Research on Environmental Quality Evaluation System of Coordinated Development of the Beijing-Tianjin-Hebei Region

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Abstract. Since the coordinated development plan of Beijing-Tianjin-Hebei region was put forward, environmental protection and pollution control have become the primary breakthrough of coordinated development. The ecological environment problem in Beijing-Tianjin-Hebei region has been the bottleneck factor restricting the integrated development. It is of great significance for environmental protection and economic development to establish a coordinated assessment mechanism for ecological environment quality in Beijing-Tianjin-Hebei region. This study analyzed the progress and effectiveness of the assessment of ecological environment quality in Beijing-Tianjin-Hebei region, analyzed the problems and challenges in the assessment of ecological environment in Beijing-Tianjin-Hebei region, and put forward some suggestions on the establishment of the mechanism of joint environmental prevention and control under the coordinated development of Beijing-Tianjin-Hebei region.

1. Introduction
As the third economic growth pole following the Yangtze River Delta and the Pearl River Delta, Beijing-Tianjin-Hebei region is mainly driven by the secondary industry dominated by heavy industry, especially the energy consumption for long time. In addition, the flourishing industrialization and urbanization also brings huge pressure to the ecological environment[1]. Since the central government proposed to advance "integration of Beijing, Tianjin and Hebei" as soon as possible, the region has been working faster in its coordinated development and governance of ecological environment. However, the three local governments, in practice, demonstrate an obvious non-institutionalized coordination, without a relatively fixed system [2] as mechanism to evaluate cross-regional eco-environment quality targets. The coordinated development of the area is the strategy of the CPC Central Committee with Xi Jinping as the core to promote regional development in a coordinated manner and create new economic growth pole [3]. Therefore, Beijing-Tianjin-Hebei ecological environment quality assessment requires a multi-agent linkage mechanism to speed up the high-quality development of the region [4].
Many problems and challenges are presented to environmental quality assessment in the coordinated development of Beijing-Tianjin-Hebei. Despite the gradual appearance of environmental quality assessment concept in the performance management of government departments [5-7], the ecological environment is still not valued enough in terms of position and proportion to steer local governments towards the strengthened role of environment quality target assessment in environment protection and to capture what ecological civilization construction orients on. The evaluation system of ecological environment quality targets is meant to shift the evaluation focus from objective-oriented environmental management into specific assessment that is intuitive, viable, quantifiable, comparable and comprehensive. In this way, it can help decision makers better understand how the ecological environment management turns out, align the relevant policies and reprioritize their efforts. The ecological environment quality assessment needs to be included into the performance assessment system of governments at all levels in Beijing-Tianjin-Hebei region. A set of top-down incentive and constraint mechanism shall be shaped through the establishment of a scientific environmental quality assessment system that sets the effect of environmental quality target assessment as a key indicator of the ecological performance assessment across municipal governments [1]. Carrying out environmental quality assessment in Beijing-Tianjin-Hebei region is a part of exploring new forms of ecological environment management, which is of theoretical and practical significance.

2. Progress and Effects of Ecological Environment Quality Evaluation in Beijing-Tianjin-Hebei Region

2.1 Progress and Effects of Ecological Environment Quality Evaluation in Beijing

(1) Progress has been made in improving the comprehensive evaluation system for the economic and social development of each district. At present, a number of assessments for each district are available in Beijing, evaluating such sectors as economic development, air pollution control, water pollution control, energy consumption etc. Despite the positive effects, they still have limitations. Different districts have their own strengths and weakness assessed by different indicators. Therefore, it needs a more comprehensive measurement to evaluate the effectiveness of ecological civilization construction in a district as a whole. The comprehensive assessment method and corresponding indicator system for the construction of ecological civilization is thus in need to reflect the consumption of resources (Figure 1), environmental damage, ecological benefits etc. in each district across the board, and assess the development quality and benefits of each district in a more balanced way, especially the green development.

