

Environmental Compliance and Enforcement in CHINA

AN ASSESSMENT OF CURRENT PRACTICES AND WAYS FORWARD

The study was prepared in the context of the OECD Programme of Environmental Co-operation with Asia and the OECD work on environmental compliance and enforcement in non-member countries. This draft was presented at the second meeting of the Asian Environmental Compliance and Enforcement Network, 4-5 December 2006, in Hanoi, Vietnam.

For further information please contact Mr Krzysztof Michalak at Krzysztof.michalak@oecd.org or Mr Eugene Mazur at Eugene.mazur@oecd.org



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ACRONYMS

AECEN	Asian Environmental Compliance and Enforcement Network
CAEP	Chinese Academy of Environmental Planning
CCEL	China Certification Committee for Environmental Labelling of Products
CLAPV	Centre for Legal Assistance to Pollution Victims
CNEMC	China National Environmental Monitoring Centre
CNY	Chinese Yuan/Renminbi
CP	Cleaner Production
CRCEA	China's Registration Committee for Environmental Auditors
DPS	Discharge Permit System
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
EPD	Environmental Protection Division of Industrial Bureau
EPL	Environmental Protection Law
FYP	Five-Year Social and Economic Development Plan
FYEP	Five-Year Environmental Plan
GDP	Gross Domestic Product
ISO	International Organisation for Standardization
NEPA	National Environmental Protection Agency
NDRC	National Development and Reform Commission
NGO	Non-Governmental Organisation
NPC	National People's Congress
SEPA	State Environmental Protection Agency
SME	Small and Medium-Sized Enterprise
TEC	Total Emission Control of Major Pollutant Discharges
TVIE	Township and Village Industrial Enterprise
3Rs	Reduce-Reuse-Recycle
3S	Three Synchronisations/Three Simultaneous Steps

SUMMARY

Since the inception of its policy of opening up and economic reform at the end of the 1970s, China has achieved remarkable progress in sustaining high economic growth rates and rising incomes that have eased poverty, reduced infant mortality and lengthened life expectancy. However, rapid industrialisation and urbanisation has exacerbated many environmental problems. The quality of surface and ground waters, air in urban areas, land and natural resources has been serious. This, in turn, has adversely impacted human health and the productivity of natural resources. As the state of environment continues to deteriorate, the potential for maintaining fast economic growth may be affected.

The Chinese government recognises that the current patterns of economic growth are not environmentally sustainable. The late 1990s and the beginning of the new century witnessed an important acceleration in building a comprehensive regulatory and institutional framework for environmental management. The set of Five Year Plans (FYPs), including regional and sectoral plans, provides a comprehensive planning framework for pursuing environmental progress in China. The plans contain a number of quantitative, time-bound targets and are linked to project programming designed to meet these targets.

The environmental regulatory framework expanded particularly rapidly between 2000 and 2004 when a number of new environment laws were enacted, such as the Law on Environmental Impact Assessment (EIA) and the Law on Cleaner Production. In this period, a number of other legal acts were also amended, including the Environmental Protection Law (EPL) as well as the Air, Water and Waste Prevention and Control Laws. The legal system is supported by a number of specific regulatory instruments for industrial pollution control. The most important ones introduced by the 1989 EPL include: environmental quality and emission/discharge standards, the Discharge Permit System (DPS), “three synchronisations” (“3S”) and EIA.

The structure and position of the national environmental agency has been strengthened over the last decades. The reorganisations of the institutional framework, particularly that in 1998, led to the creation of a State Environmental Protection Administration (SEPA) placed directly under the State Council. Although SEPA does not have a permanent seat in the State Council, it is an agency of a ministerial level; its head reports directly to the Vice Premier in charge of environmental protection and participates in State Council meetings when environmental matters are discussed. More recently, regional enforcement centres have been created at the regional level, reinforcing the supervision role and autonomy of the Environmental Compliance and Enforcement Bureau structures. An extensive system of environmental agencies has been established at the provincial and lower administrative levels.

The Chinese government has identified inadequate enforcement as one of the key factors in China’s deteriorating environmental situation. The 9th, 10th and 11th FYPs emphasised the need to strengthen environmental enforcement and compliance assurance. In this context, a number of enforcement activities have been carried out, closing down or penalising most polluting industries. The legal system has been built up to fight against non-compliant firms and the courts have been brought in to support the prosecution of environmental offenders. The public has been gradually engaged in non-compliance detection and compliance promotion.

However, the environmental management system and policy implementation are still far from being effective and efficient. Environmental policies have often been declarative and unrealistic. Their low effectiveness has been also influenced by a lack of coherence among environmental regulations, conflicting interests at different levels of the administration, and insufficient technical capacity and resources available to environmental institutions to carry out their duties. The general policy framework favouring development over the environment compromises the work of enforcement bodies at the sub-national level and results in widespread non-compliance with environmental requirements. These problems are further magnified by slow progress in engaging sectoral agencies and the public at large in addressing environmental problems. Some of the specific obstacles to better environmental policy implementation include:

- Institutional and financial subordination of Environmental Protection Bureaus (EPBs) to provincial and local governments and their low ranking in the government hierarchy. This implies that the actions of EPBs are directed more by those governments than by SEPA in the situation where local governments tend to favour economic development over environmental considerations. In addition, the performance of local government leaders has been evaluated using criteria that emphasise GDP growth, with little, if any, consideration of environmental performance.
- Polluter registration and environmental permitting in China are sporadic and not backed up by nationwide binding provisions and procedures. In permitting, only ambient standards are considered, and the methodological basis for their determination is weak and not coherently applied across the country.
- Pollution charges are still significantly lower than the cost of pollution reduction, despite the recent increases of their rates. In many cases, the actual charge paid by a firm is a result of bargaining between the administration and the firm. In addition, the charge collection rate is low, estimated on average at less than 50% of the charges imposed (between 10% in western provinces and 80% in coastal areas), which reduces their incentive effect.
- In many cases, approved and installed air and water pollution control equipment is put in operation only at times when inspectors' visits are expected, as polluters are more interested in saving on operation costs or, in the case of wastewater, communities cannot afford to operate sewage treatment plants.
- In spite of several types of non-compliance sanctions that are used by environmental authorities, a wide gap exists between what EPBs are authorised to apply and what they actually do when enterprises violate environmental rules. A significant proportion of small and medium-sized enterprises, including those in rural areas and in the service sector in urban areas, are not inspected due to the lack of capacity or constraints stemming from "pragmatic" enforcement (considerable discretion applied by EPBs in determining how to enforce environmental requirements) or conflicts of interest between economic and environmental parts of the administration. Pragmatic enforcement also pushes EPBs towards picking "low-hanging fruits" first by targeting big polluters and leaving SMEs unattended even though their aggregated pollution volume can be much larger. However, even where EPB officials may have identified right targets for aggressive enforcement, local governments generally may show special leniency toward these targets if they are considered to be big contributors to local tax revenue or big employers.
- Compliance promotion in China is much less developed than punitive measures. The government has at its disposal only limited tools to promote compliance and good

environmental performance and does not actively reach out to regulated entities to inform them of developments in environmental regulations. To most polluters, only fines or other punitive measures are evidence of the government's concern about industry's environmental performance.

Reducing the implementation gap, in particular at the sub-national level, is one of the major challenges in improving environmental performance in China. Chinese authorities have recognised this problem, most recently with the December 2005 State Council Decision on Implementing the Scientific Concept of Development and Strengthening Environmental Protection. The decision provided for strict enforcement of environmental laws and regulations and firm non-compliance response, as well as strengthening the prosecution system. It also called for greater engagement of the public in environmental compliance promotion.

While there is some evidence that the policies have had some effect, there is still considerable scope for strengthening the implementation of environmental policies. In order to increase the rates of compliance with environmental regulations and limit negative environmental and health impacts of rapid economic growth the Chinese authorities should consider the following:

- Environmental laws and regulations could be made more consistent, transparent and non-discriminatory. The Chinese authorities should launch a review of environmental legislation to eliminate important discrepancies and gaps between the principal laws and executive regulations. The legislative and rule-making processes should be made more transparent to build better relations between regulating entities, the regulated community and the public. Allowing more public participation in the regulatory process at all stages, from drafting environmental legislation to enforcement activities, can help improve policy effectiveness and address potential inconsistencies early in the legislative process.
- There is a need to strengthen capacities of environmental administrations in China and align responsibilities with funding. As a matter of priority, SEPA should review staffing at all levels to assess the gap between their responsibilities and capacities and identify actions needed to bring them into better alignment to address priority issues. The recently established five regional enforcement centres that aim to investigate serious pollution cases, help solve cross-regional environmental disputes and supervise law enforcement should receive appropriate support, staff and funding to carry their task effectively.
- At the same time, the government should continue to search for environmental policy tools suitable to address problems experienced in different parts of the country. The effectiveness of policy instruments (including standards, permitting and economic instruments) should be enhanced by designing their optimal mixes to tackle different environmental problems and different segments of the regulated community. Special attention should be devoted to designing effective environmental permitting for large enterprises.
- Appropriate compliance assurance strategies should be developed, first and foremost to promote compliance through awareness raising, capacity building, public pressure and incentives for better environmental behaviour. Voluntary schemes should be promoted whenever possible. At the same time, the strategies should enable, when necessary, strict and timely response to non-compliance. The discretion of enforcement personnel should be limited and described precisely in regulations. When administrative enforcement is insufficient or fails, non-compliance should be addressed through courts. Experience of application of compliance assurance strategies in OECD countries provides useful examples.

- Evaluation of environmental performance of provincial and local governments should become routine activities along with evaluating impacts of enforcement actions. Doing so would be all the more effective if it were supplemented by enhancing the transparency of administrative actions.
- Mechanisms for continuous training for staff of environmental authorities should be established to ensure regular and sustainable skill enhancement and information provision on new regulations and approaches to environmental management. Selected local training institutions should become regional centres of excellence.
- Promoting public participation in environmental decision-making should continue to be one of the key objectives of the state and local environmental authorities. By enhancing environmental awareness, encouraging environmental associations and providing training, the public can become an active implementation agent. Studying mechanisms for public participation in OECD countries can help to adapt the best approaches to the Chinese context.

1. INTRODUCTION

1.1. Objective of the Study

The study analyses government strategies for ensuring compliance with environmental requirements in China. A particular emphasis is placed on the regulatory and institutional framework and enforcement (or non-compliance response) instruments available at the disposal of the Chinese authorities at the central and sub-national level. These instruments include both informal and formal channels, administrative, civil and criminal enforcement.

The study also reviews how the traditional instruments available to environmental enforcers – compliance monitoring (including inspections) and enforcement/non-compliance response – are balanced and how far their application can be supported or traded off by the use of economic instruments and voluntary commitments by firms.

This report provides examples of the use of various instruments and attempts to assess their impact, effectiveness and efficiency and remaining obstacles that should be overcome to better implement environmental policies in China.

1.2. Institutional Framework for the Study

Strengthening enforcement systems (or compliance assurance in a broader sense) has become a subject of particular interest in the context of designing policies that can stimulate sustainable development and economic growth. Recent discussions have shown the need to promote better understanding of the incentive structures facing firms and the need to provide governments with approaches that can optimise their expenditure on assuring environmental compliance.

A Conference on Economic Aspects of Environmental Compliance Assurance organised in December 2004 in Paris within the framework of the OECD Global Forum on Sustainable Development facilitated a dialogue between OECD countries and transition and developing economies on designing optimal enforcement strategies and tools that can maximise environmental benefits and minimise costs to the regulators and regulated community. Participants confirmed the need for more empirical analysis of compliance rates and of the costs and benefits of government compliance assurance programmes. Participants requested the OECD and its partners to extend the dialogue and to help, in particular, non-member countries, to design policy approaches that ensure environmental compliance and that are cost effective for the administration and the regulated community.

Similarly, representatives from thirteen Asian countries and several international development agencies and organizations met in Manila in August 2005 to establish the Asian Environmental Compliance and Enforcement Network (AECEN) whose mission is to:

- Improve the technical, institutional and financial capacity of environmental agencies and organizations;
- Cooperate on a regional basis through the network to share and exchange best practices, experience, and information on environmental compliance and enforcement; and

- Coordinate with other regional economic and social development programs and initiatives in Asia, as well as with other environmental practitioner networks in achievement of the AECEN mission.

The AECEN survey of the current status of compliance assurance systems in the Asian countries identified, inter alia, the area of enforcement policy formation, program design and procedural guidelines; and enforcement responses (administrative, civil and criminal actions, including evidence preparation, settlement negotiations, penalties, dispute resolution) as priorities for further analysis.

The OECD, in the context of its work on enforcement and compliance in non-members and its programme of cooperation with China, committed to take these discussions forward and develop this case study of compliance assurance system in China which is a member of the AECEN.

The study was prepared on the basis of existing information by the OECD Secretariat with a substantial support from Ms. Wanxin Li, Assistant Professor at the Tsinghua University. This draft of the case study is presented for discussion at the second meeting of the Asian Environmental Compliance and Enforcement Network that will be held in December 2006 in Vietnam.

The views expressed in this publication are those of authors and do not necessarily reflect those of the Chinese authorities, the OECD or its member countries.

1.3. Structure of the Study

The study is structured as follows:

- Chapter 2 describes China's environmental context and its policy, institutional and legal frameworks for environmental management.
- Chapter 3 presents objectives and main elements of government strategies for ensuring environmental compliance, including targeting compliance assurance efforts, monitoring compliance, applying specific enforcement/non-compliance actions, and compliance promotion instruments.
- Chapter 4 highlights a range of other instruments that have been applied to influence behaviour of the regulated community, including economic instruments, "inside the firm" incentives and management systems, pressure from consumers, communities, and workers/trade unions.
- Chapter 5 briefly presents approaches to the assessment of environmental compliance efforts and their application in China.

