

CHAPTER 17
ENVIRONMENT AND GOVERNANCE IN CHINA

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ENVIRONMENT AND GOVERNANCE IN CHINA¹

SUMMARY

China has made remarkable progress in sustaining high economic growth rates, raising incomes and lengthening life expectancy. However, the pattern of economic growth, rapid industrialization and urbanization has not been environmentally sustainable. These processes have generated high pressures on the environment, including surface and ground waters, air in urban areas, land and natural resources. This in turn has adversely affected human health and the productivity of natural resources. If the state of the environment continues to deteriorate, these problems will intensify and the potential for maintaining economic growth may be undermined.

China's policies and the institutional setting for environmental protection have undergone several transformations over recent decades. The late 1990s and the beginning of the new century witnessed an important acceleration in the development of a comprehensive regulatory and institutional framework for environmental management and more public participation in environmental policy-making. While there is some evidence that these policies have had some effect, there is still considerable scope for strengthening good environmental governance, drawing on international practices.

1. The current declarative character in environmental planning lacks realism and could be more targeted. This implies strengthened efforts in setting explicit but realistic objectives and targets, evaluating progress in achieving them, providing feedback to policy makers and adjusting priorities on the basis of "results of the ground" and lessons learned. Such an approach requires the participation of relevant stakeholders, including the general public. Analysis of the costs of achieving environmental goals, combined with a robust analysis of possible funding sources, could assist environmental protection authorities in their discussions with other relevant government bodies over the measures, including resources, for environmental improvement.
2. Given that most issues related to sustainable natural resource use and environmental management cut across lines of administrative responsibilities, effective ways are needed to co-ordinate the work of different bodies, to reduce overlaps and contradictions, maximize synergies and adjust problems. The elevation of the State Environmental Protection Administration (SEPA), which is the main government body responsible for the environment, to the full status of a ministry and full membership of the Cabinet could be one important step. This could be accompanied by the creation of a high-level co-ordination and communication mechanism for integration of environmentally-related decision-making within the whole government.
3. Taking account of China's size and complexity, a thorough review of relations across levels of government with regard to environmental protection policy could help identify ways to make the system more vertically and horizontally integrated. This could include assigning more regulatory authority over all but the smallest industrial enterprises to provinces and municipalities and away

from counties, and increasing the supervision of lower levels by higher levels through performance audits and public reporting. There is also a need for strengthened capacities of the staff of environmental bodies and aligning responsibilities with funding. The SEPA and the Environmental Protection Bureaus (EPBs) should concentrate their efforts on “core” public functions and a smaller number of priority issues, and focus on problems which are potentially solvable.

4. 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 bodies, the regulatees and the public. Regulatory impact analysis (RIA) applied in a number of OECD member countries can improve the quality of legislation by eliminating contradictions between various regulations, reducing the costs and enhancing effectiveness.
5. Promoting public participation in environmental decision-making should continue to be one of the key objectives of the state and local environmental administration. By enhancing environmental awareness, encouraging environmental associations, and providing training, the public can be mobilized to contribute constructively to policy development and implementation. The government could consider how barriers to the development of environmental non-government groups could be removed. Studying mechanisms for public participation in OECD member countries can help to apply the best approaches and procedures in a way that is adapted to the Chinese context.

1. Background and purpose of the report

Rapid economic growth, stimulated by a policy of reform and opening-up, has helped China to increase the wealth of the 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.

Chinese society and decision makers have increasingly realised the seriousness of environmental problems and the related economic and human health costs. In a variety of official government statements, Chinese leaders have accorded priority status to environmental protection. As the General Secretary of the Communist Party of China (CPC) Hu Jintao stated: “China needs the growth which balances development between urban and rural areas, between the regions, between social and economic aspects, between human and nature, and between domestic and international policy development.”² A reduction of environmental pollution and better management of natural resources have become priorities for state policies.

Environmental protection and sustainable development have been proclaimed among the “major tasks and important targets” in five-year plans since the 1970s, while the most significant changes in environmental governance occurred in the second half of the 1990s and the first years of the new millennium. The narrow approach of maximizing gross domestic product (GDP) growth without considering other costs, including environmental, is being replaced by government policies at the central and local level that aim at a more balanced growth. This development was stimulated by the adoption of the Ninth (1996-2000) and then the Tenth (2001-2005) Five-Year Plans for Social and Economic Development of China and then the promotion of the “new development strategy”³ by the central government. The strategy called for a comprehensive, co-ordinated and sustainable approach to economic development; an approach that takes social and environmental aspects seriously into account. The implementation of the strategy has been supported by important changes in environmental governance structures, the introduction of many new environmental laws and regulations, institutional capacity building and raising environmental awareness among society.

However, the reform of environmental governance is still a work in progress. Many obstacles must be overcome to strengthen the role, effectiveness and efficiency of environmental institutions and policies. This includes creating an effective enforcement system, based on an impartial judiciary, and providing for a greater role for civil society in environmental decision-making.

This chapter aims to identify areas where further efforts to design and implement environmental policies that promote economic development should be made while at the same time enabling social and environmental objectives should be met. The chapter is divided as follows:

- Section 2 examines relations between good governance and environmental policies, and the benefits of linking them more closely;
- Section 3 provides a brief description of key developments in environmental policy planning, the development of environmental institutions and the application of policy instruments in China;
- Section 4 evaluates the developments presented in Section 3 and suggests areas for further action;
- Section 5 discusses the rationale for involving the public in environmental management. This section also presents examples of improved public access to information and public participation in environmental decision-making;
- Section 6 summarizes key conclusions and recommendations for further reform.

2. Good governance and environment

Good governance is defined as “the ability to assure effective, efficient and democratic functioning of government institutions through sound, coherent and inclusive processes, for the national and global common good” (OECD, 2000a). Environmental protection is an important public policy concern in OECD and other countries, as a healthy environment is an essential human right and an important element of long-term economic and social development (OECD, 2001c; OECD, 2001d). This part of the report presents the basic relations between good governance and environmental policies and the benefits of linking them more closely in China.

2.1. *Key elements of good governance in environmental policies*

Over the years, the traditional view of environmental issues as externalities has gradually been replaced by a more proactive view of environmental management that stresses its potential economic and financial benefits and its contribution to establishing better governance and sustainable development practices. As a result, government regulations and institutions in OECD member countries have gone through major changes during the last decade (OECD, 2000b; OECD, 2001b; OECD, 2004). Environmental bodies in OECD member countries have been at the forefront in developing good governance practices, notably by fostering greater openness and participation in decision-making. Many environmental concerns have been amplified by the public, which has demanded governments to protect and improve the environment as a basic human right.

Progress towards environmental improvement, and sustainable development in general, is influenced by the quality of the overall governance system in place (at whatever level: international, regional, national and sub-national). There are several examples illustrating that good governance supports environmental improvement (OECD, 2002b). At the same time, there are other examples showing that lack of good governance hampers countries’ efforts to maximize the benefits of environmental policies and minimize the negative impacts of sectoral policies on human health, the environment and natural resources (OECD, 2001e).

The existence of good governance in public policies is a necessary, albeit insufficient, condition to ensure better environmental management. Improving the state of the environment and sustainable development are two among many objectives of democratic government. Although the institutional and procedural prerequisites for democratic governance are also prerequisites for good environmental management, the latter requires specific elements which are critical to achieving the desired objectives (OECD, 1998a). The most important are:

1. Consensus/science-based objectives (differentiated by time) appropriately reflected in policies, laws and regulations.
2. Appropriate institutional framework for policy development and implementation, including a clear allocation of responsibilities and powers to national and sub-national levels of government.
3. Institutions and instruments for policy integration and coherence, embracing the three pillars of “sustainable development”: environmental, economic and social.
4. Provision of information, public participation and access to an impartial judiciary in the development and implementation of environmental policies.

Good governance in general requires the rule of law to ensure the respect and protection of basic human rights; checks and balances between the executive, legislative and judiciary branches; the existence of auditing and accountability mechanisms to review government actions, and a degree of autonomy for

local governments. Good environmental management contributes to, and benefits from, good overall governance. It is an essential component of the sustainable development of nations.

2.2. Why is good governance needed in China's environmental policy?

Undoubtedly, environmental pollution and resource degradation are severe in China. They negatively impact human health and quality of life, as well as economic and social development. The key problems (Economy, 2004; SEPA, 2002; Stockholm Environmental Institute and UNDP China, 2002; OECD, 2002a; 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 is unsuitable for drinking or fishing. There have been serious outbreaks of waterborne disease, 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 particulates as well as other gases 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 continue to accumulate.
5. Due to the reasons mentioned above, almost all of China's unique and globally significant biodiversity resources are under stress.

A study conducted in 1995 (World Bank, 1997) showed 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 – or nearly 8% of China's GDP. Furthermore, the analysis of the scale of pollution damage suggests that real GDP is less than the GDP measured if environmental pollution and other social loss are included into the accounting system. The Chinese authorities have launched a pilot project to reflect environmental impacts in the measurement of GDP, but at present, there are no internationally agreed methodologies for doing this. Many researchers (Rogers *et al.*, 1997) also point out that GDP growth in China continues to significantly reduce the opportunities of future generations to enjoy natural resources and the environmental base for meeting their needs.

The environmental problems in China did not happen accidentally. China's population of 1.3 billion, coupled with rapid industrialization and urbanization as well as rapidly growing GDP per capita, create huge pressure on the environment and the demand for resources. China's coal-dominant energy and industrial structures contribute to serious indoor and outdoor air pollution in cities and rural areas. The 30 million people living in poverty increase the pressures on natural resources and environment. At the same time, China is not a country rich in all resources: for example, water resource per capita is only one-fourth of world average level, and that of arable land is only one-seventh of world average level.

The Chinese leadership considers that environmental degradation and unsustainable management of natural resources have become an obstacle to further economic development and the well-being of the population. Addressing environmental problems has become a state priority and there is a clear recognition that more ambitious and concerted policies are needed to stop further environmental degradation.

Developing and applying good governance in environmental policies in China can enhance the impact of these policies and improve the capacity of the administration to pursue effective and efficient regulations and policy instruments. It will also help to mobilize the information and energies of all concerned parties, including citizens and the regulated community.

3. Description of the framework for environmental policy

Addressing environmental problems requires a mix of policy and institutional actions. The key elements of this mix are: *i*) consensus-based strategies and policies backed by robust analysis; *ii*) appropriate institutional framework for policy development and implementation at the national and sub-national level; and *iii*) instruments for policy integration and coherence, which can embrace three pillars of “sustainable development”: environmental protection, economic development and social cohesion.

This part presents the development of policy planning in China, the process of building the institutional set-up for environmental management and reform of China’s environmental regulatory framework.

3.1. Environmental policy planning

The changes in political and economic development in the late 1970s unlocked the possibilities for closer co-ordination between economic development and environmental protection. Strategically, the Party and the central government already stressed at that time that sustainable development was one of the key elements to guide the development of the country and that environmental protection was one of the most important parts of reform and modernization. Methodologically, they called for two shifts that have significant impacts on environmental governance, that is, from a “planned” economy to a “socialist market” economy and from an “extensive” to an “intensive” pattern of economic growth.

