

中国机动车标准升级及达标管理

How China Addressed Challenges of Vehicle Emission Standards Upgrade and Compliance

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2018, Malaysia

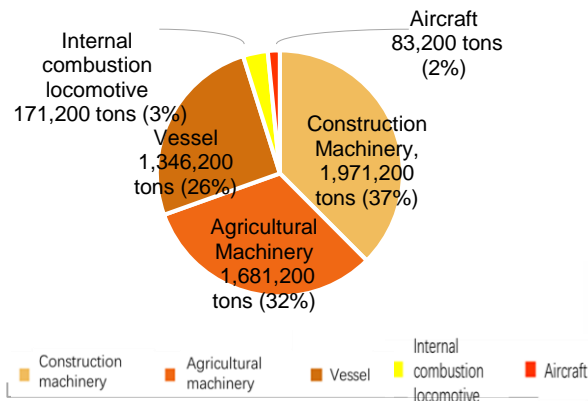
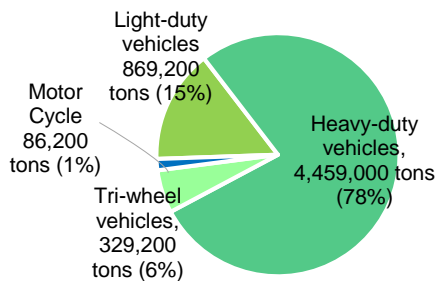
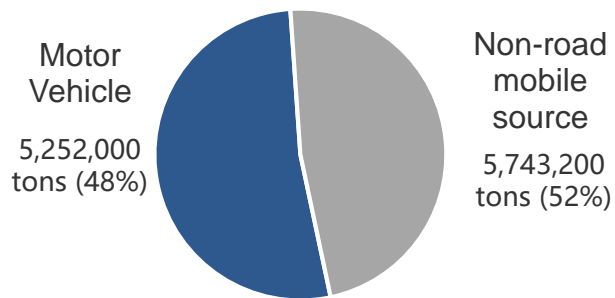
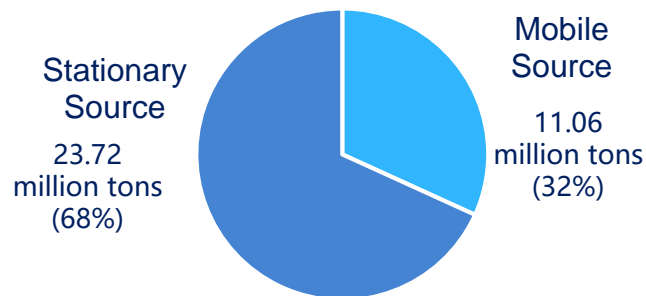


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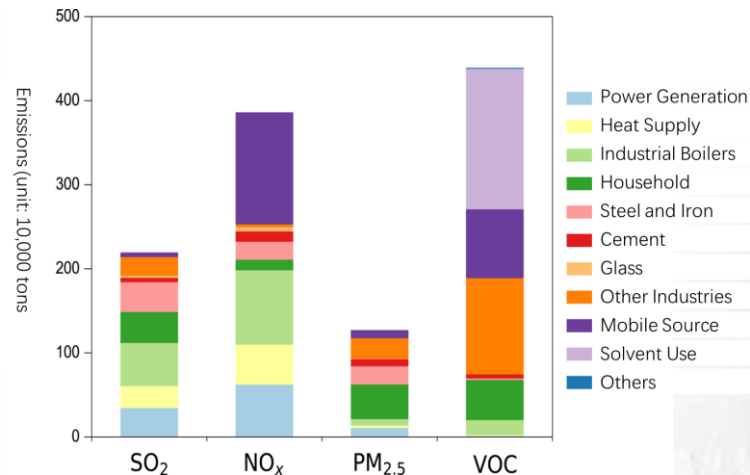
- Retrospect on Environmental Regulations and Standards of Vehicles
- Management and Upgrading of Vehicle Emission Standards
- Future Strategies for Vehicle Emissions Reduction

