

The World Bank and China's Environment 1993-2003

Robert C.G. Varley

Director-General, Operations Evaluation: Gregory K. Ingram
Director: Ajay Chhibber
Manager: R. Kyle Peters
Task Manager: Gene Tidrick

This paper is available upon request from OED. It was prepared in 2003 as a background paper for the China Country Assistance Evaluation.

2005
The World Bank
Washington, D.C.



***ENHANCING DEVELOPMENT EFFECTIVENESS THROUGH EXCELLENCE
AND INDEPENDENCE IN EVALUATION***

The Operations Evaluation Department (OED) is an independent unit within the World Bank; it reports directly to the Bank's Board of Executive Directors. OED assesses what works, and what does not; how a borrower plans to run and maintain a project; and the lasting contribution of the Bank to a country's overall development. The goals of evaluation are to learn from experience, to provide an objective basis for assessing the results of the Bank's work, and to provide accountability in the achievement of its objectives. It also improves Bank work by identifying and disseminating the lessons learned from experience and by framing recommendations drawn from evaluation findings.

OED Working Papers are an informal series to disseminate the findings of work in progress to encourage the exchange of ideas about development effectiveness through evaluation.

The findings, interpretations, and conclusions expressed here are those of the author(s) and do not necessarily reflect the views of the Board of Executive Directors of the World Bank or the governments they represent.

The World Bank cannot guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply on the part of the World Bank any judgment of the legal status of any territory or the endorsement or acceptance of such boundaries.

Contact:
Operations Evaluation Department
Knowledge and Evaluation Capacity Development (OEDKE)
e-mail: eline@worldbank.org
Telephone: 202-458-4497
Facsimile: 202-522-3125
<http://www.worldbank.org/oed>

Foreword

The main purpose of this background paper on the Bank's environment work in China, is to support the 2003 China Country Assistance Evaluation. Its findings are based on Bank documents, interviews with Bank and Chinese officials, limited field-work in China, and interviews with DC-based staff, as well as outside China environment specialist.

Abbreviations & Acronyms

AAA	Analytical and Advisory Services
ADP	Agricultural Development Projects
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
ESW	Economic Sector Work
ETAP	Environmental Technical Assistance Project
GEF	Global Environment Facility
MFMP	Multilateral Fund for the Montreal Protocol
NEPA	National Environment Policy Act
ODS	Ozone depleting substance
PACE	Professional Association for China's Environment
SEPA	State Environmental Protection Agency
SMU	Sector Management Unit
TA	Technical Assistance
TSP	Total suspended particulates
UE	Urban environment
WHO	World Health Organization
WWTP	Waste water treatment plants

Table of Contents

1. Introduction	
1.1 China’s Environment	1
1.2 Bank Environmental Operations in China	2
2. China’s Environmental Problems and Bank Responses	
2.1 Air Pollution in China.....	4
2.2 Bank Air Pollution Activities.....	5
2.3 Land and Natural Resource Management Problems.....	7
2.4 Bank Land Improvement and Natural Resources Management Activities.....	8
2.5 Water Quality and Water Resources Management.....	9
2.6 Bank Activities to Improve Water Quality	10
3. The World Bank and the Environment	
3.1 Did the Bank “Mainstream” the Environment in Projects and Programs?	11
3.2 What were the strengths and weaknesses of the Bank Environmental Safeguards and how might their application in China be improved?	14
3.3 Was Bank Knowledge Management/ ESW/AAA its Most Important Contribution?	16
3.4 Did the Bank have an Environmental Strategy?	20
4. Conclusions.....	23

1. Introduction

China's Environment

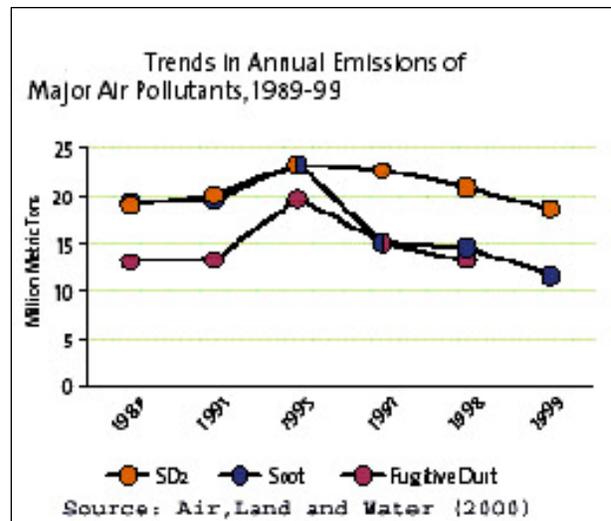
1.1 *The magnitude and costs of pollution in China are still large, despite sustained government efforts over the last decade.* China's environmental degradation has developed over centuries, but record recent rates of economic growth have now widened environmental impacts and accelerated many adverse trends. China's urbanization,

and industrialization have produced rising material standards of living but have ever more costly environmental consequences. Vaclav Smil's "China's Environment" (1993), Lester Brown's "Who Will Feed China?" (1995) and "Grave Concerns - Problems of Sustainable Development for China" (1998)¹ are typical examples of literature that has spread the notion of "China's Environmental Crisis." Plausible estimates of environmental costs vary from 3 percent to 15 percent of China's GDP.² Accuracy is constrained both by methodology and limited accurate data. This is not simply a matter of lack of

transparency - the National Peoples Congress's Oversight Committee on the Environment dispatches investigation teams over the vast area of China to check if attempts are being made at all to enforce environmental laws in particular provinces.

1.2 Despite local variations, emissions of soot, industrial dust and other pollution fell, new approaches to natural resource management were adopted, and new-growth forest area increased. But biodiversity was reduced, less than 30 percent of the sections of seven major river basins meet minimum water quality standards, lung diseases are now the major cause of premature death and erosion by wind and water still affects 3.6 million km². Air quality in about two-thirds of Chinese cities failed to meet SEPA's (State Environmental Protection Agency) standard for Grade II.³ According to an important Bank-SEPA report⁴ there was a general improvement in environmental conditions from 1995-2000 but they have started to reverse again. Emerging new patterns of dispersed non-point pollution and heightened competition for water and land threaten existing progress. Government

Figure 1 Annual Emissions of Air Pollutants



¹ Grave Concerns, Zheng Yisheng and Qian Yihong (Environment and Development Research Institute at the Chinese Academy of Social Sciences), Today's China Publishing House, October 1998.

² For instance Professor Dale Jorgenson of the Harvard China Project is quoted recently in Harvard Magazine as saying that 5 percent of China's GDP is lost to the increased health costs and mortality associated with domestic environmental pollution and that this figure will rise to 15 percent by 2030 if nothing is done

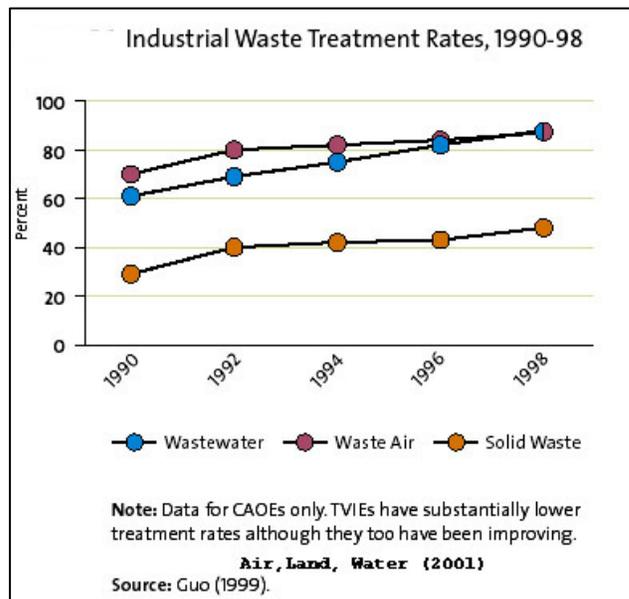
³ China's Annual Report on Environment reports a range of indices.

⁴ "Air, Land and Water: Environmental Options for a new Millennium (2001)" was the result of a joint effort by the SEPA and the Bank. Since the data in this report represent the best efforts of SEPA and the Bank the figures have been reproduced here with permission of EASES.

ambitions to sustain reductions in the rate of growth of adverse environmental impacts over the next 5-year period planning period are a challenge.