The preparations for the 1972 United Nations Conference on the Human Environment (UNCHE) gave the first impetus for introducing environmental management within the Chinese Government. The first country-wide discussion on environmental protection was launched in 1973 at the National Conference on Human Environment, a national follow-up to the UNCHE. Subsequently, analyses of the environmental consequences of economic development were carried out by a group of experts and officials under the State Council. This work resulted in a 1974 report *Key Points in the Environmental Protection*.

However, this analytical work was not fully translated into practice for nearly two decades. The first PRC environmental protection law was promulgated in 1979, but it was applied for “trial implementation”. The “trial” status was only changed in 1989 when a new Environmental Protection Law was introduced, providing a solid legislative base for existing *ad hoc* enforcement programmes (see Box 17.7).

The beginning of the 1990s witnessed a relative increase in the attention devoted to environmental problems. In March 1991, the then-Premier of the State Council Li Peng stated at the National People’s Congress (NPC) session that environmental protection was a basic policy of China. The Eighth Five-Year Plan approved by the NPC in 1991 listed environmental protection among the “major tasks and important targets for the following five to 10 years”. However, the Plan, which aimed to improve and better coordinate environmental planning, control pollution emissions and the generation of industrial waste, and strengthen monitoring and enforcement, was still implemented more on paper rather than in practice.

The 1996 Fourth National Conference on Environmental Protection was the turning point in the reform of environmental policies. The conference, for the first time, defined explicit environmental objectives, duties and plans for the end of the 1990s and the next century. Former President Jiang Zemin pointed out that “environmental protection is to conserve natural resources and improve the productivity”. The conference, again for the first time, placed pollution control and ecological conservation as two parallel tasks. The conference also recommended approaches to control “total amount of pollutants” and described in detail China’s “Transcentury Green Project”, which included over 800 water pollution abatement projects. After the conference, the whole country initiated large-scale campaigns for pollution control and ecological construction in key cities, watersheds, regions and ocean zones. The results of the Fourth National Conference provided important inputs to the provisions of the Ninth Five-Year Plan for the Social and Economic Development of China.

The subsequent Tenth Five-Year Plan for Social and Economic Development, adopted in 2000, contained a specific Five-Year Plan for Environmental Protection. The environmental plan set new goals for the following five years, building on the provisions of the previous plan. Emphasis continued to be placed on further reducing all forms of pollution, including reducing the length of polluted sections in the main rivers, reducing acid deposition across China and more vigorously addressing pollution from agricultural sources. Other goals included slowing down the trend in the destruction of natural habitats and improving environmental quality in major municipalities and regions. Table 17.1 presents selected examples of policy objectives and targets established under the Tenth Five-Year Plan.

The Tenth Five-Year Plan also introduced concepts of “green” consumption and “circular” economy,⁴ which aimed to help to promote economic development with less pollution and to better integrate environmental considerations into economic development. Coupled with the new development strategy, these concepts play an important role in further development of China’s environmental policies.

Table 17.1. 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	Achieving higher water quality in state-controlled sections of seven major river basins and major lakes. Total elimination of the state-controlled sections in major rivers with the lowest quality of water.
Acid rain and SO₂ control	Reduction of sulphur dioxide and total suspended particulates by 10%. Reduction of sulphur dioxide concentration in urban air within the “acid rain control zone” and the “SO ₂ control zone”.
Urban environmental protection	Improvement of air quality in 50% of defined medium-sized and large municipalities. Meeting relevant water quality national standards by all centralized potable water sources in urban areas. Achieving a 50% rate of centralized sewage treatment in urban areas. Increase the rate of urban waste treatment to 50%.
Total pollutant discharge control	Achieving progress in “one control – meeting two standards” over the period of five years. Reduction of total amount of air pollutants (SO ₂ emissions to the level of 19 million tons and industrial dust discharges to the level of 12.5 million tons). Reduction of the total chemical oxygen demand discharge to the levels of 12.5 million tons. Reduction of the total industrial solid waste to 36 million tons.
Nature protection	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.
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3.2. *Institutional framework*

3.2.1. *Historical development of state environmental institutions*

Even though an institutional framework for environmental management in China was only set up relatively recently, it has already undergone several reforms and adjustments. There are more than 2 500 environmental administrative institutions that exist at the state, provincial, municipal and county levels and more than 100 000 people are involved in management, monitoring, supervision, statistical analysis, scientific research and environmental education. However, the institutional set-up is still far from being effective and efficient. Institutional capacity to design, implement and enforce policies lags behind the requirements of curbing environmental problems associated with China's rapid economic development.

The first version of China's top environmental body was the Environmental Protection Bureau, a unit with a staff of 20 set up in 1974 under the State Council. The office concentrated on general environmental planning and had no authority over environmental management at the sub-national level. In 1982, three years after the promulgation of the trial environmental law, the State Council set up the Ministry of Urban and Rural Construction and Environmental Protection, incorporating the Environmental Protection Bureau within its structure.

Subsequent reorganisations in 1984 and 1988 elevated the status of the environmental bureau to a separate office. Its staff size doubled from 60 to 120 persons and it had dual subordination: to the Ministry of Construction and, at the same time, to the State Council's Environmental Protection Commission, which was an important forum for co-ordinating environmental management among different bodies. Eventually, the Bureau was brought out from under the Ministry of Construction and renamed the National Environmental Protection Agency (NEPA). In making this change, the State Council increased the administration's authority, more than doubled the number of staff (from 120 to 320), and signalled that the State Council attached importance to environmental protection. Like main line ministries, NEPA had direct links to the State Council.

In 1998, China's environmental administration was transformed again, renamed the State Environmental Protection Administration (SEPA). But this time it was upgraded to a ministerial rank, however without a permanent seat in the Council. The restructuring involved consolidating the functions of NEPA and some of the Ministry of Forestry staff. Furthermore, the fact that senior officials from other restructured ministries (Geology and Mineral Resources and the Chemical Industry) had been appointed vice administrators of SEPA gave this institution even greater weight. In the new structure, the administration, with ministerial rank and its head reporting directly to the Vice Premier in charge of environmental protection, is in a better position to influence other government bodies. Notwithstanding these changes, SEPA remains far less powerful than some other key ministries or bodies.

An important role in environmental decision-making was played by the Commission of Environmental Protection of the State Council. It consisted of key persons from 31 ministries and commissions and several representatives of large enterprises and the media. The Commission played an active role in policy-making, co-ordinating environmental efforts of ministries and assisting in resolving controversies in the proposed laws related to the environment. However, the 1998 reorganisation dismantled the State Council's Environmental Protection Commission. This change was regarded as a step which weakened the possibilities for proper co-ordination of environmental measures within the State Council.

3.2.2. Current institutional framework

3.2.2.1. National level

Currently, the following government organisations are involved in environmental protection at the national level:

1. The Environmental and Resources Protection Committee (ERPC) of the NPC is responsible for developing, reviewing and enacting environmental laws. It is also responsible for supervising the implementation of environmental regulations and performance evaluation of the government in the environmental sector. In the 1990s, the ERPC developed into a forum for discussing environmental issues of particular concern to the NPC.
2. A number of sectoral ministries and administrations of the State Council are involved in natural resource and environmental management, playing different but sometimes critical roles in environmental management. Their areas of responsibility are presented in Box 17.1. One of the Vice Premiers is responsible for environmental issues in the Council.

Box 17.1. Government bodies involved in environmental management in China

- **State Environmental Protection Administration** (SEPA) is the highest administrative body responsible for environmental protection. It is responsible for developing environmental policies and programmes and supervising Environmental Protection Bureaus (EPBs). SEPA implements rules for projects undertaken by national-level bodies and activities that are of national significance.
- **National Development and Reform Commission** (NDRC) develops the overall economic plans for the country, including environmental strategies and plans.
- **Ministry of Finance** (MOF) must approve foreign loans and domestic financial allocation related to environmental projects/programmes.
- **Ministry of Construction** is responsible for urban environmental issues, especially environmental infrastructures, such as water supply and wastewater treatment plants and solid waste management.
- **State Forestry Administration** is responsible for forest conservation, afforestation, biodiversity and wildlife management.
- **Ministry of Water Resources** controls soil erosion, groundwater quality, and carries watershed management outside urban areas.
- **China Meteorology Administration** has responsibilities in regional air quality management (it also takes part in the climate change negotiations).
- **Ministry of Agriculture** (MOA) is responsible for management of agricultural chemicals, aquatic natural reserves, agro-biodiversity and grasslands. It also regulates township and village enterprises.
- **Ministry of Land and Resources** is responsible for land use planning, mineral and marine resource management, and land rehabilitation. It is also responsible for mapping and cadastral (land ownership) management.
- **Ministry of Communications** shares responsibility with SEPA on vehicle emissions control, the implementation of which falls on the Public Security Bureaus.
- **Ministry of Health** is responsible for monitoring the quality of drinking water and the incidences of related diseases.

- **Ministry of Science and Technology** is the leading body in the development of environmental sciences and technology. It co-ordinates various environmental research programmes in the whole country, including co-operation with international partners.
- **State Oceanic Administration** is responsible for management of coastal and marine waters, including marine biodiversity conservation.

3. Within the government, SEPA is the highest administrative body responsible for environmental protection. Even though it does not have a permanent seat in the Council, the SEPA Administrator participates in State Council meetings when environmental matters are discussed.
4. SEPA is responsible for developing environmental policies and programmes and, to some extent, supervising Environmental Protection Bureaus (EPBs) (see below). SEPA, which has a staff of around 300 people, develops regulations only for projects undertaken by the sectoral bodies at the national level, or activities that are of national significance. In all other cases, EPBs implement industrial pollution control rules and deal with enterprises on a daily basis.

3.2.2.2. Sub-national level

Several administrative units at the sub-national level play a role in environmental protection in China. In each province, EPBs oversee compliance with national and local level environmental and pollution control regulations and standards. These bureaus are part (including their funding) of the provincial administration (Governor's Office). SEPA has limited direct influence over EPBs although it provides them with guidance on the implementation of policies and regulations. Only recently, SEPA has acquired a say in the selection of the heads of local EPBs.

EPBs also exist at the prefecture/municipal, district/counties administration levels. Each work unit within the administrative system reports to both an upper level department of the same functional area and the government of a geographical area. For example, the prefecture/municipal EPB reports to the provincial EPB and at the same time to the mayor's office. Similarly, at the lower level, the county/district EPB reports to the prefecture/municipal EPB and at the same time to the Office of the County Magistrate (or head of a district). For a number of years, townships and villages have not had environmental units. Only in some cases have individuals been assigned to oversee environmental management.

The EPBs have a number of affiliated units, such as an Environmental Monitoring Centre (responsible for ambient and emission monitoring), an Inspection Unit (responsible for enforcement of regulations and collection of pollution charges), a Research Institute (responsible for technical analysis and research) or an Environmental Investment Unit (managing pollution levy funds). Most of these units are public service units (PSUs, see Chapter 2) and have been supported by state funds to provide services for the government and the public simultaneously. Most recently, however, some of them have undergone changes in their status and management which, in many cases, led to commercialization of some of their services. These institutions, now coupled with universities, may in the future provide consultancy services to the government, the public and enterprises on a competitive basis.

Box 17.2. Involvement of administrative and sectoral units in environmental protection at sub-national level

Mayor's offices take key decisions on large investment projects involving industrial development and environmental protection. They also settle disputes between the municipal EPBs and enterprises supervised by a municipality's industrial bureaus. In some cities, the mayor heads the Environmental Protection Commission of a People's 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.

