



Korea–World Bank

ENVIRONMENTAL BRIEFING NOTE

Environmental Management of SMEs and Industrial Zones for China

Small- and medium-sized enterprises (SMEs) are flourishing and industrial zones (IZs) are expanding in China and have jointly made a significant contribution to the development of the Chinese economy. At the same time, they have created many pressing and thorny environmental problems. This note looks at the issues and challenges facing SMEs and IZs in China. Based on case studies and relevant experience in Korea, this note identifies realistic strategies to promote more environmentally friendly production and mitigate the environmental problems generated by SMEs and IZs in China. This note draws upon experience from the Environmental Management of SME and IZ project implemented in China in 2004 under the Environmental Management Partnership Program (EMPP).

China's economy in the post-reform period was characterized by the rapid proliferation of small- and medium-sized enterprises, many of which were located in industrial zones. This brought new impetus to domestic production, contributing more than half of China's gross national industrial output value. However, SMEs have the highest pollution intensity among enterprises of all ownership types. Pollution from SMEs and IZs has already caused visible damage to the environment. Chemical oxygen demand (COD) discharges from Town and Village Enterprises have gone down since 1995 due to pollution control interventions, but their contribution is still significant and continued control interventions are necessary. Therefore, if China wants to achieve more ambitious environmental protection goals, pollution from SMEs and IZs must be continuously addressed.

Environmental Management of SMEs

Problems & Issues

Environmental management (EM) in China is still in its early stages, especially for SMEs. Human, financial, and technological resources, as well as incentives to adopt a comprehensive environmental management system, accordingly have to be developed and strengthened. Several issues are particularly important. First, there is a discord between the government's slow environmental planning and the rapid development of SMEs. Environmental planning and policies of central and local governments in China lag far behind the rapid proliferation and construction of SMEs. Hence, governmental institutions in charge of environmental management are comparatively

weak in enforcing environmental regulations. Second, SMEs often lack awareness about the importance of EM. Both workers and senior management personnel have to improve their awareness of environmental issues and the benefits of environmental management, as well as improve their knowledge of environmental laws, regulations, and standards, and hence of the improvement measures needed to satisfy these legal and regulatory requirements. In addition, consumers' awareness of the importance of the environment is also often limited, and there is little pressure from the market to improve EM. Third, SMEs have limited resources for EM. Within SMEs, there are usually few people with the skills to manage environmental issues or effectively respond to environmental challenges.

Policy Recommendations for EM of SMEs

Regulatory Policies

China and Korea have similar regulatory systems and standards, which are compatible with generally accepted international standards. For example, both countries are developing Total Pollution Load Management Systems (TPLMS). In China, TPLMS is still in the early stages of implementation. Most industrial environmental regulations are based on standard measures of pollutant concentration. In Korea, TPLMS has been introduced in four major rivers, and a TPLMS for air pollution is ready to be introduced.

TPLMS involves determining the target water quality standard for each block of a water system, computing the maximum allowable load, and regulating or controlling the amount of pollutants. This system helps achieve a balance of preservation and development of a watershed region by permitting regional development only to the extent to which the target level of water quality is attainable. In practice, uncertain water quality targets and voluntary implementation schemes present serious institutional hurdles to overcome in successfully implementing TPLMS. In order to achieve integrated and effective management of watersheds and industrial zones for China, the promotion of residents' voluntary participation and the active development of deregulated water quality management plans are important. To save time and resources, it would be advisable for the managers of watershed management systems to take an active role in problem-solving.

Economic Incentive Systems: Charging Schemes

An economic incentive system using emission charges based on emission permits is designed to induce voluntary environmental management activities or emission reductions by internalizing the cost of environmental

management. Emission charge systems are the main instrument of the Chinese government's environmental policy. However, emission charge systems in China have several problems. For example, (a) charge rates are far lower than the abatement cost, so they do not provide sufficient incentives for pollution abatement to the polluters (firms); (b) target pollutants are limited; (c) the charge focuses only on discharges exceeding the pollution concentration standard, so it cannot induce pollution reduction by firms that are under the pollution standard, even though it is socially desirable; and (d) the implementation of the emission charge system is inefficient.

To improve the system, it is advisable that the charging scheme should (a) differ among regions, depending on ambient water conditions and regional characteristics; (b) be expanded to other toxic pollutants; (c) be adjusted to be more consistent with the TPLMS; (d) use the funds generated by charges for environmental management purposes; (e) improve implementation efficiency by designing special charge schemes for small-sized polluters; and (f) adopt monitoring waivers for firms with good environmental performance.

Voluntary Programs

Flexibility in enforcement is important so that regulations do not become barriers to companies with reasonable and efficient environmental management. Flexibility encourages companies to set their own plans and methods for environmental management. One way to do this is to waive regulatory enforcement until the voluntary environmental management plan established by a company is carried out. Like ISO 14000 certification, the utilization of voluntary schemes in China is at an early stage. Even though the concepts of eco-design, life-cycle analysis, environmental auditing, and cleaner production have been introduced, in practice these concepts are limited. Therefore, both government voluntary programs and also industrial or regional programs are to be encouraged to promote voluntary EM by companies. Korea's experience shows that EM certification encourages companies to set their own plans and methods for environmental management. The Environmentally Friendly Enterprises Designation Program is also desirable, in that it covers the entire production process. A voluntary approach should be used together with the conventional system to maximize efficiency; it cannot be used as an alternative to regulatory measures or economic incentives.