2. PLANNING, LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL POLICY IMPLEMENTATION IN CHINA

2.1. China's Environmental Context

Rapid economic growth, stimulated by a policy of reform and opening-up, has helped China to increase the wealth of its population and provided employment and development opportunities. However, the rapid growth has not come without a price: natural resource depletion and environmental pollution of air, water and soil have been unintended, but significant, side effects. The key problems (Economy, 2004; SEPA, 2001-2004; Stockholm Environmental Institute and UNDP China, 2002; OECD, 2002; World Bank, 2001) include:

1. Contamination of fresh water resources with urban, industrial and agricultural effluents and wastes results in decreasing access to good quality drinking water and pollution-related illnesses. More than 75% of the waters in rivers flowing through China's urban areas are unsuitable for drinking or fishing. There have been serious outbreaks of waterborne diseases, as well as long-term health problems in riverside communities reflected in rising rates of spontaneous abortions, birth defects, and premature deaths. Water pollution in rivers and coastal areas impacts fisheries, aquaculture and leisure activities.
2. Air pollution by particulate matter as well as other pollutants from energy production, manufacturing and transport, provoke periods of smoke and haze. By 2002, China had become home to six of the 10 most polluted cities in the world. This adversely affects human health, results in "acid rain" (which now affects about one-third of China's territory, including one-third of its farmland) and contributes to the build-up of greenhouse gases in the atmosphere. Air pollution alone, primarily from coal burning, is responsible for over 300 000 premature deaths per year.
3. Degradation and destruction of forests leads to massive soil erosion and desertification (desert now covers 25% of China's territory);
4. China's best cultivated land is being lost to unsustainable agricultural practices and expanding urban and industrial areas, as well as to the developing network of roads and railways. Household and industrial waste continues to accumulate.
5. Due to the reasons mentioned above, almost all of China's unique and globally significant biodiversity resources are under stress¹.

A study conducted in 1999 by the World Bank calculated that air and water pollution damage, especially the dangers that fine airborne particulates pose to human health, have been estimated to be at least USD 54 billion a year –nearly 8% of China's GDP. A report released by the Chinese Academy of

¹ The desire for self-sufficiency promoted by the Chinese leaders has also exerted large pressures on the ecosystem. For example, because sparrows were thought to compete with humans for food, Chairman Mao called in 1958 for a national campaign to kill off the birds in China. As a result, sparrows are now one of the endangered species in China.

Environmental Planning (CAEP) for SEPA in 2006² states that damage from environmental pollution accounts for CNY 511.8 billion (about USD 64 billion) in economic losses in 2004, which amounts to 3.05% of the GDP. According to the report, the cost of water pollution accounts for CNY 286.3 billion, air pollution for CNY 219.8 billion and solid waste pollution and pollution accidents for CNY 5.7 billion.

The environmental problems in China did not happen accidentally. With 1.3 billion people, comprising 20% of the global population, China only has 6.8% of global arable land. The desire for self-sufficiency has exerted large pressures on the ecosystem. Starting in the early 1990s, the processes of industrialization and urbanization have generated pressures on the environment as well. Between 1979 and 2005, the average GDP growth rate in China was 9.3% annually. Urban population increased by 4.2% annually between 1990 and 2003 with a total of 523.8 million in 2003, accounting for 40.53% of the total population in China. The expanding scale of industrial and human activities and associated material flows have caused resource depletion and created wastes beyond the assimilative capacity of the environment.

Furthermore, rampant industrial non-compliance has exacerbated environmental problems in China. For example, over 60% of enterprises in Hohhot (capital city of the Inner Mongolia Autonomous Region) were out of compliance with environmental standards and regulations in 2000³. As time passes by, the effect of industrial non-compliance has become more visible. In 2005, environmental incidents were the second most frequent cause for social unrest. Chinese society and decision makers are increasingly aware of the seriousness of environmental problems and the related economic and human health costs.

2.2. Environmental Planning

Five-Year Social and Economic Development Plans (FYPs) have been the basis for coordinating Chinese public policy priorities. These have been developed by the Chinese government and approved by the Chinese Communist Party and the National People's Congress (NPC). In line with FYPs, the Chinese environmental authorities have developed Five-Year Environment Plans (FYEPs). The FYEPs are further broken down into sectoral five-year plans, in areas such as water management in key rivers and lakes, air pollution reduction in specially designated regions ("acid rain control zones" and "sulphur dioxide control zones"), hazardous waste management, and nature conservation. Goals set forth in the national plans constitute the basis for provincial and local governments to prepare their own five-year environment plans at the sub-national level.

In 1995, the Chinese top leaders stated that the narrow approach of maximizing gross domestic product without considering other costs, including environmental, should be replaced by policies that aim at a more balanced growth at the national and local levels. The Ninth (1996-2000) and the Tenth (2001-2005) FYPs reflected this shift. Moreover, the "scientific approach to development", which calls for a comprehensive, coordinated and sustainable approach to economic development that takes social and environmental aspects into account, was promoted in the 11th FYP⁴ (2006-2010) adopted by the NPC in March 2006.

While the Eighth FYEP (1991-1995) included some provisions to strengthen environmental management, the Ninth FYEP (1996-2000) acknowledged serious deterioration of the environment and, for the first time, called for the establishment of environmental management and legislative systems. The

² Reuters/Xinhua News Agency, <http://www.planetark.com/dailynewsstory.cfm/newsid/38017/story.htm>, 7.09.2006.

³ Wanxin Li, *Informational Environmental Regulation in Practice*, unpublished Ph.D. dissertation, 2006.

⁴ Contrary to the previous China's FYPs, the 11th FYP document is referred to as "programme". Moving away from planned economy and production targets, the document sets broader objectives and goals (which open up opportunities for market forces to allocate resources more efficiently) and plans a set of public investment projects.

provisions of the plan were supported by the State Council Decision on “Issues Regarding Environmental Protection” enacted in August 1996 that introduced a number of mechanisms for achieving environmental objectives, many of which are still in force⁵. The Decision also called for stricter inspection of industrial pollution control.

The Tenth FYEP (2001-2005) aimed at further improvement of the quality of the environment, in particularly in large and medium-sized cities. It set new targets based on progress in achieving objectives of various programmes. The key targets are presented in Table 1. The 10th FYEP envisaged a number of institutional and regulatory measures such as integrating environmental considerations into development decision-making, strengthening capacity of environmental management institutions, promoting the use of incentive mechanisms and tightening up enforcement towards non-compliant enterprises responsible for severe pollution that damages public health. The programme also called for enhancing research and development efforts for environmental protection, promoting environmental goods and services industry, and promoting public participation in environmental policies. The plan also stipulated that the total investment in environmental protection would achieve CNY 700 billion accounting for 1.3% of the GDP, and about 3.6% of the total fixed investment in China.

⁵ These measures included, *inter alia*, the “33221” programme which called for special protection measures for three rivers (Huai, Hai and Liao), three lakes (Chao, Diao and Tai), two air pollution control zones (“acid rain control zone” and “sulphur dioxide control zone”), and one municipality (Beijing). China subsequently started a number of environmental initiatives, as for example, “one control and double attainments” programme. The “one control” required that the total emission loads of major pollutants in all regions nationwide should be kept within nationally specified levels (1995 standards). The “double attainments” required that emissions from all industrial sources nationwide should meet both national and local standards by the target date.

Table 1. Examples of Environmental Targets and Indicators in the Tenth Five-Year Economic and Social Development Plan (2001-2005)

Issue	Specific Targets and Indicators
Environmental protection in river basins	<ul style="list-style-type: none"> Total elimination of grade V quality water in major rivers in all regions
Acid rain and SO ₂ control	<ul style="list-style-type: none"> Reduction of sulphur dioxide and total suspended particulates by 10% and 20%, respectively. Reduction of sulphur dioxide concentrations in urban air within the "Acid Rain Control Zone" and the "SO₂ Control Zone" to the level of national Grade II standards (daily average less than 150 µg/m³, annual average less than 60 µg/m³)
Urban environmental protection	<ul style="list-style-type: none"> Improvement of air quality in 50% of defined medium and large-sized municipalities to the level of Second Grade or above Meeting relevant water quality national standards by all centralised potable water sources in urban areas Achieving 45% rate of centralised sewage treatment in urban areas with the daily treatment capacity of 40 million tonnes Increase the rate of urban waste treatment to 50% (with an annual treatment capacity of 55 million tonnes - or 150,000 t/day) Achieving the level of 90% in the use of gas for heating and cooking by urban households Increasing the number of cities targeted for pollution control to 100 from 47 and reaching in all of them applicable standards for air, water and noise Installing in all 100 key cities automatic air quality monitoring equipment with the ability of data being transmitted via satellite to a national monitoring centre
Total pollutant discharge control	<ul style="list-style-type: none"> Reduction of total amount of air pollutants emitted (SO₂ emissions to the level of 19 million tonnes and industrial dust discharges to the level of 12.5 million tonnes) Reduction of the volume of total industrial solid waste generated to 36 million tonnes
Nature protection	<ul style="list-style-type: none"> Increasing the total number of nature reserves to 1,200 with the area of 11.2 million hectares Increasing the percentage of land designated as nature reserves from 10 to 13% of the total land area Achieving the rate of forestry coverage to 18.2% of the total land area

The 11th FYEP (2006-2010) was under preparation at the time of the writing. Some environmental targets were identified in the overall Social and Economic Plan (Box 1).

Box 1. Environmental targets in the 11th Five-Year Social and Economic Development Programme (2006-2010)

- Reduce energy intensity by 20%;
- Reduce water consumption per unit of industrial value-added by 30%;
- Maintain water consumption for irrigation in agriculture at current levels;
- Increase recycling of industrial solid wastes by 60%;
- Retain the area of farmland at 120 million hectares;
- Reduce the total discharge quantity of major pollutants by 10%;
- Reach forest coverage of 20%; and
- Control greenhouse gases to "generate good results."

The development of FYPs has been based on extensive analytical work, including a review of experience from the previous planning period. The plans contain a number of quantitative, time-bound targets. The plans are linked to project programming that is designed to meet these targets⁶. Together, the set of FYPs, FYEPs and the specific plans provides a very good planning framework for pursuing

⁶ National Development and Reform Commission (NDRC) further link the programming and budgeting processes.

environmental progress in China and has evolved positively, together with the reform in Chinese governance. However, there are a number of ways in which these plans could be improved, in particular through more economic analysis to establish objectives and greater use of environmental performance indicators.

At the end of 2005, in the wake of an accident at a chemical plant in Jilin that contaminated the Songhua River, the State Council adopted a Decision on Implementing the Scientific Approach to Development and Strengthening Environmental Protection (updating its similar Decision of 1996). The decision called for strict enforcement of environmental laws and regulations and firm non-compliance response, as well as strengthening the prosecution system. It also called for developing a legal mechanism for compensating pollution victims.

2.3. Institutional Framework for Environmental Regulation

National Level

The State Environmental Protection Administration (SEPA)⁷ is the national-level administrative body responsible for environmental management (Figure 1). SEPA's functions include preparing and implementing national policies, legislation, and regulations related to water and air quality, solid waste management, nature protection and nuclear/radiation safety. SEPA is also in charge of formulating environmental quality criteria and pollutant discharge/emission standards at the national level, organising environmental quality monitoring and initiating enforcement activities together with local environmental authorities. SEPA coordinates plans for addressing trans-boundary environmental problems and organising scientific research and development.

A range of environment-related issues are managed separately by a number of Ministries and Agencies of the State Council. The National Development and Reform Commission (NDRC) plays a key role as the body responsible for developing and implementing FYPs. In this capacity, NDRC integrates environmental issues into the overall planning system in China and into sector-specific policies (e.g., on energy). The key ministries engaged in the implementation of environmental policies include:

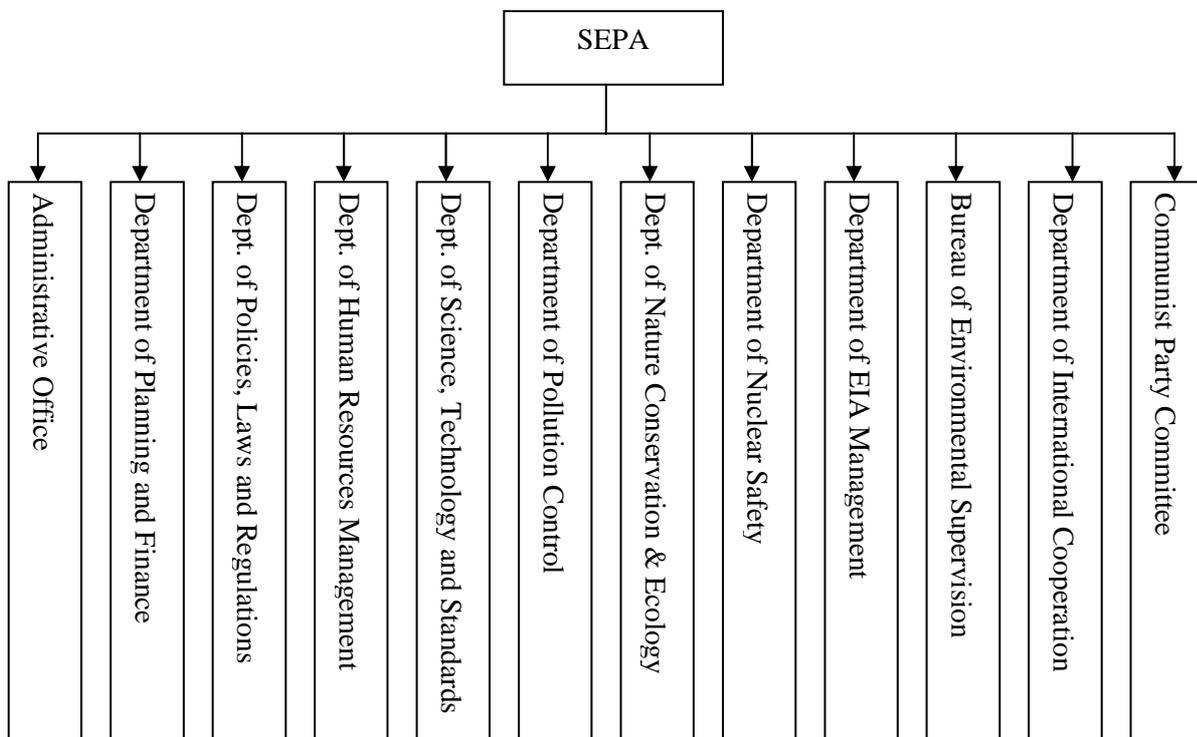
- Ministry of Water Management: watershed management, soil erosion, groundwater quality;
- Ministry of Land and Resources: land use planning, mineral and marine resource management, land rehabilitation;
- Ministry of Agriculture: management of agricultural chemicals, aquatic natural reserves, agro-biodiversity and grasslands;
- Ministry of Forestry: forest management and protection and nature conservation;
- Ministry of Health: monitoring the quality of drinking water and the incidences of related diseases;

⁷ The structure and position of the national environmental agency has evolved over the last three decades. The first China's top environmental body, the Environmental Protection Bureau, was a unit under the State Council set up in 1974 with a staff of 20. The subsequent reorganisations of the governmental system, particularly in 1998, led to the creation of a SEPA placed directly under the State Council. Although SEPA does not have a permanent seat in the State Council, its head reports directly to the Vice Premier in charge of environmental protection, has the status of Minister and participates in State Council meetings when environmental matters are discussed.