1.3 China has an expanding menu of legal, voluntary and economic instruments to pursue environmental policies, but cannot yet use them effectively. Ability to implement comprehensive national environment policies has been limited by the high degree of administrative decentralization, local prioritization of investment and employment, vertical and horizontal fiscal imbalance, and absence of clear accountability for environmental conditions. Local governments are usually more concerned with economic growth and employment than they are with adhering to national environmental mandates. The legal system for compliance and enforcement is used sparingly, although it is slowly increasing, with actions brought by the victims of pollution receiving press attention.

1.4 *SEPA has the environment mandate, supported by a good legal framework and comprehensive policies, but few resources.* Relative to the World Bank's counterparts in the major infrastructure sectors (e.g. Energy, Transport, Water Resources) SEPA lacks the influence with the provinces, that access to a large investment budget can provide. Policy and its implementation depends heavily on the commitment of local officials and leaders, such as mayors and governors. As the lead environmental agency, SEPA has



broad responsibilities for policy formulation and the small staff of 220 professionals has expertise in: (a) "Regulatory, Environmental Assessment and Planning"; (b) "Pollution Control"; (c) "Setting Standards"; and (d) "Environmental Monitoring and Public Participation." The power SEPA has is from the active support of the apex State Council, the commitment of mayors and local government leaders to environmental management, and increasingly, public opinion. Implementation of environmental policies is the responsibility of 100,000 provincial and local

governments employees in the Environmental Protection Bureaux (EPB.) They are nominally under SEPA supervision but paid by the local administrations, creating the potential for a conflict of loyalties.

Bank Environmental Operations in China

1.5 The period 1992-2001 coincided with a renewed Bank commitment to the environment, culminating in a new 2001 Bank Environmental Strategy. For the

evaluation period there were four policies against which environmental performance can be judged⁵:

- **“Mainstreaming the environment”**: modifying and adding to the design of projects and conventional sector activities to mitigate environmental “bads” and generate “goods.”
- **“Enforcing Environmental Safeguards”**: safeguards define the operational directives to implement environmental policy and manage the Bank’s reputational risk.
- **“Implementing a Global Agenda”**: international cooperation on issues such as biodiversity, climate friendly renewable energy international waterways, coastal environment and ozone depleting substances.
- **“Environmental Stewardship”**: This includes “policy dialogue”, “advocacy and policy analysis through ESW/AAA” and “technical support”.

1.6 Accountability for environmental outcomes is diffuse, falling between (a) country operations largely managed by a decentralized and quite autonomous country department; (b) centrally directed technical sector management units (SMU) providing support; and (c) corporate management policy oversight. The Environment and Social Sector Development SMU (EASES) has a small professional staff and manages the few Bank-funded specialized environment projects. EASES⁶ has cross-sector influence over project design and is responsible for signing off on safeguard compliance. Since there are few Bank grants to fund SEPA’s analytic and research work, EASES raises money from other donors, and also manages and coordinates the activities. These grants, from bilateral and international agencies, create the possibility of a conflict of interest over the choice and uses of research output. Five other SMUs, some responsible for several conventional “sectors”, employ their own environmental specialists to integrate or “mainstream” environment into project and sector activities. These are: Energy and Mining (EASEG); Rural Development and Natural Resources (EASRD); Urban Development (EASUR); Industry and Private Sector (EASPS) and Transport (EASTR.) SMU staff are based in both China and Washington, providing support to all the countries of the Region. The portfolio of loans to China is managed by the East Asia and Pacific Vice Presidency (EAP).

1.7 *The Bank is not the only external influence on environmental progress in China - 118 national agencies, institutes and organizations, working on 359 projects, are cited in a recent inventory.*⁷ There is substantial bilateral environmental cooperation, notably with the USA, Japan, Europe and the Scandinavian countries. Bank loans are a fraction of all environmental investments while government spending of \$350 billion/ annum dwarfs Bank operations. An indication of the scope of Bank involvement is the “Environment Portfolio” of \$6.4 billion that categorizes Bank projects as “Brown” or

⁵ “Promoting environmental sustainability in development - an evaluation of the World Bank’s performance” (2002), Operations Evaluation Department, World Bank.

⁶ Environment and Social Development Sector Unit.

⁷ China Environment Series, Issue 4, Woodrow Wilson International Center, Program for Environmental Change and Security.

“Green” agenda issues. All projects are also rated for the required level of environmental impact assessments (EIA.). Type “A” EIAs are more intense than “B”, while “C” projects (that could have positive environmental impacts) require no EIA.

Table 1: Bank Environment Portfolio in China 2001 (from Air, Land and Water, 2000)

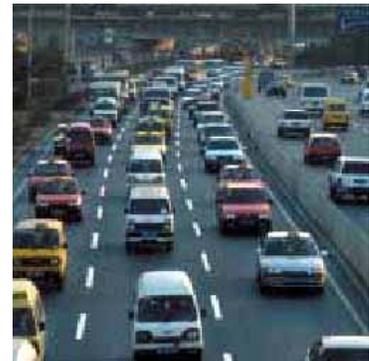
Investment Sector	Category A Projects		Category B		Total No.
	No.	Amount \$ million	No.	Amount \$ million	
<u>Brown Agenda</u>					
Urban	12	1944	5	637	17
Energy	Nil	Nil	3	965	3
Health	Nil	Nil	1	110	1
Water Supply and Sanitation	1	250	1	92	2
Total Brown Agenda	13	2194	10	1805	23
<u>Green Agenda</u>					
Rural Development	2	446	14	1862	16
Water Supply & Sanitation	Nil	Nil	2	117	2
Total Green Agenda	2	446	16	1979	18
TOTAL	15	2640	26	3784	41

2. China’s Environmental Problems And Bank Responses

Air Pollution in China

2.1 *Atmospheric conditions in China are amongst the worst in the world , in terms both of scale and concentrations.*

According to the World Health Organization , seven of the ten most polluted cities in the world in the late 1990s were in China, one of the world’s three main acid rain regions. SEPA tests in more than 300 Chinese cities indicate that air quality in almost two-thirds fail to achieve standards set by WHO for acceptable levels of total suspended particulates. Coal, which supplies more than three-fourths of China’s electricity, is the main source of air pollution. With 80 percent of Chinese households using coal and wood, air pollution is high but ameliorated by increased use of gas and coal briquettes. Acid rain, primarily caused by sulfur-dioxide emissions, affects 30 percent of China’s territory (OECD 2000, p. 590). An emergent form of urban air pollution, is emissions from private vehicle that are growing in number by 20 percent per annum.



2.2 Energy intensity in Chinese industry has decreased dramatically and energy consumption in 1995 (and CO₂ production) would have been 2.2 times greater had the economy consumed energy at the same intensity in 1995 as it did in 1977.⁸ Researchers

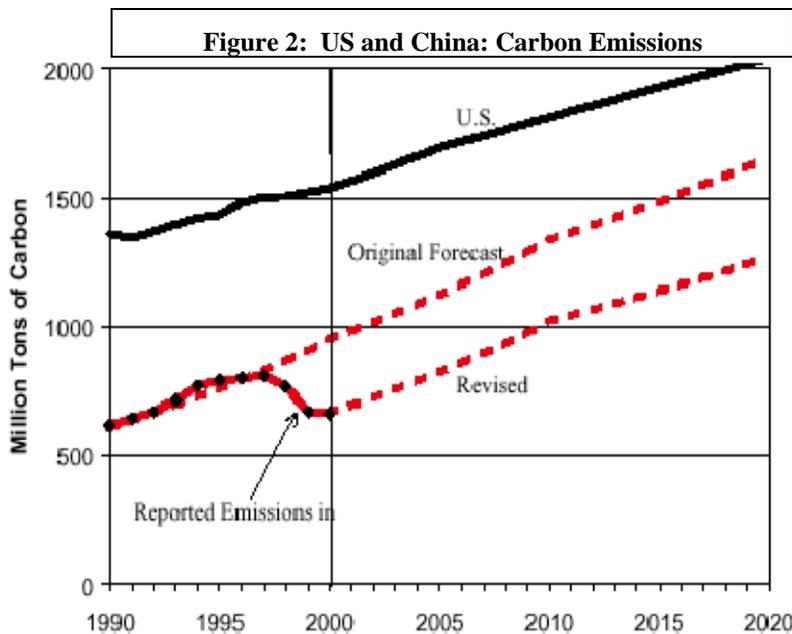
⁸ Sinton, J. E., Levine, M. D. (1998) Energy efficiency in China: accomplishments and challenges, Energy Policy 26 (11): 813-829

in the United States believe China's progress in decreasing CO₂ emission rates, while somewhat overstated by official statistics approximates 6 to 14 percent below 1996 levels.⁹ China has increased GDP per unit of energy, and shifted from high-polluting industries to favor those using fewer raw materials. For instance 1989-1999 output growth was much higher than that of emissions of chemical oxygen demand (COD), sulphur dioxide and soot, which all declined. China, the largest ODS (ozone depleting substance) producer has made a major contribution to the global environment through a sharp reduction in ODS production. The annual cost of CO₂ damage has been estimated to be 2.4 percent of China's GDP – far higher than comparator countries.

