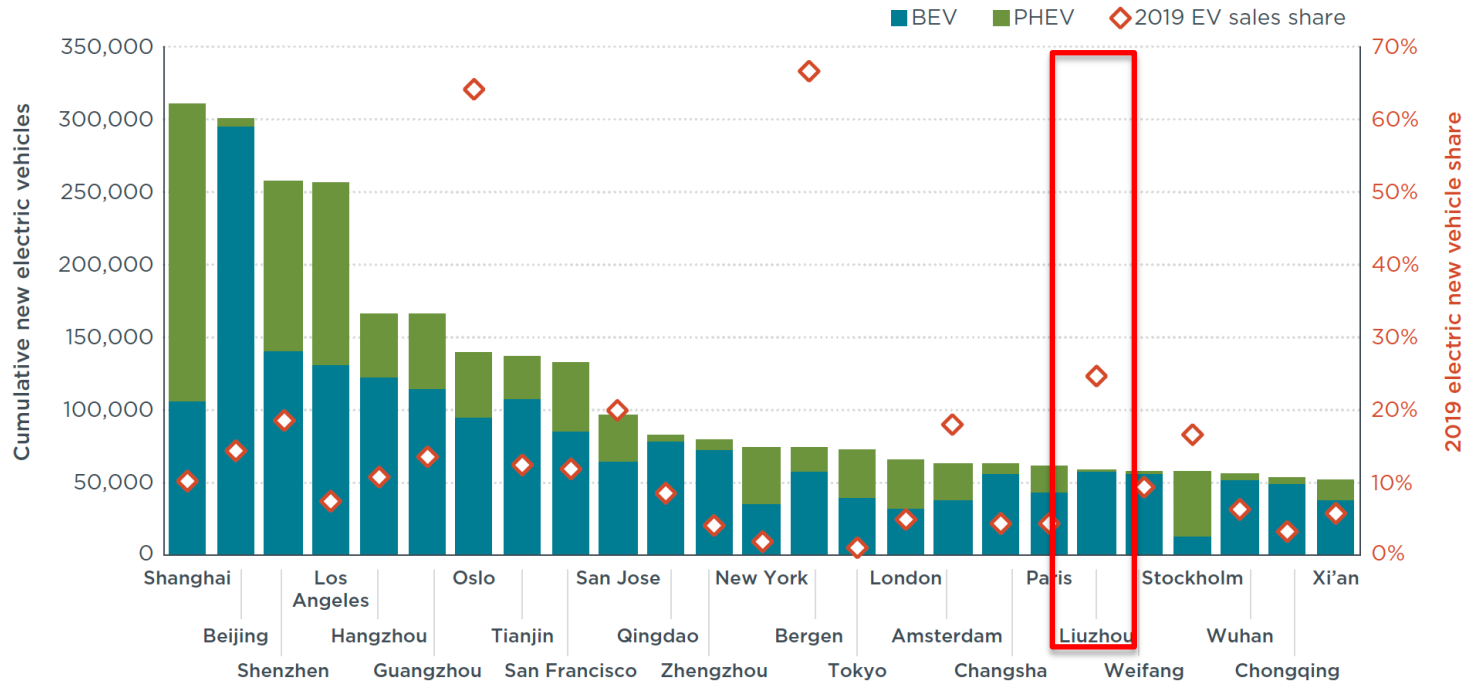
# Local policies

Country	Metropolitan area	City planning				Infrastructure				Fleets				Incentives							
		100% electric sales goal	100% electric stock goal	Planned central zero-emission zone	Low emission zone in place	Fossil Fuel Free Streets declaration	Public charging incentives	Private charging incentives	EV-ready building code	Charging strategy	City government fleet goal	Taxi electrification goal	Ride-hailing electrification goal	Electric car-sharing program	100% electric bus goal	100% electric buses achieved	Financial incentives	License plate preferential access	Electric vehicle parking privileges	Access to bus/carpool lanes	Toll, bridge, or ferry discounts
China	Shanghai				x		⊗		x	x	x	x	x	x	⊗		○	x	x		
	Beijing				x		⊗		x	x	x	x			○		○	x	x		
	Shenzhen				x		⊗		x	x	x	x	x		x		○	x	x		
	Hangzhou				x		⊗	x	⊗	x	○	x		x	⊗		○	x	x	○	
	Guangzhou				x		⊗		⊗	x	⊗	⊗	x	x		x	○	x	⊗	x	
	Tianjin				x		⊗		x	x	x	x		x	⊗		○	x	x		
	Qingdao				x		⊗		⊗	x	⊗	x		x	⊗		○		⊗		
	Zhengzhou				x		⊗		⊗	x	⊗	⊗	x	x	⊗		○		⊗		
	Changsha						⊗		⊗	x	x	x		x	x		○		x		
	Liuzhou				x		⊗		⊗	x	x			x		○		⊗	⊗		
	Weifang				x		⊗		⊗	x	○			x		○		⊗	⊗		
	Wuhan				x		⊗		x	x	⊗	x	x	x	x		○	⊗			x
	Chongqing				x		⊗		x	x	⊗			x		○		x			x
Xi'an				x		⊗		⊗	x	⊗	x	x	x	○		○	x	⊗			
Japan	Tokyo			x	x	x	⊗	x		x	x		x		⊗						
