



Urban Environmental Priorities

January 2001

This note was drafted by Carl R. Bartone, Lead Environmental Specialist, Urban Development Division, Infrastructure Group.

E N V I R O N M E N T S T R A T E G Y B A C K G R O U N D P A P E R S

Donor Survey of Environmental Aid Effectiveness, October 2000

Health and Environment, April 2000

Mainstreaming Environment in Country Assistance Strategies, April 2000

Natural Resources Management, April 2000

Poverty and Environment, April 2000

Reducing Vulnerability to Environmental Variability, October 2000

Sourcebook on Poverty, Environment, and Natural Resources (for the Poverty Reduction Strategy Papers), April 2000

Urban Air Quality Management: The Transport-Environment-Energy Nexus, April 2000

Urban Environmental Priorities, January 2001

Contents

Preface v

Introduction	1
Linking Environment and the New Urban Strategy	1
Emerging Definition and Scope of “Urban Environment”	2
Linking Poverty, Environment, and Health	3
Priority Urban Environmental Problems	6
Urban Lending for the Environment	6
Environmental Focus in Urban Sector Projects	8
Scope of Urban Environment Projects	8
Environmental Objectives in Urban Projects	13
Environmental Indicators of Outcomes	15
Toward Better Design of Urban Environment Projects	16

References 20

Box

1. Urban Projects with Environmental Objectives 14

Figures

1. Cumulative impacts of urban poverty 5
2. Number of urban projects with environmental focus by sub-sector 7
3. Volume of urban lending on environment by sub-sector 7

Tables

1. Urban projects by degree of relevance to environmental issues: By sub-sector 8
2. Environmental issues addressed by urban sector projects: By Region 9
3. Urban projects by degree of relevance to environmental issues and by objectives 14
4. Urban projects by environmental indicators used and by objectives 15
5. Indicators for studying possible infrastructure and health linkages 17

Preface

The World Bank Group has embarked on a comprehensive effort to develop a corporate environment strategy. The initial phase of the preparation of the environment strategy has mobilized a large number of World Bank Group staff who work in various Regions and a wide range of sectors. This phase included the preparation of thematic background papers to describe emerging issues for discussion. This report is one of those background papers. It is intended as a vehicle to help a stocktaking process and stimulate a dialogue within the World Bank Group, as well as with its client countries, partners, and other interested stakeholders.

Introduction

Urban environment has emerged as a concern in the World Bank over the past decade. Since the late 1980s the World Bank has focused on urban environmental problems and issues. This emphasis was clearly spelled out in the publication, *Urban Policy and Economic Development: An Agenda for the 1990s*,¹ which included urban environment as one of the priority areas. Additionally, various publications under the Urban Management Program laid down guidelines for “urban environmental planning and management”² and conducting “rapid environmental assessments.”³

The United Nations’ Conference on Environment and Development⁴ included a chapter on “Promoting Sustainable Human Settlement” that called upon all nations to deal with urban environmental problems. The Habitat II Conference held in Istanbul in 1996 re-emphasized this objective by building one of its two themes around “sustainable human settlement development.” As one of the contributions to Habitat II, the World Bank published *Livable Cities for the 21st Century*.⁵ This study underscored three main strategies: to make cities livable: basic environmental services for the urban poor; cleaner air, cleaner water, healthier cities; and finance for people in cities.

Linking Environment and the New Urban Strategy

In the Bank’s new *Urban and Local Government Strategy*,⁶ the concept of the “livable” city is defined in terms of a healthy and dignified living environment. Making cities livable requires addressing the sources of environmental degradation, enabling access to basic shelter and environmental services for the urban poor, and reducing their vulnerability to environmental insults and hazards.

