IEA-Advanced Motor Fuels ANNUAL REPORT 2021

China

Technology Collaboration Programme
by IEA

China

Drivers and Policies

China will strive to achieve the goal of carbon neutrality, realizing the peak of carbon dioxide emissions before 2030, and carbon neutrality before 2060. China will further implement the national strategy for the development of new energy vehicles (battery electric vehicles, plug-in hybrid electric vehicles and fuel cell electric vehicles). A development plan for the New Energy Vehicle Industry (2021-2035) has been put forward: by 2025, the sales of new energy vehicles will reach around 20% of the total sales of new vehicles; by 2035, battery electric vehicles will become the mainstream of new vehicles; public vehicles will be fully electrified; fuel cell electric vehicles will be commercialized; and the hydrogen fuel supply system will be steadily advancing; which will effectively promote energy conservation and emission reduction and improve the efficiency of social operations.

Peak Carbon Dioxide Emissions Action Program Pre-2030

In October 2021, the State Council printed and distributed the Peak Carbon Dioxide Emissions Action Program Pre-2030 ("the Program"). Centering on the implementation and execution of the Central Committee of the Communist Party of China's and the State Council's important strategic decisions on peak carbon dioxide emissions and carbon neutrality, and focusing on peak carbon dioxide emissions target pre-2030, the Program makes overall deployment of peak carbon dioxide emissions in accordance with the State's work requirements regarding complete, accurate and comprehensive implementation of the new development concept and optimization of peak carbon dioxide emissions and carbon neutrality work.

The Program proposes to implement peak carbon dioxide emissions work throughout all aspects of economic and social development, and focus on the implementation of "top 10 peak carbon dioxide emissions actions," such as green low-carbon energy transformation action, energy saving, carbon reduction and efficiency enhancement action, peak carbon dioxide emissions action in industrial fields, peak carbon dioxide emissions action for urban and rural development, green low-carbon action in the transport field, carbon reduction action through cyclic economy assistance, green low-carbon science and technology innovation action, carbon sink capacity consolidation and enhancement action, green low-carbon action by all people and orderly cascade peak carbon dioxide emissions action in all regions.

In regard to the green low-carbon action in the transport field, it is proposed to actively expand the application of new energy and clean energy such as electricity, hydrogen energy, natural gas and advanced liquid biological fuel in the field of transport. China will energetically promote new energy vehicles and gradually reduce the proportion of traditional fuel vehicles to new vehicle production and sales as well as vehicle ownership. By 2030, the proportion of newly added vehicles using new energy and clean energy for propulsion should reach approximately 40%. China will speed up the construction of green traffic infrastructure and orderly propel the construction of infrastructure such as charging pillars, auxiliary power grids, fuel (gas) filling stations and hydrogen filling stations to enhance the level of urban public transport infrastructure.

The White Book of Policies and Actions of China for Addressing Climate Change

In October 2021, the State Council Information Office published the White Book of Policies and Actions of China for Addressing Climate Change.

The White Book emphasizes that climate change is a common challenge for all mankind. Addressing climate change is related to the sustainable development of the Chinese nation and the future and destiny of mankind. The White Book introduces the progress of China in addressing climate change from four major sections of "new concept of China regarding addressing climate change," "implementation of national strategy to actively address climate change," "historical changes of China for addressing climate change" and "joint development of fair, reasonable and win-win global climate governance system," shares practices and experiences of China on addressing climate change, and enhances international understanding.

As a responsible country, China will actively promote the joint development of a fair, reasonable and win-win global climate governance system and contribute the wisdom and strength of China for

addressing climate change. Facing the serious challenges of climate change, China is willing to make joint efforts and move forward hand-in-hand with the international community to promote stable, long-range implementation of the Paris Agreement and to make greater contribution to global efforts for addressing climate change.