- Ministry of Construction: environmental infrastructure, including water supply and wastewater treatment plants and solid waste management;
- Ministry of Communications: shares responsibility with SEPA on vehicle emissions control; and
- Ministry of Supervision: takes part in environmental enforcement campaigns carried out by SEPA.
- Other government agencies concerned with environmental policy include:
 - State Forest Administration: forest conservation, afforestation, biodiversity and wildlife management;
 - State Oceanic Administration: management of coastal and marine waters, including marine biodiversity conservation; and
 - China Meteorology Administration: regional air quality management, climate change issues.

The National Bureau of Statistics coordinates the incorporation of environmental information into China's statistical information.

Figure 1. Organisational Structure of the State Environmental Protection Administration (SEPA)

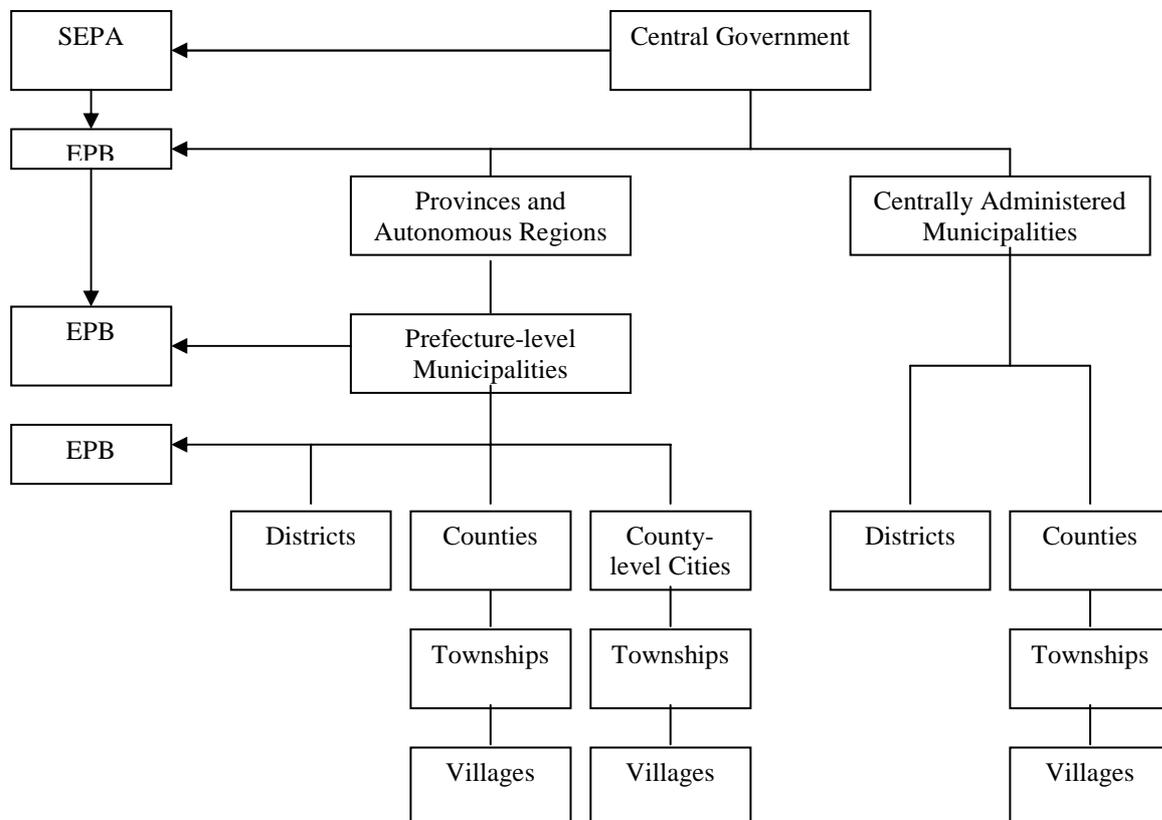


Sub-national Level

The primary responsibility for implementing environmental policy is at the sub-national (provincial and local) level. There are about 2,000 Environmental Protection Bureaus (EPBs) with approximately 60,000 employees at the provincial, prefecture/municipal, district/counties, and township administration levels (Figure 2). The EPBs vary in size: an average provincial EPB employs 59 staff members (2004), with the lowest number of 29 in Qinghai and Tibet, and the highest of 102 in Tianjin. The main responsibilities of EPBs include:

- overseeing environmental impact assessment (EIA) and other procedures for new development projects (including permitting and the “three synchronisations”, see Section 2.5);
- monitoring pollution releases from industries;
- assessing fees for pollution discharges;
- initiating legal action against firms that fail to meet environmental requirements; and
- environmental reporting, environmental education and awareness raising activities.

Figure 2. The Sub-National Institutional Structure for Implementing Environmental Policies



Other administrative units of local governments are engaged in environmental policy implementation:

- *Environmental Protection Committees of local People's Congresses* endorse local environmental regulations, review work carried out by executive bodies at the same or lower administrative levels and consider environmental complaints raised by citizens.
- *Environmental Protection Commissions of local governments* coordinate EPBs' work with that of other government organs.
- *Mayor's offices* take key decisions on large investment projects involving industrial development and environmental protection. They also settle disputes between municipal EPBs and enterprises supervised by a municipalities' industrial bureaus. In some cities, the mayor heads the Environmental Protection Commission of the local government.
- *Planning commissions* at the county level and above are responsible for reviewing the environmental protection plans of EPBs and for integrating them into local economic and social development plans. Despite these arrangements, environmental and economic components of development plans are not always consistent. This occurs, in part, because different bodies often fail to communicate with each other during plan preparations.
- Many *industrial bureaus* play a significant role in day-to-day industrial pollution abatement. A number of industrial bureaus have environmental protection divisions (EPDs) that assist enterprises associated with their bureaus with technical aspects of pollution control. EPDs also help settle disputes and improve communications between enterprises. EPDs have generally more contacts with their affiliated enterprises and know more about their pollution problems than EPBs. In comparison to EPB staff, the educational background of EPD personnel enables them to be more familiar with technologies employed in factories. However, under the current government reform, industrial bureaus are being transformed into industrial associations with much lesser administrative powers.
- *Finance bureaus* manage city revenues and expenditures and play important roles in the pollution discharge fee system. The bureaus also approve the annual plans of municipal EPBs for use of pollution levy funds.

Some of the main structural obstacles to effective environmental policy implementation at the local level are as follows:

- EPBs receive guidance from SEPA but institutionally and financially they are subordinate to provincial and local governments. Thus the actions of EPBs are directed more by those governments than by SEPA as local governments tend to favour economic development over environmental considerations, and EPBs have low ranking in the government hierarchy. Several measures have been taken to strengthen the position of EPBs: SEPA is now involved in the appointment of the heads of local EPBs; all provincial EPBs were given a status of independent institutions in 2000; in some provinces, local EPBs are required to report to the provincial EPB rather than to local governments. In what could be a model for other provinces, the Jiangsu provincial EPB has been upgraded to a Department, the same level as the major economic and sectoral agencies. The recent decision to establish regional enforcement centres (see Section 3.1) should also help to strengthen environmental management and compliance assurance.

- The performance of local government leaders has been evaluated using criteria that emphasise GDP growth, with little, if any, consideration of environmental performance. The State Council has recognised the need to include the environment in local leaders' performance assessment criteria (a pilot experiment has taken place in Qingdao city). Work is also underway to develop an environmentally adjusted accounting system to reduce the bias towards GDP growth in the evaluation and reward system of government officials. However, the difficulty of developing an acceptable methodology and potential problems with applying it in a country as diverse as China suggest that a more disaggregated set of indicators would provide a better basis for assessing local leader's environmental performance.
- The process of decentralisation has resulted in local governments acquiring responsibilities without necessary means to fulfil them. Local governments are delegated more responsibilities by the central government for addressing local problems and are expected to provide local funds to do that. This has created a revenue-raising problem for local environmental officials. Until 2003, EPBs were dependent on revenues from the pollution levy to finance their operations. EPBs are involved in both conducting and assessing EIAs, and environmental monitoring stations prefer contract work from enterprises to regular monitoring assignments from EPBs. These conflicts of interest have to be addressed. EPBs need to identify alternative ways to finance their activities. Charging for services associated with permitting, as practised in some OECD countries, could be an option.
- Even though a large number of civil servants are trained every year, training opportunities for environmental staff are unevenly distributed. Budgets for training, even including opportunities for training overseas, are relatively generous at the central level and in richer coastal cities. In poorer counties and townships where government cannot even pay the salaries of local officials, training may appear to be a non-essential luxury.

2.4. Environmental Legislation

For many years, China relied on a highly personal system of moral suasion with few environmental regulations and no codified environmental laws. Starting in the 1980s, largely as a response to the country's environmental challenges and its importance as a player in the international governance regime, China's law and policymakers have developed one of Asia's most dynamic environmental law frameworks.

The Environmental Protection Law (EPL) that came into effect in 1989 after a 10-year trial period is the main legal basis for environmental management in China. The statute, which has just 6 chapters and 47 provisions in total, lays out general principles for environmental protection and describes key instruments for environmental management. It requires enterprises to assess environmental impacts of proposed projects and comply with applicable environmental standards. This statute also divides environmental management functions between national and local environmental administrations with powers to enforce environmental legal requirements. In addition, the EPL recognises the right of organisations and individuals to report cases of pollution and file charges against polluters.

Since 1989, at least 24 laws addressing pollution control and natural resource conservation (including energy resources) have been enacted by the NPC (Box 2). The environmental regulatory framework has expanded particularly rapidly between 2000 and 2004 when a number of new environmental laws were enacted, such as the Law on Environmental Impact Assessment and the Law on Cleaner Production Promotion. In this period, a number of existing legal acts were also amended, including the EPL as well as the Air, Water and Waste Management Laws. A greater emphasis was placed on a "preventive approach"

and stricter non-compliance response. For example, the recently revised Criminal Law makes provisions for criminal sanctions in case of serious harm to the environment and/or natural resources.

Legal statutes adopted by the NPC are supported by more than 40 State Council regulations, approximately 500 standards and more than 600 other regulatory documents⁸ that address pollution control, natural resources conservation and the management of the environmental aspects of production and consumption patterns. These documents set detailed binding rules for the implementation of the legislation and establish a number of regulatory tools for environmental and natural resources management.

The 1989 EPL is currently under revision to adjust the environmental regulatory framework in light of the fast economic development and new sectoral laws are being drafted, such as the new Law on Circular Economy. In spite of the comprehensiveness of the legal framework, some issues, such as soil pollution prevention, sustainable management of chemical substances, comprehensive waste reduction and management, environmental permitting, damage compensation and addressing the liability for the past pollution, are not yet regulated.

Box 2. Key Environmental Statutes of China

- Environmental Protection Law (1979), amended in 1989 and 2001
- Law on Marine Environmental Protection (1982), amended in 1999
- Law on Forests (1984), amended in 1998
- Law on Water Pollution Prevention and Control (1984), amended in 1996
- Law on Grasslands (1985)
- Law on Fisheries (1986)
- Law on Mineral Resources (1986), amended in 1996 and 1999
- Law on Land Resources (1986), amended in 1998
- Law on Air Pollution Prevention and Control (1987), amended in 1995 and 2000
- Law on Water (1988), amended in 1996 and 2002
- Law on Wildlife Protection (1988)
- Law on Water and Soil Conservation (1991)
- Act on Protected Areas (1994)
- Law on Solid Waste Pollution Prevention and Control (1995)
- Environmental Noise Pollution and Prevention Law (1996)
- Law on Coal (1996);
- Law on Conservation of Energy Resources (1997)
- Flood Prevention Law (1997)
- Land Administration Law (1998)
- Energy Saving Law (1997)
- Law on Prevention and Control of Desertification (2001)
- Law on Cleaner Production (2002)
- Radioactive Pollution Prevention and Control Law (2003)
- Law on Environmental Impact Assessment (2003)

Increasingly, sub-national rule-making is moving beyond the parameters set by the national laws in order to reflect environmental priorities of localities. Recent examples of this trend include introduction by local authorities of pollution charges, bans and waste minimisation and recycling measures addressing control of one-time-use products such as plastic bags. The provinces can also promulgate ambient standards for pollutants that are not covered in the national law. The authorities at the national level generally favour such independent local lawmaking initiatives, especially when they are considered premature to be promoted nationwide. These “pilot projects” test the feasibility, efficiency, and

⁸ These are documents whose English translations are: “catalogues”, “interpretive letters”, “circulars”, “decisions”, “methods”, “measures” or “penalty procedures”.

effectiveness of the proposals at the local level before they can make their way to the agenda of the central government. If a particular issue, such as a waste minimisation measure or an economic instrument, is considered urgent by an expanding number of local governments, SEPA may issue guidance in an effort to institutionalize the innovations incrementally.

When the environmental requirements are ambiguous, difficult to interpret and conflict each other, which is often the case, it is usually the Legal Committee under the Standing Committee of the National People's Congress that helps interpret the laws. The State Council may answer questions about the regulations it enacted but usually the authority of interpreting laws is delegated at the time of enacting the law. When a question arises from local environmental bureaus concerning the intention of legal issues, SEPA provides an interpretation directly to the bureaus, publishes it in its own publication or the Chinese Environmental News. The interpretation is then disseminated to all local environmental bureaus across that province.

One recent policy innovation was to publish draft laws and regulations on the government web sites to invite public comments. This step helps to increase the level of transparency of the government and should expand the practical application of the legal instruments. However, many Chinese administrative agencies do not yet have a publicly available official journal or other central publication for their administrative laws, and both regulators and the regulated community have to rely on internal or external efforts to produce compilations and databases of the Chinese laws. One distinct problem with this procedure is that it is often difficult to ensure that a particular compilation is comprehensible and accurate. Introducing a regular publication of an official document that contains the normative environmental acts promulgated in China would help to increase the transparency of the regulatory framework and contribute to better understanding of the requirements by the regulated community and more effective compliance assurance.

2.5. Regulatory and Economic Instruments of Environmental Policy

In China, there are a number of specific regulatory instruments for industrial pollution control. The most important, that were introduced by the 1989 Environmental Protection Law, include: emission/discharge and environmental quality standards, the Discharge Permit System (DPS), "three synchronisations" ("3S") and EIA.