Overview of Vehicle Exhaust Emissions in China

NOx Emissions from Mobile Source in 2017

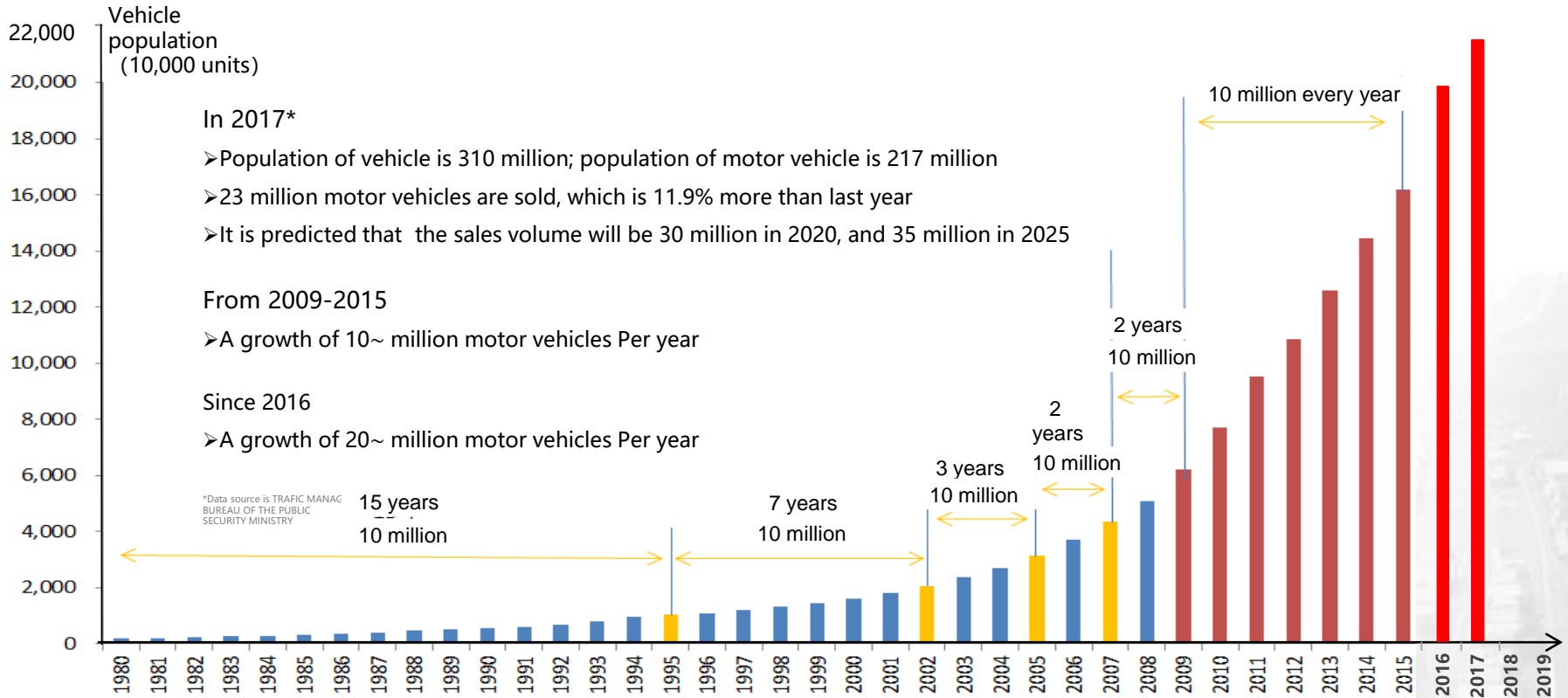


Contribution to Air Pollutant Emissions from different sectors in 2+26 cities in 2017



- Mobile source has the maximum potential for the emission reduction of NO_x and VOCs
- NO_x emission from non-road mobile sources is roughly equivalent to the amount emitted by vehicles
- NO_x emissions from heavy-duty vehicles are the most serious, thus becoming the priority for emission reduction
- Emissions from non-road mobile machineries (including construction and agricultural machineries) and vessels should not be neglected.

