CHINA'S ENVIRONMENT:

NEXT STEPS IN ADMINISTRATIVE REFORM

ISSUE

- What are the next incremental steps required to meet the government's environmentally sustainable development objectives recently articulated in Jiang Zemin's report to the 16th Communist Party Congress.

FINDINGS

- Over the last twenty years, China's economy grew four times higher than those of the high income countries of the world. This had significant implications for the environment and the government, through the State Environmental Protection Administration (SEPA) has responded aggressively to the challenge. SEPA has developed an environmental administrative and regulatory system which places China in the front rank of developing countries. Where it has had the authority and resources to act—mainly in the area of industrial pollution control—advances have been made. But in other areas where it has not had the authority or resources, overall environmental quality has deteriorated.

- The prospects for the foreseeable future are that environmental conditions will continue to deteriorate unless fundamental changes are made in the government's development strategy. The reactive approaches of the past will not be sufficient to address this challenge. The government needs to become more pro-active on the environmental agenda, in particular, by strengthening the role of environmental factors in overall development policy formulation and evaluation.

- The long term agenda will require actions on:

  - administrative arrangements for environmental management;
  - SEPA's rank;
  - Relationships between environmental agencies at different levels;
  - Conflicts of interest within resource development agencies;
  - Cross-sectoral coordination; and,
  - Public access to environmental information and public participation environmental decision-making.

NEXT STEPS

- SEPA should become the Ministry of the Environment as a member of the State Council cabinet so that it can participate more effectively in the government's strategic planning. This action would also bring China into line with current administrative practice within the OECD, which is the standard by which China should measure itself. SEPA's staffing level also should be increased.

- An inter-agency coordination body, such as the former Environmental Protection Committee (EPC) under the State Council, should be established to strengthen cross-sectoral coordination on environmental issues. To more accurately reflect its role, it should be named the Sustainable Development Committee

ISSUE

This note has been prepared as a contribution to the Government of China's deliberations on the next round of State-level administrative reform.[1] The government has clear environmental policy goals which were most recently articulated in Jiang Zemin's report to the 16th Communist Party Congress. Sustainable development was identified as one of three key pillars of the strategy to build a "well-off society in an all-round way". An essential element of that objective is to address "the growing contradiction between the ecological environmental and natural resources on the one hand, and economic and social development on the other."

The issues facing the government, and the subject of this note, are: (a) what should be the long term agenda defined by its sustainable development objectives; and (b) what steps should be taken as part of the current round of reform to pursue that agenda.

BACKGROUND

Over the last twenty years, China's economy grew at a rate which, on average, was four times higher than high income countries of the world, and substantially unprecedented in any country in modern history. Growth was accompanied and reinforced by a wide range of fundamental changes in the nature of the economy and society as a whole: (a) the country changed from a planned and supply-driven economy to a much more market oriented and demand-driven economy; (b) the private sector progressively replaced the State-owned sector as the main engine of economic growth; (c) the economic role of the rural sector declined while at the same time, the diversity of agricultural output and intensity of production increased significantly; (d) poverty declined dramatically although inequality increased markedly; (e) population continued to grow but the peak (expected around the middle of the 21st century) came into sight; and, (f) per capita consumption increased significantly and the pressure on natural resources exceeded any levels previously experienced.

These changes are continuing and may actually accelerate as a result of China's recent accession to the World Trade Organization (WTO).

All of these developments had implications for the state of the environment, both beneficial[2] and adverse.[3] The adverse effects have been progressively tackled through the work of the State Environmental Protection Administration (SEPA) which, amongst other things, has developed an administrative and regulatory system which places China in the front rank of developing countries. Where SEPA has had the authority and resources to act, advances have been made. But these have been offset by setbacks in other areas where it has not had the authority or resources. The overall result is

[1] The note has been prepared by staff and consultants of the World Bank's Environment and Social Development Division, East Asia and Pacific Region. It reflects views expressed in a number of Bank publications, most recently World Bank. 2001 *China: Air, Land and Water – environmental priorities for a new millennium* World Bank, Washington DC.