2.3 PM10 particles, the smallest and most harmful, are 60 percent of Total Suspended Particulates (TSP), causing emphysema and chronic bronchitis, the leading causes of death in China with a mortality rate five times that in the USA. Air pollution in China affects the rich and poor alike in the rapidly expanding urban population. Unhealthy levels of sulphates and dust from industrial chemical processes, construction and natural sources (“dust storms”) are normal in most urban and some rural areas.

Bank Air Pollution Activities

2.4 The major air quality impacts of Bank-supported investments can be attributed to CO₂ and sulphur reductions in the energy sector. The Bank lends more to China for energy than any other country and, from 1984 to 1999, funded about \$7 billion for 36 projects (\$3.5 billion for coal power plants, \$2.7 billion for hydro projects, \$430 million



for the stand-alone energy efficiency projects, and \$100 million for the one renewable energy project.) Total costs of these projects were two to three times higher. GEF granted \$90 million in co-financing for efficiency and renewable energy projects. The efficiency and environmental impact of coal was the subject of early Bank-funded research collaboration between the Ministry of Energy and SEPA, although China did not subsequently borrow for coal extraction. Half the CO₂ emissions in China are from

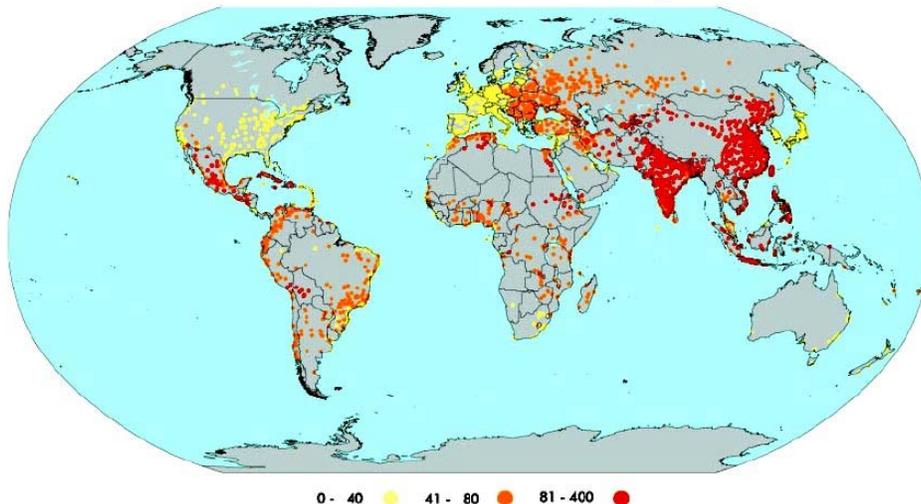
industrial boilers, furnaces and kilns and early industrial boiler and municipal heating

⁹ The diagram showing projected emissions is from: Logan, Jeffrey, "China's Air Pollution Down Dramatically, But Can It Last?" *Harvard Asia Pacific Review*, April 2001. (see <http://www.nrdc.org/globalWarming/achinagg.asp>)

projects targeted both efficiency and emissions. Designs for GEF-supported industrial boiler plants, were very successful in reducing emissions. The Bank worked with the Ministry of Construction on central heating tariffs, pushing for reform in this area, and starting demonstration projects in Tianjin under the GEF umbrella. The promotion of district heating reduced the number of small industrial kilns.

2.5 The Bank was largely responsible for China's adoption of high-efficiency electrostatic precipitators (ESP) in new power plants and strongly influenced adoption of low-NO_x burner technology. New combustion technologies and international best practices contributed to reductions in particulate emissions of Bank-funded coal-fired power plants. The technology is the standard for Bank projects and widespread throughout China for all new power plants. Controlling sulfur dioxide emissions, China has also employed flue-gas desulfurization (FGD) on Bank projects. Large hydro and multi-purpose dams co-financed by the Bank created the possibility of substituting clean hydropower for thermal coal-powered plants. This was not automatic and in some cases coal-fired plants were not closed after hydropower came on line.

Estimated ambient concentration of particulates (PM₁₀) in urban areas (µg/m³)



Note: Most of the adverse health effects of exposure to air pollution are attributable to particulate matter smaller than 10 microns in diameter (PM₁₀).
Sources: WDI 2001; World Bank estimates.

2.6 *China is the biggest producer of Ozone Depleting Substances (ODS) but its ODS program fulfilled international obligation by reducing ODS output and consumption by over 50,000 tons between 1990 and 1999.* This has been accomplished by international agreements and provision of grant funds under the Multilateral Fund for the Montreal Protocol (MFMP) the GEF. The biggest single source of supplementary funding for World Bank supported projects was the GEF which covered 10 percent of total project cost on average. EASES acts as a conduit for GEF funds which can be added to projects to enhance their attractiveness by addressing environmental factors—GEF is itself relatively passive and the initiative has to be taken by the client, EASES or another SMU. Bank-supported ESW in energy-related sectoral studies, has increased Chinese interest in, and commitment to, new environmentally preferable strategies, and strengthened the

ability of Chinese scientists and policy-makers to push for new environmental strategies in the energy sector. Measures under development or being strengthened include emissions limits, emissions taxes, emissions trading, environmental fines, and imposing FGD requirements on new plants in some provinces.¹⁰



Land and Natural Resource Management Problems

2.7 *Land degradation accounts for the highest proportion of GDP losses attributed to environmental causes.* Apart from loss of productive land and worsened rural poverty, watershed functioning is impaired and air pollution from dust storms has increased, especially in Beijing and the North East. During the 1950's and 1960's target-driven campaigns aimed to tame nature and extend the agricultural frontier, causing much damage.¹¹ Ill thought-out land reclamation and an excessive build up of livestock in the 1960's are blamed for deterioration of grasslands. China's environment is especially fragile because of dense population in the East, and unstable ecosystems in the drier West.

2.8 A 1999 Ministry of Agriculture study estimated that one-third of grassland (which cover 40 percent of China's land area), is degraded. Desertification, erosion, salinization, and loss of high-quality cultivated land to urban development have reduced the quality of land resources. About 25 percent of land area is affected, especially the agro-pastoral zone of Inner-Mongolia and surrounding oases in the internally draining river systems in

Figure 3: Loess Plateau Before (left and center) and After (right) Terracing and Land Leveling



¹⁰ Ibid

¹¹ See "Mao's War Against Nature", Judith Shapiro, Cambridge University Press, 2001.

the NW provinces of Xinjiang and Gansu.

2.9 In 1998 the Government introduced a blanket ban on the logging of natural forests and opening of new lands at the expense of forests.¹² Reforestation has been implemented on a vast scale, plantations representing 40 percent of forest area, some financed by World Bank and GEF. While this has arrested the decline in forest cover, it has not reversed the loss of biodiversity, and time is needed to achieve the full impact on erosion, silt load in rivers, and the frequency and severity of floods. The logging ban reduced incomes in often-poor areas while increasing timber imports. Salinization affects 7-8 million hectares of cultivated land although the rate of increase of affected area has declined.

Bank Land Improvement and Natural Resources Management Activities

2.10 An internal review of Natural Resource Management in the East Asia Region in 1999 noted of Agricultural Development Projects (ADP) that “None has attempted to systematically address NRM issues in participating provinces or counties, even though these are important issues throughout rural China... the ADP have high ownership and may or may not have a strong NRM focus.” The Bank had supported many ADPs that included extensive multi-sector investments in agro-industries, crop production, small-scale irrigation, diversified agricultural production, soil conservation (sometimes) and afforestation. Poverty alleviation was the primary goal, and ADPs were all able to demonstrate achievements. But the early ones had little policy content or institutional innovation, and often included disconnected sector loans, earning them the name of “Christmas tree projects.” Adopting an NRM framework shifted design from a narrow agriculture focus to harmonizing poverty and environmental objectives. NRM, like water resources management must overcome the mismatch of institutions with the physical resource base. Past ADPs were strictly provincial and even projects covering 3 provinces were managed as three discrete accounting entities. Current “Green Agenda” projects include forestry, biodiversity integrated agricultural development, coastal zone management irrigation and drainage, and for the first time pastoral development.

