

# Deepening Joint Prevention and Control Mechanism of Air Pollution in the Yangtze River Delta Region

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## ***1. City Cluster in Yangtze River Delta with a Strategic Position***

As national optimization development area and important International transportation hub, the strategic position of the Yangtze River Delta region is very prominent. However, intensive layout of petrochemical industry along the coast and the resulting heavy chemical industry and high-strength industrial activities also contributes to emissions of atmospheric pollutants, which influences the air quality and the people living in the Yangtze River.

## ***2. Main Manifestation of Combined Pollution in Yangtze River Delta Region***

Firstly, conventional air pollution has not been effectively improved, especially as vehicle ownership increases year by year, and the regional air quality is still not optimistic; secondly, the high levels of fine particulate matter hovers at a high level and regional haze pollution incidents frequently occur; thirdly, phenomenon of ozone pollution is server in the summer and autumn, and the problem of photochemical pollution is grim; fourthly, the characteristics of interregional transmission of air pollution is significant.

## ***3. Notable achievements have been made since the establishment of the Yangtze River Delta air pollution linkage mechanism***

### ***3.1. Air Quality has been Obviously Improved since the Establishment of Mechanism***

In 2014, the average annual concentration of PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, CO, etc. has dropped significantly year on year in 25 prefecture and upper level cities in the Yangtze River Delta region. Meanwhile, although particulate pollution situation has eased, but PM<sub>10</sub>, PM<sub>2.5</sub> in the Yangtze River Delta region seriously exceeds the criteria. It will be the major air pollution in the recent and future time.

### ***3.2. Regional Cooperation Pushes Forward the Decrease of Regional Pollution Emission***

Since the establishment of the mechanism in 2014, every province and city in the Yangtze River Delta has made great effort to reduce the emission of air pollution in the field of energy, industry, transportation,

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*Intensive layout of petrochemical industry along the coast and the resulting heavy chemical industry and high-strength industrial activities contributes to emissions of atmospheric pollutants. This article make a meaningful explore to the Yangtze River Delta air pollution joint prevention and control mechanism and puts forwards policy suggestions on the mechanism.*

agriculture and daily life. The emissions of major pollutants in the Yangtze River Delta decreased overall in 2012--2014. The main contribution to reduction is from four categories: power plants, industrial processes, industrial boilers and furnaces, vehicle exhaust.

### 3.3. Regional Air Quality Management has been Effectively Promoted.

Since the establishment of coordination mechanism, three provinces and one city release the "Implementation Details of the Implementation of the Air Pollution Prevention Action Plan in the Yangtze River Delta Region" and "Heavy Air Pollution Emergency Response Plan in the Yangtze River Delta Region," and basically complete the first stage construction of regional air quality forecast center, and publish the regional forecast information. Three provinces and one city strengthen information sharing, monitoring and forecasting, scientific research, pollution control and supervision of law enforcement and other linkage, and work to control regional haze pollution and ozone pollution, and implement the national "Atmospheric Pollution Prevention Plan of Action", a joint regional air quality management has been effective promote.

### 3.4. Promoting Regional Joint Reduction by Major Events

In August, 2014, Nanjing held the Youth Olympic Games. The environmental protection departments at all levels work together to complete the outstanding work of environmental safeguards, to honor the solemn promise of the "Green Olympic" and shows the good ecological environment of cities in Yangtze River Delta region. Additionally, three provinces and one city have negotiated jointly to carry out environment quality assurance work during great events such as Shanghai CICA summit, the first World Internet Conference in Tongxiang, Zhejiang, The National Public Memorial Day of Nanjing Massacre.

## ***4. Yangtze air pollution linkage still exist critical bottlenecks.***

### 4.1. Institutional and Mechanic Obstacles are the Critical Bottlenecks to Deepen Cooperative Control Air Pollution in Yangtze River Delta.

Due to lack of systematic top-level design and a strong coordination mechanism, three provinces and one city in the Yangtze River Delta is constrained by "administrative" management constraints because of deep-rooted concept of territorial management. Urban and industrial development layout lacks overall design, and the development function is in disorders without cooperation. There are differences in industry access standards, pollutant discharge standards, and environmental protection law enforcement. It lacks coordination prevention and control mechanism.

### 4.2. Political discordance is the major obstacle that leads to the weakness

of reduction

Because it is difficult to break the boundaries of administrative divisions, one year has passed since the establishment of mechanism, but the region has not been unified as a whole region, proposing common regional atmospheric environment management objectives and division policies and measures requirements. The policy that is beneficial to the continual improvement of air quality is not perfect so that it can not effectively guide and constrain the energetic strategy, industrial structure, industrial layout and transportation development. Environmental standards, environmental enforcement and industrial access lacks coordination. There is no reasonable and clear system guarantee of atmospheric environment management responsibility and duty in Yangtze River Delta. Four places take maximum of self-interest as a criterion. The definition of individual environmental protection rights and responsibility is not clear. The lack of interest of coordination, cooperation and win-win ecological compensation system can not truly protect cooperatively the benefits of balanced environment.