[2] For example, the change from a planned to a market-driven economy generally increased resource-use efficiency which means that a given level of growth could be achieved with less consumption of basic raw materials; structural reform in the industrial sector has favored the growth of industries which produce lower levels of pollution per unit of output; diversification of agricultural output resulted in many land use changes which were environmentally beneficial (e.g. conversion of grain production land to economic forest production).

[3] For example, even though the pollution intensity of industrial production tended to decline, the benefits were outweighed by the overall growth in industrial output.

that environmental conditions have generally deteriorated and environmental costs have increased (see Annex A).

Opinions vary as to the true cost of these damages in China. The most recent comprehensive estimate prepared by the World Bank[4] concluded that environmental costs were equivalent to about 7.7 per cent of Chinese GDP with incremental human health costs accounting for more than 80% of the total. Other analysts have made different estimates ranging from a low of around 2% of GDP to highs in the order of 14%. There will always be debate about the actual number but there is no question that there is a current cost that is real and significant within the order of accuracy of GDP estimates as a whole.

As environmental quality deteriorated during the 1980s and into the 1990s the level of political awareness of the need to take action increased as did the administrative responses, primarily through the work of what is now the State Environmental Protection Administration (SEPA). SEPA's development as an environmental agency over the last 20 years has been one of alternating forward and backward steps with the balance favoring forward progress. The last reform (1998) was mixed for SEPA. On the positive side, SEPA's rank was upgraded but, on the negative side, its staff level was reduced. Most foreign observers would agree that, given China's size and the scope and seriousness of the environmental agenda, SEPA is significantly under-resourced in terms of staff, budget and authority.

During this development process, significant progress was made in development of a management and regulatory regime covering, to varying degrees, the three main themes of the environmental agenda: industrial pollution, urban environmental management, and "ecological environmental protection," or sustainable natural resources management.

The regulatory and administrative framework for **industrial pollution control** is quite comprehensive. The current framework of command-and-control measures supplemented by economic, voluntary, and public disclosure instruments provides a good basis for effective pollution control. In terms of design and concept, the system rates amongst the best of developing countries but it suffers from two major shortcomings: (a) the laws and regulations lack effective compliance measures and are inadequately implemented; and (b) they are concentrated primarily on stationary point-source pollution control.

Notwithstanding these problems, there has been measurable success in industrial pollution control in China. Between 1991 and 1998, the gross value of industrial output more than doubled while the total discharge of major pollutants barely increased.

Success on the other elements of the agenda has been less encouraging however.

Continuing deterioration of China's **urban environment** is due, in large part, to the complexity of the issues, the large number of institutions influencing the pace and nature of development, the rapid rate of urban growth and SEPA's marginalization in the urban planning process which limits the degree to which environmental factors are taken into account. Various instruments have been developed to deal with the adverse environmental effects of urban growth and development but, in comparison to the instruments developed for industrial pollution control, they are fewer in number, less sophisticated, and more weakly applied. As a result, they have been less successful.

[4] World Bank. 1997. *China's Environment in the New Century: Clear Water, Blue Skies* in "China 2020: Development Challenges in the New Century" World Bank, Washington DC.

Progress on the **ecological protection and natural resources management** agendas has been even less satisfactory even though the government has made major financial commitments to afforestation and reforestation. Contributing factors include: (a) there have been inconsistencies between some of the development goals of the large resources management agencies and the government's overall environmentally sustainable development objectives; (b) responsibilities for ecological protection are spread across a wide range of government organizations with inadequate attention being paid to cross-sectoral coordination; and, (c) the government's approach to ecological protection typically places too much emphasis on reactive approaches and too little emphasis on proactive approaches.

The comparative lack of success in dealing with the urban environmental management and ecological and natural resources management agendas is the main reason that China's environmental balance sheet has continued to deteriorate. The situation will continue to worsen unless corrective action is taken immediately.

INTERNATIONAL EXPERIENCE

The environmental management problems being faced by China are not new although they are of a scale that has been experienced by only a small number of countries. Most OECD countries have successfully addressed similar problems and instructive lessons can be learned by studying their experiences.