Consequently, the *Urban and Local Government Strategy* proposes an agenda for working with both national and local governments to develop cities that are, first and foremost, “livable.” That is, cities that are committed to ensuring that the poor achieve a healthful and dignified living environment, among other needs. To be livable, cities must also become “competitive” (well governed and managed) and financially sustainable, or “bankable.” To pursue these four interrelated objectives, the proposed strategy argues that the World Bank needs to *view the city holistically*, and as an integral unit of assistance and analysis, representing a specific spatial, social, political, environmental, financial and economic context. Within this holistic perspective, the Bank would *intervene selectively* to support cities and countries where there is a strong commitment by

¹ World Bank 1991.

² Bartone and others 1994.

³ Leitmann 1994a, 1994b.

⁴ United Nations 1993.

⁵ World Bank 1996.

⁶ World Bank 2000.

stakeholders to shared objectives, and would aim to scale-up urban assistance to meet the urban challenges.

Four main building blocks are proposed for the new emphasis in the Bank's urban support:

- Formulation of national urban strategies
- Support to city development strategies
- Scaling-up programs of services for the poor
- Enhanced assistance for capacity building

These strategic building blocks are in addition to, and reinforce, the Bank's core business of urban development. This includes lending and non-lending assistance for urban environmental management activities, among other urban activities.

One of the key tools for viewing the city holistically and intervening selectively is the City Development Strategy (CDS). Within the context of the CDS, cities that suffer the priority environmental problems identified in this paper should develop an urban environmental management strategy that can be transformed into issue-specific action plans. A common approach for achieving this objective is laid out in *Toward Environmental Strategies for Cities*,⁷ as well as other key publications.⁸ The approach is based on: (a) a process of informed consultation to reach consensus and commit stakeholders; (b) common agreement on priority issues, long-term goals, phased targets for environmental improvement, and strategies for achieving them; and (c) an action agenda that clearly defines responsibilities and resource allocations among key actors for implementing the strategies.

Similarly, at the national level there is a need to link national urban policy with national environmental policy, and to focus on building local capacity to manage local environmental priorities. This includes, in particular, managing the linkages between poverty, environment, health, and development, as discussed in this paper.

Emerging Definition and Scope of “Urban Environment”

Urban Environment encompasses the interactions of population, growth, city management, and the built environment with the natural environment (ecological system) in which the city is located. It also links other pieces of the urban puzzle such as health, infrastructure, energy, transport, and land use. A fundamental dimension of sustainable development is sustaining the growth and development of the city while balancing the benefits of growth with its short- and long-term

⁷ Bartone et al (1994).

⁸ See, for example, Leitmann (1999) and ICLEI (1996).

implications for the health of the population, especially the urban poor, and for complex ecosystems and the global environment.

Managing the urban environment is intricately linked to questions of urban governance and finance and the capacity of cities to provide needed environmental infrastructure and services on an equitable and self-sustaining basis. While urban governance issues deal with political boundaries, environmental impacts respect only natural boundaries such as watersheds, underlying aquifers, coastal zones, or urban airsheds. Therefore solutions to environmental challenges often call for new approaches to planning and management; for example, by introducing water-basin or air-basin management coordination mechanisms and regional spatial planning approaches to pollution management.

An urban environmental management strategy and action plan should be an integral and essential component of any city development strategy (CDS). Addressing complex environmental issues is only possible if a strategic approach is taken to identifying environmental priorities and desired outcomes, engaging various sectors and players to work together toward common objectives, and ensuring the necessary resources for achieving them. Traditionally, the Bank's response to environmental challenges has been through stand-alone projects in various sectors and portfolio categories, or complex urban projects with several components, which are often characterized as "Christmas tree" projects. These interventions usually focus on physical targets rather than on environmental outcomes linked with fundamental development objectives, such as improved air and water quality to protect human health.

As our understanding of complex urban environmental challenges and the factors that influence them evolves, it is becoming increasingly clear that only joint efforts of various sectors and actors can effectively address these challenges, and a greater effort has to be made to target desirable environmental outcomes.

