



Selected City Cases of Sensor Technology Application in China

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Bluetech Clean Air Alliance

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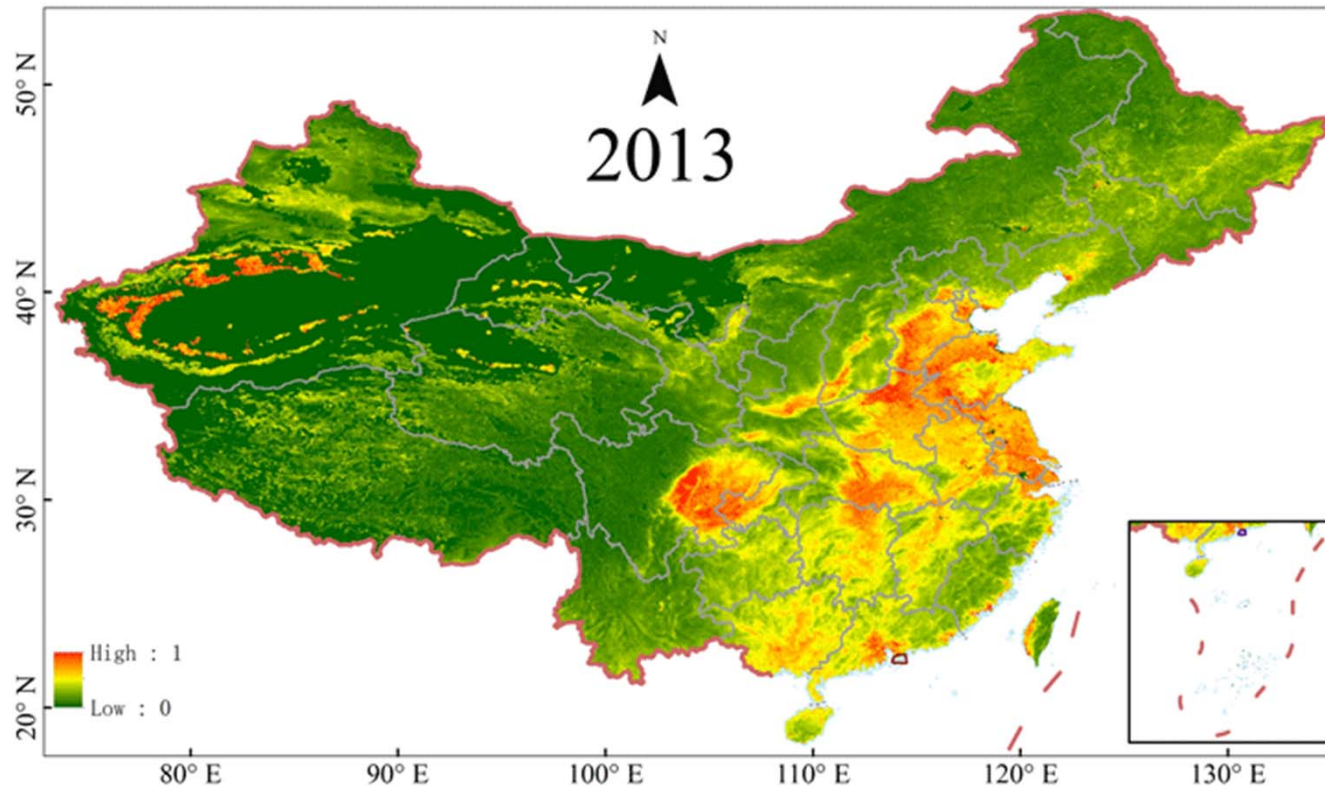