The *first lesson* of international experience is that all OECD countries have accepted environmental protection as one of the five core responsibilities of modern governments. These five responsibilities are:[5]

- to establish the legal foundation for the country;
- to ensure macro-economic stability;
- to provide or ensure provision of basic social and infrastructure facilities and services for the population;
- to protect vulnerable groups in society; and,
- to protect the environment and natural resources.

The *second lesson* is that the effectiveness of environmental programs is closely correlated with the role and position of the environmental agency within the government. Different countries have found different ways to provide the necessary level of influence for environmental agencies. But, in all cases, the environmental agency is situated sufficiently high in the executive structure to allow it to participate directly in the government's deliberations on general development policies in addition to environmental policies.

On balance, it is noted that the effectiveness of environmental agencies tends to be increased if they are: (a) "full" ministries;[6] and, (b) "cabinet" level ministries.[7] Full ministerial status increases the prominence and political visibility of environmental issues and has been associated with notable improvements in effectiveness as, for example, in the case of Germany in 1987, Mexico in 1990, and

5 World Bank. 1997 World Development Report Washington DC.

[6] Full Environmental Ministry—the agency's sole or primary responsibility is environmental management and protection.

[7] The term "cabinet" is used to define the subset of government ministers who participate directly with the head of the state in determination and administration of government policies and affairs.

Brazil in 1992. Cabinet status means that the Environment Ministry can inject an environmental perspective into consideration of all aspects of government development policy.

The *third lesson* is that, to be effective, environmental ministries need to be adequately staffed. Table 1 shows the staffing levels environmental ministries of 11 OECD countries as well as five developing or newly industrialized countries in the east Asia region, including China. China does not compare well.

Table 1: Staff Levels of Environmental Agencies in Selected OECD and Developing Countries

OECD Countries

Country	Name of Environmental Protection Institution	Staff No.[a]
Australia	Ministry of Environment and Heritage	> 3,000
Canada	Ministry of Environment	> 5,000
Demark	Ministry of Environment and Energy	> 3,000
France	Ministry of Ecological Protection and Sustainable Development	2,351
Germany	Federal Ministry of Environment, Natural Protection and Nuclear Security	3,000
Japan	Ministry of Environment	1,131
South Korea	Ministry of Environment	392
New Zealand	Ministry of Environment	110
Russia	Ministry of Natural Resources	> 700
Sweden	Ministry of Environment	1,500
USA	Environmental Protection Agency	> 18,000

DEVELOPING COUNTRIES

Country	Name of Environmental Protection Institution	Staff No.[a]
Cambodia	Ministry of Environment	1,301
China	**State Environmental Protection Administration**	**220**
Indonesia	Ministry of Environment	About 1,000
Philippines	Environmental Management Bureau	599
Vietnam	National Environmental Agency	1,097

Source:

[a] Surveys by the staff of theWorld Bank, Renmin University, and the Ecological Center of the Chinese Academy of Sciences, and reviewed by a SEPA research institute.

Finally, international experience shows that several functional characteristics are associated with effective environmental management and control:

- Political commitment to environmental issues. No substantive progress is being made anywhere unless there is a reasonable level of awareness and understanding amongst political leaders of the need to actively pursue an environmental agenda;

- Separation of environmental oversight from resource development functions. The tendency in OECD countries has been to separate environmental oversight functions from functions associated with resource development. Where this is not done, serious conflicts of interest can occur with the result that, in most cases, the interests of environmental protection are subordinated to sectoral

development interests.

- Effective cross-sectoral coordination. Cross-sectoral coordination bodies, often chaired by the head of state or chief executive of state, can play a very useful role in aligning the operations of different agencies although the effectiveness of these bodies is heavily influenced by the level of political support and interest.

- Division of implementation responsibility across different levels of government. Environmental management and control cannot effectively be administered from the center, even in the most centralized of governments. There needs to be a division of responsibility. The State should reserve responsibility for and authority to set minimum environmental standards, manage natural resources in the national interest, and ensure compliance with foreign policy obligations such as global environmental agreements. Other functions can be decentralized provided there is sufficient and effective supervision to protect higher interests, including ensuring conformance with national environmental norms. Considerable care needs to be taken in decentralizing authority below the Provincial level however; local governments tend to be better at administering controls over "nuisance" environmental issues[8] and less effective at regulating industrial pollution.