Linking Poverty, Environment, and Health

Urban poverty and environmental conditions are intimately inter-related. The poor are constrained (by their poverty) to live in unsafe, marginal, and environmentally sensitive sites such as steep hillsides and floodplains, or heavily polluted land-sites near solid waste dumps, next to open drains and sewers, or adjacent to polluting industries. Although the poor can build or rent houses with less fear of eviction in these marginal areas, they suffer from pollution, and natural and man-made disasters as a result. "The more serious environmental problems at the household and community levels, such as inadequate water and sanitation facilities and indoor air pollution, are more prevalent in poor cities and poor

neighborhoods.”⁹ Inadequate diet exacerbates the environmental health risks of the poor by lowering their resistance to many diseases, especially as they live in the constant presence of pathogenic micro-organisms and crowded, cramped housing conditions. Thus, poverty constrains the poor to live in unsafe environments, both inside the home and outside of it.

These poor environmental conditions lead to poor health, which aggravates poverty and leads to impacts such as lower educational levels; loss of income owing to sickness, disease, and inadequate medical treatment; and increased spending on health care, which depletes household savings. Lowered incomes and aggravated poverty divest the poor of their capability either to live in safer environments or to improve the environment where they live. Hence it is essential to improve the environmental conditions of the urban poor if we are to enhance their capability to fight poverty.

Linkages between poverty, environment, and health are not limited to cities. At a broader spatial scale there may also be profound impacts of urban growth on surrounding peri-urban and rural areas. Environmental risks in these areas may be more related to productive processes (for example, the reuse of urban wastewater for food-crop irrigation), or to the deterioration of natural capital, such as forests and water resources. Similarly, migration to urban centers—as a result of rural environmental stress, and economic insecurity when farmers cannot sustain their living—increases the demand for public resources for urban environmental infrastructure and services. Thus urban environmental strategies should also focus on the entire ecological footprint of the city¹⁰ and on managing the corresponding impacts on peri-urban and rural populations, as well as bidirectional linkages between urban and rural economic decisions.

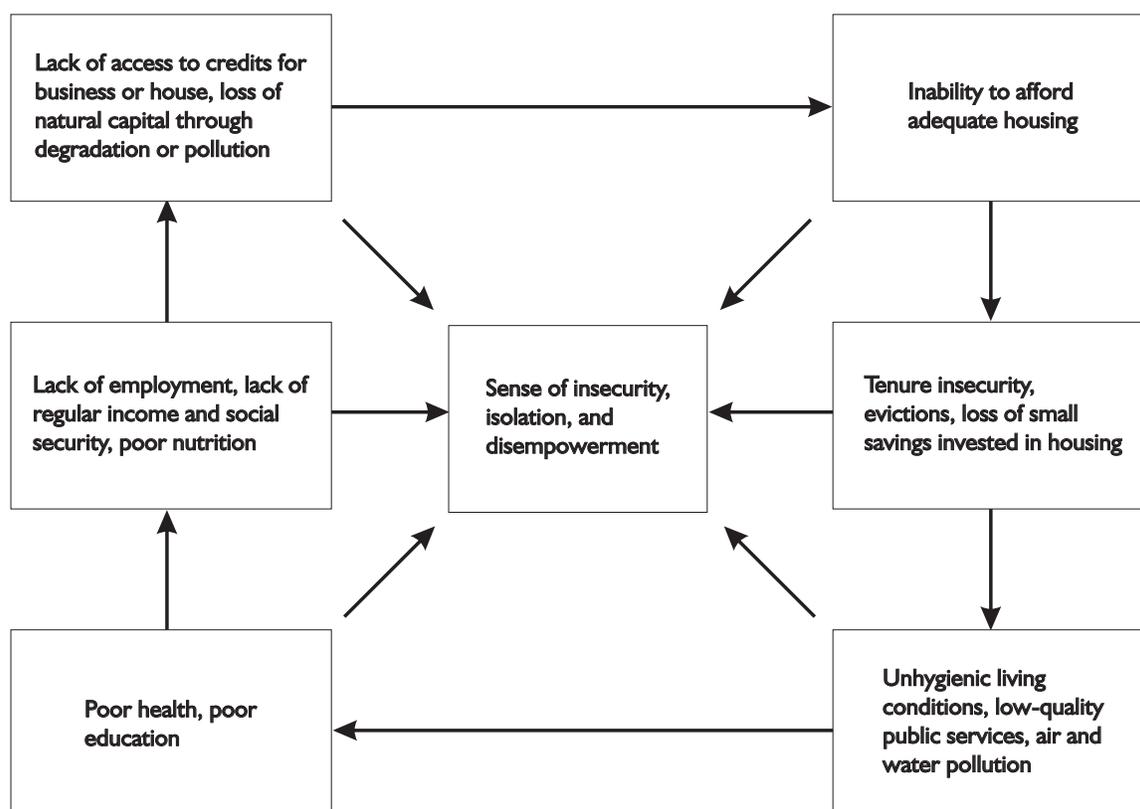
Improving environmental conditions in and around cities and towns helps to reduce poverty both directly and indirectly. As a direct impact, improvement in environmental (and living) conditions leads to better health, which, in turn, helps to attain better education, greater productivity, and increased incomes. The indirect impact of enhancing the quality of environmental and living conditions on poverty is that it will lead to fewer health problems and hence produce savings from spending on health. The savings and better living environment would provide the poor with resources, time, and, most importantly, a better quality of life to enrich their skills (and thereby increase their capabilities) to earn higher incomes and overcome poverty. Further, increase in incomes would also enable the poor to pay for the basic environmental services they need. Thus, the provision of basic environmental services will help in sustaining a livable environment and livable cities.