Background

A Rising Market

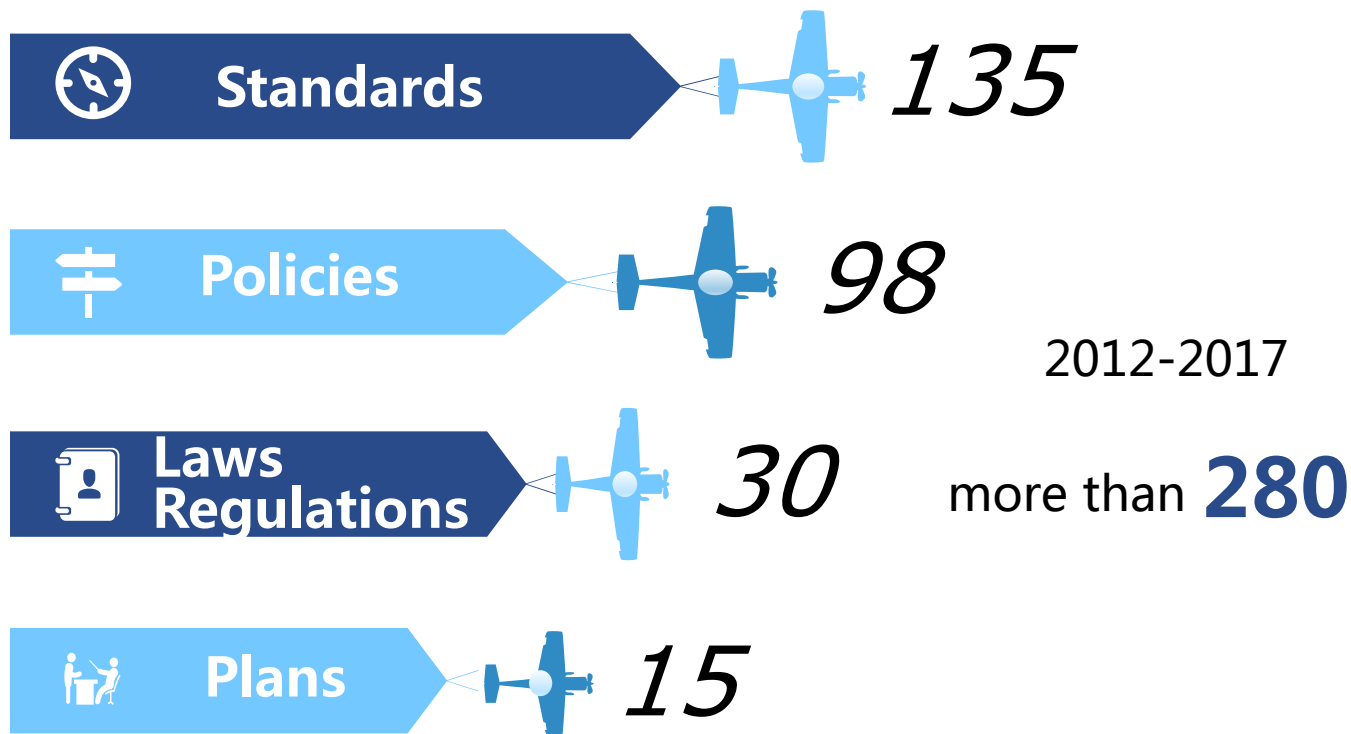
1

Rapid AQ Improvement in China