![Assessment Indicator System](image_url)
(2) It has worked faster in the ecological civilization system reform in Beijing to better satisfy the need for the system. The CPC Central Committee and the State Council have proposed the establishment of eight systems, including property rights for natural resources, land development and protection, spatial planning system, total resource management and conservation, paid use and compensation of resources, environmental governance system, market system, performance appraisal and accountability. The construction of performance appraisal system is among them as one of the multiple pillars to support ecological civilization system. Beijing has issued the "Roadmap for the Reform of the Ecological Civilization System in Beijing", which sets out the specific tasks and expected results. At present, the tasks are well underway, such as the release of the Beijing Urban Master Plan, the definition of ecological protection red line area, the determination of 3 binding red lines namely construction land, water consumption, energy consumption, the practice of water environmental area compensation, the release of Opinions on Implementation of Third-party Treatment of Environmental Pollution, and all-round advance in trials for trading carbon emission rights.

2.2 Progress and Effects of Ecological Environment Quality Evaluation in Tianjin

(1) Air quality improvement has been included as one of the key indicators. On the basis of the existing evaluation and accountability, Tianjin Municipal Government conducts weekly open interviews on the districts where the air quality ranks last and the composite index, PM2.5 concentration rise, and supervises last three districts every month to take stricter measures to work their way up. Every month, the relevant departments at the municipal level who are behind the schedule, underperformed in special rectification and ineffective in supervision and punishment shall be criticized publicly. Those who have been criticized three times in total shall be subject to accountability. The improvement of air quality and the internal ranking results of Beijing-Tianjin-Hebei region are included as a supervision focus of municipal government to evaluate annual performance, the results of which are taken as a key reference for the evaluation of the leading bodies and cadres.

(2) It has strengthened administrative efficiency responsibility of departments. According to the requirements of the state, the environmental protection supervision plan of Tianjin was formulated and implemented accompanied by the supervision system. With each district as the supervision object, the responsibilities are broken down to some key towns and industrial parks. In this way, localities taken on main responsibilities to protect environment. Tianjin Environmental Protection Bureau and Supervision Bureau set up a municipal environmental protection supervision group to supervise localities and hold those with ineffective and poor performance accountable. Efforts are made to make districts and departments more self-driven in assessment and accountability. Relevant departments responsible for the assessment and ranking of the districts shall earnestly perform their duties and conduct assessment strictly. The ranking results shall reflect varying levels and be true to the performance. Each district shall ramp up efforts on evaluating township, streets at all levels, grid administrator chiefs (grid administrators) and full-time grid supervisors, and resolutely put an end to "no one held accountable".

2.3 Progress and Effects of Ecological Environment Quality Evaluation in Hebei

(1) It has built grid regulation system of environment. In accordance with the principle of "localization administration, assigned of responsibility to different levels, comprehensive coverage and individual responsibility", governments at all levels hold themselves accountable with the focus on solving the blind spots in the supervision of the atmosphere, water, soil and rural environment. In this way, Hebei has comprehensively pushed forward the management in "province, city, county, township and village" levels and the three-level grid administration system of "county, township and village", shaping a grid administration system of environment featuring deepest and broadest coverage. At present, all cities and counties in Hebei Province have completed grid division and system establishment, with 194 primary grids (counties, cities, districts, development zones and parks), 2477
secondary grids (townships, towns and streets), 50101 third grids (administrative villages and neighborhood committees), which have been made public as required (Table 1). It has clearly defined the environmental supervision responsibilities of local governments and relevant departments. According to the requirements that local governments at all levels are responsible for the environmental quality of the administrative region and the governments at or above the county level are responsible for the environmental supervision and law enforcement, responsible persons of county (city, district, park), township (town, street) and village (residential) committees shall also be in charge of all grids, clarifying the authorities’ responsibility in grid administration of environment. Especially township (town) governments and sub-district offices, have extended their environmental supervision responsibility. A grid administration network of environment thus comes into being with governments at all levels responsible for implementation, environmental protection departments responsible for coordination, relevant departments’ roles clearly defined and engagement of all sectors.