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.

Urban construction bureaus oversee the construction and operations of wastewater treatment plants. Some tensions exist between construction bureaus and EPBs over who should collect fees from enterprises that release waste, violating effluent standards and flowing into municipal treatment plants. There are also tensions over the enforcement of discharge standards for releases from municipal wastewater treatment works, which are built and operated by urban construction bureaus.

Other institutions at the provincial (and similarly at the lower levels) influencing environmental policies include Environmental Protection Committees of People's Congresses and Environmental Protection Commissions of the People's Governments. The Environmental Protection Committees of People's Congresses approve local environmental regulations, review work carried out by the lower level administrations and keep them informed about environmental problems raised by citizens. The Environmental Protection Commissions of People's Governments, which typically consist of high-level officials (directors and deputy directors), are responsible for co-ordinating EPBs work with other government organs. Members of the Environmental Protection Commissions of People's Governments meet on an *ad hoc* basis to co-ordinate activities related to pollution abatement, settle disputes and respond to accidents.

Other administrative units, such as mayor's offices, planning commissions and economic commissions, as well as industrial, finance and urban construction bureaus are engaged in the environmental policy implementation at the sub-national level (see Box 17.2).

3.3. **Regulatory framework**

Compared to other developing countries, China has a relatively well-developed regulatory system with more than 2 000 laws issued in the area of environmental protection. However, the design and implementation of policy instruments could be improved.

Over the centuries, China's leaders relied on a highly personal system of moral suasion with few environmental regulations and no codified environmental laws (Economy, 2004). The environmental protection system was highly decentralised and typically based on frequent campaigns and mass mobilisation efforts (see Box 17.7). However, China's regulatory framework for environmental protection has been gradually developed over the past few decades. In 1979, the NPC Standing Committee promulgated a provisional version of China's basic environmental law, the PRC Environmental Protection Law for Trial Implementation. This statute required polluters to comply with pollution and waste-discharge standards, directed enterprises to assess environmental impacts of proposed projects, and required new projects to satisfy applicable environmental standards. This statute also established national and local environmental administrations with powers to enforce environmental legal requirements. Following a 10-year trial period, the formal Environmental Protection Law of the People's Republic of China came into effect in 1989. This legal act now constitutes the main legal basis for China's environmental protection system. In addition, the recently revised Criminal Law makes provisions for criminal sanctions, in case of egregious harm to the environment and/or natural resources. As the 1990s witnessed reform in economic

and sectoral regulations, environmental requirements have also been reformed. They gave greater emphasis to a “preventive approach” and to shifting the responsibility to polluters to pay for environmental damage.

Presently, China possesses an extensive regulatory framework that, in theory, should safeguard the environment. At present, provisions for environmental management are included in the regulations at state, provincial and local levels with more than 30 environmental administrative regulations, more than 70 rules, and about 400 national environmental standards. Examples of specific regulatory instruments applied in China are presented in Box 17.3.

Box 17.3. Regulatory instruments applied in China’s environmental policy

Emission/discharge and ambient (quality) standards

The 1989 PRC Environmental Protection Law authorized SEPA to establish two types of national standards: ambient (environmental quality) standards and waste discharge/emission standards. Ambient standards are illustrated by restrictions on the maximum allowable concentration of a pollutant in water, air or soil. Discharge/emission standards establish a limit on the maximum permissible concentration of a pollutant in industrial emissions or discharge (e.g. mercury in a factory wastewater release). Local governments may create ambient and discharge standards for pollutants not specified in national standards, and they may also establish stricter limit values for pollutants included in national discharge standards. For a long time, China’s effluent standards only constrained discharge concentrations and were met by diluting wastewater with uncontaminated water. As a result, pilot schemes have been launched to introduce “mass-based” controls on total provincial discharges. In this connection, another programme, called “two compliance policy”, has been launched. This programme aims to promote compliance with discharge standards and ambient standards at the same time (hence “two compliance”) to help the move from concentration-based to mass-based or total pollution load control.

Discharge permit system (DPS)

Under the DPS, EPBs issue permits that limit both the quantities and concentrations of pollutants in an enterprise’s wastewater and air emissions. DPS rules require enterprises to register with EPBs and apply for a permit. EPBs then allocate allowable pollution loads to enterprise, issue discharge permits and enforce permit conditions. Unlike other systems and programmes, the DPS has not been backed by legislation, but is based on administrative edicts.

Pollution control within deadlines

Under the 1989 PRC Environmental Protection Law, government can require polluting enterprises to reduce their waste releases by specific dates. Clean-up deadlines for enterprises can only be imposed by national or local People’s governments, but local governments sometimes give EPBs the authority to set deadlines. Enterprises that do not abate pollution on time risk being fined or shut down.

Environmental impact assessment (EIA) and reporting systems

The EIA requires every project with a potential negative effect on the environment to be reviewed to assess its environmental impacts. Project proposals should contain an analysis of environmental impacts and the corresponding preventive measures, and be submitted to the environmental administrative authorities for screening. After the review of the proposal, the applicant needs to engage a qualified firm to prepare an Environmental Impact Report. It is only after the approval by the national or regional environmental administration that the project can be formally launched.

“Three synchronisations” system

The system of “three synchronisations” (called also “Three Simultaneous Steps”) requires that: *i*) the design; *ii*) the construction; and *iii*) the operation of a new industrial enterprise (or an existing factory expanding or changing its operations) must 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 the approval from the local EPB, the owner of the project can be sanctioned. In many instances though, the sanctions have not been applied and there are many departures from the above-mentioned procedures, especially by many TVEs. Overall, however, this programme has played an

important role in stimulating investment in pollution-abatement facilities at industrial enterprises, especially at new factories.

Centralized pollution control

Until the 1980s, China's pollution reduction efforts focused on treatment by individual enterprises. This strategy has not always been effective as the costs of individual treatment plants were higher per unit of waste treated than in cases of larger centralized plants. Recognizing the possible economic advantages of building large treatment plants, the State Council and SEPA issued documents requiring governments at all levels to promote centralized control of waste within their jurisdictions.

To complement the regulatory system, economic instruments have been adopted to curtail environmental pollution, especially from industry. Discharge fees are calculated based on concentrations in effluents. These are applied to industrial emissions across China covering discharges of wastewater, waste gases, solid waste, noise and low-level radioactive waste. Pollution levies are collected by EPBs and earmarked for environmental purposes.

Other economic instruments have been introduced. Since 1989, an ecological damage compensation system has been introduced in some provinces and cities. Experiments with sulphur dioxide taxes and product charges have been undertaken in some provinces and cities. The application of these instruments has been expanded over time.

In addition, financing mechanisms for environmental protection have been set up by the government. These included: funds for enterprise expansion and redevelopment, municipal maintenance funds, earmarked grants from revenues raised by the pollution levy and provision for retention of enterprise-owned profit resulting from waste reuse and access to bank credits.

4. Governance challenges

Previous sections presented historical developments of policy and institutional framework in China. This section evaluates these developments and suggests areas for further action.

4.1. *Environmental policy planning*

A review of environmental policy development between the late 1970s and the beginning of the 21st century shows that environmental policy planning has only become more result-oriented, systematic and consistent over the last 10 years, in the context of developing the Ninth and Tenth Five-Year Plans. The scope of environmental policies has become more specific and policy objectives clearer. The plans specified both the priority geographical areas for actions (such as the Yangtze and Yellow Rivers; Three Rivers: Huaihe, Haihe and Liaohe; Three Lakes: Taihu, Dianchi, Chaohu; Beijing municipality; major municipalities areas) as well as topical issues (such as industrial pollution control, urban environmental quality, protection of the rural environment and nature conservation). The Tenth Five-Year Plan in particular contained important new features such as the development of concrete objectives and numerical targets. It also enlisted environmental indicators which were to assess progress in implementing the established policies against established targets.

Furthermore, the policy-making process has become more open to the views of local governments and the public as more consultative meetings have been conducted. A number of new management approaches have been adopted on the basis of experience from the local level rather than based on the views of "technocrats and experts". Furthermore, the approval procedures of draft plans have become more open and transparent. After being drafted by expert groups, the plans are discussed with different stakeholders. These changes have made central government, along with provincial governments, more interested in performance, rather than just the planning process itself. Although no slogan such as "process-to-

performance” was explicitly raised by the central government, environmental management in practice became performance-oriented and focused on “impacts on the ground”.

Calls for the elaboration of environmental legislation to strengthen environmental compliance, as well as the assessment of needs for environmental investment and an increase in environmental expenditure, were important new elements included in the most recent plan.

However, environmental policy development is still driven by a top-down approach inherited from the planning era. The assessment of the results from the previously implemented plans has been infrequent and not open to public scrutiny. This can impede the identification of “real” (as opposed to “perceived”⁵) causes of environmental problems and limit the possibilities for finding appropriate solutions and calibrating regulations and instruments to increase their effectiveness. Another problem with designing environmental policies has been that not enough attention has been paid to ensuring coherence between national and sub-national policy objectives and targets. This has led to duplication of efforts or leaving gaps in priority areas.

One possible approach to address these problems could be a wider application of a “planning cycle” that is applied in a number of OECD member countries. The “planning cycle” includes explicit objectives and target-setting, evaluation of progress in achieving them, providing feedback to policy makers and adjusting priorities on the basis of lessons learned. Such evaluation has to include relevant stakeholders and answer questions raised by different interest groups.⁶

Policy planning in China also lacks robust financial analysis of the necessary funding to address environmental problems, and more importantly, the assessment of funding sources and developing strategies for closing funding gaps. There are various methods for assessing funding gaps. A methodology developed by the OECD (presented in Box 17.4, together with the description of its application) can be a particularly useful tool in this regard. The explicit presentation of funding gaps, combined with a robust analysis of possible funding sources could be a powerful instrument for environmental administrations in their discussions with other relevant government bodies over funding for environmental improvement.

Box 17.4. Water management in Sichuan Province

China's rapid urbanisation is generating a demand for urban infrastructure that is calling into question existing policy, institutional and financial arrangements. The OECD recently concluded a study to develop a strategy to finance wastewater infrastructure in Sichuan Province, including related changes in the governance of the water sector that would need to be implemented (OECD, 2005a, forthcoming).

Tools for analysis

The analysis of the financing of the wastewater sector in Sichuan Province was supported by the Environmental Financing Strategy methodology, which includes a specialized software application developed at the OECD for transition and developing economies.

The Environmental Financing Strategy is a standardized methodological framework supported by a software *FEASIBLE*© which facilitates the preparation of realistic, multi-year programmes of action for environmental sectors that require heavy capital investments in public infrastructure. It is also used to evaluate the financial viability and affordability of existing infrastructure development programmes and plans. Its targeted users are public sector officials from the ministries (or sub-national authorities) in charge of environmental and water infrastructure.

The *FEASIBLE*© model requires specific, technical city-by-city data on the present size and state of infrastructure. It calculates investment, maintenance and operational expenditure that would be required to reach specific targets determined by local policy makers. These expenditure requirements are subsequently compared with forecasted levels and sources of finance. All sources of finance (public, private, domestic, foreign, etc.) and all financial products can be simulated. Through this comparison, the model calculates the financing deficits or surpluses, both annual and accumulated. Not only the magnitude of total cash flow deficits/surpluses is presented, but also the structure of the

financing gaps can be extracted, e.g. coverage of investment costs by various funding sources, coverage of operation and maintenance costs, etc.