Overgrazing
Guanzhou Environmental Education Center
 Photo Credit: Zu Yia-Min



¹² China: From Afforestation to Poverty Alleviation and Natural Forest Management, OED, World Bank, 2000.

2.11 The Bank-supported Loess Plateau Project has been one of the most successful erosion control programs in the world, using indigenous ecological engineering to allow efficient use of watershed resources and reverse soil deterioration. The Red Soils Project also developed numerous small and eroded watersheds on unused, often barren red soils which cover 21 percent of China's surface area, integrating crops-livestock, land conservation, and water balance. Both projects broke a cycle of poverty and environmental degradation by introducing economically viable and environmentally sustainable farming practices on a large scale. Loess Plateau Project in particular appears to be one of the few up-scale working examples of the Bank's much promoted win-win poverty-environment model.

2.12 China has been very successful at securing \$90 million in GEF grants and managing GEF projects, addressing a variety of global environment objectives. China has been aggressive in pursuing IDA and GEF grant funding, to the point where the justification for grant funding of tree plantations has been questioned. The GEF pipeline includes projects on aquatic biodiversity, pastoral and integrated water resources development. GEF funds the incremental costs of activities that benefit the global environment. Forthcoming Gansu and Xinjiang Pastoral Development Project will have a GEF Grasslands conservation project attached. The more active management of "biodiversity" is shown in nature conservation projects - the substantial GEF biodiversity component attached to the Sustainable Forestry Project (recently approved by the Board), and a medium-sized Fish Biodiversity Project for Dianchi Lake (Yunnan Province).

Water Quality and Water Resources Management

2.13 More than 75 percent of rivers in urban areas are unsuitable for drinking or fishing, sixty million people have poor access to piped supplies, while nearly 200 million drink contaminated water. Water use has more than doubled in the 1990s, while urban water consumption increased by over 350 percent. Industrial pollution loads actually declined but were offset by roughly equal increases in municipal waste. Industrial pollution is worst in the North East where rainfall and the absorptive capacity of the major rivers are low, and high-polluting papermaking and brewing industries are concentrated. Groundwater levels are falling dramatically in parts of the North China Plain and water quality has deteriorated. A study by the Chinese Academy of Sciences estimated the annual economic loss from water pollution to be 1.5- 3 percent of GDP



2.14 *The water quality of the larger rivers has been held steady over the last ten years, but the remainder has gotten worse.* Many freshwater lakes continue to deteriorate and groundwater is contaminated by seepage of pollutants and intrusion of salt water. The

coastal environment and 25 percent of lakes are affected by heavy metals and eutrophication from fertilizer runoff and municipal wastewater. Pesticide residues in crops are high enough not only to threaten public health but also access to international markets. Extensive waste run-off from pig-farms, is now also a major sources of pollution of rivers, lakes, and coastal areas.

2.15 *Water resource management is fragmented between agencies responsible for quantity (Ministry of Water Resources) and quality (the local environmental protection bureau or EPB, paid by the provinces and overseen by SEPA).*¹³ Both ministries collect their own water quality data and there are significant differences of opinion between them as to who should lead on integrated river basin management. Enforcement efforts target treatment and regulation of point sources, concentrating on the largest and most visible offenders. The need for granting rights for environmental flows is recognized but meeting the need is still an experimental activity.

Bank Activities to Improve Water Quality

2.16 *The main Bank response to water pollution has been water supply and wastewater treatment plants (WWTP).*¹⁴ The Bank invested heavily in water, wastewater and sewage/wastewater treatment, although a number of problems have prevented achievement of design effectiveness. The Bank committed finance equal to 30 percent of



\$11 billion costs for 24 urban environment (UE) projects, primarily for WWTPs, but also including water supply, air pollution, solid waste management and cultural heritage components. This alone represents half of the total Bank environment portfolio in Table 1. UE projects introduced add-on managerial/institutional components, and covenants addressing cost recovery, and user fees are now de rigeur. The Bank influenced the 1999 State Council Circular that introduced national regulations requiring that independent wastewater utilities be established, and wastewater fees set to cover costs. But the case of Sichuan, which received a \$360 million Bank project, is fairly typical with heavy dependence on budgetary support. Wastewater

fees paid by households, industry and other institutions¹⁵ cover only about 30 percent of operational costs and less than 20 percent of costs of operation and necessary

¹³ An accompanying background paper on water resources discusses water resources management issues in much more detail – Robert C G Varley, *China Country Assistance Evaluation 2003, Review of World Bank Assistance for Water Resources Management*, OED, World Bank, February 2004.

¹⁴ A sector thematic review has recently been completed by OED for water supply and wastewater.

¹⁵ Over \$1 billion has been loaned to Chonqqing (a mega-city of provincial status) – the investments are intended to help treat the backup which will be generated by the Three Gorges Dam coming fully on line.

maintenance (small repairs etc.)¹⁶ WWTPs are over and sewerage is under-funded. Many bilaterals are willing to fund one-off WWTP investments with tied aid, which leads to a lack of ownership and non-standard technologies in varying physical/ financial operating environments.

2.17 Despite an 8 percent increase in water consumption and a 19 percent increase in wastewater treatment capacity during the 1990s, the proportion of waterways meeting minimum standards has actually declined. WWTPs are designed for particular types and concentrations (the main distinction between primary and simpler secondary treatment) of wastewater, and to connect to collection systems.¹⁷ Using technology for primary treatment when there is poor sewerage and wastewater collection may not be a cost-effective solution. Coordination of collection systems and WWTPs is hampered by separation of construction and operational responsibility between different agencies. A 2001 diagnosis conducted for the Ministry of Construction by five international and domestic experts, visited 16 of the more advanced WWTPs funded by bilateral and multilateral donors, confirming most were operating well below capacity (40 percent.) The reasons given included “a lack of operating funds, the absence of timely sewer connections, poor initial design practices, low strength wastewater due to infiltration, lack of skilled operators and lack of effluent guideline enforcement”¹⁸. The three Bank-supported projects were better than the other 13, but overall there are serious problems with the present and proposed programs, about which the Region has not been very vocal.

3. The World Bank and the Environment

Did the Bank “Mainstream” the Environment in its Projects and Programs?

3.1 Many Bank sector projects and programs had positive environmental impacts but where there was a strategic intent it was not necessarily the Bank’s. At sector-level environmental mainstreaming initiatives tended to be piecemeal, but Energy, Forestry, and Agriculture sectors developed comprehensive justifications and articulated a methodology. Transport projects became more environmentally oriented by gradual introduction of noise, traffic management and drainage components, responding to application of safeguard policies that revealed the pace of natural resource degradation and land use change. The primary justification for UE projects was environmental, but they were not very effective at improving water quality, especially given the large investments and anticipated institutional changes. Water and WWTP projects had capacity-building components but limited institutional reform and impact on needed water and sanitation sector reforms.¹⁹ Many of the early sector projects, including major

¹⁶ “China Programme 2002 Results”, OECD. This is an OECD report on environmental financing strategy for Sichuan using a software application, FEASIBLE, to support preparation of realistic, multi-year programs of action for environmental sectors that require heavy capital investments in public infrastructure.

¹⁷ Investment needs for wastewater collection systems is several times that needed for the WWTPs (Ibid.)

¹⁸ See “Preliminary Assessment of Municipal, Wastewater Treatment Plant Operations and Biosolids Management in China”, Merv Palmer, Lanqing Jia, Zhang Yue, Wang Lin and Jack Fritz. <http://www.h2o-china.com/lianmeng/21cnwater/eng-art/2001/mp.htm>

¹⁹ China Urban Water Supply And Wastewater Sector Assistance Review, Operations Evaluation Department Sector And Thematic Evaluation Group, July 15, 2002

hydraulic structures, roads, power plants, school buildings, harbors, were stripped of environment policy content. Bank value-added came from resource transfer and project management expertise, not environmental mainstreaming.