Environmental Quality and Emission/discharge Standards

The 1989 Environmental Protection Law authorized SEPA to establish two types of national standards: environmental quality (ambient) standards and discharge/emission standards. Ambient standards are maximum allowable concentrations of pollutants in water, air or soil. Discharge/emission standards are maximum allowable concentrations of pollutants in industrial emissions or discharges. Local governments may create ambient and discharge standards for pollutants not specified in national standards, and they may also establish stricter, or more relaxed, limit values for pollutants than those of the national standards. The standards provide a basis for inspection activities of EPBs. The "two compliance policy" programme aims to promote compliance with discharge standards and ambient standards at the same time.

Discharge Permit System

Under the DPS, EPBs issue permits that limit both the quantities and concentrations of pollutants in an enterprise's wastewater discharges and air emissions. The DPS rules require enterprises to register with EPBs and apply for a permit. SEPA provides guidance to provincial EPBs on how to calculate the total environmental assimilative capacity and how to enforce environmental permits that are issued. EPBs then allocate allowable pollution loads to enterprises (on the basis of mathematical dispersion and loads models) and issue discharge permits. EPBs are also responsible for enforcing permit conditions.

Local EPBs have flexibility in developing their own environmental permitting systems. For example, the Yunnan province has developed an environmental permitting system for its 11 industrial sectors, including mining. However, after carrying out trial implementation of pollution discharge registration and pollution permit systems, some of the problems have come to light, including the legality of pollution permits and coordination between the permit system and other instruments, especially pollution charge.

As experiences accumulated with water permits, sulphur dioxide emissions became regulated by permits. As the policy goal is to control total pollution, enterprises in a few pilot areas are allowed to trade their permits as long as the total amount of pollutant discharge stays below assimilative capacity of the area. Tradable emission permits for sulphur dioxide were first tested in Nantong (Jiangsu province).

However, polluter registration and environmental permitting in China is fragmented and not backed up by legally binding provisions and procedures. In permitting, only ambient standards are considered, and the methodological basis for their determination is weak and not coherently applied across the country. Therefore, the environmental permitting system requires serious revision and development of a legal basis for its application.

“Three Synchronisations” System

The system of “three synchronisations” (also called “three simultaneous steps”) introduced by the 1989 EPL requires that (1) the design, (2) the construction; and (3) the operation of a new industrial enterprise (or an existing factory expanding or changing its operations) be synchronised with the design, construction and operation of an appropriate pollution treatment facility. Once the construction of the project is completed, inspection and approval by environmental administrations are required (for large projects, or in case of a dispute at the local level, the approval has to be confirmed by the national level authority). If project operations begin without approval from a local EPB, the owner of the project can be sanctioned. In 2004, out of 127 500 total investment projects, 79 500 investment projects were subject to the 3S procedure. In slightly more than 76 000 cases the 3S procedure was approved. However, there is evidence that sanctions associated with non-compliance with the 3S procedure are often not applied by local authorities.

The “3S” programme has played an important role in stimulating investment in pollution abatement facilities at industrial enterprises, especially in new factories. However, problems still exist as, in many instances, the “3S” procedures are not strictly followed. Industries usually fail to involve local environmental authorities early in the design phase of the project and ask for approval only when facilities are about to start operations. To overcome the implementation problems in some areas, a deposit-refund system for “3S” in construction projects has been introduced. Deposits, which are based on the project’s total investment cost, can be returned to investors upon approval of the project’s “3S” requirements. However, the deposit-refund system still has no adequate legal basis and no clear criteria for evaluation and return of the deposits.

Environmental Impact Assessment

The 1989 EPL requires projects with potentially negative environmental effects to be subject to EIA before approval by local Development and Reform Commissions. The 1998 Ordinance of Environmental Management for the Construction Projects prescribed three different levels of assessment in proportion to the potential environmental impact of proposed projects. As there was widespread dissatisfaction with the system, in 2002 a new EIA Law was promulgated with the aim to address the shortcomings of the original law. The law specifies in more detail the content of the assessment which should include:

- identification and analysis of potential environmental impacts;

- possible measures to prevent or control the identified impacts, and
- assessment of the feasibility and costs of the possible measures.

SEPA conducts nationwide checks on the implementation of EIA. For example, a total of 55,000 construction projects underwent the process in 2004, of which 1,190 projects were found to have failed to satisfy EIA requirements, including 30 big construction projects (most of them hydro or thermal power plants). A joint investigation by SEPA and the Ministry of Land and Resources showed that only 30 to 40% of the mining construction projects went through the required EIA procedures, and the share was as low as 6 to 7% in certain provinces.

A major innovation is the provision in the 2002 EIA Law requiring public authorities to hold public hearings involving parties that are potentially affected, the first time such a provision was included in an environmental law in China. Subsequently, SEPA issued “Measures on Public Participation in the Environmental Impact Assessment Process” which took effect in March 2006. The Measures clarify the rights and responsibilities of various parties with an interest in the EIA and the forms of public participation, including surveys, consultations, seminars, debates and hearings. The provisions have generally been welcomed by NGOs.

These regulatory instruments and a regulation on “Total Emission Control of Major Pollutant Discharges” (TEC)⁹ approved in 1996, have led to better control of pollution releases and to a shift from reducing pollutant concentrations (through dilution) to reducing total pollution loads. This has been achieved by combining concentration and mass-based discharge criteria introduced through pilot discharge permits. There has also been a shift from “end-of pipe” pollution control to pollution prevention through more integrated and comprehensive approaches, such as “cleaner production” and “circular economy”.

Pollution Charges

In conjunction with the regulatory instruments, there is a comprehensive system of pollution levies in China¹⁰. Pollution charges link an economic incentive for pollution reduction with sanctions in case of non-compliance. Originally only discharges that exceeded emission/discharge standards were subject to a fee. Currently, the levy formula incorporates both concentration and volume: it calculates a pollutant-specific discharge factor based on both total load of pollutants in the discharge and the degree to which each pollutant concentration exceeds the standard. Charges are levied on 18 water pollutants specified by the national discharge standards. The polluter is charged for the highest three of the calculated potential charges rather than a cumulative amount of all calculated charges. The charge rate and the discharge factor are set by the central government and concentration standards are set jointly by the national and local governments.

Polluters have a 20-day grace period to pay the monthly charge after which the due payment increases by 0.2% per day. To encourage pollution reduction, charges increase with the duration of non-compliance. After 2 years of paying the levy, polluters are subject to an annual 5% increase in the charge rate. The system also has a “new source bias”: the official charge rate is doubled for facilities that began operation after 1979. The EPBs can close down existing treatment facilities that operate without approval of the local

⁹ TEC set fixed amounts of the total annual emissions of key pollutants such as sulphur dioxide (SO₂). For 2005, the national limit on SO₂, a key ingredient of acid rain, was set at 10% below the 2000 levels.

¹⁰ The development of other types of economic instruments, such as user fees, tradable permits, and deposit-refund systems for environmental protection or natural resource management has been limited so far, with their implementation confined to local pilot projects.

EPB, or fail to comply with administrative orders to correct a violation by a fixed day. In addition, there is a fine to compensate for economic losses or adverse human health effects caused by pollution releases.

Rebates are possible when pollution reductions are verified by local environmental authorities. Although the EPBs issue notices with the amounts of due pollution charges, in practice, the amount is usually negotiated rather than calculated using formulas detailed in regulations. The payment can be reduced or even waived at the discretion of local regulators after appropriate inspections. It may also be postponed if the polluter cannot afford to pay, although such reductions or exemptions are not allowed by the law. Intractable disputes are resolved by local courts or higher-level environmental authorities.

Although the revenue from collected charges is now transferred to the Ministry of Finance, which submits expenditure proposals to the NPC, the resources are still earmarked for environmental improvement. The revenue is no longer partially used to cover operating expenses of environmental authorities (as used to be the case until recently) but is directed towards environmental protection measures, purchase of monitoring equipment and new technology. Of the total pollution charge revenues, 10% is transferred to the central government and 90% remains at the sub-national level.

The current pollution charge system is relatively mature and effective, although some problems still exist. In particular, the charges are still significantly lower than the cost of pollution reduction, despite the recent increases of their rates (for example, the rates for SO₂ emissions were increased from CNY 0.21/kg to CNY 0.42/kg in 2004 and to CNY 0.63/kg in 2005; a new charge of CNY 0.6/kg of NO_x was introduced in 2004). In many cases, the actual charge paid by a firm is a result of bargaining between the administration and the firm. Some surveys show that state-owned enterprises pay lower effective rates than privately owned ones, and that the rates are positively related to firm profitability. In addition, the charge collection rate is low, estimated on average at less than 50% of the charges imposed (between 10% in western provinces and 80% in coastal areas), which reduces their incentive effect.

3. GOVERNMENT STRATEGIES FOR ENSURING ENVIRONMENTAL COMPLIANCE

3.1. Institutional Arrangement for Compliance Assurance

Responsibility for compliance assurance lies principally at the local level. In 2004, there were over 3 000 environmental inspection agencies in China with about 50 000 inspectors, including 633 inspectors at the provincial level (with the highest number of 53 inspectors in Tianjin and the lowest of 8 in Hubei), 8,164 inspectors at the prefectural level and 38,356 inspectors at the county level¹¹. Even though the number of inspectors nationwide has increased by 116% between 1997 and 2003, the staffing is not sufficient to effectively compliance monitoring and enforcement responsibilities effectively. For example, in Shanghai, which has received national recognition for its environmental leadership, there are 50 environmental inspectors who have responsibility for over 20 000 factories.

The inspectors generally work as part of EPBs and are, therefore, supervised by local authorities, which often compromises the stringency of environmental enforcement. To avoid that, some provinces and centrally administered municipalities such as Henan, Hubei, Beijing and Tianjing, have established inspectorates that are separate from the EPBs. In addition, in 2006, five regional “enforcement coordination centres” were set up to independently monitor and investigate environmental issues. The regional centres, which are expected to be under direct control of SEPA, will be operating in the cities of Nanjing (covering east China), Guangzhou (south), Xi’an (northwest), Chengdu (southwest) and Shenyang (northeast). The size of staff and funding mechanisms for the centres are still being discussed. The five centres will investigate serious pollution cases, help solve cross-regional environmental disputes and supervise law enforcement in national nature reserves, key scenic spots and forest parks.

At the central level, SEPA primarily provides guidance to local enforcement staff on investigating non-compliance and taking enforcement actions. In some cases, SEPA is involved in enforcement actions of EPBs, especially when they are undertaken against companies under direct supervision of the State Council. SEPA also participates in enforcement campaigns carried out by EPBs or together with other national-level agencies.

Taking account of SEPA’s growing enforcement responsibilities, a Bureau of Environmental Supervision was established in 2003 as part of the agency. The Bureau consists of four divisions: the Comprehensive Division, the Division for Environmental Inspection, the Division for Emergency Supervision of Urban and Industrial Pollution, and the Division for Emergency Supervision of Regional and Ecological Environment. The Bureau, which, under the limits imposed by the State Council regulations, consists of 45 enforcement officers and has a budget of CNY 4.4 million¹², is responsible for:

- investigating and supervising violations of Chinese law involving environmental pollution and ecological degradation;
- coordinating resolution of “transboundary” (inter-provincial) environmental disputes;

¹¹ EPBs at the provincial level employ, on average, 24 staff, 32 at the city level and 35 at the county level.

¹² This amount constituted 0.62% of the total SEPA budget in 2004.

- inspecting polluted sites for possible evidence of violations of environmental laws;
- helping SEPA to formulate policies and requirements for enforcement of environmental regulations; and
- coordinating the operations of the regional enforcement centres.

3.2. Enforcement Actions and Non-Compliance Responses

At present, the following offences are most common in China (in the order of frequency):

- failure to comply with the EIA or “three synchronisations” requirements;
- non-compliance with environmental standards and failure to pay pollution charges;
- operating without necessary environmental permits;
- engaging in hazardous waste disposal without a required permit;
- pollution releases to air and water as a result of industrial accidents.

The enforcement strategy for addressing these offences has relied on three key elements:

1. inspections by local EPBs;
2. joint inspections (campaigns) carried out by the central government and EPBs; and
3. mobilising the population, including the media and NGOs, to help promote compliance with environmental requirements.

Environmental Inspections

The level of compliance by enterprises with pollution standards, permits, payment of charges is checked through environmental inspections carried out by inspectors from EPBs. Private enterprises are inspected by the EPB of the jurisdiction where they are located. State-owned enterprises which are assigned a special administrative status are inspected by a respectively higher EPB. Many inspections are in fact triggered by complaints from the public about pollution incidents. In urban areas, the EPB staff is required to arrive at the affected area within 2 hours after receiving a signal about a particular environmental problem. This time limit extends to 6 hours in rural areas.

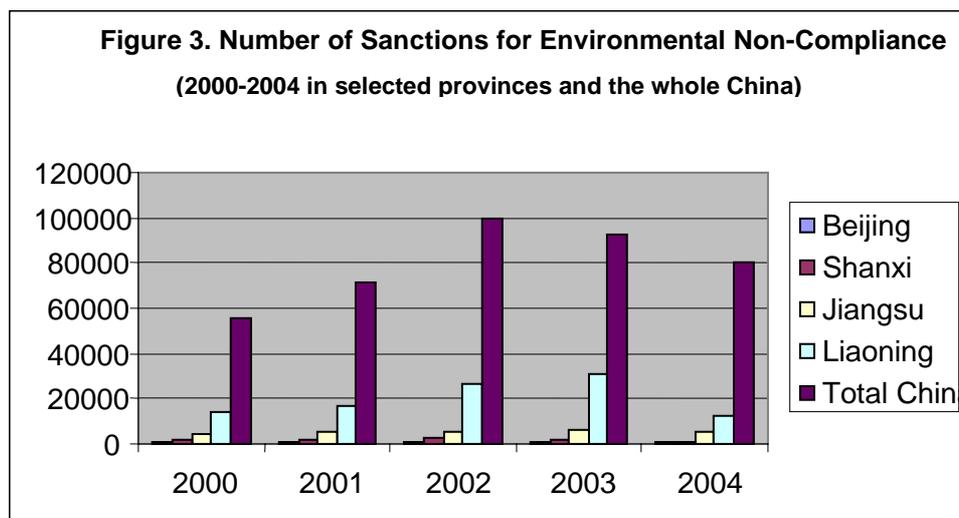
Each EPB maintains a list of enterprises that pose threats to the environment. For example, environmental officials in the Fujian province identified 565 factories that affect the environment. The list is a result of inspections of more than 2,300 factories located in the province.