These results help policy makers understand where the main bottlenecks are and where/when/what additional policy interventions are needed to facilitate effective financing of infrastructure development programmes.

Results of analysis

The overall conclusion of the study was that, on present trends, wastewater infrastructure development targets would not be met; these targets are broadly comparable to the water-related Millennium Development Goals which aim to halve the proportion of people without access to safe water and sanitation by 2015.

Current financing arrangements in Sichuan Province rely excessively on public budgets, and would be unsustainable in the future. The report analyses various finance options and suggests that users and taxpayers will probably need to pay more. At the same time, it identifies some regulatory and institutional reforms that would need to accompany efforts to mobilize additional financial resources, including the following:

- The institutional arrangements for the wastewater sector at the national level do not allow resources to be used in the most efficient manner. They are biased in favour of construction of treatment plants, whereas the greatest need for capital expenditure is for sewage networks. They should be re-examined.
- The existing tariff system should be reformed. Water tariffs are kept well below cost-recovery levels, ostensibly to protect the poor. However, this is undermining the financial sustainability of the sector and benefiting richer segments of the population as much as, if not more than, the poor. Tariff reform, together with more targeted subsidies for the poor, would lead to more efficient use of public funds and reduce demand for water resources and related infrastructure.
- The projected financial burdens on taxpayers and users suggest that more will need to be done to spread the increase of user charges over time by greater recourse to debt financing. However, this implies that current legislation prohibiting municipalities from borrowing from commercial banks, issuing bonds, or extending guarantees to municipal utilities would have to be reformed. This in turn would involve broad reform of the municipal finance framework to ensure, among other things, that municipalities did not incur excessive debt.
- Relations between municipalities and water utilities should be redefined. Utilities should concentrate on the core business of service delivery municipalities should be responsible for establishing the policy and regulatory framework within which utilities operate. In many OECD member countries, performance contracts between municipalities and utilities specify the responsibilities that each will assume, including the financial contribution that municipalities will provide for utilities. Reform of municipal finance to enable municipalities to raise debt financing would help avoid the current practice whereby local governments offer implicit, unsanctioned utilities to borrow from commercial banks. It is not clear what the level of this "hidden" municipal debt might be.
- The status of water utilities should be re-assessed. Property rights to infrastructure should be clarified. Utilities should be given more financial and operational autonomy, and be held accountable for it. For wastewater utilities, this would mean granting them authority to collect user charges (they do not have this at present) and to use them to finance their operations. This would also generate more incentives for efficiency. Consideration should also be given to merging water supply and wastewater utilities, or at least providing for joint billing and collection. This would increase efficiency, help to address non-payment and help increase the willingness to pay of consumers for wastewater services.

4.2. Institutional framework

Over the past two decades, China's environmental institutional framework has been broadened and strengthened. It included the creation of a central autonomous authority responsible for developing environmental policy. Elevating SEPA to ministerial level strengthened its position within the government. An extensive framework of environmental administrations at the provincial and other sub-national level has also been created.

The measures taken were influenced by broader institutional changes applied to the whole government system, which included streamlining the central administration, decentralization and further

emphasis on effectiveness and efficiency in China's governmental structures. Even though the changes consolidated the position of environmental administrations, several features of the existing framework impede their ability to achieve established environmental objectives.

4.2.1. Lack of co-ordination between environmental and sectoral decision-making

SEPA is mandated to develop and implement environmental policies, but it cannot succeed without collaboration with other government bodies, as many environmental responsibilities are shared. Instead of co-operating, different bodies tend to compete for limited resources and influence. For example, SEPA relations with the State Oceanic Administration are contentious with regard to the monitoring and responsibility over the coastal environmental quality. SEPA relations with the Ministry of Water Resources on watershed management are also tense, as both bodies consider watershed environmental management as their priority. Although the State Council attempted to address the problem by setting up watershed water resources protection bureaus, subordinated to both Ministry of Water Resources and SEPA, the results have not been positive.

There are several reasons for such lack of co-operation. Firstly, the historical status of SEPA and the EPBs adversely affect co-ordination efforts. Even though SEPA and the EPBs now have similar ranks to other ministries and bureaus, they are still considered as lower grade bodies, as in the early 1980s they were parts of the Ministry of Urban and Rural Construction and its municipal bureaus. The uncooperative attitude of urban, industrial or other bureaus to EPBs makes it difficult for those, and SEPA, to resolve differences and co-ordinate policies. Secondly, SEPA is often perceived by enterprises, local governments and sectoral ministries as an environmental "policeman" who impedes economic growth (Stockholm Environmental Institute and UNDP China, 2002). Finally, there are no effective mechanisms to co-ordinate activities and to safeguard the achievement of environmental objectives. Such a situation occurred especially after the abolition of the Environmental Protection Commission of the State Council which played an important role in decision-making and in co-ordinating environmental and sectoral policies. As a result, SEPA often develops a defensive attitude towards co-ordination and narrows the scope of its activities to issues which do not require collaboration with other bodies.

In order to improve the situation, the Chinese authorities may consider various options. One could be to elevate SEPA to full membership of the Cabinet with the same rank as other ministries. This arrangement exists in a number of OECD member countries. Another approach could be the creation of a high-level co-ordination and communication mechanism for integration of decision-making within the whole government, similar to the former Environmental Protection Commission of the State Council. Such a mechanism could ensure that environmental considerations are taken into account in setting sectoral policies; overlaps and contradictions would be reduced, and synergies between the work of different bodies maximized. It is also suggested that the activities of the existing China Council for International Co-operation on Environment and Development could provide important contributions to the work of such a co-ordination mechanism (see Box 17.5).

Box 17.5. China Council for International Co-operation on Environment and Development

The China Council for International Co-operation on Environment and Development (CCICED), which was established in 1992, provides a forum for dialogue between high-level Chinese representatives and their OECD counterparts on issues related to environment and development.

The objectives of CCICED are to:

- provide strategic advice and policy recommendations to the Chinese Government on how to ensure sustainable economic growth, protect and improve China's environment, and safeguard long-term supply and safety of energy and natural resources;

- foster international co-operation between China and the international community on critical issues of environment and development, such as relevant planning, projects, scientific development, technology transfer, training, etc.;
- provide advisory service to the Chinese Government on important decision-making in the field of environment and development, and to assess the economic, social and environmental impacts of such decision-making;
- provide the Chinese Government with international experience in the field of environment and development in the context of globalization, information technology, and scientific and technological innovation, and at the same time to assist China in introducing its accomplishments and experience to other countries;
- help enhance China's capacity in participating in negotiations of international agreements aiming to alleviate global environmental problems; and
- play an advisory and assisting role in promoting public awareness and public participation in environmental protection.

The Council is composed of 40-50 high-level Chinese and international members. The chairmanship is held by the Vice Prime Minister of the State Council of China. The Chinese Council members are ministers, vice ministers, and distinguished scholars working on environment and development issues. These Council members participate in the activities of CCICED in their personal capacities.

CCICED establishes a number of short-term task forces, according to need and on a continual basis, to carry out research on the urgent priority issues related to China's environment and development. Council meetings are held once a year to review research reports and policy recommendations developed by the task forces (currently, 12 task forces exist), and make recommendation to the Chinese Government.

4.2.2. *Conflicts between national and local decision makers*

Environmental administration at the local level is susceptible to interference by local leaders due to the relationships between the vertical and horizontal lines (*tiaokuai guanxi*). Lower level EPBs report to higher level EPBs (and ultimately to SEPA), but the funding and supervisory functions are provided by the provincial or lower level administration. The environmental regulatory and enforcement functions have not been given sufficient autonomy from, and authority over, institutions promoting economic development. The local governments often have different views from SEPA on the balance between development and environment, particularly in cases where the local government may be the whole or part-owner of a polluting enterprise or municipal activity. When such enterprises are threatened with sanctions because of non-compliance, a different department of the government – typically the economic or development planning department – may intervene to limit the actions of a local EPB. This tendency is reinforced when entrepreneurs or managers of firms hold positions in the local Party committee, People's Congress or in the local governments (Ma and Ortolano, 2000).

This is not to say that EPB leaders are totally subservient to local leaders. Indeed there are cases reported to SEPA each year involving EPB leaders in conflict with local administrations. However, since the senior managers of EPBs are nominated by, and dependent on sub-national administrations, the policies of local governments generally prevail in cases of conflict.

Another factor that adversely affects environmental management at the local level is the incentive structure for career advancement. The promotion schemes are based on performance in pursuing narrowly defined economic development and employment. As environmental problems are perceived by some as slowing down economic growth, they tend to be ignored. Although this pattern is changing, especially by the recent attempt to develop "green GDP", the incentives for environmental protection remain weak. And finally, leaders in China are usually appointed for short-term contracts. This does not allow them to adequately understand existing problems and does not provide an adequate incentive to develop longer term sustainable development visions and strategies.

Most recently, efforts have been made to address some of the problems mentioned above. The appointments of the heads of sub-national EPBs must now be endorsed by a higher-ranked environmental administration. At the same time, lower-level EPBs were strengthened by receiving an independent administrative status.⁷ In addition, central government assigned explicitly the responsibility for environmental protection to the provincial, municipality and country/district governmental administration rather than leaving it only as a duty of the sub-national EPBs. However, mechanisms for holding the government administration accountable for achieving environmental objectives have yet to be developed.

Notwithstanding the abundance of experience accumulated in OECD member countries on integrating economic and environmental policies and decoupling environmental pollution from economic growth, and the application of indicators for assessing the implementation of environmental and sectoral policies,⁸ these issues are among the most frequently discussed aspects of environmental policy implementation.

4.2.3. Gap between mandate and capacity at the national and sub-national levels

Environmental administrations in China lack capacity for effective environmental management. The 1990s witnessed an increase in the importance attached to environmental issues by political leaders and the enhancement of the position of the state environmental administration. For example, cities as Dalian, Shanghai and Xiamen routinely invest a significant percentage of their local government revenues in environmental protection and have developed relatively well staffed and well funded EPBs. At the same time, however, a gap was growing between the widening mandates assigned to SEPA and the decline in staff and financial resources. This gap extends to many EPBs at the provincial level. The funding of compliance monitoring activities and control of point-source pollution, in particular, are inadequate in relation to the task assigned.

The tensions between EPBs and Environmental Protection Departments (EPDs) of industrial bureaus mentioned before also contribute to management problems. As EPDs have a greater capacity than EPBs to help enterprises to design ways to meet environmental rules, many company managers are more prepared to co-operate with EPDs than with EPBs.

A World Bank survey of 300 townships in China showed that weaknesses in environmental management capacity are even more pronounced at this level (World Bank 2001). Only a small portion of township governments have designated employees responsible for environmental management. Their functioning is subordinated to the local township management which usually has close relations with village and township enterprises (TVEs). Even though the TVEs have been largely transformed into private enterprises, they still have a very close relationship with local government in regard to tax and employment, as well as personal links. Thus, environmental management at the local level is weak, although 1 422 environmental protection units were established recently at the township level. This was a step in the right direction which could provide a basis for rectifying the situation.