Norway	Oslo	x	x	x	x	x		x	x	x	⊗	x	x	x		○	x	x	○		
	Bergen	x	x	x	x			x	x		⊗	x	x		○		x	x	○		
France	Paris		x	x	x			x	x		x	x	x		⊗		x				
United Kingdom	London	x	x	x	x	x		○	x	x	x		x	x	x	○		x		x	
Netherlands	Amsterdam	x	x	x	x	x	x	x	x	x	○	x	x	x		○		x		○	
Sweden	Stockholm		x	x			○	○	x	x	x		x		○						
United States	Los Angeles		x	x		x		⊗	⊗	x	⊗	x		x		○			○	○	
	San Francisco	x	x				⊗	⊗	x	⊗	x			x		○			○	○	
	San Jose						○	○	x	⊗	x				○		○		x	○	○
	New York		x					○	x						x		○			○	○

Notes: ⊗ = action by local government; ○ = action by state or national government; ⊗ = action at multiple levels

# Local markets

Cumulative electric car sales through 2019 and 2019 electric vehicle share of new car sales in the 25 cities with the most electric cars



# China's next step:

## NEV Industrial Development Plan: 2021-2035 (Oct. 2020)



- 20% NEV annual sales (by 2025)
- Average electricity consumption of new passenger BEVs: 12.0 kWh/100km (by 2025)
- BEVs become the mainstream (by 2035)



- Commercialize autonomous driving in specific areas and scenarios (by 2025)
- Scale-up application of highly autonomous, intelligent connected vehicles (by 2035)



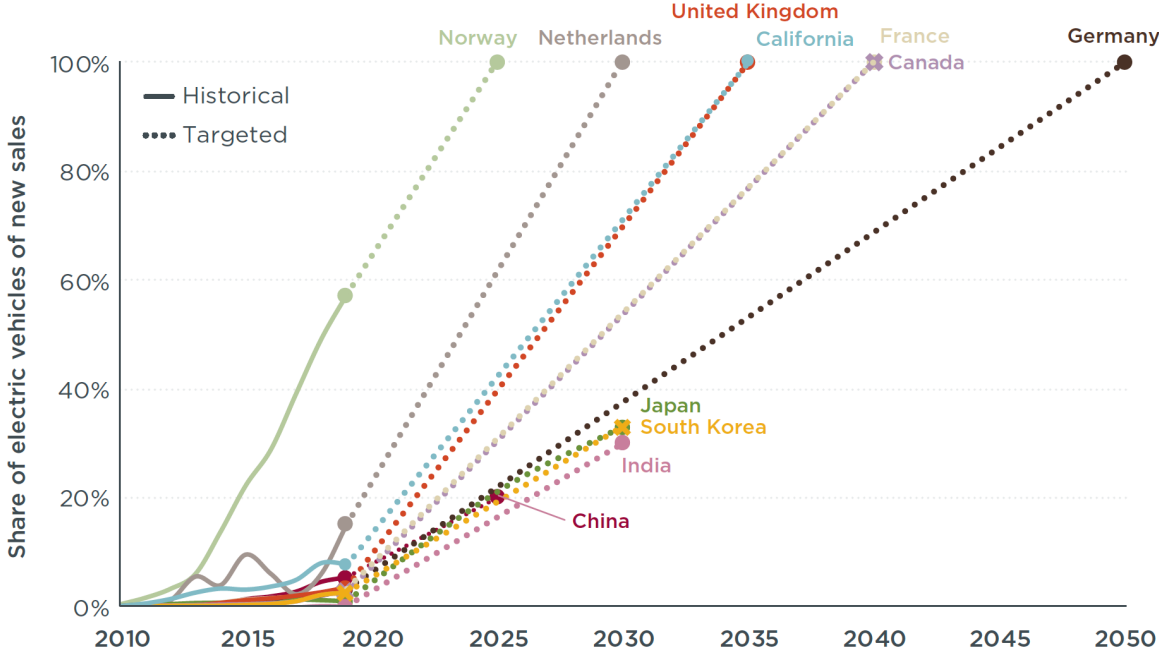
- $\geq 80\%$  NEVs (e.g., new buses, taxis, and logistics) in public fleets in pilot zones (by 2021)
- 100% electrification in public fleets (by 2035)