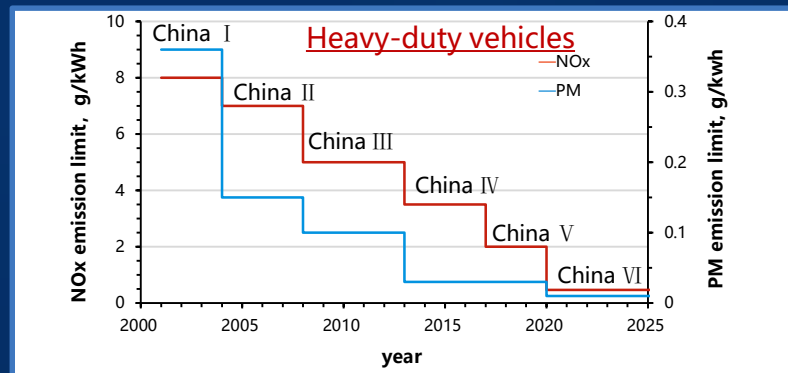
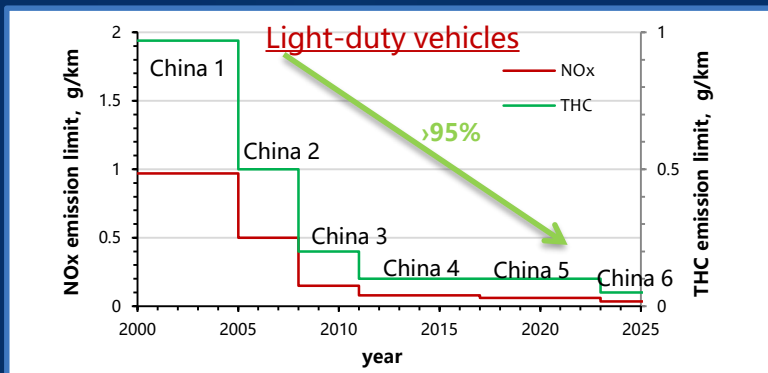
Overview of Vehicle Development and Environmental Regulations



Law		Issued						Modified
Emission Regulation	Idle check		China 0 (Driving cycle)	China 1—China6				
Enforcement Method				Certification			Registration	Information disclosure
Compliance Activity					COP Supervision			
Policy				New vehicle control			Fleet Control	Structural Control
	Stage I			Stage II			Stage III	Stage IV

Development of Vehicle Emission Standards

Emission Standards for Mobile Source		Implementation year		99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24																							
On road vehicles	Light-duty vehicles	Gasoline	no	China 1	China 2	China 3	China 4	China 5	China 6a	6b																	
		Diesel	no	China 1	China 2	China 3	China 4	China 5	China 6a	6b																	
	Heavy-duty vehicles	Gasoline	No control requirement	1	China 2	China 3	China 4	Under revision																			
		Diesel	N/A	China I	China II	China III	China IV	China V	China VI a	VI b																	
		Gaseous fuel	N/A	China 1	China 2	China 3	China 4	China 5	6a	China 6b																	
	Motor cycle	Motor cycle	N/A	1	China 2	China 3	China 4																				
		Moped	N/A	China 1	China 2	China 3	China 4																				
	Tri-wheel vehicles		N/A	1	China 2	Under revision																					
	Non road vehicles	Mobile machinery	Diesel machinery	N/A	China 1	China 2	China 3	Under revision																			
			Small gasoline machinery	N/A	China 1	China 2	Under revision																				
Locomotive		No standard has been issued yet																									
Vessel		N/A																		China 1	China 2						
Aircraft		Implement international conventions																									
		Implementation year		99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24																							



Upgrading of Fuel Quality Standards

Fuel Quality Standards

Category	Standards
Gasoline	Gasoline for motor vehicles, Ethanol gasoline for motor vehicles (E10), Blendstocks of ethanol gasoline for motor vehicles, Methanol gasoline for motor vehicles (M85), Fuel methanol for motor vehicles
Diesel	Automobile diesel fuels, General diesel fuels, B5 diesel fuels
Detergent additive	Detergent additive for vehicular gasoline, Detergent additive for vehicular diesel
NOx reduction agent	Diesel engines NOx reduction agent—Aqueous urea solution