There is a clear need to strengthen the capacities of environmental administrations in China and to align responsibilities with funding. As a matter of priority, SEPA should review staffing at all levels to assess the gap between their obligations and capacities and identify actions needed to bring them into better alignment to address priority issues. One approach could be for SEPA and EPBs to concentrate their efforts on a smaller number of priority issues, focusing on problems which are potentially solvable. Since pollution in some rural areas is severe and there is a lack of appropriate institutions/staff, the institutional setting at this level is in particular need of review.

In addition, mechanisms for continuous training for SEPA and EPB staff 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. These environmental training and research institutions should cater not only for the personal capacities of environmental and enforcement officers to deal with environmental issues but also strengthen the capacity of staff to co-ordinate their activities with sectoral bodies.

As government institutions in China are often overloaded with administrative tasks and lack time for thorough research of policy options, they need additional support from experts. The establishment of environmental “think-tanks” could open up the market for consulting services in the environmental field which could play an instrumental role in forging effective and efficient solutions in light of the latest scientific research.

4.2.4. Inadequate and contradictory approach to funding of environmental administrations

The lack of financial resources for environmental administrations is creating perverse incentives with deleterious environmental impacts. Many EPBs have become dependent on the pollution levies they collect, which yield substantial revenues and are used to cover their operating costs. They could retain as much as 20% of the non-compliance pollution fees they collect.⁹ For many EPBs, the imposition and retention of these fees are essential for their survival. In many cases, EPBs want to establish unjustifiably strict limits to yield maximum income for the office rather than to ensure compliance. This approach is reinforced by the central authorities’ calls for self-supporting government entities. Local government cuts in funding of EPBs also encourage the drive to maximise fee-based revenues. In this context, EPBs prefer to keep enterprises polluting and paying their pollution levy rather than making them comply with discharge standards and stop paying.

Furthermore, many EPB affiliates generate substantial revenues by conducting EIAs on proposed development projects. This leads to potential conflicts of interest when EPB staff evaluate impact assessment documents prepared by their colleagues in EPB affiliates.

Therefore, an analysis of the financing of environmental institutions should be carried out with the view to removing perverse incentives linked to the role of EPBs in collecting pollution fees and fines (e.g. by reallocating the responsibility for collecting pollution levies to other institutions, such as tax authorities). The analysis should also consider the longer term view of ensuring adequate funding from the national budget, which is the case in many OECD member countries. A recent OECD review of funding schemes of enforcement bodies provides examples of possible approaches (OECD, 2005b).

4.3. Regulatory framework

The regulatory and enforcement framework developed in China for industrial pollution is quite comprehensive as it includes command and control, economic, and other instruments. The system has been continuously updated and expanded to improve effectiveness and cover priority issues. Experimentation in pilot projects has helped improve the design of new approaches. However, the system suffers from a number of shortcomings. These include:

1. ambiguity and lack of coherence in some legal requirements, including the lack of clearly defined rights and responsibilities of different parties;
2. a non-transparent enforcement system, with considerable and largely unaccountable discretion vested in environmental officials and inspectors; and
3. limited involvement of courts in addressing conflicts and penalising non-compliance.

These problems and possible solutions, are described briefly in the sections below:

4.3.1. *Lack of clearly defined law requirements and responsibilities*

In principle, China's laws on environmental protection contain general requirements with which the regulated community should comply. However, these provisions are not supported by implementation regulations which further define the responsibilities of various parties and make detailed implementation provisions. So, for example, environmental protection departments cannot enforce the law effectively as the legal basis for their actions is lacking. In some cases, such as in the pollution levy system, fees are established by administrative order rather than by higher level laws approved by the State Council. This leaves these regulations open to challenge by enterprise managers, given the lack of appropriate binding legal status. In addition, related instruments, such as permits and pollution levies, are not always consistent, which makes the system difficult to administer (see Box 17.6).

Box 17.6. China's discharge permit system

During late 1980s, SEPA introduced a discharge permit system that aimed to limit both concentration and mass flows of pollution. This was stimulated by the fact that in some cities, although national effluent standards had been satisfied, the quality of watercourses continued to deteriorate because there were no constraints on the total mass of pollutants discharged into rivers. When the permit programme was introduced, it was inconsistent with the long-standing discharge fee system. Although discharge fees are calculated using concentrations in effluent standards, the permit system is based on both mass flow rates and concentrations of pollutants in discharges. Moreover, the allowable concentration in permits can be different from limits in effluent standards. This leads to confusion as to which of the two concentration limits should be met by enterprises. It has also raised the question as to whether the existing concentration-based fee programme should be replaced by a new fee system based on allowable concentrations and mass flow rates in permits. This lack of consistency between pollution limits in discharge permits and effluent standards frustrated many EPB staff. They felt it would be difficult to implement the permit programme without changing the existing fee system. At the same time they felt powerless to change the fee programme because both effluent standards and the method of calculating fees were specified by law.

In addition, the permit system required EPBs to establish, for each regulated enterprise, limits on concentrations and mass flow rates of pollutants in the wastewater released by enterprises. National rules governing the procedure for writing permits did not require concentration limits to be as stringent as effluent standards. Since the concentration restrictions of many permits were less demanding than those applying to effluent standards, it was common to find enterprises that satisfied permit conditions while violating effluent standards.

To address these problems, the Chinese authorities should launch a review of environmental legislation to eliminate important discrepancies and gaps between the laws and executive regulations. The legislative and rule-making processes should be made more transparent to build consensus between regulating entities, the regulated parties and the public. At present, most OECD member countries use regulatory impact analysis (RIA) (OECD, 1997a; OECD, 1997b) also in environmental policies. Such analysis includes both regulatory appraisal and regulatory evaluation.¹⁰ RIA can improve the quality of legislation by reviewing the consistency of the proposed laws with existing regulations, reducing costs and enhancing their effectiveness. China may learn from applying this tool in the OECD region. Allowing more public participation in the regulatory process at all stages, from drafting of environmental legislation to enforcement activities, can help to improve policy effectiveness and to address potential inconsistencies early in the legislative process.

At the same time, policy instruments should be enhanced by designing their optimal mixes to increase their effectiveness and efficiency in addressing particular environmental problems. Such mixes could include emission standards, permit systems and economic instruments applied in a coherent manner, and also differentiate these approaches between various groups of the regulated community (*e.g.* large and small/medium-size enterprises). Recent OECD experience from developing packages (mixes) of policy instruments in OECD member countries and in Eastern Europe could serve as examples (OECD, 2003a).

4.3.2. *Non-transparent and “pragmatic” enforcement system*

In general, local EPBs are responsible for the routine supervision and management of the polluters within their jurisdiction. Firms are required to meet the national standards of pollution discharges which are subject to environmental regulations. In cases where standards are exceeded, existing firms may be sanctioned for excessive pollution or denied registration when applying for their environmental permit.

EPB enforcement personnel, however, have considerable discretion to determine how they will enforce environmental requirements. In the current institutional context, EPBs must exercise discretion consistent with local government priorities. They have little opportunity for taking enforcement action as they are likely to be opposed by local leaders or powerful bodies. In this context, for example, difficulties have also been experienced in ensuring that recently introduced economic instruments achieve their expected objectives. Although the EPBs issue notices to collect discharge fees, the level of the amounts of fees is generally negotiated rather than calculated using formulas detailed in regulations.

The approach applied in China is considered as “pragmatic” enforcement, in which the choice of enforcement action has more to do with the particular case at hand than the strict compliance with environmental rules. Pragmatism is reflected in EPBs reliance on *guanxi*¹¹ with regulated enterprises. Many EPB staff believe that the way to bring most enterprises into compliance is by developing mutual understanding, providing technical and financial assistance, and negotiating reasonable compliance deadlines.

Such a “pragmatic” 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 (*guanxi*) with enterprises. Accusing enterprises of violating permit conditions is considered to be risky, as it could lead to a “loss of face” of enterprise managers. Some EPB staff also believe that penalising an enterprise may have the opposite effect of removing the incentive for compliance in the future (Ma and Ortolano, 2000).

To address this problem, appropriate compliance assurance strategies should be developed which enable strict, fair and timely response to non-compliance, while creating incentives to improve compliance and rewards for better environmental behaviour. Experience from applying such strategies exists in several OECD member countries, including examples of “compliance assistance” which use negotiations with enterprises over, for example, compliance schedules. However, the limits of such approaches are clearly specified in the regulations and are open for public scrutiny (USEPA 1992; OECD, 2003a).

In any case, the discretionary powers of enforcement personnel in China should be limited, and delineated precisely in the regulations. More use could be made of public pressure to achieve compliance with environmental requirements. Implementation of such a policy would also require awareness-raising campaigns and capacity building efforts.

Some enterprises in China are also able to escape the supervision of local EPBs by asking local officials to sign permit documents without the approval of environmental administrations. Moreover, some local governments set up “umbrella” schemes, prohibiting the environmental enforcement authorities to inspect, impose and collect fees and fines from firms which are seriously polluting, but are considered as important to the local economy. There are also 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. The ultimate check on this system is when the pollution leads to demonstrable impacts on human health and environment.

Other countervailing forces are specially-arranged environmental campaigns by the central government (see Box 17.7). EPBs view environmental enforcement campaigns as opportunities to enhance their credibility with polluters and demonstrate their accomplishments to higher level officials.

Box 17.7. Environmental campaigns by the Chinese Government

In the 1960s and 1970s, the Chinese Government's main approach to economic and social challenges was through campaigns. Policies that were set at the central level and implemented through large government investment programmes were supported by administrative control measures and propaganda campaigns. This approach dominated the response to environmental issues in the early 1980s and continues to be important today. The measures include: banning certain activities, closing down production lines or whole enterprises, large-scale physical investments and mobilizing communities.

The campaign to clean up the Huai River serves as an example. The call to "harness the Huai River" was introduced by the Chinese Government in the 1970s. The river, which runs through four provinces in China's heavily industrialized eastern coast, remained seriously polluted, despite years of pollution control and reduction. As a response, more than 1 000 plants were shut down as part of the "campaign to control pollution". Furthermore, in 1995 more than 1 500 separate projects were launched in support of government priorities, with an investment totaling over USD 18 billion. These investments were accompanied by efforts to crack down on heavy polluters. Between 1995 and 2000, more than 84 000 heavily polluting plants were shut down, including oil refineries, cement plants, thermal power plants and metallurgical mills. Most of the plants closed were privately owned small businesses scattered across the country and far away from the reaches of state-sponsored infrastructure investments.

These examples reveal how the campaign approach has evolved over the years. In the 1970s, campaigns were often sectoral and relied purely on administrative bans and investments. Increasingly, they have become inter-sectoral, relying also on a regulatory framework and are complemented by social measures. This "campaign" approach has contributed greatly to improving some aspects of the environment. Its main strength has been its power to mobilize broad and deep support from across society to address a key issue, often in support of a "magic number"* or a patriotic slogan. Campaigns are believed to ensure the focus of efforts on issues that matter to people - such as pollution - rather than on technical challenges or means - such as emissions standards. These campaigns helped to some extent to set and to illustrate the priorities of governmental policies.