- Public access to environmental information and participation in environmental decision-making. It is almost universally accepted internationally that citizens have a basic right to know about the state of environment and role to play in setting and supporting environmental objectives. Governments can facilitate this in a number of ways including disclosure of environmental quality data, public review of and comment on proposed laws and regulations, and public participation in environmental impact assessment and related activities such as spatial planning and sectoral planning.

Many of the lessons of international experience have already been internalized in China but more work needs to be done. Annex B summarizes the lessons of international experience, briefly assesses the present situation in China, and outlines a broad agenda of issues that still need to be tackled.

FINDINGS AND RECOMMENDATIONS

There is no doubt that China is facing a major environmental challenge. If GDP growth continues at or near 9% into the short to medium term future, urbanization continues and possibly even accelerates, and industrialization continues to move towards production of more highly transformed products, the scope and dimensions of the environmental agenda will continue to grow and become more complex. The reactive approaches of the past will not be sufficient to address this challenge. The government needs to become more pro-active on the environmental agenda and, to do this, it needs to position and equip SEPA to do the long term strategic thinking that needs to be undertaken, inject that thinking into the formulation of development policy, and encourage cross-sectoral coordination for environmentally sustainable development.

The lessons of domestic and international experience provide complementary guidance on how to achieve these aims. The full agenda is set out in Annex B, but key elements are:

[8] These include noise abatement; regulation and control of small scale and generally non-industrial air and water pollution emissions; and, control of small scale environmental spills.

- Government should maintain its strong commitment to the environmental agenda;

- SEPA should become the Ministry of the Environment as a member of the State Council cabinet to ensure that the government's environmental concerns are taken into account on all aspects of development policy;

- SEPA's institutional capacity, including staffing level, should be significantly increased to bring it more into line with relevant international comparators;

- The State should strengthen supervision of environmental performance at all levels. SEPA should adopt a regional structure along the lines of the People's Bank of China and US Environmental Protection Agency;

- Conflicts of interest within natural resource management agencies, between resource development and resource protection, need to be resolved;

- An inter-agency coordination body, such as the former Environmental Protection Committee (EPC) under the State Council, should be established to strengthen cross-sectoral coordination on environmental issues and the operational procedures for this body should be crafted to optimize the body's activity and efficacy. This body may be designated the Sustainable Development Committee to align its functions more closely with the government's sustainable development objectives;

- The allocation of environmental regulatory authority between the different levels of government should be reviewed and measures should be taken to strengthen oversight of lower levels by higher levels; and,

- The good work on public participation already done by the government needs to be extended to provide a greater role for the people who must comply with China's environmental laws in formulation of these laws, as well as the EIA process and other relevant environmental decision-making activities such as spatial planning.

NEXT STEPS

Clearly, this is a substantial agenda that will require considerable time and effort to implement. However, some steps need to be made in the immediate short term if the environmental challenge is to be kept within manageable bounds. Looking at the broad agenda in the context of the national level administrative reforms presently being considered, the following two actions can and should be implemented immediately:

1. Given the substantial and growing tension between development policy and the environmental agenda, the government needs to strengthen the consideration of environmental factors in policy development and comprehensive environmental supervision of all elements of the government's work. SEPA, in theory, has this responsibility. But, due to the fact that it is not a ministry and member of the State Council cabinet, it is frequently excluded from or not considered a necessary participant in high-level policy considerations and cannot exercise that responsibility in practice. SEPA should become the Ministry of the Environment as a member of the State Council cabinet so that it can more forcefully integrate environmental considerations into the

government's strategic planning. This action would also bring China into line with current administrative practice within the OECD, which is the standard by which China should measure itself. Directly related to this, the regulation governing SEPA's institutional resources needs to be revised to bring it into line with international norms. The result of this would be a significant increase in SEPA's staff.

Actions on SEPA's ministerial status and institutional resources can be justified solely by reference to SEPA's responsibilities on pollution control and the ecological environment, which are areas on which the World Bank has relevant knowledge and expertise. Further justification is provided by consideration of SEPA's responsibilities regarding nuclear industry regulation. This is not a field in which the World Bank has applied knowledge and experience. However, a recent analysis by inspectors of the International Atomic Energy Agency (IAEA)[9] included the following recommendations: (a) staff of the Nuclear Safety and Radioactive Management (NSRM) Department of SEPA need to be increased; and, (b) the rank of the head of the NSRM Department (and, by extension, the head of SEPA) needs to be elevated to levels equivalent to the heads of NSRM's main counterparts.