Existing National Standards on Alternative Motor Fuels

- GB/T 23510-2009, "Fuel methanol for motor vehicles" was released on April 8, 2009, and implemented on November 1, 2009.
- GB/T 23799-2009, "Methanol gasoline (M85) for motor vehicles" was released on May 18, 2009, and implemented on December 1, 2009.
- GB/T 23799-2021, "Methanol gasoline (M85)" for motor vehicles was released on October 11, 2021, and will be implemented on May 1, 2022.
- GB/T 34548-2017, "The additive of methanol gasoline for vehicles" was released on October 14, 2017 and implemented on May 1, 2018.
- GB/T 31776-2015, "Determination method of methanol content in methanol gasoline for motor vehicles" was released on July 3, 2015 and implemented on October 1, 2015.
- GB/T 26127-2010, "Compressed coalbed methane as vehicle fuel" was released on January 14, 2011, and implemented on June 1, 2011.
- GB/T 26605-2011, "Dimethyl ether for motor vehicle fuel" was released on June 16, 2011, and implemented on November 1, 2011.
- GB 19159-2012, "Automotive liquefied petroleum gases" was released on November 5, 2012, and implemented on April 1, 2013.
- GB/T 20828 2015, "Biodiesel blend stock (BD100) for diesel engine fuels" was released and implemented on May 8, 2015.
- GB 25199-2017, "B5 diesel fuels" was released and implemented on September 7, 2017.
- GB 18351-2017, "Ethanol gasoline for motor vehicles (E10)" was released and implemented on September 7, 2017.
- GB/T 22030-2017, "Blendstocks of ethanol gasoline for motor vehicles" was released and implemented on September 7, 2017.
- GB 35793-2018, "Ethanol gasoline for motor vehicles E85" was released on February 6, 2018, and implemented on September 1, 2018.
- GB 18047-2017, "Compressed natural gas as vehicle fuel" was released on September 7, 2017, and implemented on April 1, 2018.
- GB/T 40510-2021, "Bio-natural gas as vehicle fuel" was released on August 20, 2021, and will be implemented on March 1, 2022.
- GB/T 34537-2017, "Hydrogen and compressed natural gas (HCNG) blended as vehicle fuel was released on October 14, 2017 and implemented on May 1, 2018.
- GB/T 37178-2018, "Coal-based synthetic natural gas for vehicle" was released on December 28, 2018, and implemented on July 1, 2019.
- GB/T 37244-2018, "Fuel specification for proton exchange membrane fuel cell vehicles—Hydrogen" was released on December 28, 2018 and implemented on July 1, 2019.

Advanced Motor Fuels Statistics

In 2021, 198.98 million tons of crude oil were produced in China, an increase of 2.4% year-on-year; 703.55 million tons of crude oil were processed, an increase of 4.3% year-on-year. Meanwhile, 512.98 million tons of crude oil were imported, a decline of 5.4% year-on-year.

In 2021, China produced 205.3 billion cubic meters (m3) of natural gas, an increase of 8.2% year-on-year. China imported 121.36 million tons of natural gas, an increase of 19.9% year-on-year.

In 2021, China's auto production and sales were 26.082 million vehicles and 26.275 million vehicles respectively, with a year-on-year increase of 3.4% for production and 3.8% for sales.

The production and sales of new energy vehicles were 3.545 million units and 3.521 million units, both showing a year-on-year increase of 160%, accounting for 13.4% of the market share. The production and sales of fuel cell electric vehicles were both 2,000 units.

In 2021, the sales volume of commercial natural gas vehicles was 86,936 units and the top five provinces by sales were Xinjiang, Shanxi, Shaanxi, Hebei and Sichuan.

Research and Demonstration Focus

Promotion of Methanol Gasoline Pilot Project

In 2019, the Ministry of Industry and Information Technology and other relevant departments jointly issued the "Guiding Opinions on the Application of Methanol Vehicles in Some Areas." According to the principles of adapting measures to local conditions, being proactive and prudent, and being safe and controllable, the focus is on areas with better resources and experiences in operating methanol vehicles, such as Shanxi, Shaanxi, Guizhou, and Gansu, to accelerate the application of M100 methanol vehicles. The use of methanol vehicles for official cars, taxis, and short-distance passenger buses in suitable areas is encouraged. The use of methanol commercial vehicles in the fields of public service vehicles and dedicated logistics in suitable areas is encouraged.