FCV

- Commercialize fuel cell vehicles (by 2035)
- Build a fundamental hydrogen fuel supply chain (by 2035)

# Race to electrification ?

Electrification commitment for new passenger cars versus historical electric vehicle penetration in select markets.

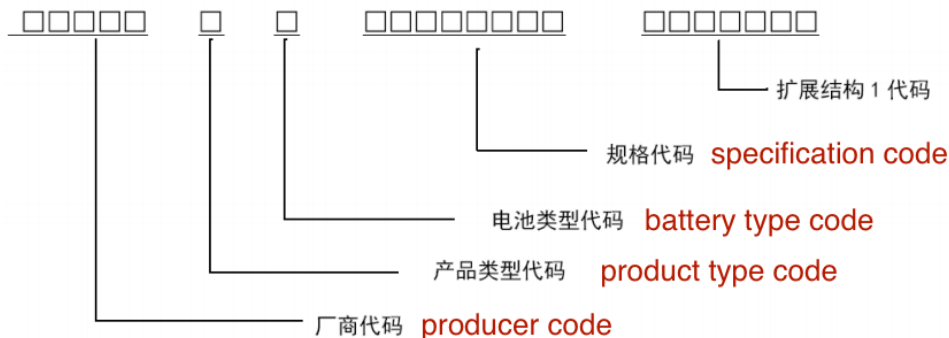


# China's battery recycling policies



新能源汽车国家监测与动力蓄电池回收利用溯源综合管理平台（回收利用管理模块）

National NEV Monitoring And Management-Traction Battery Recycling And Traceability Platform (Recycling Management Module)



Requires a recovery rate of nickel, cobalt, manganese  $\geq 98\%$  lithium  $\geq 85\%$  Rare-earth metals  $\geq 97\%$

(Industry Specifications for Comprehensive Utilization of Waste Power Batteries for New Energy Vehicles, Interim Procedures, 2019)



# Best practices to promote EVs



1. Set clear visions of the strategy for the industry
2. Make consistent planning and set concrete goals
3. Take coordinated actions cooperatively from national and local levels
4. Provide fiscal and regulatory support to launch and grow the market
5. Include detailed policy implementation and robust enforcement provisions
6. Deploy charging facilities and allow charging to go hand-in-hand with vehicles
7. Encourage policy innovation tailored to local level conditions
8. Adjust policy tools continuously and properly to meet the changing market

## More info

ICCT electric vehicle page: <http://theicct.org/electric-vehicles>

ICCT China program page: <https://theicct.org/countryregion/asia/china>

ZEV Alliance: <http://www.zevalliance.org>

## Acknowledgements

Research team: HE Hui, CUI Hongyang, JIN Lingzhi, Nic LUTSEY, CHEN Zhinan

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