This approach also has its weaknesses, however. In the past, it has not been clear how priorities were set and environmental campaigns initiated. 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 re-opened, with the support of local governments. Also, once an issue was identified, insufficient attention was given to determining the most cost-effective methods to achieve the goals set, as the campaigns gave an automatic focus on big 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 campaigns makes it difficult for the private sector to adjust.

* Chinese numerology has its roots in Taoist traditions and the ancient and contemporary Chinese consider numbers a mystical part of the universe and use them in slogans.

Source: Stockholm Environmental Institute, UNDP (2002), *China Human Development Report 2002. Making Green Development a Choice*.

4.3.3. Limited involvement of courts in addressing conflicts and penalizing non-compliance

The laws and regulations provide environmental administrations with some administrative powers, such as the authority to issue warnings and impose an administrative fee in cases of minor non-compliance. However, the authorities do not have adequate instruments to address serious non-compliance. For example, they cannot shut down production lines or whole enterprises, suspend accounts of enterprises, or order people to be detained for serious breach of environmental regulations leading to casualties. This is in contrast with the taxation, commercial and industrial government departments that do possess such powers.

Some of these options would be possible through recourse to the courts. However, EPBs rarely use this path. There are several reasons for this. Firstly, in China parties in dispute prefer to resolve their differences using informal negotiations in which compromises are made by opposing sides in order to

reach a consensus. Third parties often facilitate conflict resolution by means of mediation and conciliation. Although legal institutions have become increasingly important in China, mediation and conciliation continue to play a strong role, particularly in the context of environmental policy implementation. This approach comes from a Confucian tradition which emphasizes moral values and moral instructions (not fear of legal sanctions) as a basis for guiding behaviour and maintaining social order. At the same time, the legal system has been used as a means to implement state policies rather than a mechanism for articulating and guaranteeing the rights of the citizens.

Secondly, the Chinese legal system is still underdeveloped and trained judges are short in supply. Some legal specialists point out other inadequacies of the court system, such as judicial ignorance of the law, corruption, pressures on judges from local governments and high-level officials, and the inability of courts to enforce their own decisions. Furthermore, even when courts are used, the letter of the law is only one of several factors considered in enforcing environmental rules. Courts decide on the cases by relying on official policy, the views of local governments and a court's individual sense of justice and fairness in contractual dealings. Factors as *guanxi* between EPB staff and enterprise managers, interventions by local officials and an enterprise's profitability may lead to outcomes that are far from those specified in environmental regulations.

Additional reasons why courts are not used more frequently include: most EPBs want to avoid the costs of gathering data needed to support legally convincing evidence; many EPBs lack staff with legal training; vaguely drafted statutes often make it difficult to allocate liability; negotiations are more likely to preserve EPB *guanxi* with enterprises and provide a better basis for future co-operation. Finally, the vagueness of many Chinese environmental regulations does not provide an unambiguous basis for judges to adjudicate on environmental issues.

Even though greater involvement of the court system in enforcing environmental requirements may be time and resource consuming, this path should be encouraged. The courts can assist in reviewing the coherence of legislation; they can help to interpret the ambiguities of regulations and review the clarity and propriety of the delegation of administrative authority. More efforts are also needed to ensure the public's rights and awareness of the possibility of bringing cases of serious environmental pollution (which result from deliberate actions by individuals or enterprises) to court. Penalizing serious civil or criminal offences has proven to be an effective mechanism for creating a deterrence effect in a number of OECD member countries.

5. Access to environmental information and public participation in environmental decision-making

For years, little was known about pressures on the environment or the long-term effects of economic activities in China. The environment was seen as a resource to be used, and potentially dangerous consequences were ignored in the face of important political, economic or social considerations. In some cases the repercussions were known, but dismissed as trivial or to be dealt with later. Even when negative environmental effects became apparent, environmental information and decision-making were often kept secret. Information was difficult to come by and action taken to protect the environment tended to be top-down and based on governmental priorities. People who were affected by the activities were often kept aside and had little to say.

Since the beginning of the 1990s, in light of the visible failure of some of the 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 are demanding better information about the state of the environment and expressing a desire to influence public policies. The government increasingly recognizes the potential of these players and is taking steps to encourage them. The following

sections show some of the most prominent examples of public access to information and public participation in environmental decision-making.

5.1. Provision of, and access to environmental information

Article 11 of the Environmental Protection Law of the People's Republic of China (1979, amended in 1989) stipulates that "the 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".¹² 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, at the provincial level, 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 the 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 are also 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. Their contents include information about environmental pollution, state of the ambient environment and information about environmental protection measures. The reports also contain environmental indicators. Starting from 1998, reports include information about biodiversity and climate change. The structures of the reports are based on a methodological framework "Stress – Status – Response" which follows the "Pressure – State – Response" model adopted by OECD member countries.¹³

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 (see Box 17.8) and publish the State of the Environment Reports on the Internet. At the time of writing, reports at city level were not yet being produced.

Box 17. 8. Weekly and daily environmental 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 the 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 quality¹⁴ 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 the air quality indices of key cities on the Internet.

After more than two years of weekly bulletins of urban air quality in key cities, in 1999, 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 release of urban air quality weekly/daily reports has played a positive role in enhancing the standing of the government and increasing the environmental awareness of citizens.

In addition to State of the Environment reports at national and provincial level, reports on the environmental situation in key environmental management regions and river basins are produced. For example, in 1997, NEPA issued the *Report on Ecological and Environmental Monitoring in the Three Gorges Region of the Yangtze River*, publicizing the ecological and environmental status of the Three Gorges reservoir area as well as of the upstream area ranging to the estuary of the Yangtze River. The main indicators of this report included monitoring networks, engineering progress, socio-economic development, natural eco-environment status, eco-environmental experimental stations, polluting source emission status, environmental quality status, and human health in the reservoir area. The compilation of the report was carried out by China's National Environmental Monitoring Centre and some 18 other units, including the National Climate Centre, the Eco-Environmental Monitoring Centre of the State Forestry Administration, the Chinese Yangtze River Three Gorges Engineering Development Group Company and the State Seism Bureau. At present, reports on the water quality of key river basins are also published periodically in the newspapers, including *China Environmental News* and *People's Daily*.

However, some reports on the environmental situation (especially in urban areas) are classified as confidential and are available only to senior staff of environmental protection departments at various levels. The *Environmental Quality Briefs* are provided to leaders of environmental protection departments. The main contents and indicators 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.

Information technology has been playing an important role in promoting public awareness of environmental issues. The public can express their 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 from government policies.

Recently, central and local governments have been using a more systematic mechanism for disclosure of environmental information to influence the environmental behaviour of enterprises. An example of the successful application of an environmental performance rating and information disclosure scheme in China is presented in Box 17.9. This scheme is a good example of providing a platform for communication between different stakeholders, including the government, industry and the public.

Box 17.9. Environmental information disclosure and performance rating in China

The State Environmental Protection Administration (SEPA) has become interested in public disclosure as a means to complement traditional regulatory instruments. Since 1989, SEPA and its predecessor NEPA have maintained a list of enterprises with excellent environmental performance. Enterprises are included on the list following the recommendation of provincial Environmental Protection Bureaus, after being vetted by a national Panel of Evaluation and Assessment whose representatives include SEPA, the General Environmental Monitoring Station of China and other ministries. By 1997, this assessment had been conducted six times, and 500 enterprises had been awarded the title of "Nation-wide Advanced Enterprise on Environmental Protection". Over time, numerous enterprises have been removed from the list for failure to maintain standards consistent with the award. However, over 180 enterprises have retained their excellent ratings.

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 the World Bank experts have worked together to establish a "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 municipal-level pilot Green-Watch programmes have been implemented. Reactions to these programmes have been positive, and SEPA currently plans to launch pilot

programmes in other areas, in preparation for nation-wide implementation of public disclosure. The Green-Watch draws on five principal sources of information: self-monitoring reports, inspection reports, records of public complaints, regulatory actions and penalties, and surveys that record characteristics of the firms that are relevant for rating environmental performance.

The rating system incorporates emission information for 13 regulated air and water pollutants. Pollutant discharges are rated by total quantity and concentration. Solid wastes are rated in three dimensions: production, disposal and recycling.

The rating process involves a detailed account of a firm's behaviour in several dimensions. Environmental management is graded with respect to: timely payment of pollution discharge fees, implementation of the National Pollutant Discharge Reporting and Registering Programme, the Standardized Waste Management Measures, and other administrative regulatory requirements. Internal environmental monitoring, staff training and internal document preparation are taken into account. In addition, the rating system considers the efficiency of resource use, its technological level and the quality of its environmental management system.

The rating scheme is comprehensive, voluntary and offers participants an opportunity to discuss their rating with the authorities before it is disclosed. After being set, the ratings are sent to the programme's steering board for final checking and ratification prior to public disclosure. To ensure accurate press reports, journalists are invited to a detailed presentation of the programme, including an explanation of the rating system and demonstration of the software that is used for ratings development.

Source: Hua Wang, Jun Bi, David Wheeler (2002), *Environmental Performance Rating And Disclosure: China's Greenwatch Program*, Development Research Group, World Bank.

5.2. Public participation in environmental decision-making

Public participation is one of the key concepts underpinning the principles and practice of good governance. Meaningful participation of relevant stakeholders can increase the effectiveness and efficiency of policies. Public participation can also bring legitimacy, improve credibility and accountability of decision makers and decision-making processes. Stakeholders can identify conflicts and signal potential problems that managers may have overlooked at an early stage. When all stakeholders have a voice and time is taken to find acceptable solutions, public confidence in the fairness of the decision increases, as well as their involvement in their implementation.

Public involvement in decision-making may make it harder to reach the final decision. However, experiences in OECD member countries indicate that public involvement can ensure the durability of decisions and that policies reflect public values. Public participation can also help offset any undue influence of interest or lobby groups over the regulatory system. Benefits of public participation include:

1. improving the quality of decisions (the public may provide site-specific knowledge or offer suggestions that satisfy a wider range of interests);
2. building trust in institutions;
3. resolving conflict among competing interests (resulting in longer lasting and more satisfying decisions, helping to overcome gridlocks);
4. educating the public and stimulating its active engagement in environmental improvement.

5.2.1. Forms of public participation

Legal provisions in China require the authorities to provide information about the state of the environment but also to allow individuals to participate in decision-making processes. The regulations also describe a number of possibilities through which citizens can participate in decision-making. In many

cases, however, these mostly 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 receive public input.

A tradition allowing Chinese citizens to make complaints to government authorities has existed for centuries and was continued after the political changes of 1949. Citizens can express dissatisfaction to specially assigned offices at various levels of government. To reduce the risk of retaliation, many people send unsigned letters of complaint.¹⁵ In addition to relying on government offices and visits, citizens can direct their concerns about environmental matters to:

1. EPBs, as many of them have “complaint divisions” to hear public concerns;
2. mayor’s offices, as many cities have a vice mayor whose responsibilities include environmental protection, and the staff of this office deal with citizens’ complaints; and
3. local People’s Congresses and their Environmental Protection Committees, and citizens frequently bring environmental complaints to their elected representatives.

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. The city has a radio talk-show that gives people an opportunity to discuss their environmental problems. Frequently, citizens first complain to the factory causing the problems and turn to government authorities or the media only if the factory is not responsive. In such cases, EPBs receive anonymous telephone calls tipping them off about factories violating environmental rules.