2. The problem of cross-sectoral coordination or, more correctly, the lack of cross-sectoral coordination, is commonly found to be at the heart of critical development problems facing the government. The issue emerges in water resources management, urban development, forest sector management , product-related environmental measures, biosafety, and even in the energy sector. This dimension of the government's work needs to be significantly strengthened. An inter-agency coordination body, such as the former Environmental Protection Committee (EPC) under the State Council, should be established to undertake this coordinating role. To more closely reflect its role and connect its work with the government's development strategy it should be re-named the Sustainable Development Committee.

[9] International Atomic Energy Agency, 2000, *Report of the International Regulatory Review Team to China* EBP-ASIA-63, IABA/NSNI/IRRT/00/4, Vienna, Austria.

Water

The chemical and biological quality of China's water resources—rivers, lakes, groundwater and coastal waters—is generally poor or very poor. Over the last 10 years, there has been improvement in the quality of some of the larger rivers, but the quality of the remaining water systems (the small and medium sized rivers, the lakes, coastal waters and groundwater) deteriorated. The most widespread pollutant is organic material from domestic, industrial and intensive animal production sources. Other important pollutants include light lubricating oils, industrial hydrocarbons, plant nutrients (from fertilizer runoff), and heavy metals.

It is probable that the water quality situation will worsen in the foreseeable future; projections by the Ministry of Water Resources indicate that water consumption for urban and industrial purposes will increase significantly over the next 30—50 years. Since both forms of consumption lead to emissions of polluted water, total water pollution will also increase substantially.

On balance, there is reason to believe that problems due to industrial water pollution will be controllable. Measurable progress was made during the 1990s and, given continued commitment to the pollution control agenda by political leaders, further development of the legal and regulatory framework, stronger enforcement powers, and provision of adequate staffing and budgets for environmental protection bureaus, it is likely that continued progress will be made into the future. The most difficult water pollution challenges will arise due to three significant emerging problems which are outside the mainstream of work by environmental protection bureaus: municipal wastewater discharges; discharges from intensive animal production units; and, "non-point" pollution due to agro-chemical runoff (fertilizers and pesticides).

The problem of **municipal wastewater** discharges arises due to a widening gap between the rate of urban wastewater production and the capacity of urban sewage collection and treatment systems. China already has the largest urban population in the world and it will become much more urbanized in the foreseeable future. If growth and urbanization continue, water supply services standards continue to improve, and urban per capita water consumption increases from its already high level, resultant water pollution will increase exponentially. According to SEPA's data, total wastewater flows and pollutant loads from municipal sources already exceed those from industrial sources; the first time that this has happened since compilation of these data began.

The problem of **discharges from intensive animal production units** is a by-product of a change in the structure of the rural economy, namely, the increased contribution made to the Gross Value of Agricultural Output (GVAO) by livestock production, which doubled its contribution from 14 percent in 1970 to 31 percent in 1998. Domestic livestock production will continue to increase as will the proportion of livestock raised in intensive production units. Water pollution loads from intensive animal production units are very high. According to some estimates, pollution loads from intensive animal production in

some parts of the country are already of similar size to industrial and municipal loads combined.

The problem of **non-point pollution due to runoff of agro-chemicals (mainly fertilizers)** is producing visible adverse water quality effects in certain areas and also can be expected to increase in the future as agricultural production intensity increases. Regarding pesticides, China is already the largest producer and consumer in the world and there is considerable evidence to suggest that over-use of pesticides and non-compliance with regulations governing their safe manufacture, storage, transport and sale is widespread. Misuse of pesticides is leading to excessive pesticide residues in crops, which directly threatens the health of Chinese people, threatens access to export markets for food products, has adverse biodiversity impacts, and leads to chemical contamination of water and soil.