Table 1. Three-level grid division and system of ecological environment quality assessment in Hebei Province.

| Grid system           | Amount |
|-----------------------|--------|
| Primary grid          |        |
| Counties              |        |
| Cities                |        |
| Districts             | 194    |
| Development zones     |        |
| Parks                 |        |
| Townships             |        |
| Secondary grid        |        |
| Towns                 | 2477   |
| Streets               |        |
| Tertiary grid         |        |
| Administrative villages | 50101 |
| Neighborhood committees |      |

(2) Hebei has strictly supervised environmental law enforcement. Hebei conducts reviews on issues proposed by the Central Environmental Protection Supervision Group. In accordance with the principle of "clearing up the responsibility of each case and holding accountable for rebound", the province has reviewed 2856 reported environmental problems in 31 batches assigned by the Central Environmental Protection Supervision Group. It defines the specific responsible departments and personnel to ensure rectification in place and prevent rebound. It also further strengthens the mid-term and post-supervision of key environmental issues. Once any rebound is found, it shall be banned according to law and the relevant responsible organizations and persons shall be held accountable in accordance with the requirements of grid administration of environment.

(3) The local governments have improved environmental management efficiency. When carrying out performance appraisal, all regions and organizations in Hebei Province have made work plans and specific measures to break down the key tasks of the government based on target management in the beginning of the year, and at the end of the year, the target progress will be assessed, the results of which are referred to for the selection, appointment, reward and punishment of cadres. At the same time, the performance appraisal helps clarify the roles of all regions and departments, reduce buck-passing and urge better performance of the lower level governments and departments. It improves the working style and efficiency of the organs.

(4) It has completed key work and tasks. Governments and authorities at all levels in Hebei Province are presented with complicated work and tasks, and the indicators and scores of performance evaluation are a navigation. By using floating scores, the scores of evaluation items are aligned with the priorities of various tasks in that year, which can motivate and stimulate organizations and staff to complete the priorities or key tasks.
3. Problems of Beijing-Tianjin-Hebei Environmental Quality Evaluation

(1) The status and proportion of environmental quality objectives in environmental performance management are relatively low. Despite the gradual appearance of environmental quality assessment concept in the performance management of government departments, the ecological environment is still not valued enough in terms of position and proportion to steer local governments towards the strengthened role of environment quality target assessment in environment protection and to capture what ecological civilization construction orientates on. The performance evaluation and management still focus on the performance evaluation within the environmental protection system and environmental protection administrative departments. The evaluation and management system for administrative regions are still yet to be rolled out.

(2) The environmental protection departments bear the brunt of the target assessment pressure. As the environmental performance evaluation is mainly about the related target responsibility of local governments, it, in essence, is about evaluating environmental management behavior of environmental protection sector. Therefore, it can’t play a guiding, binding and incentive role for the other environmental protection government departments. The environmental protection departments are also responsible for various related assessment work in the environmental protection system. The current management system gives environmental protection departments more responsibilities than rights, so the assessment work puts these departments under great pressure.

(3) Diversified environmental quality assessment mechanism has not yet been in place. The environmental protection quality target responsibility assessment in Beijing-Tianjin-Hebei region is dominated by the internal assessment of the environmental protection system. In the government performance evaluation system, the environmental protection functional departments are evaluated mainly based on their performance management in the way that the government is assessed by its superior department. This mode helps improve the efficiency and save the cost of assessment, but the assessment results are prone to be inconsistent with public perception, which affects the objectivity and transparency of the assessment results. The public's satisfaction with environmental quality is not included in the assessment system yet. Social forces have not been involved in the assessment work.

4. Policy Suggestions

(1) Push forward the ecological environment quality evaluation in Beijing, Tianjin and Hebei institutionally and legally. The State formulates relevant laws and regulations, improves policies to provide a clear orientation based on pilot experience and analysis of problems in order to move forward the ecological environment quality evaluation in Beijing, Tianjin and Hebei. In the primary stage of rolling out the assessment, the central government can formulate laws, regulations and policies which provide guidance for governments at all levels from top to bottom, and then gradually improve the system of laws and regulations. First of all, when developing relevant laws and regulations, it is suggested to cover performance assessment and management of ecological environment quality targets. Secondly, it is necessary to increase the proportion of environmental related indicators to highlight the importance of environmental performance in specific circumstances. Thirdly, it needs to develop special laws, standards and guidelines for government environmental performance management, such as the technical guidelines on promotion of environmental performance and management, and environmental performance management methods, which can lay the institutional foundation for the follow-up implementation in various regions. Finally, the government environmental performance management should be combined with the existing "accountability" system, target management and performance evaluation system. It can offer a clear guidance and remove the restrictions on the use of government environmental performance evaluation results in the appointment of cadres. It can also make the application of multi-sector results easier, and apply the government performance evaluation results in a legal, full, open and transparent manner.