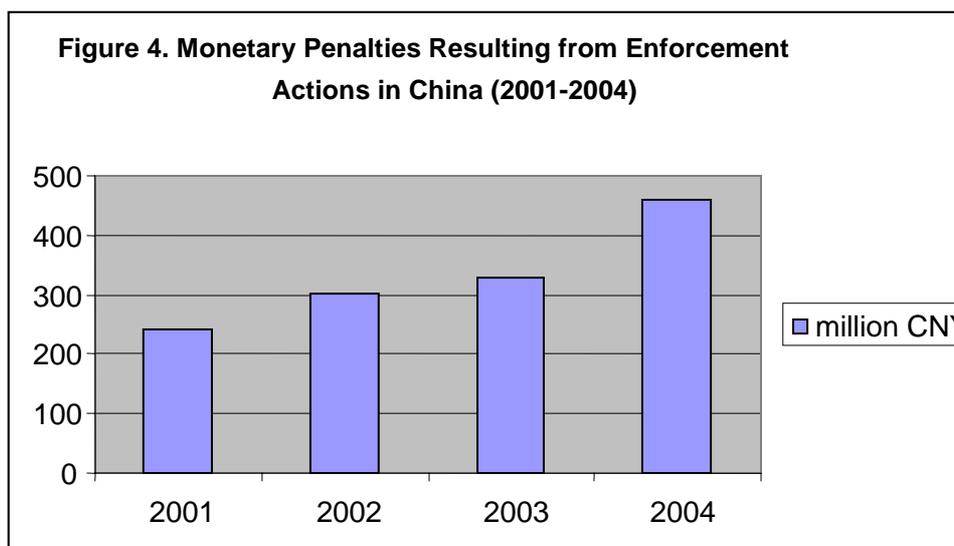
Each year, EPBs conduct more than 2 million inspections. EPBs send out inspectors for conducting regular, but also surprise site visits. According to one survey (Lu et al., 2006), enterprises are inspected, on average, 8.6 times per year. The frequency of inspections is higher in the cities (nearly 12 times per year) and lower at the county level (5.5 times per year). The 2001 Administrative Penalty Procedures set forth guidelines for national and local enforcement staff for establishing and investigating non-compliance and applying enforcement actions to violations of national and local environmental law. The procedures also cover management requirements that help to protect the integrity of case evidence. However, many

enterprise managers still do not fully understand EPBs' approaches to assessing pollution charges and penalties as the procedures are open to interpretation by local environmental officials.

When non-compliance is established, inspectors can issue warning letters, impose fines or withdraw the permit for a part of or the whole installation. Fines are the most frequently applied measure, accounting for over 60% of non-compliance responses. An administrative penalty was first applied by SEPA in 1998 when a chemical factory in the Sichuan province was ordered to stop production and was fined CNY 50,000 for violations of the "three synchronisations" regulations. In 2004, the EPBs imposed sanctions in 80,000 cases of violation of environmental laws across China, with monetary penalties of CNY 460 million (see also Figures 3 and 4). The revenue from the fines goes to the central budget.

The 1989 Environmental Protection Law specified conditions for imposing fines in various cases. These include: refusing an on-site inspection, resorting to fraud during inspections, refusing to file a report or submitting a false pollution report, exceeding national or local discharge standards, or failing to pay charges. Under the Water Pollution Law, those who refuse to allow inspections, do not report or falsify reports on their pollution can be fined up to CNY 10,000. Severe pollution of a water body can lead to a fine of up to CNY 200,000. A pollution discharge that causes a water pollution emergency can be fined up to 20% of the direct economic damage (up to a maximum of CNY 200,000) or, in case of large economic damage, 30% of the damage (up to a maximum of CNY 1,000,000). Similar provisions are contained in the Air Pollution Law which envisages fines of up to CNY 50,000 for submitting false reports or failing to operate pollution treatment equipment. In case of a pollution accident, an enterprise can be fined up to 50% of direct economic damage, but no more than CNY 500,000.





Different levels of EPBs have different responsibility and authority to impose penalties. County-level EPBs can impose fines of up to CNY 10,000, city EPBs can impose fines up to CNY 50,000, while provincial and centrally administered municipality EPBs can impose up to CNY 200,000. The determination of a level of a fine is subject to discretion of the local government but the decision-making shall be “open and fair”. The severity of the penalty can be adjusted taking account of such factors as the degree to which regulations were violated, the number of times violation occurred, and the response to the violation (whether voluntary corrective action was taken). Fines are also levied by the NDRC in cases of serious breaches of the law.

Compliance schedules (called “*pollution control within deadlines*”) are also frequently used: they require enterprises to reduce their pollution releases to acceptable levels by specific dates. Clean-up deadlines for enterprises are usually imposed by the national or local governments, but EPBs can also be authorised to set such deadlines. Enterprises that do not abate pollution on time risk being fined or shut down. In recent years, the system was expanded by offering the possibilities for technological renovation, phase-out of outdated technologies and products, and promotion of cleaner production in exchange for extending the shut-down deadlines.

Inspection Campaigns

Other instruments against environmental non-compliance are special environmental enforcement campaigns that are conducted by the central government in cooperation with local EPBs. Almost every year, SEPA initiates country-wide campaigns to address specific environmental problems such as excessive pollution from Township and Village Industrial Enterprises (TVIEs), prevention of accidents in the chemical sector, pollution from mining activities, etc. The campaigns often involve “shutting down, stopping, merging and converting” non-compliant enterprises, with decisions concerning these steps made by local governments. The decision is subject to approval by the State Council if actions are undertaken against enterprises directed by the central government. According to SEPA, more than 1,500 factories violating environmental requirements are closed every year during such inspection campaigns.

Several campaigns have been carried out over the last decade, e.g., to clean up the Bohai Sea, the Tai Lake and the Huai River. The latter was one of the first sweeping campaigns that followed a State Council’s decision to outlaw and shut down fifteen types of seriously polluting enterprises. As a result, between 1995 and 2000 more than 84,000 heavily polluting plants were shut down along the Huai River. Most of the plants closed were privately owned TVIEs (especially small paper mills and dyeing and metal

coating shops) scattered across the country and far away from the reaches of state-sponsored infrastructure investments. Several oil refineries, cement plants, thermal power plants and metallurgical mills were also closed down.

The campaigns carried out in 2003-2005 focused on mining and chemical industries. Those special campaigns, in which more than one million law enforcement personnel participated from SEPA, the State Development and Reform Commission, the Ministry of Supervision and the Ministry of Justice, resulted in closing down heavily polluting enterprises, suspending operations to fix or upgrade pollution treatment facilities, providing serious warnings (see Table 2). During the 2005 campaign, 155 plant managers were punished for negligence in environmental management. Most of the factories were located along the Huaihe River, around Taihu Lake and in the Henan, Hebei, Shandong, Shanxi, Shaanxi provinces and the Inner Mongolia Autonomous Region. As powerful government agencies participated in the campaigns, local EPBs encountered fewer obstacles in pursuing their enforcement efforts. However, SEPA considered that many of the factories resumed production soon after the end of the campaign with support of local governments.

Table 2. Results of Inspection Campaigns in 2003-2005

Year	No. of companies inspected	No. of companies sued in courts	No. of companies closed	No. of companies production suspended	No. of companies given limited time to improve their performance
2003	201,000	21,000	7339	2079	1094
2004	600,000	Not available	6462	3861	6755
2005	560,000	27,000	2609	2170	4302

In 2005, SEPA also conducted a nationwide check on the implementation of EIA and “3S”. A total of 55,000 construction projects were investigated: 1,190 projects were found to have violated the EIA law and the 3S clause in the Environmental Protection Law, and 30 big construction projects were halted.

In February 2006, SEPA and the Ministry of Supervision conducted a first round of joint investigations in four key pollution sectors, including 45 factories. During the six-month probe, one factory was closed down, two are in the process of installing and testing pollution control equipment, and 42 factories were ordered to upgrade their environmental technologies.

Often the campaigns follow major industrial accidents (see Table 3), as was the case after the Tuojiang River accident in March 2004, the Songhua river accident in November 2005 (Box 3). For example, SEPA’s inspection of more than 100 sites just four months after the pollution of the Songhua River ordered the cleanup at 20 chemical and petrochemical enterprises, after they were found to pose serious safety threats. SEPA also decided to stop or postpone approval of construction projects at 44 sites as their locations were considered unsafe.

Table 3. Selected Accidents Involving Hazardous Substances¹³, 2000-2005

Year	Date	Location	Origin of accident	Products involved	Number of deaths	Number of injured
2000	10.03	Jiangxi	Explosion	Fireworks	33	10
	22.04	Shandong	Fire	Chemicals	38	20
	30.06	Guangdong	Explosion	Chemicals	36	160
	05.08	Jiangxi	Explosion	Chemicals	27	26
2001	15.11	Zhejiang	Gas leak, aniline	Gas	..	700
	30.12	Huangmao	Explosion	Fireworks	34	61
2003	28.07	Hebei	Explosion	Fireworks	35	91
	23.12	Sichuan	Explosion	Gas deposit	243	10 000
	30.12	Liaoning	Explosion	Fireworks plant	35	20
2004	20.04	Nanchang	Gas leak	Gas	..	282
	15.01	Heilongjiang	Poisoning	Chlorine	..	134
	15.06	Fujian	Gas leak	Phosgene	1	300
	22.06	Jiangxi	Food poisoning	258
	04.10	Beijing	Explosion	Chemicals	34	55
	25.10	Fujian	Food poisoning	Chemicals	..	160
	11.01	Shanxi	Explosion	Chemicals	25	9
2005	21.06	Shanxi	Explosion	Chemicals	..	285
	13.11	Jilin	Explosion	Benzene, nitrobenzene	5	86
	22.12	Sichuan	Explosion	Chemicals	42	336
	23.12	Sichuan	Gas explosion	Gas	44	70

Source: SIGMA, UNEP, CRED International Disaster Database.

¹³ Only disasters involving 25 or more deaths, 125 or more injured, or 10 000 or more evacuated or deprived of water supply are included. Excluded are oil spills at sea from ships, mining accidents, voluntary destruction of ships or airplanes, damage caused by defective products.

Box 3. The Jilin accident and the Songhua River pollution

On 13 November 2005, an explosion at a petrochemical plant in Jilin city (Jilin province) killed six people and injured 70. It also generated an 80-km spill of benzene compounds into the Songhua river, which flowed towards Harbin city (Heilongjiang province), which has 3.8 million inhabitants. The spill then reached Russia's Amur River which provides water to the city of Khabarovsk, with 500 000 residents.

SEPA issued emergency monitoring instructions to the EPB in the Heilongjiang province five days after the accident. The Jilin provincial authorities ordered water to be released from a dam into the Songhua River in an attempt to dilute the pollution levels within Jilin's borders.

In December 2005, the State Council stated that SEPA "underestimated the possible impacts of the incident" and the Environment Minister resigned. A package of USD 1.2 billion was committed to combat pollution in the Songhua River basin. The general manager of the petrochemical plant in Jilin was dismissed by its parent company. Two workshop managers at the Jilin plant were also dismissed as the investigation pointed to human error in handling the industrial operations. Cooperation with Russian authorities took place at the technical level and at the highest level of both governments. Chinese authorities offered substantial support to the local Russian population affected. On 24 January 2006, monitoring data showed that fish from the Songhua River was safe for consumption.

An assessment of the accident's impact was carried out by UNEP (after a field mission on 9-16 December 2005) at the request of the Chinese authorities. It concluded that: i) during the initial response phase, government communication and information-sharing with the general public was not adequate to ensure appropriate responses by the affected population, and ii) in order to reduce the risk of such accidents, analysis of the internal risk management practices used in enterprises should be undertaken through a random sample of industries. The analysis also showed that further investigations were needed to clarify whether existing early warning systems and contingency plans were sufficient.

In the four months following the Jilin accident, SEPA enhanced its communication and information on pollution accidents, reporting a further 73 pollution accidents affecting China's river systems. These accidents included: a cadmium spill along the Beijing River in South China's Guangdong province that also threatened the local drinking and agricultural water supplies; chemical spills along Northeast China's Hun River; central China's Xiangjiang River in the Hunan province; a diesel spill along the Yellow River in the Henan province; and an oil spill in Ganjiang River in the Jiangxi province.

To increase the effectiveness of environmental compliance and enforcement work, Prime Minister Wen Jiabao ordered local governments to release information on energy consumption and pollutant emissions every six months, set plans for emission control and step up environmental assessment of construction projects. As a result in early 2006 SEPA inspected more than 100 industrial sites and ordered corrective actions at 20 chemical and petrochemical enterprises that were found to pose serious safety threats. SEPA stopped or postponed approval of projects at 44 sites with a total investment of CNY 149.5 billion, because their locations were considered unsafe. Twelve of the 20 projects that inspectors found to pose hazards were located along China's two main rivers, the Yellow and Yangtze.

Prosecution through Courts

When administrative enforcement is insufficient or fails, non-compliance can be addressed through courts. In China, this can include actions ranging from gaining court assistance in collecting charges or fines to criminal sanctions for serious environmental degradation. Item 6 of the Environmental Protection Law¹⁴ states that every individual or organization has a right to complain to the state or take legal action against polluters. The 1997 amendments to the Criminal Law made, for the first time, those breaking environmental law subject to prosecution. The Criminal Law now stipulates up to three years imprisonment and/or a fine for individuals involved in illegally discharging pollutants. The police are

¹⁴ This is also stated under item 5 of Water Law, item 5 of the Air Protection Law, and item 9 of the Solid Waste Prevention Law.

charged with investigating environmental crimes together with the prosecutor's office. Environmental authorities are consulted to facilitate the investigation and provide information.

Besides fixed monetary fines, sanctions can include confiscation of illegal earnings or equipment, mandatory treatment or remediation of effects of pollution and fines measured as a percentage of illegal earnings or of the cost of treatment. However, current laws are silent on such issues as liability for activities which are potentially dangerous and liability in the absence of either intent or negligence.

The first case environmental trial took place in 1998 when the Yuncheng City People's Court in the Shanxi province convicted a manager of a pulp and paper company for deliberate pollution sentenced him to two years in prison and a fine of CNY 50,000. To date, a number of high profile cases of environmental crime have been submitted to the courts (Box 4) but, in general, this avenue has not been used very often due to the difficulty in establishing causal relationships between pollution and harm, uncertainty over the legal responsibilities, and long judiciary procedures. Currently, an analysis is carried out to specify and clarify provisions for criminal prosecution of environmental crimes. SEPA has solicited experts to prepare a set of amendments to the Criminal Law that are expected to be submitted to the Standing Committee of the NPC.