Infrastructure Provision

Insufficient investment is a prominent issue in the field of

urban environmental infrastructure and SME pollution control in China. In order to implement effective installation and management of environmental infrastructure, the Chinese government needs to establish and operate an effective system for inducing private sector participation. It is advisable that incentives for creativity and profitability by the private sector are provided. Determining the rate of return can be compatible with international standards. Risk reduction, including foreign exchange rate risk, should be assured through minimum operational revenue guarantees. The provision of various tax reductions and exemptions can also be helpful to promote foreign investment in environmental infrastructure.

Policies to support investment by SMEs in environmental facilities should be encouraged as well; possibilities could include funds provided by the government, commercial mechanisms with funds raised in the market, and the development of preferential policies. Beside incentive policies, it is important to introduce management systems that can enhance the efficiency of private participation; a useful starting point would be the rationalization of treatment or user fees.

Infrastructure Investment in Korea

Korea has effectively encouraged private sector participation in infrastructure investment, including collective wastewater treatment in IZs. In Korea, promoting private sector participation has a legal basis. The law of private sector participation in SOC (1994) included environmental infrastructure. Under this law, 137 sewage treatment facilities (12.3 million ton/day, 59.3 percent of total treatment facilities) have management contracts with the private sector.

Environmental Management of IZs

Policy & Development Planning for EM of IZs

EM concerns issues embedded in industrial zoning and development policies that are related directly or indirectly to environmental deterioration. The EMPP work shows that such issues include (a) the insufficiency of systematic industrial zoning policy and location planning among different levels of governments, notably central government economic development plans (such as industrial policy or land use policy), which are frequently not in harmony with policies on development zone construction; (b) policies

between IZ management and IZ establishments often do not match with each other, which makes EM of IZ more difficult; (c) laws and regulations for EM of IZ are often not well prepared; and (d) environmental institutions need to improve their structure to efficiently tackle various subjects in implementing industrial zoning policy and development planning of IZs. Consistent institutional arrangements for EM organizations in IZs are strongly needed. In addition, incentive schemes for local governments, local authorities, and enterprises are needed to encourage them to improve their EM implementation. IZ-related policies also are excessively preferential for economic development over environmental management. Imperfect and insufficient investment and financial systems for environmental infrastructure are additional barriers in effectively implementing EM.

To address these challenges, (a) central and local governments have to reform systems and policies to establish a balanced IZ policy and development plans that consider comprehensive national and regional plans; (b) comprehensive industrial zoning and development policies (combining economic development plans and industrial policies) should be set up and implemented at the national level that consider regional and socioeconomic conditions, such as environmental resources, labor, and capital; and (c) central and local governments need to categorize SMEs by their industry type, so that government can have a legal and administrative basis to achieve effective EM.

Korean IZ Policy

Based on the Korean experience, benchmarking points of industrial zoning policy can be categorized in four parts; (1) promoting zoning policy through enacting relevant law; (2) zoning policy within comprehensive national construction plans; (3) IZ supply policy emphasizing planned zoning; and (4) zoning policy related to industrial policy that considers the times and stage of development. Korean IZ development policy broadly focused on national productivity, the balanced development of local economies and industry, efficient territorial management, and sustainable IZ development.

Another benchmark was the effort by local governments to restructure policies and institutions governing industrial zones. In the 1990s, central and local governments restructured IZ policies and institutions in accordance with the changed economic situation and internal demand of IZs. Restructuring IZ projects in Korea was conducted

mainly by local governments or IZ management organizations in the high-tech industrialization plans of Seoul Kuro IZ and the cities of Kwangjoo, Dajeon, and Jeonjoo.

In order to manage IZ zoning and operations, the Korean government also established a specialized industrial zone, which placed specific IZs of companies in a concentrated area. Petro-chemical IZs, foreign investment IZs, and SME IZs belong to this type of IZ. These experiences in Korea suggest that Chinese IZ environmental management policies need to be reviewed, and local authorities need to create an institutional scheme that considers the condition of a local IZ's administrative system, scale, and characteristics.

EM Policy of IZs

China's EM policy creates barriers to EM practice because of the discord between management policy and the establishment of IZs, as well as insufficient laws and regulations for EM of IZ. Imperfect investment and financial systems for environmental infrastructure also are barriers to EM practice. As for institutional arrangements, rational and united institutional arrangements for EM in IZs are needed. Finally, a lack of incentive schemes for local governments, authorities, and enterprises are prominent issues for EM implementation.

To address these challenges, it is advisable that the Chinese government enforce EM of IZ standards from the beginning stage of IZ zoning and development planning. One of the major problems preventing EM of IZ from being practiced well is often the gap between environmental policy and zoning or development planning policy on IZs. To resolve this problem, the EMPP study suggests an "Industrial Zoning and Development Planning Act" and an "Industrial Zoning and Development Planning Guideline," including compulsory articles on environmental management and standards.

Regional Environmental Management for Effective EM of IZ

EM of IZ is a sub-set of regional EM. One of the effective

measures for improving EM of IZ is to deal with environmental issues of IZ in terms of regional EM. This study finds, however, that this is impeded by lack of financing capability and often by resistance on the part of local governments. Hence, it is advisable that central government policies should be geared to build the capacity of local governments in EM financing, techniques, and experience.

In order to induce local governments' active and voluntary participation, it is important to demonstrate the positive effects of environmental improvements, and the socioeconomic benefits should be guaranteed through the policy. Thus, voluntary EM policy should be able to provide residents in the region with a future vision of environmental quality as well as regional economic growth.

Regional EM Examples in Korea

"Green City" policy can improve environmental model city construction and provide long-term urban development vision. Local governments can get the clean image through Green City Designation as well as financial and administrative support from the central government. As for other voluntary regional EM policies, "certification for environmentally friendly building"-in which local governments evaluate 44 categories, including land use, transportation, and energy consumption-can be recommended. These EM policies provide more central government financial support and reduce local government costs.

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