(2) Research and explore the methods, indicators and data collection technology of environmental quality evaluation. Environmental quality evaluation is still in its infancy in China. Giving full play to the role of it in environmental management requires to systematically build a theoretical and technical
method system of environmental assessment, and take a deep dive into key issues such as the theory, method, assessment framework and indicators. It can clarify basic issues such as reason and contents of the evaluation, the evaluator and how to evaluate as well as application of evaluation results. It requires research on basic technology issues such as the collection, statistics, quality control and information sharing of environmental quality assessment data and information in Beijing-Tianjin-Hebei. At the same time, an effective assessment information system is needed to timely report data at a given time and further share information resources. The system can save the cost of repeated collection, achieve real-time performance comparison, dynamically monitor government performance, spot problems and rectify at any time, which will improve government executive ability.

(3) Improve the proportion of eco-environmental indicators in the government performance appraisal system. Raising the status and proportion of environmental protection in the government performance evaluation system can further push forward environmental protection and ecological civilization construction through performance management. Beijing-Tianjin-Hebei should continue to improve the comprehensive performance evaluation system of leading cadres, raise the weight and score of ecological environment quality evaluation indicators in the system, and combine qualitative and quantitative indicators to highlight quantitative indicators. Local governments at all levels in Beijing, Tianjin and Hebei should, in light of the major environmental problems in various regions, focus on the comprehensive improvement of the environment in regions, river basins and industries, and take all tasks of environmental protection as "mandatory indicators". The government target responsibility system for environmental protection shall cover environmental quality indicator, total emission control indicator of major pollutants, environmental protection input indicator, pollution prevention and control projects, ecological environment construction and protection to realize target-oriented, quantitative and institutionalized management. Local governments at all levels shall be steered to put environmental protection on high agenda so as to timely solve major related problems in their respective regions.

(4) Improve the communication and coordination mechanism of environmental quality target performance evaluation featuring through connectivity in Beijing, Tianjin and Hebei. The ecological environment quality evaluation is a systematic project with complicated contents, wide range of involvement, involving multiple departments and sectors. It is necessary to establish a coordination mechanism between the upper and lower levels of governments and among different departments. Beijing, Tianjin and Hebei shall be interconnected and share information to help solve the difficulties, improve the administrative efficiency and the performance of the government. It is suggested that the central government should set up a management organization with clear function, organize coordination among the departments by the dint of joint conference system of environmental protection and establish a top-down government performance management system. This organization management system can improve environmental quality assessment in Beijing, Tianjin and Hebei region in an all-round way. By creating an integrated assessment mechanism of multi-agent linkage, we will sustain the development of regional ecological environment and shape a long-term green development mechanism system based on it. These efforts can constantly reduce the damage of pollutants to the ecological environment, enhance the ability of Beijing-Tianjin-Hebei to spur the development of surrounding areas. We shall strive to build a shared and harmonious joint governance mechanism to engage multiple sectors in environmental management.

(5) It is suggested to establish a diversified evaluation model for eco-environment quality assessment in Beijing, Tianjin and Hebei. The Ministry of Ecological Environment should lead the evaluation and engage other departments (such as collaboration between environmental protection and water conservancy departments) and even third parties (even international organizations) in the process. The evaluation related work shall be done more openly such as the evaluation scope, method and standard, and the release of report. We can establish an eco-environment quality evaluation system that engages both internal and external parties, timely and orderly consulting professional third-party institutions and exploring channels and ways for the public to get involved. Public representatives should be assessed as part of the group. The assessment process and results shall be released in a
timely manner. The governments of Beijing, Tianjin and Hebei are urged to strengthen internal assessment institutionally and encourage more forms of external assessment to shape a unified and standardized assessment system rather than the past spontaneity.

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