Box 4. Court Case: Changjian Zhang et al. vs. Rongping Chemical Plant, Fujian Province

The Changjian Zhang et al. vs. Rongping Chemical Plant is an environmental lawsuit that was identified by SEPA as one of the ten most important environmental lawsuits in 2003 and was named one of the most influential ten lawsuits in 2005 in China in a poll done by the Legal Daily Newspaper and All China Lawyer Association.

The Rongping Chemical Plant was built in Xiping village, Pingnan city (Fujian province) in 1994 and has been operating since then. From 1994 to 2001, crops, fruit trees and bamboo plantations, as well as fish and shrimp in the nearby waters were seriously affected. Farmers suffered from cancer and other diseases. No young men in Xiping village passed successfully a physical examination for army recruitment.

In November 2002, a class action case was filed against the Rongping Chemical Plant by 1721 farmers with the help of the Centre for Legal Assistance to Pollution Victims. In April 2005, the Pingnan Lower Court ordered the Rongping Chemical Plant to pay the plaintiff CNY 240,000 of compensation. However, neither the plaintiff nor the defendant were satisfied with the court decision. Both sides appealed to the High Court of the Fujian province.

In November 2005, the High Court ordered the Rongping Chemical Plant to stop immediately the harm to the plaintiff, pay CNY 684,178 of compensation, treat the stored solid waste within a year following the court decision, and close the solid waste storage site.

However, the plant ignored the court decision and continued its production and pollution. The environmental harm and associated health damage are continuing. It remains a challenge for the farmers to enforce the court decision and protect their livelihoods and health.

3.3. Role of the Media and Citizens in Enforcement

SEPA frequently uses the media to participate in enforcement campaigns to increase pressure on local enterprises and officials and inform the public throughout China about SEPA's efforts and the results of inspections. In May 2002, for example, SEPA broadcast a television programme that showed several cases of violations of environmental laws and regulations across China. It was followed up by sending to twelve provinces, regions and municipalities inspections and supervision teams, which included reporters, to review performance of thousands of factories.

In several provinces, environmental telephone "hotlines" exist that allow citizens to report non-compliance so that government agencies can undertake quick enforcement actions. Over 80% of

environmental agencies at the county level operate 24-hour telephone “hotlines”. Most reported cases relate to noise pollution, followed by air and water pollution. In several cases, the reporting parties are rewarded financially for providing information on non-compliance. Regular publishing of the air pollution index became another important instrument that increased the accountability of municipal government and stimulated public interest and involvement.

Recently, central and local governments have been using a more systematic mechanism for disclosure of environmental information to influence environmental behaviour of enterprises. An example of successful application of an environmental performance rating and information disclosure scheme in China is presented in Box 5. The scheme provides a platform for communication between different stakeholders, including the government, industry and the public.

Box 5. Environmental performance rating and information disclosure scheme in China

SEPA has become interested in public disclosure as a means to complement traditional compliance assurance instruments. Chinese regulators have recently been influenced by the rapid spread of pollution disclosure systems in other Asian countries in the wake of pilot programmes which were initiated by Indonesia and the Philippines, in collaboration with the World Bank.

Since late 1998, SEPA and World Bank experts have worked together to establish Green Watch, a public disclosure programme for industrial polluters adapted from Indonesia’s PROPER. The Green Watch rates industrial environmental performance from best to worst in five colours – green, blue, yellow, red and black. The ratings are disseminated to the public through the media. Two municipalities, Zhengjiang (Jiangsu province) and Hohhot (Inner Mongolia) piloted this programme between 1999 and 2001.

The colour rating for each individual enterprise was compiled on the basis of the following three major sources: self-monitoring pollution data, administrative records (including inspection, public complaints, and administrative penalties), and special surveys on firm-specific characteristics such as the size of production and existence of an internal environmental management system.

More specifically, the rating system incorporated pollution data on emissions of 13 regulated air and water indicator pollutants. Both the total amount and concentration level of pollutant discharge are considered. Solid wastes are rated along three dimensions: generation, disposal and recycling.

Besides pollution discharge, firms’ environmental behaviour was taken into account following two dimensions: relations with the regulator and internal environmental management. More specifically the following elements were considered: timely payment of pollution charges, implementation of the National Pollutant Discharge Reporting and Registration Programme, implementation of the Standardized Waste Management Measures and other administrative regulatory requirements, internal environmental monitoring, staff training and record keeping, energy and resource efficiency, etc.

The rating scheme is comprehensive, voluntary and offers participants an opportunity to discuss the result with the authorities before disclosing it to the public (the rating was sent to the programme’s steering board for endorsement). To ensure accurate press reports, journalists were invited to a detailed presentation of the programme, including an explanation of the rating system and a demonstration of the software used.

Reactions to these pilot programmes have been positive. In November 2005, SEPA issued a guideline to promote the disclosure programme nationwide. However, some local governments tend to conceal information on poor environmental performance of enterprises within their jurisdiction. For example, in Hohhot of Inner Mongolia and Tongling of Anhui Province, city governments stopped the EPBs to disclose the color rating results of environmental performance of some big enterprises as they were important contributors of local taxation and significant employers. The resistance from economic commission, industrial bureau, and city government of Hohhot has failed the pilot environmental information disclosure program in 1999.

In some provinces, the compliance performance rating system is used by the banks as a guide for giving loans to individual enterprises (the Jiangsu Province considers itself a leader in this method). This

system may well prove to become a persuasive instrument to foster greater environmental responsibility in industry.

China's legal framework provides opportunities for the public to take environmental disputes to court and to take legal action against polluters. Cases involving illegal pollution discharges from a factory can be tried through the Civil Law, with the aim of stopping the discharges and receiving compensation for damage. A number of legal actions have also been taken against local governments that fail to act against non-compliance. Administrative units such as a local EPB (or its employees) can be sued under the Administrative Law for deficiency in fulfilling administrative responsibilities (e.g., refusal to provide information, absence of active enforcement of environmental laws and regulations).

The Civil Law also contains provisions on collective litigation, which have proven effective in providing legal protection to victims in environmental civil lawsuits. Many environmental civil lawsuits are currently handled through this approach. However, only public prosecutors can bring a lawsuit to court in the public interest. The Centre for Legal Assistance to Pollution Victims (at the University of Politics and Law in Beijing) has been active in providing legal assistance in many cases, including the widely publicised case in Pingnan county (Fujian province), where 1 721 villagers filed a successful lawsuit against a large chemical plant.

3.4. Effectiveness of Enforcement Mechanisms

Even though several types of non-compliance sanctions are used by environmental authorities, a wide gap exists between what EPBs are authorised to apply and what they actually do when enterprises violate environmental rules. In many cases, approved and installed air and water pollution control equipment is put in operation only at times when inspectors' visits are expected, as polluters are more interested in saving on operation costs or, in the case of wastewater, communities cannot afford to operate sewage treatment plants. A significant proportion of small and medium-sized enterprises, including those in rural areas and in the service sector in urban areas, are not inspected due to the lack of capacity or constraints stemming from "pragmatic" enforcement (considerable discretion is applied by EPBs in determining how to enforce environmental requirements), or conflicts of interest between economic and environmental parts of the administration. Pragmatic enforcement also pushes EPBs towards picking "low-hanging fruits" first by targeting big polluters and leaving SMEs unattended even though their aggregated pollution volume can be much larger.

Pragmatism is reflected in EPBs' reliance on *guanxi*¹⁵ with regulated enterprises, i.e., developing mutual understanding, providing technical and financial assistance, and negotiating reasonable compliance deadlines. This approach has been applied with some success in China, but frequently EPB staff stop short of revoking permits for serious violation of their conditions or choose not to fine enterprises for non-compliance in order to maintain harmonious relations with enterprises. Furthermore, under the guidance of *guanxi*, EPBs are lenient towards polluters that generate fiscal revenues or create employment opportunities for local people.

Some enterprises in China are able to escape the supervision of local EPBs by asking local officials to sign permit documents without approval of environmental authorities. Some local governments set up "umbrella" schemes, prohibiting the environmental authorities to inspect and impose fees and fines on

¹⁵ The Chinese word *guanxi* is frequently translated as "social connections". *Guanxi*, which has long been an element of Chinese life, is based on a blend of exchanges and mutual affection that "create feelings of responsibility and obligation on the one hand and indebtedness on the other". In general, *guanxi* is maintained by trading favours over long periods. These exchanges are often viewed as creating a resource that can be used to "get things done".

firms which are significant polluters but are considered important to the local economy in terms of providing tax revenue or employment. Even more, there are cases where county governments revoked EPB decisions to fine an enterprise or did not permit the local EPB to apply for a court order to execute an administrative fine. Such interference renders environmental enforcement ineffective. This also leads to an administrative culture in which career prospects are better served by not taking responsibility for problems (and not reporting them to superiors) than by actively trying to resolve them.

The impacts of environmental enforcement campaigns evolved over the years. In the 1990s, campaigns were often sectoral and relied purely on administrative bans and investments. Increasingly, they have become cross-sectoral (with participation of several other government agencies such as the NDRC, the Ministry of Supervision, the Ministry of Justice and the State Business Administration), combining regulatory and social measures. The main strength of this approach has been its power to mobilise broad and deep support in the society for addressing a key issue, often in support of a “magic number” or a patriotic slogan. These campaigns helped to some extent to set and illustrate the priorities of governmental policies. The EPBs viewed environmental enforcement campaigns as opportunities to enhance their credibility with polluters and demonstrate their accomplishments to higher level officials.

This approach also has its weaknesses, however. Usually, the launch of a campaign was associated with publicity, but once an issue became less fashionable, implementation may have faded away. Many of the closed polluting plants reopened with support of local governments. Many enterprises that met emission standards set by the government did so only by diverting their effluents elsewhere or by temporarily slowing down production. Also, once an issue was identified, insufficient attention was given to determining most cost-effective methods to achieve the goals set, as the campaigns gave automatic priority to “easy” solutions such as shut-down of enterprises or comprehensive spending schemes. Campaigns tend to work against sectoral co-ordination since one body has usually been responsible for each campaign. Finally, the *ad hoc* nature of the campaigns makes it difficult for the private sector to adjust. At present, no comprehensive evaluation on environmental and economic effectiveness has been conducted for government campaigns.

The most recent engagement of the media and citizens in enforcement shows their positive influence on promoting compliance and deterring environmental offences. However, some local governments prevent releasing information about pollution not to discourage investors or not to attract attention from higher authorities. In some provinces, city governments would not let EPBs make public the colour rating results of performance rating for their key industries.

Chinese courts do not currently play a major role in addressing environmental disputes for several reasons. First, in China, disputing parties often prefer to resolve their differences using informal negotiations in which compromises are made to reach consensus. Third parties often facilitate conflict resolution by means of mediation and conciliation. This approach comes from a Confucian tradition which emphasises moral values and moral instructions (not fear of legal sanctions) as a basis for guiding behaviour and maintaining social cooperation. Second, even when courts are used, they decide their cases not only on the basis of environmental law, but also by relying on official policy, the views of local governments, and their own sense of justice and fairness in contractual dealings. Third, pollution victims may have difficulty providing courts with evidence of the damage claimed, for instance, if samples of polluted air or water were not collected at the time when the polluting discharge occurred. Pollution victims may also have difficulty taking cases to court; for example, farmers may not be able to afford the cost of filing a lawsuit, hiring lawyers and conducting appraisals. Another potential obstacle is that local governments sometimes back the polluting enterprise. In 60 to 70% of cases, pollution victims are not successful in redressing their losses in court. Finally, China does not have enough judges trained in environmental law.

Nevertheless, examples of legal cases brought by the public are positive signs of a change that could strengthen the influence of the public on environmental behaviour of industry and local officials. Greater involvement of the court system could strengthen enforcement of environmental law. More efforts are needed to inform the public of its rights in bringing cases of serious environmental pollution (for example, those resulting from deliberate actions by individuals or enterprises) to court. The National People's Congress has put forward proposals to open up opportunities for the public to sue in the public interest. This new initiative would be all the more effective if it were supplemented by greater "downward accountability" towards citizens, for instance, by enhancing the transparency of administrative actions.

The ultimate check on the compliance assurance system in China occurs when the pollution leads to demonstrable impacts on human health and environment as in cases of several industrial accidents, including pollution of the Tuojiang River in 2004 and the benzene spill to the Songhua River in 2005. Such accidents provide strong arguments for evaluating environmental performance of provincial and local governments.

3.5. Compliance Promotion

SEPA and some local EPBs evaluate industrial performance within their jurisdictions and name excellent performers "environmentally friendly" or "green" enterprise. From 1989 to 1997, SEPA and its predecessor NEPA maintained a list of enterprises with excellent environmental performance. Enterprises were recommended by provincial EPBs and vetted by a national Panel of Evaluation and Assessment whose members represented SEPA, the General Environmental Monitoring Station of China and several ministries. By 1997, this assessment had been conducted six times, and 500 enterprises had been awarded the title of the "Nationwide Advanced Enterprise on Environmental Protection". Over time, numerous enterprises have been removed from the list for failing to meet standards, while over 180 enterprises have retained their excellent ratings. Although the government sets up such environmental recognition programmes, it rarely follows up to enable excellent environmental performers to capitalise on their environmentally friendly behaviour. Therefore, the effect of such programmes is limited.

Other compliance promotion tools include provision of subsidies for wastewater treatment facilities, faster approval of upgrading or expansion of pollution control installations, and lower inspection frequency.

Overall, compliance promotion in China is less developed than punitive measures. First of all, the government does not reach out actively to industries and government facilities to inform them of the developments in environmental regulations and standards. Thus, existing and potential polluters are not aware of their environmental compliance status. To most of them, only fines or other punitive measures are evidence of the government's concern about industry's environmental performance.

Second, the government rarely provides technical assistance to help polluting industries clean up, and seldom imposes compliance schedules with differentiated penalties to induce polluters to come into compliance. In recent years, SEPA has been trying to promote environmental management in industry by organising conferences. However, these conferences can only reach a small group of enterprises that have already committed themselves to environmental protection and want to do better. For a large share of enterprises that are consistently out of compliance (or frequently in and out), there is no compliance assistance centre or directory of experts readily available for them to seek help if they want to improve their compliance status.