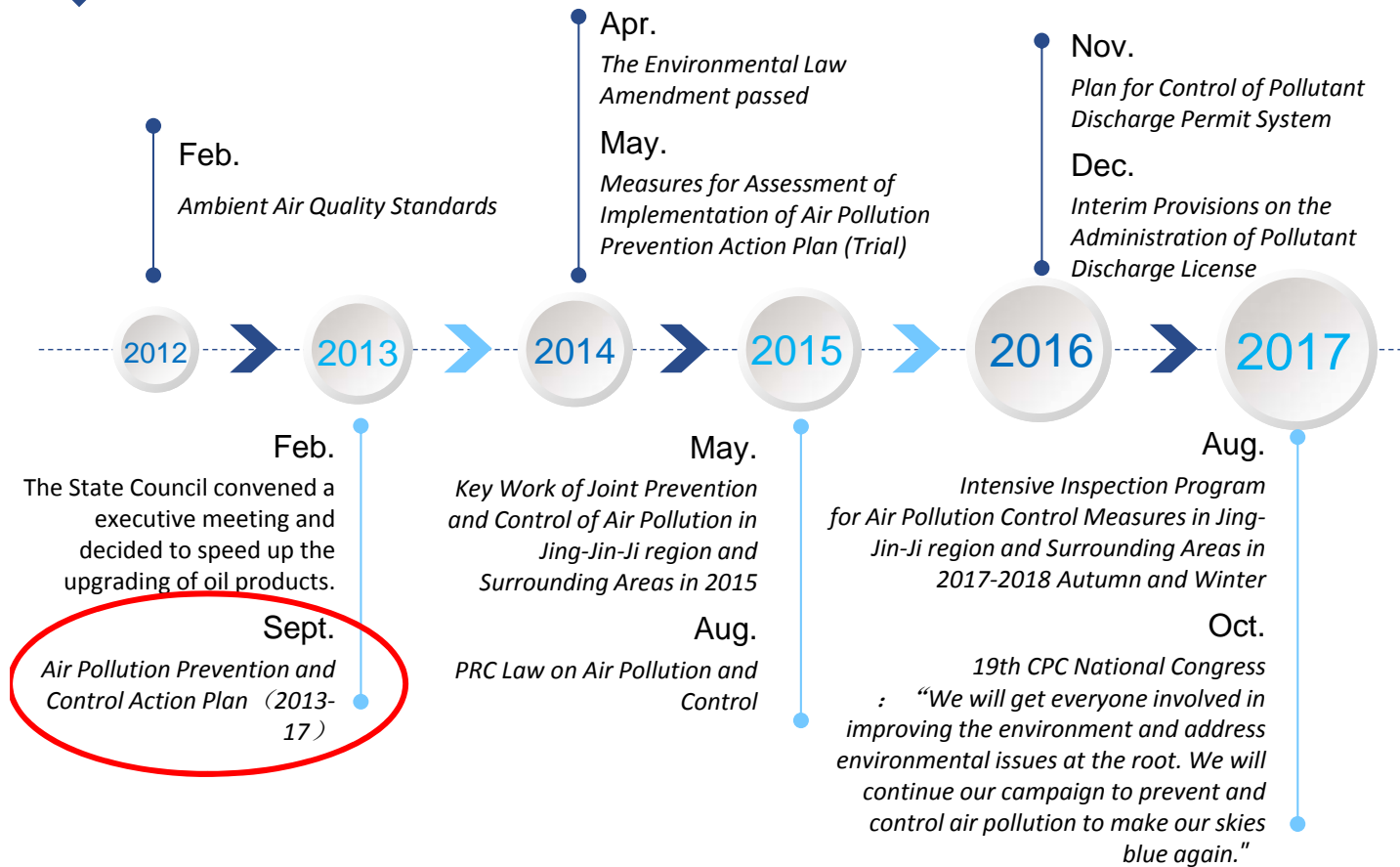
2

Air Quality Policies (2013-2017)