By the end of 2022, Shanxi will make efforts to operate three to five methanol vehicles demonstration projects or routes, promote more than 20,000 units of M100 methanol vehicles and build more than 200 methanol refueling stations.

Guizhou has established a complete methanol vehicle production, sales, service system and methanol fuel transportation and distribution supply guarantee system. As of September 2021, Guizhou had promoted 16,400 methanol vehicles, with a total operating mileage of more than 6.5 billion kilometers and a maximum single-vehicle operating mileage of more than 950,000 kilometers. More than 50 methanol fuel filling stations have been put into operation in the province.

Gansu strives to have more than 10,000 methanol vehicles in the province by the end of 2025. At the same time, the use of methanol vehicles will be encouraged in the fields of urban buses, public services vehicles, and government vehicles. The use of methanol commercial vehicles will be encouraged in the field of infrastructure construction, and the use of heavy-duty methanol commercial vehicles will be encouraged in the field of resource mining. In addition, areas such as taxis and driving training will be encouraged to use methanol vehicles when adding and updating vehicles, and gradually household use of methanol vehicles will be promoted.

Promotion of Fuel Cell Electric Vehicles Pilot Project

In September 2020, the Ministry of Finance, MIIT, Ministry of Science and Technology, National Development and Reform Commission and National Energy Administration jointly issued the Notice on Developing Demonstrative Application of Fuel Cell Vehicles. Incentive funds will be allocated to the pilot city groups promoting fuel cell electric vehicles.

In September 2021, the first batch of three fuel cell vehicle demonstration city groups was announced and the three city groups are led respectively by Beijing, Shanghai and Foshan of Guangdong Province. During the demonstration period from 2022 to 2025, the five ministries and commissions will conduct integral assessments on the promotion and application of fuel cell vehicles, the R&D industrialization of key components, and the supply of hydrogen energy.

The Beijing-Tianjin-Hebei Demonstration City Group will rely on the demonstration projects of the 2022 Winter Olympics to promote the hydrogen energy industry chain. Zhangjiakou and Yanqing will respectively introduce 625 and 212 fuel cell electric vehicles for the Winter Olympics. In four years, the Beijing-Tianjin-Hebei area will achieve technological breakthroughs in core parts and components, and the number of fuel cell electric vehicles will be no less than 5,300.

The Guangdong Demonstration City Group aims to promote more than 10,000 units of fuel cell electric vehicles and build more than 200 hydrogen refueling stations.

Shanghai will cooperate with Suzhou, Nantong, Jiaxing, Zibo, and Ordos to complete the task of promoting 5,000 fuel cell electric vehicles.

Outlook

Driven by the goal of carbon neutrality, China will promote new energy and clean energy. China will actively develop renewable energy resources, such as wind energy, solar energy, biomass energy and hydrogen energy.

In order to fulfill the goal set in "Development Plan for the New Energy Vehicle Industry (2021-2035)," the new energy vehicles will develop quickly. Fuel cell electric vehicles are expected to realize commercialization by 2035.

Meanwhile, China will promote natural gas vehicles and methanol vehicles in areas where there are resources.

Additional Information Sources

- National Development and Reform Commission, https://www.ndrc.gov.cn
- China Association of Automobile Manufacturers (CAAM), http://www.caam.org.cn/
- China Society of Automotive Engineers (China-SAE), http://www.sae-china.org/
- China Automotive Technology and Research Center Co., Ltd. (CATARC), http://www.catarc.ac.cn
- Asia Pacific Natural Gas Vehicles Association (ANGVA), http://www.angva.org/
- Ministry of Industry and Information Technology (MIIT), http://www.miit.gov.cn/