Currently the regional air pollution reduction is still more dependent on administrative measures, and lacks effective market incentives, emissions right trading and other effective market, economic incentives to mobilize the enthusiasm of the provinces, to solve the contradiction between regional economic development is uneven. As a sound ecological compensation mechanism failed to form in the region, it leads to ecological conservation area cannot effectively use the ecological advantages to realize their own healthy development.

#### 4.3. Lack of Supervision Management Institution with Enforcement Rights

Now, Yangtze River Regional Air Pollution Prevention and Improvement Mechanism have played a significant role in regional organization and coordination. However, due to lack of regional management institution with enforcement, it has no deterrence to the non-fulfillment of responsibility. Industrial transfer and regional heavy transfer lacks supervision; list of regional heavy air pollution source has not been released to the public; regional environmental enforcement has not been started, cross regional pollution prevention and improvement mechanism has not been established; information notification and sharing platform has not been established. It seriously weakened the regional cooperation mechanism for air pollution monitoring and crackdown.

#### 4.4. Suggestions on Deepening Air Pollution Joint Prevention and Control Mechanism in the Yangtze River Delta

Compared with Beijing-Tianjin-Hebei region, in Yangtze River Delta region, the research combined pollution control is relatively less, and accumulation of scientific research is still lagging, scientific research on mechanism for aerosol pollution and causes of photo-chemical pollution is still in its infancy, its causes, harm and control other aspects also lags behind. Because regional pollution mechanism is unclear, the cardinal number of regional pollution emissions is not sure, it cannot achieve the object of scientific, objectives and quantitative regional joint prevention and control management. It cannot clearly distinguish responsibility between different region.

### ***5. Suggestions on Deepening the Yangtze River Delta air pollution joint prevention and control mechanism.***

#### **5.1. Coordinate Institutional mechanisms of environmental protection, break jurisdictions bottleneck**

Establishment of horizontal and vertical organization management system of two scale We should break the administrative boundaries, establish a supervision management system with enforcement and punishment power that is above the provincial level, and establish an effective supervision system responsible for regional joint prevention and control to coordinate the interests of all parties; the provincial level should coordinate an equal cooperative relationship; the county level is the specific units of practice of measures of emission reduction.

Deepen regional air mechanisms of regional pollution defense We should build up a long term regional atmospheric environment management system to break campaign-style and short term air pollution treatment methods. We should start with benefit coordination system, comprehensively improve benefit coordination, ecological compensation, information sharing, supervision and verification. We should further consolidate the systematic foundation of regional coordinated treatment and promote integral development of regional environmental improvement

Establish a Yangtze River Delta atmospheric science center It has a sub expert data with authoritative experts in every provinces in Yangtze River Delta to provide technological support on the causes of Yangtze River Delta air pollution and policy of coordinated emission reduction.

#### **5.2. Strengthen top-down Design, accelerate regional policy coordination**

Following the "common but differentiated responsibilities" principle, in order to improve regional air quality, reduce haze (PM<sub>2.5</sub>) and photo-chemical pollution (O<sub>3</sub>) as the target, we should divide air control regions based on air environment quality into different level, and set a clear

objective of air quality improvement and emissions reduction targets. We should strengthen cross regional pollution monitoring and verification, establish responsibility and accountability mechanisms to define cross-border pollution. According to calculation of cross regional pollution transfer model, it clearly states that major pollutant emission industries and regions should bear the main air pollution reduction responsibility, including economic costs responsibility of emission reduction actions.

According to energy, industry, transportation, industry, construction, daily life and agriculture seven field, we should establish regional and provincial and municipal level air pollution unified control and prevention plan. We should fulfill the work system of "five unification" at regional level, i.e., plan, prevention and treatment, monitoring, evaluation, supervision in unification. Provincial and municipal level should highlight their characteristics, refine the implementation of action programs and control measures in various fields.

### 5.3. Strengthening regional synergy interaction, enhancing the overall level of environmental regulation

We should improve integrated regional environmental monitoring network, monitor the regional atmospheric environment and release the information unifiedly; establish interregional joint supervision and law enforcement system, and promote regional unified supervision and enforcement; enhance regional environmental warning and emergency response capacity, and achieve environmental early warning and emergency response linkage; establish a regional environmental information network, and promote regional environmental information resource sharing; establish a unified examination and assessment system of responsibility determination, environmental quality and emission reduction tasks, implementation the regional air pollution reduction effectively.

At the regional air pollution prevention and control system in practice, we should achieve technology support and effective docking of work of government departments; environmental protection departments should cooperate with relevant provincial and municipal sectors of the Economy Information Committee, Transportation Committee, Construction and Management Committee, Committee of Rural Affairs, Green Amenity and City Appearance Bureau organize their work.

We should strengthen information disclosure, and make full use of existing information means, integrate "big data" concept. The Regional Coordination Group Office is responsible for coordinating all the local governments to collect and disclose information, and timely reports will be published jointly to the public in different region.

*Translator/Hong Kailun*