Implementation Date of Fuel Quality Standards

Scope		Fuel Type	Stage of the standards						
			No control	China 1	China 2	China 3	China 4	China 5	China 6
Nationwide	Automobile Gasoline	(1000ppm)*	2003.7.1 (800ppm)	2005.7.1 (500ppm)	2010.1.1 (150ppm)	2014.1.1 (50ppm)	2017.1.1 (10ppm)	2019.1.1 (10ppm)	
	Automobile Diesel	(2000/5000/ 10000ppm)	2002.1.1 (2000ppm)	/	2011.7.1 (350ppm)	2015.1.1 (50ppm)	2017.1.1 (10ppm)	2019.1.1 (10ppm)	
	General diesel	(2000/5000/ 10000ppm)	2002.1.1 (2000ppm)	/	2013.7.1 (350ppm)	2017.7.1 (50ppm)	2017.11.1 (10ppm)	Merged with automobile diesel	
Key Region **	East China	Automobile Gasoline	/			/	2016.1.1	/	
		Automobile Diesel					2016.1.1		
		General diesel					/		
	2+26 cities	Automobile Gasoline	/					/	2017.10.1
		Automobile Diesel							
		General diesel							

Note: Figures in brackets denote fuel sulfur content; ** denotes regions where central government required the early implementation of the standards.

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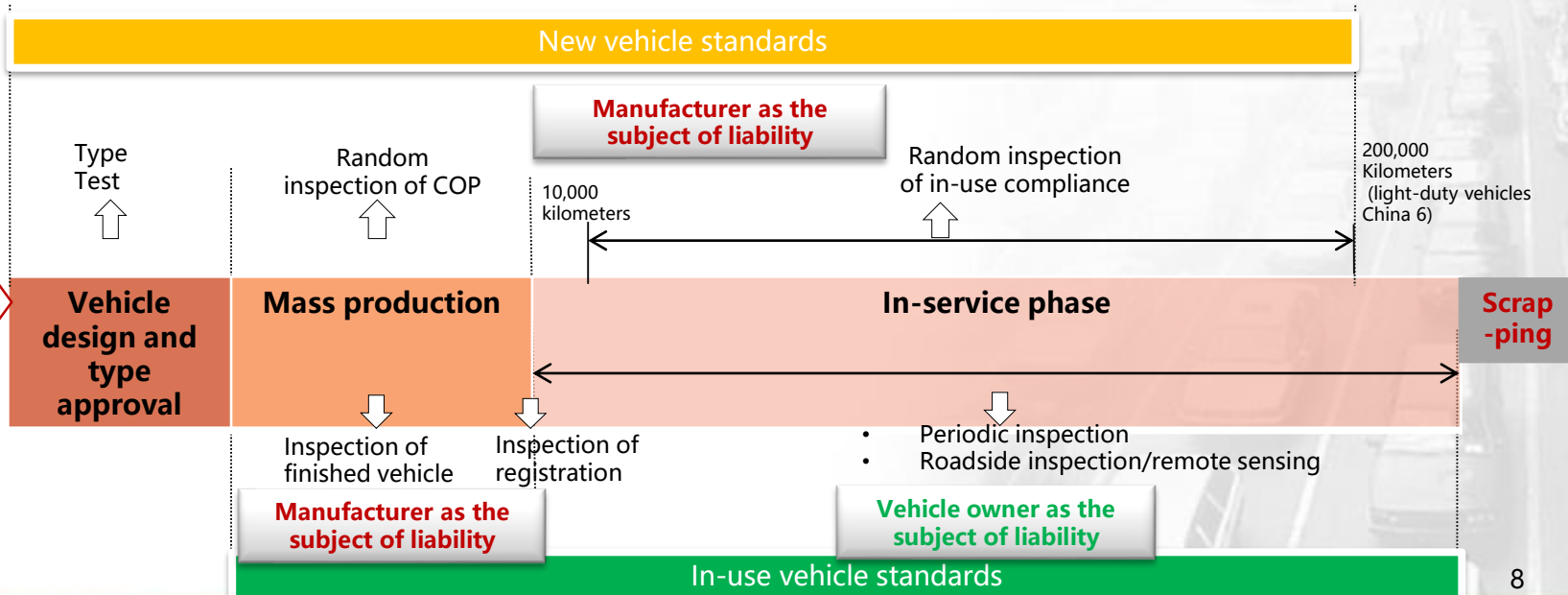
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China's Vehicle Emission Standard System and Its Implementation