2

Key Policy Milestones

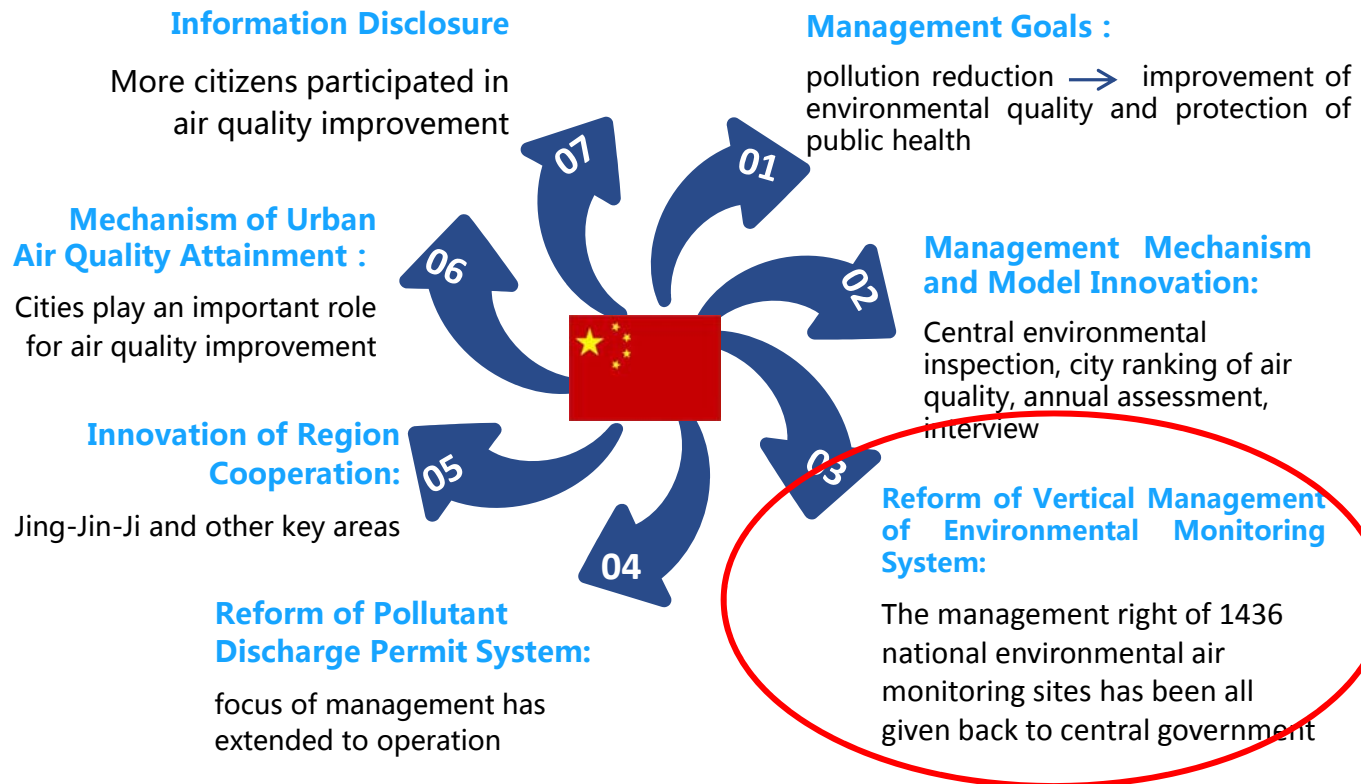


2

Management Innovation



Characteristic Chinese Model of Air Quality Management



3

Vision: 2030 Clean Air Goals



Cleaner Future

- ◆ Coal < 45% of total energy consumption, more than 70% used to electricity
- ◆ High polluting industries largely reduced, Service industry > 60%
- ◆ 50% reduction of SO₂, NO_x, VOCs, PM_{2.5}
- ◆ Mobile source emissions comparable to US and EU
- ◆ New Energy Vehicles > 50% in Beijing

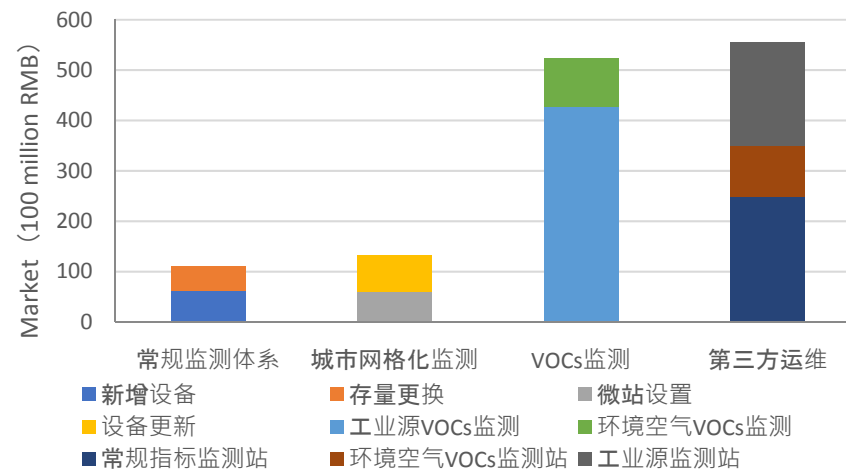
By 2030, All Cities Get Attained to
China's Standards : PM_{2.5} < 35 µg/m³

4

Future Monitoring Market : 130 billion USD



- ◆ Regular air quality monitoring: super station, high-performance O₃ monitoring equipment
- ◆ Grid monitoring: micro air quality monitoring stations
- ◆ VOCs monitoring : rigid equipment demand for industrial pollution sources monitoring, monitoring of VOCs in environmental, On-line VOCs monitoring
- ◆ Operation and maintenance by third party and professional organization
- ◆ Monitoring instruments and methods: online monitoring instruments and Grid, stereo monitoring