Air

Air pollution is probably one of the highest profile environmental issues in China because of the ready visibility of industrial air pollutant emissions and dust storms. But it is more than just an aesthetic problem; it is very damaging to public health and to the ecological environment. The most significant air pollutants are suspended particulates (TSP) and sulfur dioxide.

Significant advances were made during the 1990s in air pollution control at medium and large industrial enterprises (including power plants) although less success was achieved with small enterprises, which are now the main source of particulate emissions. National pollution survey data show that total emissions of major air pollutants such as sulfur dioxide, soot, and industrial fugitive dust peaked in the mid 1990s and have been falling ever since due to a combination of declining coal consumption and improved pollution control.

As with water pollution, there are new air pollution problems emerging. Motor vehicle emissions, mainly a problem in very large cities at the present time, are growing fast and are expected to become a major, widespread urban pollution problem in the next 10 years. Indoor air pollution due to domestic use of coal or solid biomass still adversely affects the health of hundreds of millions of people, most of them among the urban poor and the rural population and is a critical problem requiring attention.

As far as the general public is concerned, the most visible and apparent air pollution problem continues to be suspended dust, which remains unacceptably high in most urban areas although some improvements occurred during the 1990s. Important contributing factors other than coal consumption (which has been declining), including dust from construction sites and wind-eroded soil from rural areas.

A far less visible but nonetheless serious problem is acid deposition[1] which, according to government figures, peaked in 1996 and started falling thereafter as coal consumption declined and coal quality regulations were tightened. Notwithstanding this positive achievement, it is possible that the geographical area affected by acid deposition could actually increase over the next 20 years due to the dominant contributions made by large point sources, mainly coal-fired power plants, which have the potential to project emissions over larger areas due to their tall stacks.

In summary, it is reasonable to say that China has probably made more progress on the air pollution than any other environmental issue over the last 20 years but the problem is not yet solved and, in some respects, it could get worse in the future.

Land and ecological systems

China's growth and development is having a more significant impact on its land and ecological systems than on any other aspect of the environment. This is due to a combination of factors: the cause-effect relationships are complex and often not well understood; there has been a substantial imbalance in national development policy in favor of development and against the interests of environmental and ecological sustainability; there are many government agencies involved in this field and their work lacks coordination; many of the large resource management institutions are confronted with serious conflicts of interest in their objectives and responsibilities; and, many of the signs of land and ecological degradation are difficult to detect in the early stages, which can lead to complacency.

China faces overwhelming problems with almost every aspect of the land and ecological agenda. China is now considered one of the most seriously eroded countries in the world. The direct adverse effects of wind and/or water erosion are being experienced by some of the country's poorest and most vulnerable communities (herders and farmers living in mountainous and karst areas) although the indirect effects, mainly in the form of increased flood frequency and severity (water erosion) and dust storms in eastern China (wind erosion), are being felt by a much more widely.

The story of the forests has been somewhat similar, at least until the government took decisive action to reverse deforestation trends by applying a partial logging ban in 1998. During the 1970s, there was a general decline in all measures of the forest resource—area, volume, stocking rates, and age structure. Subsequently, some of these trends were reversed due, in large part, to major programs of reforestation, afforestation, and shelterbelt establishment. As a result, the area of forested land started to increase, as did the volume of wood on forested land. The story in the natural forests was the opposite however; they continued to decline in terms of volume, stocking rate, and age structure

[1] Acid deposition—more commonly referred to as acid rain—is caused by emissions of sulfur dioxide and nitrogen oxides which are converted in the atmosphere into secondary pollutants such as nitric and sulfuric acids, both of which dissolve easily in water. The resulting acidic water droplets can be carried long distances by prevailing winds, returning to earth as acid rain, snow, or fog.

right through to the mid-1990s. These trends were particularly noticeable in mature and over-mature natural forests, which are of most value from an ecological point of view.

China's ecological diversity is of great significance from a global point of view. Almost all of its valuable biodiversity is under stress, and many species are seriously threatened. It is estimated that 15-20 percent of the species in China are now endangered. This significantly exceeds the global average of 10-15 percent. Of the 640 species listed in CITES,[2] 156—nearly 25 percent—are found in China, which is also disproportionately high.

2 Convention on International Trade in Endangered Species.