Letters, visits and telephone calls to EPBs represent other ways of registering environmental complaints. However, citizens also have the right to sue companies that pollute and EPBs that fail to comply with environmental requirements. Although citizens do not often use their right to bring suits, the number of citizen-based environmental court actions is rising.

In addition, there are more interactive mechanisms which allow the public to express their opinion about governmental policies and to actively influence them. These mechanisms include regulatory mechanisms, such as EIA procedures, and informal instruments, such as government consultations with citizens through town meetings, hearings or advisory panels. Selected forms of public participation and their current application in China are presented in Box 17.10.

Box 17.10. Forms of public participation in environmental decision-making in China

Environmental impact assessment (EIA). EIA is an officially established process of analyses that detail the anticipated effects of planned projects or activities on local and regional areas. An EIA can explore options and alternatives for mitigating these effects. EIAs have recently become critical planning documents in China, and often provide legal ramifications on whether the project goes forward or needs to be modified to reduce potentially negative impacts. China formally issued the Environmental Impact Assessment Act in 2002 which became effective from September 2003. The Act requires all projects or plans to have undergone an EIA before the government can approve it. Public participation is required as one of the key components of EIA. In April 2004, the “Tieben Steel Company” in Jiangsu Province was closed by the central government because it violated EIA requirements. While the extent of public involvement in EIAs varies among different projects, EIAs can provide an opportunity for the public to comment on proposed projects and suggest alternatives. They can also include explicit procedures 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 the opportunity for all interested parties to express public feedback on proposed projects, laws, environmental policies or planning. 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 opinions and ascertain where they stand, as

well as give decision makers a sense of the diversity of public opinions. However, in many cases the hearings are simply informative, which may reduce their effectiveness. Sometimes, more emphasis is put on opinions from experts than those from ordinary citizens. Hearings involving substantive evaluation, where different project proposals are vetted publicly or details of project design are debated, are less frequent.

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 involved in crafting policies, designing and modifying projects to reduce impacts and assessing the distribution of costs and benefits. However, most of the 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 realized the importance of information disclosure. Seeking public comments on documents and reports can also increase the accountability of decision makers – as well as 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 disclosed for a charge.

Informational meetings. Even though government bureaus and environmental managers hold meetings at 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.

5.2.2. *Types of non-governmental actors*

Few environmental non-governmental organisations (NGOs) exist in China. Organised civil protest movements against environmental problems have not yet taken place as they did in some OECD member 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 mobilize the public to exert pressure on business behaviour and governmental decision-making.

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 caused environmental damage. By the late 1990s, the media and environmental NGOs had become increasingly influential. NGOs worked with the media to cover environmental affairs, to publicize NGOs activities and gain public support. The campaign for the selection of Beijing as a venue for the 2008 Olympic Games contained a highly visible environmental aspect due to public pressure.

Although NGOs are starting to play an important role in environmental protection in China, they do not have the same opportunities or autonomy as NGOs in OECD member countries. All Chinese NGOs must be registered and approved by the government. Indeed, many are established to meet the objectives of government authorities. Some administrations at the sub-national level still limit 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 to establish NGOs. These include the need to have a sponsoring institution, fewer 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 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. Some examples of participants in the consultations on governmental policies are presented in Box 17.11.

Box 17.11. Key non-governmental actors

Research institutions, training centres and other academic organisations. Even though these institutions are not governmental departments, they usually have very close relationships with the government. They are usually non-profit organisations which provide services for the government and society. Originally, the government provided financial support for these organisations, but in recent years such support has been discontinued. As a result, some of these organisations have become profit-making organisations, while others have retained their original status.

Associations registered in civil departments. By 2003, there were more than 100 national societies, associations, foundations and promotion societies in China, such as the China Environmental Protection Foundation, the China Environmental Sciences Society and the China Environmental Industry Association. In addition, there are also societies and associations at the local level.

"Government-sponsored" NGOs. While these "semi-public" or "semi-official" environmental groups may not be independent, they can still be effective, given their high-level connections. At the same time, such organisations are not likely to rally any large-scale activity against the state or business sector, and the scope of their work is correspondingly circumscribed.

Registered companies with the purpose of promoting environmental protection. Since the law required that all non-profit organisations must associate with a government department, some civil organisations have registered as companies. However, their major activities are still non-profit.

University student associations. By 2001, there were 184 environmental associations in 176 universities and colleges. This number did not include the very active associations in Hong Kong, China and Macao. A national association has been established to co-ordinate the activities of different universities. Even though students from primary and secondary schools are not excluded from environmental activities, there are very few associations at this level.

Groups associated with international NGOs, registered or unregistered. These groups have their own names and organise activities independently. The most popular are "Friends of the Earth" and "Volunteers of Green Garden".

5.3. Suggestions for promoting access to information and public participation

As discussed above, access to information and public participation has progressed in China over recent years. General information about the state of the environment and public policies is provided by the government; citizens can express their dissatisfaction with the decisions of the authorities and, if necessary, bring their complaints to the administrative or the court system. According to media reports, the increased public attention, which resulted from better access to information about levels of pollution charges and penalties, has reduced the abuse of power and misuse of pollution charges. However, the government,

official NGOs as well as the media often confine themselves merely to “lecturing” the public on the need to protect the environment rather than informing the public on problems and solutions.

To remedy this situation, the authorities may need to put more effort into gathering, updating and disseminating environmental information that is relevant to their functions. In particular, they should collect information from private parties or any other groups, that undertake or wish to undertake activities that could significantly affect the environment. Information disclosure and performance rating schemes, currently in a pilot phase, should be replicated in other parts of the country, as these are potentially powerful vehicles which combine the provision of environmental information to the public and generate public pressure on polluters.

Moreover, in the case of an imminent threat to human health or the environment, all information, which could enable the public to take measures to prevent or mitigate harm arising from the threat, should be disseminated immediately.

Not only should information be available and disseminated, but it should also be provided in a transparent manner and be effectively accessible. The government needs to pursue the dissemination of environmental information in the form of environmental reporting and information which can be presented and disseminated by the media. A national report on the state of the environment should also be published and disseminated at regular intervals. Such measures would ensure that information is updated and is easily accessible to the general public. This would certainly facilitate public enquiries on the quality of the environment and impacts on human health. Moreover, the information should become progressively available in electronic databases and on the Internet.

By enhancing environmental awareness, supporting environmental associations and providing the necessary training, society can become an active implementation agent. The government should remove barriers to the development of environmental non-governmental groups so that they could participate more autonomously in the development and implementation of environmental policy. They should be also allowed to raise their own resources for operations, either through membership fees or services provided to the public. These steps would contribute to the emergence of a civil society.

Studying the mechanisms for public participation in OECD member countries can help to apply proven solutions, approaches and procedures adapted to the Chinese context. The adaptation of the provisions of the Recommendation of the Council on Environmental Information on Access to Information and Participation in Environmental Decision-Making¹⁶ or the provisions of the UNECE¹⁷ Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (so called Aarhus Convention) can provide useful models in this regard (see Box 17.12).

Box 17.12. Examples of international instruments on strengthening the use of environmental information and public participation in decision-making

OECD Recommendation of the Council on Environmental Information (1998)

OECD member countries consider that openness in information and wide availability of public information on environmental issues is conducive to: *i*) more cost-effective policies; *ii*) greater accountability to all stakeholders concerned; and *iii*) increased public awareness and participation. Similarly, public awareness of environmental conditions and risks is considered essential to the protection of human health and the environment. Therefore, in 1998 the OECD Council adopted the Recommendation on Environmental Information. This document calls on the member countries to:

1. Intensify efforts to improve as far as necessary the quality and relevance for environmental policy of data and information systems on the environment and related economic variables, and in particular:

- improve monitoring and data collection concerning environmental pressures, conditions and responses, including explanatory information about current environmental changes;
- encourage all appropriate levels of government to collect environmental data in order to enable them to monitor progress in environmental policies which they implement;
- promote co-operation on environmental data among different administrations and government levels;
- develop co-operation in sharing methodologies and improving data comparability and collection systems, drawing on work done in various member countries and in the framework of international organisations;
- promote periodic assessment by regional or local authorities of environmental situations in their jurisdiction.

2. Further develop and use indicators to measure environmental performance, and in particular:

- establish indicators of progress concerning implementation of national and sub-national policies on the environment, eco-efficiency and sustainable development;
- systematically compare achieved results with relevant objectives of environmental policies and, where appropriate, related international commitments;
- pay particular attention to the availability, reliability and international comparability of indicators concerning international environmental issues.

3. Establish effective mechanisms to better inform the public, decision makers and the authorities on environmental and sustainable development conditions and issues, and in particular:

- encourage appropriate levels of government to make publicly available reports on the results of public policies and related actions;
- use modern effective information communication methods to enable timely, easy and inexpensive access to large volumes of information;
- promote co-operation on dissemination of environmental information among different administrations and government levels as well as non-governmental organisations concerned.

4. Provide public access on request to non-confidential information on non-compliance as well as on sanctions levied for violation of environmental laws.

5. Support educational efforts towards enabling the public to make use of available environmental information.

UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (1998)

The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (so called Aarhus Convention) was adopted in 1998 in the Danish city of Aarhus at the Fourth Ministerial Conference in the "Environment for Europe" process. It was described by United Nations Secretary-General Kofi Annan as "the most ambitious venture in environmental democracy undertaken under the auspices of the United Nations".

The Aarhus Convention links environmental and human rights. It seeks to strengthen the role of members of the public and environmental organisations in protecting and improving the environment for the benefit of future generations. Through its recognition of citizens' environmental rights to information, participation and justice, it aims to promote greater accountability and transparency in environmental matters. Specifically, it aims to:

- allow members of the public greater access to environmental information held by public authorities, thereby increasing the transparency and accountability of government;

- provide an opportunity for people to express their opinions and concerns on environmental matters and ensure that decision makers take due account of these;
- provide the public with access to review procedures when their rights to information and participation have been breached, and in some cases to challenge more general violations of environmental law.

To date, the Convention has been ratified by 30 European countries. Although the Convention is regional in scope, it is in fact open to accession by countries throughout the world.

6 Conclusions and recommendations

6.1. Progress in developing and implementing environmental policies and key challenges

Since the inception of its policy of reform and opening-up in the late 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, China entered this period with already heavy pollution loads. Rapid industrialisation and urbanisation have exacerbated environmental problems. The quality of surface and ground waters, air in urban areas, land and natural resources, including forestry, has been seriously affected. This in turn has adversely affected human health and the productivity of natural resources. Environmental quality in rural areas has been deteriorating as a result of expansion of TVEs and intensive and unsustainable farming practices. The Chinese authorities recognized that previous patterns of economic growth were not environmentally sustainable. As the state of environment continues to deteriorate, the potential for maintaining fast economic growth may be affected.

China's policies and the institutional setting for environmental protection have undergone several transformations over the past few decades, reflecting different stages of government restructuring and an increasing emphasis placed by political leaders and the government on environmental issues. Starting from late 1970s, the protection of the environment has received growing attention. Initial steps to create environmental laws were modest and spread over time. The late 1990s and the beginning of the new century witnessed an important acceleration in the development of a comprehensive regulatory and institutional framework for environmental management. Experience which has accumulated over the years helped to improve the effectiveness of environmental regulations and institutions. The public was also more engaged to promote better compliance with environmental requirements.