3.2 *ESW*²⁰ created awareness of the need for strategic guidance on the allocation of resources according to priorities. The 1997 “Blue Skies, Clear Water” applied cost-benefit and cost-effectiveness methods (using disease burden as numerator) to air and water interventions. Although the water data were weak the report sought to demonstrate that air quality was more important than water, and generated some widely quoted statements about the impact of pollution on GDP. The intent of the report appeared to be to promote efficiency as a criterion for resource allocation, not to address the institutional reasons why mainstreaming did not happen.

3.3 *Bank energy sector projects mainstreamed combustion technologies.* The China Energy Sector Review²¹ included 26 power sector projects (including thermal and hydropower), 6 petroleum sector projects and 4 projects with conservation themes (these include private sector lending by the International Finance Corporation.) The technology embedded in these projects has been replicated and contributed significantly to air quality improvement in China. According to one important study²² high efficiency electro-static precipitator (ESP) specifications and low NO_x were two of the most definitive cases of Bank influence.

3.4 The Bank could have been more proactively strategic in the energy sector and provided more assistance for planning and use of natural gas and coal-bed methane resource. The environmental benefits of using more gas and less coal are being recognized belatedly, as reflected in recent long-term international agreements to supply LNG to China, and a proposed pipeline from Xinjiang to Shanghai. Historically China has been unable or unwilling to borrow for the gas sector and the Bank was faulted by some Chinese interviewees for not pressing more strongly on gas production and utilization issues.²³ Dams had positive effects on air quality if they substituted for coal-fueled thermal generation, but their overall impact was complex given the resettlement costs, and a range of upstream and downstream environmental effects. The Bank was also criticized for supporting coal-using projects (generation plant) and ignoring the costs associated with air pollution. But the Bank’s response was that these projects would be implemented anyway, and the Bank could reduce their adverse impact by promoting cleaner combustion technology. Bank-financed large thermal power plants have allowed retirement of smaller less-efficient units, but this is not inevitable and there have been no covenants requiring small plant retirements. The present shortage of electricity indicates the need for higher tariffs to increase investment, but this also extends the life of high-polluting thermal plants. Emerging issues are vehicular emissions and the increased importance of industrial air pollution outside of the core metropolitan areas.

²⁰ Bank technical work and policy assistance, embedded in non-lending services, has always been referred to as Economic Sector Work (ESW.) Now a broader term Analytic and Advisory Activities (AAA) is used.

²¹ The Bank’s Assistance to China’s Energy Sector, OED, World Bank, February 2001.

²² “World Bank energy projects in China: influences on environmental protection”, Eric Martinot, Energy Policy 29(8): 581-594 (2001).

²³ Ibid

3.5 *Mainstreaming is more haphazard than strategic and EASES is not always willing or able to take the lead.* This is not surprising since the accountability for environmental outcomes in the Bank is diffuse, there are few EASES staff, and the discretionary budget, is small. Fortunately EASES did not have to proselytize to secure EASEG adoption of combustion technologies that increased efficiency and produced cleaner emissions. EASES and SEPA could not work directly through the energy companies and utilities that are the EASEG counterpart and Bank final-borrowers. Mainstreaming modifications to project designs are not prompted by institutionalized procedures, while safeguards only seek to avoid harm, not promote good. Thematic supervision, or an unfavorable report from the Quality Analysis Group (QAG), may provoke a response but are usually too late to affect the project outcome.

3.6 *According to staff the greatest influences on mainstreaming are the enthusiasm and political skills of the task managers.* For an SMU, loans are an opportunity to experiment with mainstreaming the environment in sector projects, while increasing interactions between the sector agencies and provincial government. For this opportunities must be sought out and successful advocacy depends on good working relationships with other SMUs and the counterpart agency. Conversely the promotion of NRM was based on cooperation between EASES and EASRD, linking environment and poverty-oriented rural development to NRM (e.g. Red Soils and Loess Plateau projects.) These projects drew on cross-sectoral planning and management experience at the province level and are one of the few working examples of approaches advocated in the new 2001 environment strategy.

3.7 Mainstreaming in urban water supply and sanitation is not yet producing the environmental impacts to be expected from the treatment capacity installed. Bank UE projects belong technically to China's water supply and sanitation sector²⁴ since they largely comprise WWTPs, which happen to be built near or serve urban needs. Lack of wastewater and sewage collection infrastructure is a widespread problem for which massive investments are required, some of which the Bank has been financing. But continued Bank investment can scarcely be justified if the chronic institutional and financial problems are not overcome, poverty alleviation more convincingly demonstrated. Some WWTP projects received IDA loans, on the basis that WWTPs benefited the poor as well as the environment. The design of IDA-supported WWTP projects had little poverty focus in the design, and when operational hardly any reporting of poverty impact, environmental health or even the degree of capacity utilization achieved.

3.8 *Investments in Chongqing, Beijing and Shanghai, and 11 provinces of East of China have generally been built efficiently.* Bank specialization in a narrow area of urban investment has facilitated high technical engineering standards, optimization and consolidation while keeping transaction cost low,²⁵ but anticipated environmental benefits have not been forthcoming.²⁶ WWTP loans responded to demand from municipal governments and MOF and SDPC guidance Both derived from the State

²⁴ A sector thematic review has recently been completed by OED for water supply and wastewater.

²⁵ A proposal for 22 WWTPs was consolidated into 2 large ones in Chongqing.

²⁶ "Preliminary Assessment of Municipal, Wastewater Treatment Plant Operations and Biosolids Management in China", Merv Palmer, Lanqing Jia, Zhang Yue, Wang Lin and Jack Fritz.

Council mandate that all large cities (over 500,000 population) must achieve a 60 percent wastewater treatment rate by 2005. Cities are critical for environmental investment decision-making in China, but are not yet able to manage the environment effectively.

3.9 The rationale given for locating investments where the main economic boom is taking places (such as the \$800 million Shanghai Environment Project) is that it allows the Bank to latch on to dynamic urban development trends and channel support to innovations. Flagship projects also satisfy Bank and Chinese engineers' demand for new technology. The exciting financial and engineering innovations for Shanghai will be of marginal relevance to other smaller and poorer of the 667 classical cities responsible for infrastructure development. The Bank's poverty mission requires focusing attention on the needs of thousands of isolated urban developments, townships and dynamic villages.

3.10 Environmental Health falls "between the cracks" and a more strategic approach might have exploited linkages and potential synergies between health and other sectors' objectives. Water-related illnesses, lung diseases and indoor pollution are best treated by prevention, requiring specialized environmental health interventions. But Bank health sector projects conform to a general pattern of dialogue with government on health issues, which is primarily conducted between the Human Development SMU and the Health Ministry. Bank health projects are already a vehicle for a wide range of health issues but environmental health has not been one of them.

What were the strengths and weaknesses of the Bank Environmental Safeguards and how might their application in China be improved?

3.11 The links between environmental impacts, resettlement and big dams in China, have been a source of controversy for the Bank – in 1999 the independent Inspection Panel on the Western Poverty Project (Qinghai component) questioned the Region's commitment to Bank safeguard procedures. EASES was accountable for application of environmental safeguard policies, and review of EIAs but the International Committee on Tibet thought the project would be a "serious threat to the lives and the livelihoods of affected peoples in the area and will result in irreparable damage to the environment, causing locally affected people material harm". Critics of the Region within the Bank suggested they were cavalier about Bank policies and bent over to please the Chinese. The environmental assessment was inadequate in many respects and the project should have been rated "A". Just over a quarter of 300 China projects require the stringent type "A" EIA, and a further 74 "B", out of a total of 300 active and pipeline projects. Chinese officials now express the view that Bank procedures aimed at protecting minorities prevented funding actually bringing benefits to such groups in backward regions. SDPC and MOF has developed policies to discourage application for loans for projects to be implemented in minority-related areas. An OED study²⁷ of involuntary resettlement praised China's improvement and performance in almost all respects.