4. OTHER INSTRUMENTS SUPPORTING COMPLIANCE ASSURANCE

4.1. Environmental Monitoring

State Monitoring System

The stated aims of the monitoring system in China are to provide technical support for the implementation of environmental policy and to help carry out environmental enforcement. The system is also an important element of social and economic infrastructure development.

Although monitoring of air, water and noise was established in the 1980s, the process of strengthening and systematising state environmental monitoring started with the approval of the Ninth Five-Year Plan. In the late 1990s, the infrastructure for an extensive monitoring network was established across the country and monitoring organisations were developed at four administrative levels:

- SEPA's China National Environmental Monitoring Centre (CNEMC);
- 38 provincial environmental monitoring centres;
- 391 municipal environmental monitoring centres; and
- 2230 county-level environmental monitoring stations.

The environmental monitoring system focuses on surveying air and water quality, noise and ecosystems. Priority issues established in the Ninth and Tenth FYPs provide guidance for the development of the monitoring system (e.g., monitoring of "three rivers", SO₂ pollution control zones and acid rain control zones, and Beijing's air quality).

The monitoring stations of local EPBs are responsible for monitoring both ambient environmental quality and pollution discharges. They carry four types of activities:

- regular monitoring of general pollution sources once a year as directed by the planning office and pollution control office of the EPB;
- targeted monitoring of important pollution sources, usually 3-4 times a year, supervised by the same offices;
- monitoring specifically for environmental campaigns or investigations by the compliance and enforcement office or the People's Congress or others; and
- contracted monitoring by industry for it to self-report pollution information to the government.

Each monitoring organisation at the sub-national level is subordinated to the upper level monitoring station technically and to the same level's EPB administratively. Some key cities must also report to the CNEMC. In 2002, out of 2230 environmental monitoring stations across China, 474 had automated air

monitoring systems. Routine monitoring of air, surface water and noise is carried out by 80-85% of city-level stations and 56% of county-level stations; 41% of city-level stations have begun monitoring soil conditions. Departments responsible for the management of agricultural, forestry, ocean, hydrological and other resources, and industrial, military and railway administrations, operate a total of more than 2,000 stations, employing over 20,000 monitoring staff.

Before 1990, the reporting was carried out mainly in a paper format. Since 1997, facilities have been gradually installed for direct electronic data communication between individual workstations at the National Environmental Monitoring Centre, provincial-level stations, and monitoring stations in major cities. Meanwhile, environmental monitoring data processing methods have also been developed. The technological capability of some stations already supports graphics processing, geographical and remote sensing information systems, global positioning systems and similar functions.

Even though an environmental monitoring system has been developed, a number of problems still persist. For example, water monitoring is not adequate for total quality control; atmospheric monitoring does not satisfy frequency and precision requirements. Many economically undeveloped regions are still using outdated measurement methods ('five-day method' of sample collection), and do not have the appropriate remote sensing capability needed for macro-level periodic monitoring. Pollution source monitoring still lacks continuous sampling and automatic monitoring which are necessary to obtain an accurate picture of overall volumes and trends of discharges from pollution sources.

Self-Monitoring

Industry is required to provide pollutant discharge information to SEPA and local EPBs. The reporting frequency is usually annual but can be increased by some local EPBs to quarterly to better supervise environmental performance by enterprises and target pollution control. In the Jiangsu province, for example, continuous monitoring facilities are installed in large enterprises. Their monitoring equipment is licensed (verified) every year by an official monitoring station to ensure its proper functioning. A company's environmental specialist is also licensed by the Jiangsu provincial EPB, so that he/she can endorse the company's self-reporting forms for them to be accepted by the local administration.

Most SMEs do not have own monitoring equipment and hire state-owned or private monitoring service providers to take measurements and then report the data to their local EPBs. All monitoring facilities of the government, trade associations, and individual enterprises, as well as their staff must be certified by the State Quality and Technology Supervision Administration. Personnel of an official monitoring station conduct regular and unannounced inspections of these monitoring service providers for quality assurance.

4.2. Access to Environmental Information

For years, public knowledge of pressures on the environment or the long-term environmental impact of economic activities in China has been minimal. The environment was seen as a resource for the country's development, and potentially negative consequences were ignored. In some cases, the impacts were known but dismissed in official statements as trivial or to be dealt with later. Even when negative environmental effects became apparent, environmental information and decision-making were often kept secret.

Since the beginning of the 1990s, in light of the visible failure of environmental protection policies, the Chinese authorities have been challenged by a rising new force – the public. The media, academic institutions, non-profit organisations and individuals have been demanding better information about the state of the environment.

The Environmental Protection Law (Article 11) stipulates that “competent departments of environmental protection administration under the State Council and governments of provinces, autonomous regions and municipalities directly under the central government shall regularly issue bulletins on environmental situations”. Similar provisions appear in China’s sectoral laws, such as the Air Pollution Prevention and Control Law, the Water Pollution Prevention and Control Law, the Marine Environment Protection Law and the Environmental Noise Prevention and Control Law. In line with these requirements, SEPA and EPBs provide information about the state of the environment in a variety of forms, including State of the Environment Reports, bulletins, brochures, and news releases.

The first report on the state of China’s environment was published in 1990. Its main objective was to make the public and society familiar with the environmental situation. Since 1991, SEPA publishes State of the Environment Reports on an annual basis. Since the construction of the “Government Online” project in 1998, the reports have also been posted on the Internet.

The compilation of State of the Environment Reports is carried out by EPBs at various levels. These reports are supported by data from other ministries such as the Ministry of Agriculture, the State Forestry Administration, the Ministry of Water Resources, the Ministry of Health, the China Meteorology Administration, the State Oceanic Administration, the Ministry of Land and Resources and the National Bureau of Statistics. They include information about pollution releases, ambient environmental quality, and environmental protection measures. The reports also contain environmental indicators. Starting from 1998, reports include information about biodiversity and climate change. The structure of the reports is based on a methodological framework “stress–status–response” which follows the “pressure–state–response” model adopted by OECD member countries.

Governments of provinces, autonomous regions and municipalities directly under the central government issue their own annual State of the Environment Reports. Some provinces issue weekly and daily reports (Box 6) and publish the State of the Environment Reports on the Internet.

Box 6. Weekly and Daily Air Quality Reporting

Weekly and daily reports on ambient air quality are released to the public. Information which is compiled in these reports is based on routine monitoring of several common pollutants stipulated in the national Standard on Ambient Air Quality, and assessment results of urban air quality. In 1997, the tenth session of the Third Environment Commission of the State Council decided that a weekly report system on urban ambient air quality¹⁶ should be established in 47 key cities in the country. The city of Nanjing was the first in China to publish weekly air quality reports through newspapers and TV. Currently, *China Environmental News* releases environmental quality reports for 46 key cities every Saturday. *China Environmental News* also publishes air quality indices of key cities on the Internet.

In 1999, after more than two years of weekly bulletins on urban air quality in key cities, the Chinese authorities decided to issue daily air quality reports in 42 key cities, replacing the original urban air quality weekly reports. There are plans for five more coastal cities to be involved in the scheme. The classification criteria and pollutants were also adjusted in daily air quality reporting. The weekly and daily reports have been presented through the media: radio, TV, newspapers, 168 telephone information stations, information highways and street displays.

The *Environmental Quality Briefs* are provided to heads of EPBs. They include information about air quality, acid rain pollution, urban river water quality, water quality of the main river systems, pollution of lakes and reservoirs, offshore marine water quality and radioactive environmental quality. However, some reports on the environmental situation (especially in urban areas) are classified as confidential and are available only to senior staff of EPBs at various levels.

¹⁶ Monitoring data covers SO₂, NO_x and total particulate matter.

It has not yet been possible to generate a nationally unified environmental data and information transmission system in China. The volume of administrative data generated is large and uncoordinated, technical limitations and a lack of resources prevents the development of a coherent system. As a result, it is difficult to test the relationships between environmental indicators and levels of socio-economic development across regions in China. For environmental information to be able to inform decision-making for sustainable development, it is necessary to create a unified monitoring information communication system by breaking traditional sectoral constraints at each of the successive stages of data collection, storage, processing, evaluation and reporting.

Information technology has been playing an important role in promoting public awareness of environmental issues. The public can express opinions on environmental issues, and various organisations and individuals have established more than 2 000 environmentally-related websites. However, in China, there are significant restrictions on Internet use, as the state provides the Internet service directly or intervenes in commercial Internet services. Citizens may be fined, questioned, or even imprisoned for messages deemed seditious or expressing dissent opinions from government policies.

4.3. Voluntary Instruments and Role of Industry

Increased visibility of pollution and subsequently more stringent implementation of environmental laws associated with the implementation of the Ninth and Tenth Five-Year Plans have stimulated industry in China to improve environmental management of their operations. The other stimulating factors included pressure exerted on China by environmental product standards of importing countries and the role of foreign firms operating in China that demand appropriate environmental standards from their Chinese suppliers. The public displeasure with environmental impacts of industrial operations and pressures exerted by citizens in China and from abroad have also played an important role.

Responding to these pressures, companies started to apply modern approaches to limit their environmental impacts. Increasingly, enterprises adopt “win-win” strategies, including cleaner production, ISO 14000 environmental management standards, and eco-labelling. The recent creation of the China Business Council for Sustainable Development is also a signal of the growing environmental awareness of entrepreneurs. Several environmental prizes have been awarded by the administration and business associations to now enterprises to recognise their excellent environmental management. Every medium-sized or large enterprise in China has an office and staff responsible for environmental matters.

Under the provisions of the Tenth and recently the Eleventh FYP, the policy and regulatory framework has moved into more integrated and multi-incentive approach to address industrial pollution. Recently, the central government has formulated mid-term and long-term plans for the application of “circular economy” concept (also known as 3Rs: “reduce-reuse-recycle”). The “circular economy” includes comprehensive re-use of solid wastes, construction of energy-saving buildings, the implementation of cleaner production, certification of enterprise environmental management systems, environmental labelling of products, construction of eco-industrial parks, initiative on green services and eco-agriculture. It is expected that the State Council will issue the *Guidelines on the Promotion of the Circular Economy* in 2006 which will provide a basis for developing a *Basic Law on the Promotion of the Development of Circular Economy*. Further application of “circular economy” is one of the key components of the Eleventh FYP on National Economy and Social Development.

Cleaner Production

When the cleaner production (CP) concept was introduced in the 1980s, its main focus was on plant-level demonstration projects, training, institutional building and policy advice. After the initial period of separate and locally driven initiatives, SEPA issued in 1997 a “Recommendation on Promoting Cleaner

Production in China”, which required local EPBs to integrate CP into their environmental management policies. The document also called for CP awareness campaigns, training and dissemination, as well as for the inclusion of CP into international cooperation. The CP approach has been referred to in key national environmental protection laws and regulations. A separate comprehensive Cleaner Production Promotion Law came into effect in January 2003.

Since 1997, 24 provinces, autonomous regions and cities have conducted or initiated CP demonstration projects. These projects have been supported by the EPBs as well as economic departments and sectoral administrations. In 1999, China’s State Economic and Trade Commission selected 10 cities (including Beijing and Shanghai) along with five sectors (including petro-chemical and metallurgy industries), as pilots for carrying out CP demonstration projects. The Shaanxi province has formulated economic incentive policies for CP audits. CP audits have been promoted by government policies which allowed returning part of pollution charges to enterprises that conduct CP audits.

The CP activities have been supported by over 40 Cleaner Production Centres that have been set up across the country. This included one national CP Centre, four sectoral CP Centres (covering petrochemical and chemical industry, metallurgy and aircraft manufacturing), and eleven local CP Centres (in Beijing, Shanghai, Tianjin, Hohhot, Shaanxi, Heilongjiang, Shandong, Jiangxi, Liaoning, Inner Mongolia and Sinkiang Autonomous Region). The National Cleaner Production Centre has held over 600 Cleaner Production training courses serving over 20,000 trainees, among which about 2,000 are certified CP trainers.

Several studies show that CP practices have led to a reduction of pollution by enterprises as well as increased production efficiency. Some estimates show that they contributed to a 20% emission reduction while generating economic returns of CNY 500 million annually. In addition, some environmental management regulations such as EIA and the “3S” system also encourage the introduction of CP.

Environmental Management Systems

A growing access to the international market stimulated enterprises in China to introduce environmental management systems based on the ISO 14000 standards. In 1997, the State Bureau of Technical and Quality Supervision transformed the ISO 14000 series into equivalent national standards. A national approval scheme for ISO 14001 certification was introduced along with a system of examination of certification entities by a national accreditation body and national registration of auditors.

The ISO 14000 series certification was first piloted in three phases in 1996, involving 55 enterprises. In 1997, first four companies, including a Japanese electrical products manufacturer, were awarded ISO 14001 certification. In 2004, the number of certified companies in China reached over 8,000, the second highest number in the world after Japan¹⁷. Given that China ranked tenth in the world in 2001, with roughly 1,000 certified companies, the growth rate has been extraordinary. This growth has been supported by the Chinese government’s move to offer tax incentives to encourage companies to obtain certification. Several administrative departments and government agencies at the city or district level as well as administrations of the special development zones have also been certified to ISO 14001.

SEPA’s Environmental Certification Centre established in 2003 with a staff of 40 qualified ISO 14001 auditors is a financially autonomous body which processes applications for ISO 14001 certifications. The applications come primarily from fast-growing, small and medium-sized Chinese companies. The standard screening fee for acquiring ISO 14001 certification is CNY 30,000. In addition, there are over 100 other certification entities, including those working on ISO 9000 certification. Most of

¹⁷ In Japan, 14,000 companies were registered under ISO 14001 in 2004.

these units were established with support of the government. About 3000 experts based at universities and research institutions serve as auditors. China's Registration Committee for Environmental Auditors (CRCEA) is responsible for approval and registration of environmental auditors and the approval of EMS training institutions.

Eco-labelling

A number of voluntary certification schemes exist in China aiming at enhancing the competitiveness of products, primarily on the Chinese market. The stated purpose of China's Environmental Labelling Scheme is to recognise efforts of producers of environmentally friendly products and stimulate environmental awareness of the consumers.

The China Certification Committee for Environmental Labelling of Products (CCEL) was formed in 1994 by SEPA, the State Bureau of Technical Supervision and the State Administration of Import and Export Inspection and Quarantine. This body involves professionals from various disciplines that develop criteria and oversee the operation of environmental labelling schemes. The CCEL Secretariat is recognised by SEPA as the only authority to conduct third party certification and award the China Environmental Labels. Annual inspections and random sample checks are carried out to ensure that appropriate standards are maintained. Between 1994 and 2005, assessments have been conducted in 800 enterprises, and 12,000 products have been awarded the environmental label. Increasingly, Chinese enterprises having an eco-label gain a competitive advantage in domestic and international trade. However, in order to increase the impact of the labelling schemes, criteria developed for the labels should become more stringent, transparent, and comparable with good international practice.