These policies, together with significant changes in the structure of the economy, especially in the rural sector, contributed to mitigating environmental pressures in many areas. For example, the gross value of industrial output doubled between 1991 and 1998 while total discharge of major pollutants increased only slightly. Water pollution, especially from small enterprises and TVEs, decreased significantly, emissions of particulates and other pollutants have been curbed, pressures on water quality from the use of pesticides and fertilizers in agriculture have also decreased. In many cases, however, the positive changes resulting from structural changes and environmental policies have been offset by the sheer scale of pollution and natural resource consumption stemming from the fast-growing market economy and continuing population growth.

While there is some evidence that environmental policies have had some effect, there is also scope for improvement. The policies still often have a declarative character and lack realism. The low effectiveness of policies is also influenced by a lack of coherence among environmental regulations, conflicting interests at different levels of the administration, and lack of technical capacity and resources available to environmental institutions to carry out their duties. The incentive framework within which enforcement bodies work at sub-national level (generally favouring development over environment) results in widespread non-compliance with environmental requirements. These problems are further magnified by slow progress in engaging sectoral bodies and the public at large in addressing environmental problems.

6.2. *Contradicting responsibilities at different levels*

As described above, a general trend of devolution and decentralization has shifted the implementation of environmental policies towards local governments. As a result, sub-national EPBs are now assuming greater responsibility for environmental protection and natural resources management. However, the subsidiarity principle¹⁸ of governance is seldom recognized in designing policy actions and optimising functions that could be allocated to various levels of government. Although the central government authority should be able to intervene at any time to prevent abuses at the local level, it should also clearly delegate and allocate responsibilities for various environmental management matters between different levels of administration to ensure that the specific problems can be tackled using local knowledge and capacities.

Given China's enormous size and complexity, a thorough analysis is required to analyse and resolve contradictions between horizontal and vertical responsibilities at all levels.¹⁹ Options may include: delegating more regulatory authority over all but the smallest industrial enterprises to provinces and municipalities and away from counties, and increasing supervision of lower levels by higher levels through performance audits and public reporting. This could also include increasing the role of SEPA in managing EPBs. All these can help to guarantee a fair, effective and transparent framework of policy-making and enhance the institutional capacity in the implementation. Once analysis is completed, appropriate changes need to be included in the legislation.

6.3. *Recommendations for better governance in environmental policies*

In view of the above, the institutional and procedural prerequisites for good environmental management are:

- consensus/science-based objectives (differentiated by time) appropriately reflected in policies, laws and regulations;
- appropriate institutional framework for policy development and implementation, including a clear allocation of responsibilities and powers between national and sub-national levels of government;
- institutions and instruments for policy integration and coherence, embracing the three pillars of "sustainable development": environmental, economic and social;
- provision of information, public participation and access to an impartial judiciary in the development and implementation of environmental policies.

In order to further promote better environmental policies based on good governance principles, the Chinese authorities may wish to consider the following issues.

6.3.1. *Improving policy planning*

The current approach to environmental planning may benefit from a wider application of the "planning cycle" approach used in a number of OECD member countries. It includes setting explicit objectives and targets, evaluating progress in achieving them, providing feedback to policy makers and adjusting priorities on the basis of "results of the ground" and lessons learned. Such an approach requires the participation of relevant stakeholders. Analysis of the costs of achieving environmental goals, combined with a robust analysis of possible funding sources, could be a powerful instrument for

environmental administrations in their discussions with other relevant government bodies over resources for environmental improvement.

6.3.2. Strengthening inter-sectoral policy co-ordination

As most issues related to sustainable natural resource use and environmental management cut across lines of administrative responsibilities, effective ways are needed to co-ordinate the work of different bodies, to reduce overlaps and contradictions, maximize synergies and adjust problems. In the current situation of weak co-ordination of environmental and other policies, the Chinese authorities may consider various options. One could be the elevation of SEPA to the full status of ministry and full membership of the Cabinet. This arrangement exists in a number of OECD member countries. Another approach could be the creation of a high-level co-ordination and communication mechanism for integration of decision-making within the whole government similar to the State Council's Environmental Protection Commission. Such a mechanism could ensure that environmental considerations are taken into account in setting sectoral policies, overlaps and contradictions are reduced and synergies between the work of different bodies are maximized. Such a body would need to be established at a suitably high governmental level and provided with sufficient resources to carry out a co-ordinating role. Lessons learned from the CCIED could be helpful in this regard.

6.3.3. Clarifying responsibilities

Taking account of China's size and complexity, a thorough review of the vertical and horizontal distribution of responsibilities in the environmental realm could help identify ways to make the system more vertically and horizontally integrated. Options may include: delegating more regulatory authority over all but the smallest industrial enterprises to provinces and municipalities and away from counties, and increasing the supervision of lower levels by higher levels through performance audits and public reporting. This could include increasing the role of SEPA in managing EPBs. All these can help to guarantee a fair, effective and transparent framework of policy-making and enhance the institutional capacity in implementation. Once analysis is completed, appropriate changes need to be included in the legislation.

6.3.4. Strengthening capacities

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. This may involve SEPA and EPBs concentrating their efforts on "core" public functions and a smaller number of priority issues and focusing on problems which are potentially solvable. Since pollution in rural areas is severe, and there is a lack of suitable institutions/staff, the institutional setting is in particular need of review.

In addition, mechanisms for continuous training for SEPA and EPB staff 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. These training and research institutions should cater not only for the personal capacities of environmental and enforcement officers to deal with environmental issues, but also strengthen the capacity of staff to co-ordinate their activities with sectoral bodies. As government institutions in China are overloaded with administrative jobs and lack time for thorough research of policy options, they need additional support from experts. The establishment of environmental "think-tanks", which can be contracted to carry out analysis and research as well as open up the market for consulting services in the

environmental field, could play instrumental roles in forging effective and efficient solutions in light of the latest scientific research.

6.3.5. Making regulations coherent, efficient and effective

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 regulating parties and the public. RIA applied in a number of OECD member countries can improve the quality of legislation by eliminating contradictions between various regulations, reducing the costs and enhancing effectiveness. 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.

At the same time, the government has to continue to diversify approaches and environmental tools to provide a better fit between solutions developed and the problems being experienced in different parts of the country. The “one size fits all” approach played a useful role in the past, but is increasingly inadequate to meet current demands. Impacts of policy instruments should be enhanced by designing their optimal mixes with the objective of increasing effectiveness and efficiency of these instruments in addressing priority environmental problems. Such mixes should include emission standards, permitting system and economic instruments applied in a coherent manner to differentiate these approaches between large and small and medium-sized enterprises. Recent OECD experience in developing mixes of policy instruments in OECD member countries and in Eastern Europe could serve as examples.

6.3.6. Strengthening compliance assurance

Appropriate compliance assurance strategies should be developed which enable strict and timely response to non-compliance, while creating fair incentives to improve compliance and reward for better environmental behaviour. Experience from the application of such strategies exists in several OECD member countries. At the same time, however, the discretion of enforcement personnel should be limited and described precisely in regulations. More use could be made of public pressure to achieve compliance with environmental regulations. Implementation of such a policy would require awareness-raising campaigns and capacity building efforts.

6.3.7. Increasing provision of information and promoting participation of the public

Promoting public participation in environmental decision-making should continue to be one of the key objectives of the state and local environmental administration. By enhancing environmental awareness, encouraging environmental associations and providing training, the public can become an active implementation agent.

The government should enhance the dissemination of environmental information in the form of environmental reporting and information, particularly for use by the media. Information disclosure and performance rating schemes are potentially powerful vehicles, combining the provision of environmental information to the public and generating public pressure on polluters. This approach, currently in a pilot phase, should be replicated in other parts of the country, especially in smaller cities, western provinces and rural areas.

A national report on the state of the environment should also be published and disseminated at regular intervals. Such measures could ensure information is updated and is easily accessible to the general public. It would certainly facilitate public enquiries on the quality of the environment and impacts on human

health. Moreover, environmental information should become progressively available in electronic databases and on the Internet to facilitate access.

The government should remove barriers to the development of environmental non-government groups so that they could participate more autonomously in the development and implementation of environmental policy. They should also be allowed to raise their own revenues for operations, either through membership fees or services provided to the public.

Studying mechanisms for public participation in OECD member countries can help to apply the best approaches, and procedures in a way that is adapted to the Chinese context. The adaptation of the provision of the OECD Recommendation of the Council on Environmental Information or the provisions of the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (so called Aarhus Convention) can provide useful models in this regard.

NOTES

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1. This chapter was written by Krzysztof Michalak, Non-Member Countries Division, Environment Directorate, OECD. An important contribution to the chapter was provided by Professor Jun Bi from the School of the Environment, Nanjing University, Nanjing, China.
 2. Statement made at the Third Plenary Meeting of the Sixteenth National Congress of the CPC.
 3. This “scientific development strategy” (also called a “second generation development strategy” or a “new development strategy”) was formally promoted at the Third Plenary Meeting of the Sixteenth National Congress of the CPC in October 2003.
 4. The core part of “circular” economy is the circular (closed) flow of materials and the use of raw materials and energy through multiple phases. The “3R” principles (reduction, re-use and recycle of materials and energy) are often cited to describe the three possible approaches in practice.
 5. Some environmental problems may be less “visible”, but may still have a higher impact on the health of the population or lead to a higher economic damage, also in the longer term.
 6. The example of the development of the Netherlands’ National Environmental Policy Plans (NEPP1 and NEPP2) is particularly comprehensive and could serve as a model for China.
 7. As of 2000, all 31 provincial EPBs were given the status of independent bodies and 30 of them were first-tier institutions. All city-level EPBs were independent bodies, and most were first-tier, while about 70% of county EPBs were independent.
 8. A number of examples can be found in the *OECD Environmental Performance Reviews*.
 9. In addition, they retain some percentages of other payments for late payment or long-term payment. Ma, Xiaoying and Leonard Ortolano (2000).
 10. **Regulatory appraisal** is the *ex ante* assessment of proposed new or revised regulation, whereas **regulatory evaluation** refers to the *ex post* assessment of existing regulations. Evaluation may be undertaken either for the environmental regulatory system as a whole or for individual regulatory instruments.

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11. 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”. Ma and Ortolano (2000).
 12. <http://www.ccchina.gov.cn/english/source/ca/ca2003091813.htm>
 13. See OECD (1998) and further OECD publications on environmental indicators and performance assessment.
 14. Monitoring data included such pollutants as SO₂, NO_x and Total Suspended Particulates.
 15. In many provinces, anonymous notes account for between 25-50% of all citizens’ complaint letters.
 16. Adopted by the OECD Council at its 922nd session on 3 April 1998, see: http://www.oecd.org/findDocument/0,2350,en_2649_34303_1_119672_1_1_1,00.html
 17. United Nations Economic Commission for Europe, for document see: <http://www.unece.org/env/pp/welcome.html>
 18. This principle calls for delegating/allocating the responsibility for addressing a specific problem to the lowest possible level where issues can be effectively managed and problems addressed most effectively and efficiently.
 19. For an example of discussion about the allocation of responsibilities between various administrative levels see “Encouraging Environmentally Sustainable Growth” in *OECD Economic Reviews: Poland*.

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