In terms of the classification of motor vehicles, their emission standards have been gradually perfected

Vehicle Type			New Vehicle Standards		In-use Vehicle Standards	
			Type test and Production	In-use compliance	Periodic inspection	Roadside inspection
Auto mobile	Light-duty vehicles	Gasoline (gaseous fuel)	China 6		Speed idle conditions and simple driving mode conditions (under revision)	Remote sensing method
		Diesel			Free acceleration and lugdown cycle (under revision)	
	Heavy-duty vehicles	Gasoline	China IV, being revised	/	Speed idle conditions and simple driving mode conditions (under revision)	Remote sensing method
		Diesel (gaseous fuel)	China VI		Free acceleration and lugdown cycle (under revision)	
Motor cycle	Motor Cycle		China 4, (under revision)	/	Speed idle conditions	/
	Moped		China 4, (under revision)	/	Speed idle conditions	/
Tri-wheel vehicles			China 2, (under revision)	/	Smoke at free acceleration	/

Vehicle emission standards are closely related to the full life cycle of vehicles



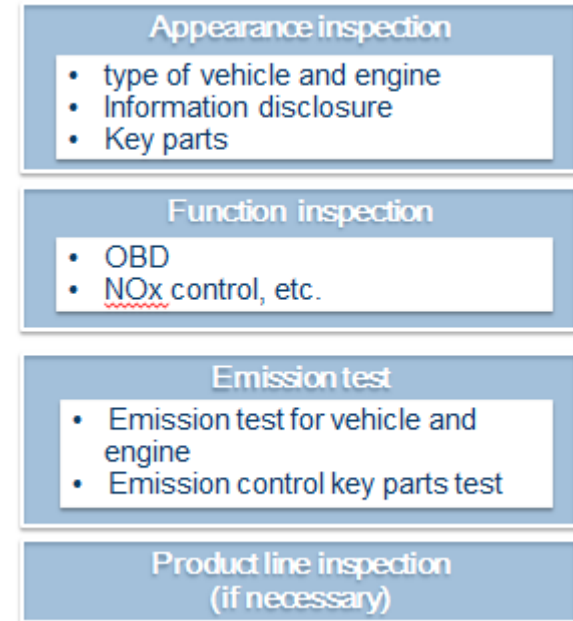
New vehicle compliance

Information disclosure

- Response Object of the information disclosure
 - Enterprise who produce or import the vehicle or non-road machinery
 - Responsible for the authenticity, accuracy, timeliness, and integrity of the information disclosure.
- Main Content
 - Internet information disclosure;
 - Environment protection information statement for each vehicle;
 - Environment protection labeling for each machinery;
- Supervision
 - An offense will result in a punishable of 50-500 Thousands Yuan;
 - Environmental protection departments above the provincial level take the responsibility.



COP Supervision



Supervision of new vehicles has been tightened, and the first penalty ticket was issued

- In Jan. 9th, 2018, the former MEP punished two automobile manufacturers for the first time.
- A total fine of 38 million RMB.

In-use vehicle supervision (1)

Annual inspection

--Speed idle conditions /simple driving mode conditions and Free acceleration/lugdown cycle

➤ More stringent emission standards for in-use vehicles to be published

- Newly revised standards for gasoline and diesel automobiles to be published.
- OBD check is required.
- Check for evaporative emission control devices is required for gasoline automobiles.
- NOx test is required for diesel vehicles.