4.4. The Role of Trade Unions

The Chinese government encourages workers of enterprises of all kinds of ownership (state-owned, collective, private, or joint ventures) to join workers unions. By 2002, there were 131.5 million unionised workers and 1.7 million workers unions at a grassroots level.¹⁸

Besides fair employment, the All China Workers Union has put an emphasis on workers health and safety. Accordingly, a network of unionised workers ensuring occupational health and safety has been set up, comprising 59,400 workers health and safety specialists at the national and provincial levels, 652,100 specialists at the local level, 643,000 worker protection and monitoring councils, and 2.33 million inspectors in industry.¹⁹

The All China Workers Union participates in nationwide inspections on workplace safety and hazardous chemicals. As a result, it provides comments and advice to relevant government agencies and enterprises concerning health and safety issues such as operating procedures, hidden risks, and factors that may lead to employment-related diseases. Between 1998 and 2002, workers unions of or above city level have carried out more than a million independent or joint workplace health and safety inspections, identified more than 500,000 risky practices, and provided more than 50,000 comments with about 90% being adopted.

As stated in the law on the Chinese Workers Union, the workers unions are supposed to complement the government administration and make suggestions to make the system work better. The workers unions, if they could be more aware of the impacts of the environment in which they function and the

¹⁸ See the 2002 Blue Report on Protecting the Lawful Rights and Benefits of Workers by the Chinese Workers Union. Available at <http://www.china.com.cn/chinese/2003/Jan/268302.htm>.

¹⁹ Ibid.

environmental performance of their firms they could potentially play a big role in pushing for better industrial environmental behaviour in enterprises. However, the unions rarely take a confrontational approach to seek compensation for unhealthy or risky work environment.

4.5. Public Participation in Environmental Decision-Making

Consultations with the Public

Historically in China, environment-related information was difficult to come by and action taken to protect the environment tended to be “top-down” and based on administratively set priorities. People who were affected by the activities were often prevented from speaking openly about their problems resulting from environmental pollution. However, since the early 1990s, the public has been increasingly expressing its desire to influence public policies. The government started to recognise that it is necessary to invite public help on environmental matters and is taking steps to encourage citizens’ involvement.

Legal provisions in China require authorities to provide information about the state of the environment (see Section 4.2). This opens several opportunities for individuals to participate in decision-making on environmental matters. In many cases, however, these depend on the political circumstances in which decisions are made, on the type of decisions that are being made, and on the time and budget available to facilitate public participation.

Citizens can express dissatisfaction to specially assigned offices at various levels of government. To reduce the risk of retaliation, many people send anonymous letters of complaint²⁰. Citizens can direct their concerns about environmental matters to EPBs, as many of them have “complaint divisions” to hear public concerns; mayor’s offices, as many cities have a vice mayor whose responsibilities include environmental protection; and local People’s Congresses and their Environmental Protection Committees, as citizens frequently bring environmental complaints to their elected representatives. More recently, many cities have established hotlines for residents to report environmental problems. For example, Dalian City (Liaoning province) installed a 24-hour telephone hotline to receive citizens’ complaints about environmental pollution. In some towns, financial rewards are offered for signalling cases of non-compliance. Several cities have radio talk-shows that give people an opportunity to discuss their environmental problems.

There are also more interactive mechanisms embedded in environmental management practices of environmental protection agencies which allow the public to express opinions about governmental policies and to actively influence them. These mechanisms include regulatory mechanisms such as EIA procedures and informal instruments such as consultations with citizens through town meetings, hearings or advisory panels (Box 7).

²⁰ In many provinces, anonymous notes account for between 25-50% of all citizens’ complaint letters. Frequently, citizens first complain to the factory causing the problems and turn to government authorities or the media if the factory is not responsive.

Box 7. Forms of Public Participation in Environmental Decision-Making in China

Environmental impact assessment. EIA has recently become a critical instrument in China, providing legal ramifications on whether a project goes forward or needs to be modified to reduce potentially negative impacts. The Law on Environmental Impact Assessment (2003) requires all projects or plans to undergo an EIA before receiving government approval. Public participation is required as one of the key components of EIA. While the extent of public involvement in EIA varies among projects, EIA can provide an opportunity for the public to comment on proposed projects and suggest alternatives. EIA also includes an explicit procedure for government authorities to review and consider written comments, which are then factored into the authority's decisions.

Public hearings. Public hearings have been one of the most widely used approaches in China's environmental management and urban planning. Hearings have frequently been applied by local governments in project site selection and urban planning. The hearings provide an opportunity for all interested parties to voice opinions on proposed projects, laws, environmental policies or plans. Such hearings, announced via radio, newspapers or other media, are particularly important for stakeholders who may not be able to express their views clearly in writing. They can provide a forum where stakeholders can inform each other about their positions and give decision makers a sense of the diversity of public opinion. However, in many cases, the hearings are simply informational, which reduces their effectiveness. Sometimes, more emphasis is put on opinions of experts than those of ordinary citizens. Less frequent are hearings involving substantive evaluation where different project proposals are vetted publicly or details of project design are debated.

Advisory committees. This is another often used channel in China. Usually, experts from academic institutions are asked to participate in such committees. Advisory committees allow participation that is more in-depth and continuous, and thus potentially much more influential. In principle, these committees should allow a diverse set of perspectives to be considered in crafting policies, designing and modifying projects to reduce negative impacts, and assessing the distribution of costs and benefits. However, most advisory committees involve a narrow group of carefully selected experts.

Document reviews. Provision for public comments of project documents, policy analyses or other background can be an important mechanism for soliciting meaningful public input to decision-making. Over the past several years, especially after the SARS epidemic, the government has realised the importance of information disclosure. Seeking public comments on documents and reports can also increase the accountability of decision makers and the perceived legitimacy of decisions, since there is a public record of project details and decisions. However, in practice, a number of official documents are not available even to experts and non-governmental organisations. Sometimes documents are not freely shared within the government. Documents are sometimes kept as "private products" by different government departments and are disclosed for a charge.

Informational meetings. Even though government bureaus and environmental managers hold meetings at the local, provincial, or national levels to provide basic information about proposed plans and projects, such events are not frequent. They are used on a project-by-project basis and may occasionally affect the project decision-making process. If arranged on a systematic basis, such meetings can help build public support, identify local concerns and develop collaboration with local groups. With the increase of environmental awareness, the public may oppose projects and plans with unfavourable environmental effects more often. In order to allow more informational meetings during the decision-making process, specific legal requirements need to be adjusted.

Forums. In China, some forums are organised to provide a channel for special interest groups to participate in environmental issues. More than 10 forums have been held in the past, such as the Forum for Women and the Environment and the Forum for China's Young Environmental Entrepreneurs.

Non-Governmental Organisations

The 1996 State Council Decision Concerning Certain Environmental Issues signalled a turning point by strongly encouraging both the media and citizens to expose illegal actions that cause environmental damage. By the late 1990s, environmental NGOs became increasingly influential. NGOs worked with the media to cover environmental affairs, publicise NGO activities and gain public support.

Environmental NGOs in China have evolved from focusing on environmental education and biodiversity protection to debating a wide range of environmental issues, including large-scale infrastructure projects, lack of enforcement of environmental requirements, and misappropriation of funds by the administration.

The Chinese government has generally adopted a positive attitude toward environmental NGOs. The 9th and 10th FYPs encouraged society and its representatives to address environmental degradation concerns and promote environmental education and awareness. For example, in 2001, 20 NGOs joined in the drafting of Beijing's plan for a "Green Olympics" in 2008. In 2002, more than 30 Chinese NGOs attended the World Summit on Sustainable Development in Johannesburg. SEPA, in particular, supports environmental NGO activities and works very closely with them both formally and informally. At the local level, however, EPBs remain ambivalent about environmental NGOs and their potential role in assessing environmental performance.

China also has many grassroots environmental NGOs, including environmental clubs and student groups which promote environmental consciousness, public participation in decision-making and sustainable development through a mix of traditional and new collective actions. These groups' traditional actions include public lectures, workshops, conferences, forum discussions, field trips, publication of newsletters and multimedia documents, and new forms of "electronic action" such as online discussions, online mailing lists and Internet petitions. Typically, the groups encourage learning, cooperation and participation. In addition, new collective actions led by some NGOs include supporting citizens through legal action, notably to protect pollution victims and induce polluting industries to operate within the environmental requirements. For example, the Centre for Legal Assistance to Pollution Victims operates a telephone hotline about environmental legal issues and has taken more than 30 cases to court on behalf of pollution victims, winning about half.

Although NGOs are starting to play a role in environmental protection in China, the opportunities for their operations and autonomy are constrained. All Chinese NGOs must be registered and approved by the government. Indeed, many are established to meet the objectives of government authorities. Some provincial and local administrations still limit the freedom of speech or the right to associate, effectively making it impossible to form a voluntary group.

The laws regulating the registration of civic organisations change frequently. China's 1998 Registration Regulations for Social Organisations imposes a number of requirements on the establishment of NGOs. These include the need to have a sponsoring institution, more than 50 members and a minimum level of financial resources. The regulation also disallows the existence of two organisations in the same field or sector, and in the same jurisdiction. Those organisations that choose to avoid these restrictions and remain unregistered are unable to enter into contractual relations, such as obtaining telephone lines or leasing office space. Nor can they offer personnel benefits like pensions and medical insurance or have their own bank account, making it harder to attract staff and funding.

NGOs still have limited ability to obtain information. Much important information on the environment is considered confidential and distributed only to high-level government officials. Notwithstanding the limited access to information and other restrictions faced by NGOs, they have undertaken campaigns to stop polluting activities and conducted studies of environmental issues aimed at influencing national leaders. Some NGOs carry out research that explores new approaches to environmental planning and decision-making.

Organised civil protest movements against environmental problems have not yet taken place as they did in some OECD countries when environmental problems reached comparable levels. The mass media, however, has begun to play an increasing role in exposing cases of violation of environmental laws and

regulations, providing environmental data and information to the public, and reporting on pollution episodes and accidents. This has helped to mobilise the public to exert pressure on business behaviour and governmental decision-making.

5. PERFORMANCE ASSESSMENT OF ENVIRONMENTAL ENFORCEMENT SYSTEM

Evaluation of compliance assurance programme activities, often using indicators, can help to understand their impacts and adjust government approaches to changing conditions. The ultimate aim of these adjustments is the improvement of programme effectiveness and better environmental performance of polluters. Disclosing performance information to the public can ensure internal and external accountability and help to create deterrence. By demonstrating the value of activities and the results, policy-relevant, analytically sound and measurable information can generate public and political support for compliance assurance programmes.

The year 2006 has witnessed a rapid rise of a sense of urgency of effective enforcement actions among the top Chinese leadership and ordinary citizens. The development of “green GDP” in the context of the Eleventh FYP shows that China’s central government wants to measure environmental losses from economic development and evaluate the performance of local government officials not only by economic indicators but also by environmental situation in their jurisdictions. However, the assessment of performance of compliance assurance programmes is underdeveloped. Some efforts have been devoted to evaluating environmental compliance by enterprises and only limited emphasis has been placed on evaluating government actions and their impacts.

Various enterprise appraisal systems have been developed at the national and sub-national levels and in specific sectors. These include listings of National Excellence Enterprises for Environmental Protection, National Excellence Units for Energy-Saving, National Advanced Enterprises for Environmental Protection, National Advanced Enterprises for Public Health, Clean and Civilised Enterprises appraised by the Ministry of Chemical Engineering, Garden Enterprises appraised in Beijing and Shanghai, Top Ten Worst Environment Enterprises and Best Environment Enterprises appraised in Shenyang. These schemes help to promote compliant industries but their scale has been small and the application sparse.

Box 8. Typology of Environmental Compliance and Enforcement Indicators

In many countries, “input”, “output”, as well as “intermediary” and “final outcome” indicators are adopted to assess performance of environmental assurance systems:

- *Input measures* may include the amount of financial and human resources devoted to compliance assurance programmes, such as the number of enforcement officers, the amount of resources devoted to training and of resources invested in technical support systems for enforcement.
- *Output measures* may include the number of inspections conducted, the number of promotion campaigns, the number of prosecutions, the amount of fines and penalties imposed and collected.
- *Intermediary outcome* indicators may include the number of requests from industry for advice from environmental agencies, the level of investment in “greener” industrial processes, compliance rates, rates of recidivism or reduction of concentration of pollutants from effluent pipes.
- *Final outcome* indicators try to capture change of environmental quality, such as decrease of ambient concentrations of pollutants in air and water.

In China, the government assessment of the implementation of environmental policies is supported by the use of “pressure”, “state” and “response” indicators. In Chinese environmental reporting, “pressure” indicators (amounts of major pollutant discharges or energy consumption per unit of GDP) and “state” indicators (air and river/lakes water quality) are well represented. The “response” indicators focus on “input” and “output” indicators showing such items as the number of enforcement officers, the number of inspections or enforcement campaigns and the number of non-compliance actions (e.g., suspended operations), amounts of monetary fines and penalties collected. The figures also include the rates of compliance with the key regulatory instruments, such as “three synchronisations”, EIA, or pollution charges. Such indicators have been recently presented in the White Paper on Environmental Protection in China (1996-2005) published in June 2006 by the State Council’s Information Office. The document provides an overview of the implementation of the 9th and 10th FYEPs, including progress in compliance assurance efforts.

However, none of the reporting mechanisms contains intermediary outcome indicators of enforcement programmes that are in use in many OECD countries (Box 8). Their wider use should help to establish better links between government actions and their effects on the regulated community and the state of the environment. They could also help to identify strengths and weaknesses of the government compliance assurance system and help in selecting most effective approaches.

The evaluation of the implementation of environmental laws, regulations, standards and policies by local governments is usually linked to the evaluation of achievement of annual environmental performance targets for individual officials set in “environmental protection contracts” which represent an environmental dimension of personnel management. Local EPBs are responsible for executing the “contracts” and reporting progress to their mayors or governors. Results are recorded and used as supporting documents for promotions and bonuses of officials. Top leaders evaluate their staff’s performance but assessment results are shared only among government officials and not made public. Generally, though, local government officials are motivated by environmental targets only to the extent that does not make them lose face by being reprimanded by their supervisors for inadequate performance.

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