3.12 *All levels of government in China complain that the Bank's environmental safeguard policies impose high transactions costs.* There is a trade-off between

²⁷ R. Picciotto, W. van Wicklin and E. Rice, *Involuntary Resettlement: Comparative Perspectives*, 2001.

flexibility and exposure to reputational risk, which is illustrated by application of safeguard policies. China's view is that Bank procedures are intrusive, do not mesh with its own, lead to long delays in project implementation, increase costs, and are unnecessary as they have their own safeguards (some incorporating Bank practices.)²⁸ China argues that its "3-simultaneous policy," requiring environmental supervision at design, construction and operational phases, is more comprehensive than Bank Safeguards. On one forestry project the Chinese claimed that 2/3 of the staff in the project team were looking at safeguards. Bank staff were concerned that the Bank had moved from "do no harm" to "avoid any criticism", and that safeguards absorbed 40-50 percent of preparation and supervision budgets. An internal study commented that 'the minimum standard in safeguard compliance is gravitating towards "best practice.'"

3.13 An internal review of six of the largest projects in China found that design of safeguard policy, including EIAs, was generally satisfactory, but it would help if the Bank could be involved earlier in the project cycle. Implementation and Bank oversight of safeguards were variable and implementation of environmental safeguards was only rated "marginally satisfactory." The study recommended a more strategic approach to safeguard management, using more sector work and thematic supervision to highlight common issues, and a less project-centered and compliance focus. If safeguard issues were framed in a regional or sector context, the underlying analytic and legal work need not be repeated when preparing individual projects. EASES has conducted two sector-specific thematic environmental supervisions over the last three years (in rural and transport sectors, and for resettlement for all sectors.) Project EIAs were frequently too narrowly focused, ignored downstream or indirect effects, and appeared more like advocacy than analytic documents. Using local institutes for external monitoring suffered from lack of candor and explicit recommendations for action. Although Chinese scientists are highly competent, they cannot always report clearly what their research has revealed. One Bank environmentalist thought "The use of local consultants for supervision of safeguards has been less effective than hoped....they appear to be strong technically but unsure of how to act on behalf of the Bank."

3.14 There is a strong case for moving toward greater harmonization of safeguard procedures, but the Bank should not devolve responsibility for safeguards prematurely. China has already incorporated some Bank procedures in its own environmental protection operations and it is preferable to devolve responsibility to China for implementing safeguards, rather than the Bank simply ring-fencing projects with its own procedures. But there are a number of reasons why such a move should be gradual. EIAs and other environmental safeguards in China still have significant weaknesses. Perspectives are too narrowly focused on compliance and box-ticking, rather than solving problems, on the project rather than the sector, region or downstream area. Technical capacity is variable, though the general standard is good and improving, but technical evaluations are too often distorted or pre-empted by anticipation of adverse political consequences. No matter how competent and committed China is to the same safeguard

²⁸ Environmental assessments for investment became mandatory in China in 1979, ten years before the Bank introduced OD 4.01 which governed its environmental assessments until replaced by OP 4.01 in 1999.

policies, a precedent would create enormous problems for the Bank in other countries. Safeguards are also channel for dialogue on mainstreaming environment in sector projects.

3.15 Proliferation of participation and publicity-based safeguard methods could strengthen the independence of Chinese environmental experts and broaden the debate on environment. Bank sponsored best practices initiatives such as Community Driven Development, Disclosure, Public Environmental Monitoring and Civil Society's oversight role are examples. For example, DEC, SEPA and the municipalities of Hohhot and Zhejiang developed an effective system of indicators of environmental behavior for industrial enterprises, using a color coding system of green, blue, yellow, red and black. Changing policies are reflected in the State Council's "Decision on Several Issues Related to Environmental Protection", which encourages public participation in environmental regulation and defines an important role for the news media in publicizing actions that damage the environment.

Was the Bank's Knowledge Management and ESW/AAA its Most Important Contribution?

3.16 *The Bank's technical capacity is respected in China and high quality ESW/AAA work is recognized as being of great importance.* Bank reports, publications and even statements are widely cited in the press.²⁹ But the quality of ESW/AAA is an issue of concern as Bank staff see this as the most important way in which they can help China at this juncture. ESW/AAA is regarded in many quarters, including among Chinese officials, as the Bank's main achievement across sectors - it offers the flexibility to overtly address development issues in a way that is not possible in regular official communications. The Bank has used its skills and experience to assist China orchestrate a wider environment constituency, manage knowledge actively and implement community-based environmental management. The Bank convenes meetings, finds money to pay travel costs and produce materials; these seem small things but they often have a big payoff. The question is how big is that pay-off and how systematic is the knowledge management.

3.17 The Bank's knowledge management activities have had a positive impact on China's progress in environmental capacity and level of dialogue since 1992. The Bank has received high marks for knowledge management in China with such innovations as distance learning, open systems, and the bilingual China website.³⁰ The impact of Bank-sponsored, broad-based, low-cost cooperative activities like conferences, sponsoring of analytic / research work, convening stakeholders and disseminating literature is hard to measure but results are widely disseminated. "On the job" training and World Bank Institute courses such as environmental economics were a formal source of knowledge

²⁹ "The World Bank knows China very well, and if they state that the cost of environmental pollution in China is 6 percent of annual GDP, this figure should be trusted. Many Chinese policies, including pricing policies, are first proposed by the World Bank and then accepted by the central government. While some Chinese Ministries do not accept the World Bank's figures, they are generally very reliable." Professor Qu Geping past head of SEPA, 19 May 1997, quoted on the US Embassy website.

³⁰ www.worldbank.org.cn

transfer. Bank staff are leading lights in the Professional Association for China's Environment (PACE), which is sponsored by DEC. Chinese students have attended US and other foreign universities under Bank sponsorship.

3.18 *The Bank is rarely able to use ESW/AAA in a systematic way.* ESW/AAA complemented project-level interventions but was not necessarily driven by project needs. A timely piece of flagship ESW can influence policy or a decision, but the lag is often long and unpredictable. For example a timely report from DEC, which might not have gone through standard ESW review procedures, can in the right circumstances be as useful as expensive formal ESW. The \$ 50 million Environmental Technical Assistance Project (ETAP) was also the vehicle for building and consolidating a relationship with SEPA and the Chinese Academy of Sciences. Many smaller TA activities, most funded by other donors, but managed by Bank staff, meet specialized SEPA needs. Economic Law Reform was another relevant Bank activity for SEPA.

3.19 ESW can be broadly categorized as flagship publications of which there were 4, and a far more voluminous Bank grey cover reports, of variable quality. The four main ESW/AAA products span the period of Bank environment work and also act as milestones:

- (i) *The China Environmental Strategy Paper (CES 1992)* signaled a formal Bank commitment to environmental operations in China, and partnership with NEPA (SEPA's predecessor). Produced cooperatively it was a dense document which did not have a wide audience or circulation beyond NEPA. Many of the recommendations found their way into China's own environmental strategy of 1994.³¹ The Bank concentrated on the environmental implications of activities in four sectors where it had a comparative advantage – energy, industry, urban and agriculture. The report outlined potential projects for Bank assistance to China and priority issues, policies and future strategy. Two sections were devoted to agriculture and degradation of natural ecosystems.
- (ii) *China Urban Environmental Service Management (1994)*. This original and analytically important urban environmental sector study had a narrow focus with the insights, diagnosis and recommendations institutionally grounded in Chinese experience. The conditions for financially autonomous and sustainable utilities were studied in depth. EASUR stretched a small budget and involved outside stakeholders, including MOF, SDPC, Ministry of Construction (MOC) and SEPA. International links to the City Alliance Fund, and the International Association of Mayors were also developed at this time.
- (iii) *Clear Water, Blue Skies: China's Environment in the New Century (CWBS, 1997)* was part of the "China 2020" study that covered environment, health finance, food policy, poverty/income distribution, trade and pension reform. CWBS used an economic approach to synthesize research on air and

³¹ When the 1992 study was published the Minister disagreed with a majority of the conclusions and recommendations but, within five years, a substantial number had been acted on, at least to some degree.

water pollution in China, including that from DEC. Coal and energy policy, pollution levies and fees, ISO 14000 certification, urban transportation, enforcement and fees were covered. CWBS's main message was that air should be a bigger priority than water pollution as the main disease burden was attributable to poor air quality. The estimates of the cost of pollution (3 to 8 percent of GDP) were later widely cited, with the implicit endorsement of the the Bank. The impact of air and water pollution on health was estimated using "Willingness to Pay" and "Human Capital" methodology. The report supported past Bank advocacy of reduced dependence on command approaches and promotion of fees and/or fines with an economic rationale. The report is extensively cited but it was not a strategic document with government ownership. SEPA approved its production, but some Chinese felt that ownership was lacking, and critics within the Bank thought it had not been properly vetted.