➤ Joint emission and safety inspection

- The same period, test information networking, emission inspection in advance
- The new private car (light-duty & mini) free from the periodic environmental inspection in previous six-year.

➤ Environmental inspection agency

- Network of nation-province-city
- Random check of the agencies. (In 2017, of the 200 inspection agencies supervised, 106 agencies were punished.)



In-use vehicle supervision (2)

Random inspection -Road side test

- For commercial vehicles
- EPB work with policemen
- Punish on-site
- the Traffic Management Bureau of the Ministry of Public Security added a national uniform Punish Code-6063



Random inspection - Remote sensor

- Driving motors are tested
- 2+26 cities installed 280 sets of remote sensing devices
- Gasoline vehicles: NOx
- Diesel vehicles: Smoke



Other Policies

Fleet Improvement

Phasing out --Air Pollution Prevention and Control Action Plan (2013)

- Traffic restriction;
- encourage beforehand elimination and provide subsidies ;
- 2014-2017,phased out 11.5 million yellow label and 9.1 million old vehicles.

Year	Phasing out Tasks
2014	6 million Yellow-label and old vehicles
2015	All of Yellow-label vehicles register before 2005
2016	3.8 million Yellow-label and old vehicles
2017	All of Yellow-label vehicles

Retrofit

- Focus on commercial fleet, such as:
 - ✓ Truck run in urban, municipal usage, taxi etc.;
 - ✓ Construction machineries and port handling machineries;
- Quality insurance and online supervision system;
- Traffic restriction;
- Provide government subsidy in some districts.

Emission control area

Traffic restriction area for vehicles

Traffic restriction measures of trucks in main roads within 6th ring

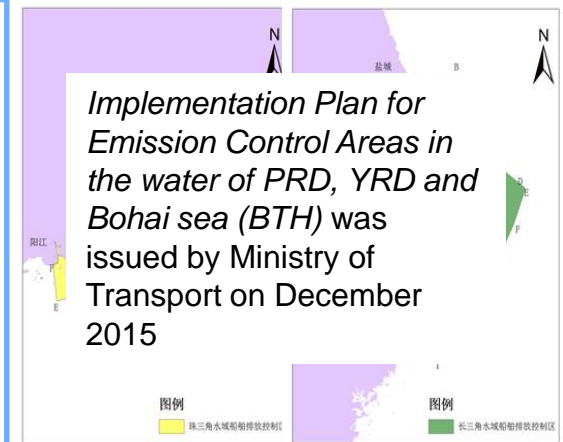
Vehicle type	Implementation time	
	Sept. 21 2017 to sept 20 2019	From Sept. 21, 2019
All diesel trucks that fall under China I & II emission standards	Banned all day in all areas	Banned all day in all areas
Local diesel trucks that fall under China III emission standard	Allow passage from 23:00 pm to 6:00 am	Banned all day
Out-of-town trucks entering into Beijing	China III Diesel trucks Used to assure the people's life and production demand	Entry permit is required, allow passage from 0:00 am to 6:00 am
	Used for delivery of agricultural products	No requirement for entry permit, allow passage from 0:00 am to 6:00 am
	others	Banned all day
Others (including China IV & V diesel trucks)	Entry permit is required, allow passage from 0:00 am to 6:00 am	

Emission control area for construction machineries

According to the Air Pollution Prevention and Control Law, municipal government can designate areas where high emission non-road machineries are banned from using.

In BTH region where the emission standards are the most stringent across the country, Beijing and Tianjin municipal government have issued relevant policies.