Sensor Application

Grid Monitoring

Grid Monitoring System



Strong Support for City Air Quality Management

3

Beijing Case (PM2.5 Monitoring)



- ◆ Over 1500 sensor-based monitoring stations
- ◆ Grid scale down to kilometer level (3X3, 8X8)
- ◆ Cover the whole city area and transport from neighbors
- ◆ Strong QC&QA requirements
- ◆ Integration of Big Data, Artificial Intelligence, and Cloud technology.



Future Trend



- ◆ Over 40 cities already applied grid monitoring;
- ◆ New trend to Integrate of PM2.5, CO, VOCs, O3, SO2, NO2;
- ◆ Jing-Jing-Ji 2+ 26 cities will be the first batch in 2018;
- ◆ 3600 key grids (3km X 3 km) identified by central government.



**Huge market opportunities for both
equipment and service providers**



Sensor Application

•—————•

Mobile Monitoring

4

Mobile AQ Monitoring System



Install Air Quality Sensors in the Lighting System of Taxis



City Cases (Jinan, Shanghai, Beijing, etc)



Jinan 200 taxi fleet



Taiyuan 50 taxi phase 1



Beijing 30 taxi demo.



Shanghai 30 taxi pilot



Chengdu 10 taxi & 2 buses



Sensor Application

Pollution Source Monitoring

Shanghai Case (Dust Monitoring)



- ◆ Mandatory required for construction dust monitoring of over 1300 construction sites
- ◆ Data were effective for enforcement with daily supervision
- ◆ Violation:
2 occurrences of $>2.0\text{mg}/\text{m}^3$
7 occurrences $>1.0\text{mg}/\text{m}^3$



3

Hebei Case (VOCs Monitoring)



- ◆ PID Sensor based Technology
- ◆ Parameter: TVOCs, Temperature, and Humidity
- ◆ Applicable for both source monitoring and facility boundary monitoring
- ◆ Applied in Shijiazhuang, Handan, Xingtai, Baoding, Hengshui, Cangzhou, Langfang, and Tangshan cities
- ◆ Strong needs from both EPBs and Industrial Zones



Jing-Jin-Ji Case (Fugitive Dust Monitoring)



- ◆ Monitoring of fugitive PM_{2.5} and PM₁₀
- ◆ Mandatory for Jing-Jin-Ji 2+26 cities
- ◆ Facilities in key industries, such as Iron and Steel
- ◆ Every facility should install at least 20 online monitors



22日08:00

国家大气污染防治攻关联合中心



About US

Bluetech Clean Air Alliance

1

Bluetech Clean Air Alliance



BCAA
中关村创蓝清洁空气产业联盟
BLUETECH CLEAN AIR ALLIANCE

- focusing on the development of clean air technologies and industries in China and the world through technology transfer, technology assessment and demos, investment service, IP protection, and policy research.
- Evolved from the Clean Air Alliance of China (CAAC), an integrated platform launched in 2013 by 10 leading Chinese research institutions to tackle China's severe air pollution problem.

2 BCAA Progress



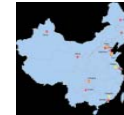
112
Experts



72
Members



33
Collaborating
Provinces & Cities



4
Professional
networks



46
Reports



9
Newsletters

50
China Air
Quality Updates



3

Clean Air Local Pilots



The alliance had carried out pilot activities **in 10 provinces and cities**, to help with air quality planning, air quality management assessment, measures design, technology demonstration assessment.

- Beijing
- Tianjin
- Shanxi Province
- Jiangsu Province
- Guangdong Province
- Guangzhou
- Taiyuan
- Shenzhen
- Changzhou
- Xinzhou





Bluetech Award (Since 2015)



200 Technology Applications from 16 Countries

- 中国
- 美国
- 欧盟
- 英国
- 法国
- 德国
- 瑞士
- 韩国
- 丹麦
- 新西兰
- 意大利
- 澳大利亚
- 瑞典



Thanks !

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