(iv) ***China Air Land and Water: environmental priorities for a new millennium (ALW, 2001)*** Published jointly in Chinese and English, and launched very publicly by SEPA and the Bank, ALW had strong client ownership. Aimed at a wide audience, its 142 readable pages re-assessed both green and brown strategic environment problems, and proposed a wide range of programs and policies to help improve environmental quality. The supporting technical studies were not impressive but the report's main purpose was to inform and persuade unconvinced elements of the government and public that China had changed in the last 10 years. It did not tackle the details of how Bank-supported activities would help overcome the institutional problems of pricing, fiscal balance, management and overlapping line-agency responsibilities. Initially the Quality Assessment Group (QAG) criticized ALW for the omission of relevant internal Bank peer-reviewing, and insufficiently technical or cutting edge content. QAG thought it fell short of what they considered ESW/AAA ought to be. However the collaborative work under ALW helped broaden dialogue, ownership, and impact.

3.20 The second category of Bank ESW included sector reports, environmental research and reports on "environmental best practices" in China and how to make them work. But some of the best examples of sector reports and research were produced not by the Region but by the Bank's evaluation department for Forestry³² and Energy³³, and also a long series of working papers from DEC. Many products sponsored by the Bank supported the Region's environment activities:

- applied studies on economic incentives to supplement command and control approaches (for instance emission fees and trading);
- public disclosure and the use of color rating systems for polluting industries
- air quality reporting;

³² *China - From Afforestation to Poverty Alleviation and Natural Forest Management*, Evaluation Country Case Study Series, Scott Rozelle, Jikun Huang, Syed Arif Husain, Aaron Zazueta, The World Bank, 2000

³³ *China - The Bank's assistance to China's energy sector - an OED country sector memorandum*, Operations Evaluation Department, World Bank, 2001.

- voluntary and participative approaches to pollution control, including complaint mechanisms;
- management of urban environmental services;
- air pollution and the setting of priorities;
- a sophisticated air pollution modeling and monitoring system for Asia to manage the impact of acid rain in Asia;
- water strategy;
- environmental administration

3.21 The amount of environmental research on China sponsored by the Bank does not imply it was part of a strategy. In the view of one senior Bank staff there was “a huge lack of the kind of targeted ESW/AAA needed to provide the conceptual framework for the Bank's environment strategy and programs in China.” EASES relied on bilateral and multilateral funding for environmental research and TA, in the absence of grant funds from within the Bank. Consequently there were limited opportunities for effective advocacy through focused ESW/AAA, and an increased tendency to be opportunistic. This did not provide a good basis for taking a strategic approach. The EASES relationship with the lead environment agency did allow it to fulfill the “policy analysis” and “technical support” functions of its stewardship role. However the extent to which Bank advocacy could be pursued through ESW/AAA was limited. To attract funding for ESW/AAA, Bank staff and Chinese counterparts often had to bend and twist the design of proposed programs to match the specific requirements of different donors. The outputs of such cooperation were not full Bank ESW products.

3.22 The Bank's reports and research output are generally too “personalized/fragmented” to deliver arguments to policy makers in the way they want them. Senior officials want tightly synthesized and coordinated pieces of technical and policy analysis from Bank staff and consultants; they are less concerned that the analyses reflected Bank orthodoxy. Although the Bank and China avoid the term “policy dialogue” there is a high demand for policy analysis. The client wants Bank involvement and approach, but in an advisory capacity. China's analytic environmental capacity has grown so fast that the Bank will have soon worked itself out of a job but it is not yet time for full client ownership of ESW/AAA, formulating the tasks and using local consultants to do the work. Many of the commissioned papers/reports received from Chinese consultants needed further processing by the Region before being subject to internal Bank peer-review and criticism.

3.23 There has been an absence of the quasi- independent OED performance evaluation reviews and there has been no OED sector-level evaluation – even though the Bank has been in China for 20 years, there has been no thematic environment review for China. One was planned by OED in 1999 but never implemented. Most projects have not reached the stage of completion and the completion report which is a basis for further evaluation. Forestry, energy and water supply-wastewater sector thematic reviews have touched on a range of environmental issues and OED thematic reviews for energy and forestry have recently initiated a dialogue between the Region and OED. The global 2001 “OED Review of the Bank's Performance on the Environment” cited a Chinese

project as “best practice” in “mainstreaming the environment” (the Sustainable Coastal Resources Development Project.) China was also judged to have strong environmental concerns and Bank commitment, both of which “had contributed to progress and nurtured policy reform.” The OED China Energy Sector Review commented very favorably on the environmental impact of Bank projects. But the relationship between OED, the Region and Client is not always smooth. It has sometimes proved difficult to schedule OED evaluations and provide the kind of access that is needed.

3.24 *OED evaluations had little influence on operations and project design.* Not only have there been relatively few completed projects but the coverage of these for performance appraisals is low. A justification for OED evaluations is to learn lessons and incorporate them in future assistance strategies. The Bank’s formal evaluation system played little role in learning from earlier projects in the 1980s. Evolving strategy depended largely on the Chinese and the Region’s response. China has not yet established an institutionalized system of scientific evaluation, for learning from past experience and incorporating the knowledge in future projects. Serious evaluation work in China will require a degree of freedom to move around and ask questions that is not always permitted. Lack of transparency and scientific evaluation capacity is hindering development and this is recognized by senior officials, but change is slow. Until there is more accountability and evaluation more rigorous, OED products will continue to have the negative connotation of “external” and of being audits rather than management tools.

Did the Bank Have an Environmental Strategy?

3.25 *EASES has put technical and policy support to SEPA at the core of its strategy.* From 1995, when EASES took over the Environmental TA Project, relations with SEPA were closer. Environmental strategy for EASES was flexible and only loosely guided by the broad directions of the Bank’s global environment strategy.³⁴ The EASES-SEPA relationship demonstrated a more general theme – when there is a convergence of interests, the Bank and China have productive working relationships, extending to upstream policy work. Bank strategy for China environment was bound to its 10-year relationship with SEPA. EASES graduated from monitoring safeguards and reviewing EIAs, to a much wider stewardship role and to championing the mainstreaming of environmental issues in sector projects. Upstream environmental policy dialogue between SEPA and EASES was not the result of management oversight or direction from the Bank. The small size of SEPA (220 professional staff) in relation to the big sector ministries, and of EASES to the sector SMUs made close cooperation feasible.

3.26 The China Environmental Strategy Paper (CES 1992) and the 2001 Air, Land and Water report, raised strategic issues and priorities, rather than specific strategies of how to overcome the primarily fiscal and institutional constraints. CES did not have strong Chinese ownership, but over the next 10 years it was used as a justification for a wide range of projects including urban environmental management, heating, solid waste management, energy conservation, reforestation/soil-conservation, pest management, institutional strengthening, regulation and co-financing of global issues with the GEF.

³⁴ World Bank Environment Strategy

But there was no follow-up of advocacy from the 1992 strategy. One experienced Bank environmentalist was much more scathing seeing the Bank reform elements being essentially random in nature. Innovation in project design were at the "whim of the project manager " while the environment strategy and program was not underpinned by a conceptual framework or supporting ESW/AAA.

3.27 *Some interviewees saw the flexibility and limited management oversight as features not deficiencies in the strategy.* It encouraged an un-bureaucratic and entrepreneurial approach and maximized professional independence. This meant that many things got done when the chance arose and someone grabbed the opportunity, rather than as a result of institutionalized strategic planning. Neither the Bank nor China expected a blueprint approach to tackle China's intractable environmental problems and unpredictable political system. While the Bank's analytic approach had its place, the cultural proclivity for negotiation, guanxi and a less corporate approach to strategy prevailed. The most output oriented and pragmatic staff even felt developing strategies was time-consuming and it was easiest to fit in with the Borrower's plans than spend a lot of unpaid time on strategies. Developing more structured and systematic coordination mechanisms might even have been counterproductive. The informal, broad-based and even opportunistic strategy, advancing on several sector/thematic fronts simultaneously, was probably correct, and the only viable option. The Chinese characterize this flexibility as "crossing the stream by feeling the stones underfoot."