Domestic emission control area for vessels



Optimize transportation and reduce total emissions from vehicles

Rail-sea multimodal transport in Tianjin and Hebei

Tianjin ports banned diesel truck from transporting coal in its port by the end of April



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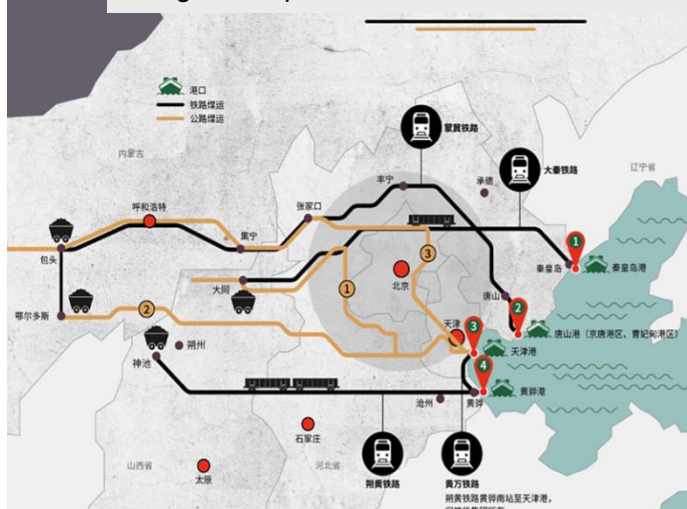
津港煤炭转运方式，解决天津港煤炭堆场及运煤汽车尾气排放污染问题，天津市明确要求4月底前，天津港不再接收柴油货车运输的集港煤炭。

此项部署较国家《京津冀及周边地区2017年大气污染防治工作方案》7月底前，天津港不再接收柴油货车运输的集港煤炭的要求提前了3个月。

据天津市环保局相关负责人介绍，大型运煤车辆过境运输影响京津冀地区空气质量



Freight transportation of coal in North China



Optimize road network in BTH



- ✓ From October 2017, the daily average of coal-loaded vehicles from Yanqing to Beijing dropped from 7,100 to 3,100 units, or about 55%
- ✓ Daily NOx and PM emissions reduce by 50 tons and 5 tons respectively, which is estimated to decrease PM2.5 concentration in areas along the transport line by 2 $\mu\text{g}/\text{m}^3$

Enforcement of Fuel Regulation

General office of the State Council required accelerating the upgrading of automobile fuels:

- Promote the low sulfur content of automobile fuels, accelerate the retrofit of refining facilities, and increase the supply of high quality automobile fuel in the market
- Accelerate the development and implementation of China 5 and 6 automobile fuel standards and hazardous materials control standards for automobile fuels
- Strengthen the approval management of detergent additives for automobile fuels

Automobile Gasoline (17930-2016) and *Automobile Diesel (19147-2016)* were released

The State Council released Three-year Action Plan to Win the Blue Skies Battle:

- From Jan. 1st 2019, China 6 automobile gasoline and diesel fuel will be supplied nationwide
- Merge the automobile diesel, general diesel and marine oil together, and cancel the standard for general diesel.;
- Early implementation in Key regions, PRD and Chengdu-Chongqing region
- Conduct research on adding detergent additives into automobile gasoline and diesel before the sales

2000

Leaded automobile gasoline was phased out, and China started to promote low sulfur content of automobile fuels

2010

The State Council determined the upgrading plan for refined oil product, which drastically changed the long-standing situation in China that "good quality vehicles with bad quality fuel"

2015

- From Jan. 1st, China 5 automobile gasoline and diesel fuel were supplied nationwide
- From July 1st, 2017, China 4 general diesel was supplied nationwide; From Jan. 1st, 2018, China 5 general diesel was supplied nationwide; the implementation of low sulfur fuel was ahead of schedule again

2016

2017

The State Council released Comprehensive 13th Five-year Plan for Energy Conservation and Emission Reduction:

2018

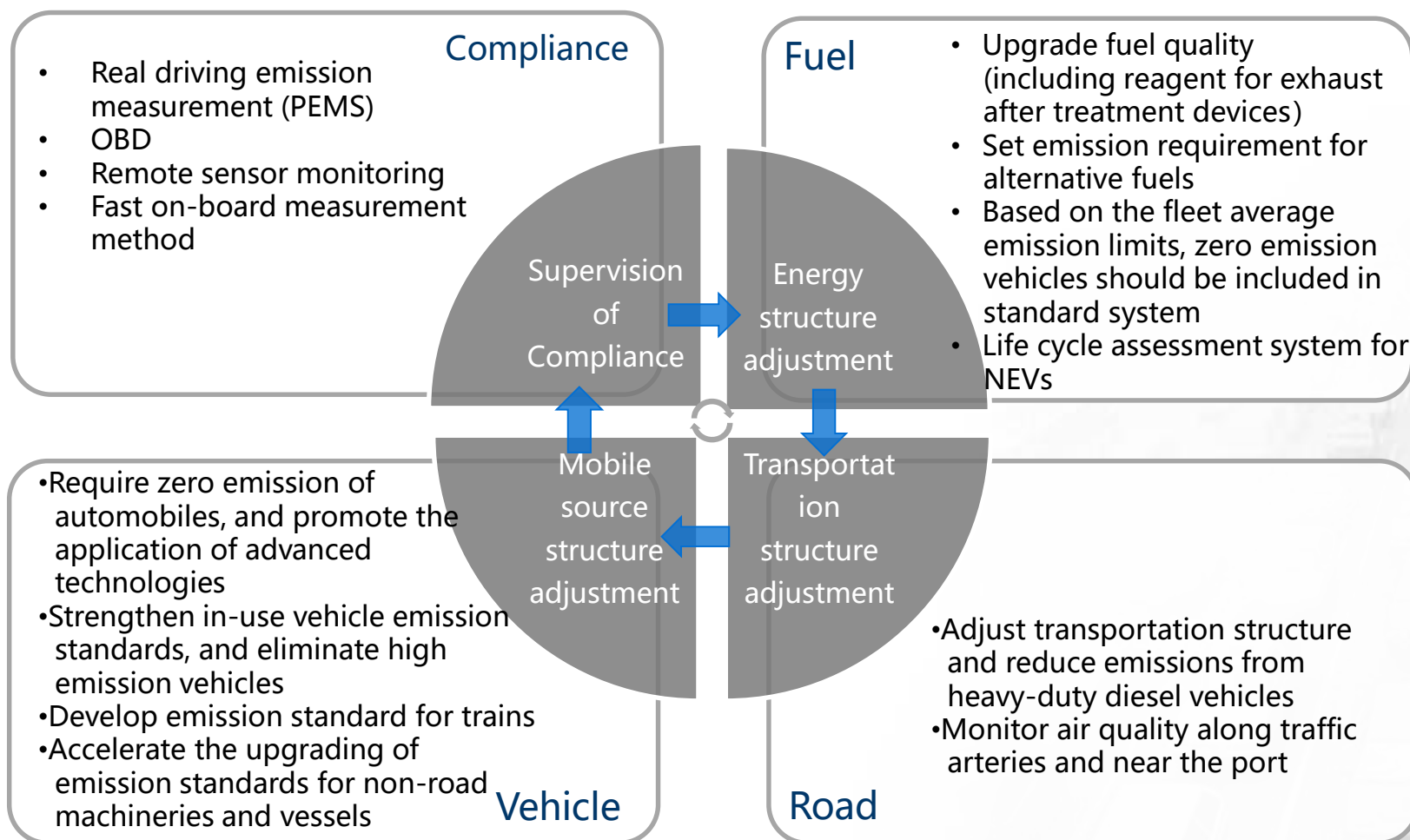
- Merge the automobile diesel, general diesel and marine oil together by 2020. Diesel vehicles, non-road mobile machineries, river ships and river-sea ships will use diesel fuel with uniform standards
- Detergent additives are required to add into automobile gasoline and diesel fuel
- Clarify the department in charge

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Future Demand and Strategies for Emission Reduction in Mobile Source

China has completed the development of vehicle standards and perfection of the management system. The next stage is to reduce emissions through structural adjustment.



Summary of Experience

- Developing emission standards according to local conditions (conforming to country's own condition)
- Supervising real-driving compliance is of vital importance
- Cleaner vehicle fuels should be supplied earlier than the implementation of the corresponding emission standards
- Green transportation system should be developed to prevent and control vehicle pollution