3.28 The Bank's concept of strategy emerging from the framework of "ESW/AAA → Bank Policies → CAS → Projects and Programs" is difficult to discern in environment operations. There was plenty of ESW/AAA after the first CAS³⁵, but environmental linkages were only exploited on an ad-hoc basis. Bank sponsored reports often only became relevant after a long and unpredictable lag, when particular problems became critical and demanded solutions. Some seemingly ignored reports remained on the shelf but were rapidly utilized when they became relevant., the direction of causation unclear, and the lags long and unpredictable. The Region was able to capitalize on opportunities due to good client relations, the relative carte blanche of the CAS, a very independent country department, and high quality Bank staff committed and motivated to working on China. The 1995 and 1997 country strategies grouped environmental sustainability with three goals of broad-based growth, poverty alleviation and relieving infrastructure bottlenecks. The environment theme is now a "pillar" of the 2002 CAS, although now the strategy exercise is more systematic, associating objectives with activities.

3.29 Bank strategy, if there was one, had a marginal impact on the pace of reform required to address shortcomings of urban environmental management. The Bank's urban environment program, for instance, was a series of independent projects with no overall strategic framework but incorporating province/city specific capacity building and tariff covenants. Bank operations were tied to particular municipal governments and provinces that were themselves struggling with the problems created by fractionalized management systems. Project designs needed to go beyond existing agency partnerships and reach out to a broader array of public and private partnerships. The Bank's urban

³⁵ Country Assistance Strategy

environment program failed to go this way as there was limited demand from the municipal borrowers, some of whom were still under the spell of socialist planning. EASUR attempted to develop a true urban strategy with innovations such as cultural heritage, new municipal debt instruments and low-income water and sanitation programs. But the work has mostly been at a high-level of generality – for instance ESW that is a generic analysis of urban management themes. There is room for a major new piece of analytic and strategic work along the lines of the 1994 ESW on Urban Environment Services to define the dimensions of the problem and help identify a role for the Bank over the next 10 years.

3.30 China's initial strategy, accepted by the Bank, was for sector projects to relate to provinces and cities in a decentralized way, to facilitate project formulation and mobilize donor funding. This arrangement does not match well with the nature and geographical distribution of environmental problems. . Efforts at controlling water pollution have focused on city institutions, which represent urban users of water resources. It is the mushrooming peri-urban areas and TVEs that are replacing old industries as the main sources of uncontrolled pollution. Water quality is a particularly difficult problem to tackle, as there are no basin-wide institutions to manage water allocation or quality. Agricultural run-off, especially of livestock by-products causes widespread environmental damage and control of this “non-point” pollution is particularly difficult. Strategy must incorporate a role for new institutions of stakeholder participation and environmental regulation which cross the administrative boundaries. The joint 2002 joint Bank-China Water Sector Strategy diagnoses the problem of lack of integration in water management but the sections on environmental management are the weakest. SEPA has limited financial leverage over the sector ministries and does not have a cabinet seat. EASES influence on the environmental aspects of design of Bank-funded dams, flood control and irrigation systems, has largely been limited to safeguards. Although the Bank has its own integrated water resources management policy (1993) the importance of environmental functions in water projects is not always clear. Conventional sector-based water investment projects, managed by traditional ministries, such as water supply and sanitation, irrigation, inland water ways and multi-purpose dams tend, in China, as elsewhere, to live in separate and under-integrated worlds. The proposed Hai River Basin Management Project, a primarily TA activity, managed by the Bank and funded by a GEF, will address the institutions for both water resources and water quality management – the Ministry of Water Resources and SEPA will be co-implementing agencies, an unusual state of affairs.

3.31 The Bank may have identified too closely with SEPA, which lacks the full range of technical skills and capacities to fulfill the wider mandate it aspires to. When there are inter-ministry conflicts one of the most valuable roles for the Bank is to act as an independent external advisor to the Government. SEPA is overextended with responsibilities in areas where it has little experience or expertise,³⁶ which other sector ministries do have. For instance the Ministry of Science and Technology for global

³⁶ A draft of a report on Environmental Administration prepared for SEPA lists no less than 10 groupings and 46 tasks for SEPA functions to supervise and administer environmental protection. Amongst these are Biodiversity Conservation, Cross-cutting Environmental Issues, Urban Environment Control, Certification, Global Agenda and Nuclear Management and Control.

issues, Ministry of Construction for urban environment, and Ministry of Agriculture for NRM. An appropriate policy for the Bank is to use the agencies with the most appropriate expertise to manage particular environmental responsibilities, while identifying and proposing means of addressing conflicts of interest. The Bank role should include being an honest broker or independent advisor to Government, supported by its relationships across many ministries (including SEPA). Past strategy assumed coordination and mediation of the SDPC and Ministry of Finance while the nature of the policy issues raised requires the attention of the apex State Council.

3.32 Environmental strategy for China should take account of the pluralistic, idiosyncratic and personality dimensions of the Bank's professional culture. This seems to have been particularly relevant for China operations where staff work very hard, there is strong competition to work in the region, connections are strong, and high levels of professional satisfaction prevail. Strong, effective and charismatic personalities are highly effective at getting things done. The effect of imminent retirements of senior staff and loss of irreplaceable experience may have a disproportionate effect on Regional capacity. Some retired staff have continued to work for up to 75 percent of the time servicing projects originated by them. The Bank's work on China has benefited from being able to attract some of best staff who work for a commendably long time. But it is also important to have new blood and ideas, both to provide up-to-date technical knowledge and to prevent Bank assistance becoming too closely tied to historical connections rather than expertise.

4. Conclusions

The Bank did mainstream the environment in its projects, but the degree it did so varied by sector and was not always the result of deliberate Bank strategy

4.1 Mainstreaming by introduction of clean combustion technology in the energy sector was very effective at improving air quality. In agriculture and forestry, natural resource management and poverty targeted designs, were associated with Bank-sponsored projects. Most add-on GEF-supported activities were not expensive and hence were very cost-effective. Successes were usually the result of interest, enthusiasm and opportunities grasped by task managers and staff, sometimes following the Client's lead. Significant mainstreaming did not necessarily originate in active intervention by the environment unit (EASES), but could be the initiative of a "pure" sector unit, as was the case with Energy. Mainstreaming joined the lexicon used to justify projects, but was not done systematically, relying more on luck than strategic vision and managerial direction. Nonetheless the Bank did have significant influence on Chinese policies and could have increased environmental impact even more with a strategic approach to adopting gas for domestic use and building environmental health capacity.

Safeguards were usually applied thoroughly, but with a compliance focus and high transactions costs.

4.2 Safeguards were applied and served their function well, but often with a compliance focus and lack of enthusiasm. Adaptation of safeguards procedures to reduce transactions costs is appropriate for China, perhaps by considering sector thematic

environmental reviews to cover common core areas for a group of projects. Although there should be a dialogue on mainstreaming environment in sector projects, the Bank cannot afford to make a special case of safeguards in China. Chinese research institutes do show considerable technical competence in environmental impact studies but would benefit from a more critical and politically independent stance. The premature transfer of all safeguard functions to the client could have adverse effects.

ESW was highly cost-effective, when technically sound and well-timed.

4.3 ESW was not generally coordinated with, or designed to, complement projects. It was inadequately funded and of mixed quality, but the finance was also used imaginatively to convene and support critical professional interactions. Influential and high quality ESW was produced, but was not the child of internal Bank identification of strategic needs and budget prioritization. The Bank provided intellectual leadership and when ESW was critical, the stakes were so high that the overall cost-effectiveness of ESW was assured. Rightly the Bank participated enthusiastically and shared knowledge with a pluralistic group of donors allied to Chinese research institutes and NGOs.

The Bank did not really have an environmental strategy.

4.4 It was more of an approach, and largely a client-centered one, responding to and cooperating with China's lead environment agency (SEPA) and sector counterpart ministries. Bank environment interests, appropriately defined, did not necessarily coincide with sector ministry priorities. The environment unit focused its limited resources on policy-support to SEPA. The sector units and counterpart Chinese ministries, well-endowed with program loan funds, might or might not search out opportunities for environmental mainstreaming. Bank environment policy was "all things to all men," and country strategies could be cited as support for almost anything with environment in it. This approach certainly had results and met client needs, but it was not supported by the conceptual framework the Bank believes it uses - "Analytic Work → Bank Policies → Country Strategies → Projects and Programs." The Region had a free hand, eschewed formal strategic planning, and sought to manage Washington-China interactions carefully. Dedicated and highly capable professionals in EASES and the sector units had no difficulty signing on to this arrangement, usually addressed environmental dimensions of projects very well and derived high satisfaction from their technical work.