⁹ McGranahan (1995:179).

¹⁰ The “ecological footprint” can be thought of as the area of productive land required to support the resource consumption and waste assimilation needs of a city, wherever that land may be.

In summary, urban poverty is often characterized by cumulative deprivations. Figure 1 summarizes the manifestations of different dimensions of poverty in urban areas, causes, and impacts of each dimension on another.¹¹

Figure 1. Cumulative impacts of urban poverty



After: Baharoglu and Kessides 2000.

The foregoing provides a cogent rationale for fighting poverty through improving environmental conditions in urban areas. It points to the importance of establishing and clarifying the links between poverty, environment, health, and development at both the conceptual and policy level. In the Bank, these links need to be made in such instruments as Country Assistance Strategies (CAS), the Comprehensive Development Framework (CDF), and City Development Strategies (CDS), as well as in the lending operations. It also confirms that the provision of basic environmental services relates directly to improving living conditions in poor neighborhoods, and hence to improving the capability of the urban poor. The majority of urban projects (as is shown below) focus on the provision of such services, and can be viewed as urban environmental projects. However, insufficient attention has been given to establishing the links between urban poverty and environmental issues, and explicitly defining project environmental objectives that are linked to poverty-reduction goals.

¹¹ See Baharoglu and Kessides (2000) for a more complete analysis of the cumulative impacts of urban poverty.

Priority Urban Environmental Problems

When prioritizing urban environmental problems and responses, the Bank's main concern should be to *protect human health* in cities, especially of the poor, from environmental threats through a variety of interventions. From a health-impact perspective, the priorities are clear:¹²

1. Providing *basic environmental services* in a way that most effectively protects health and serves the poor, including:
 - Access to safe water supply, sanitation, drainage, solid waste collection and disposal, and health education
 - Improved waste disposal
 - Reduced indoor air pollution
2. Identifying and implementing integrated approaches to *urban air quality* and *watershed and aquifer management* to prevent and abate the impacts of pollution and degradation, including:
 - Ambient air pollution
 - Surface water pollution
 - Ground water pollution and depletion
 - Land and ecosystem degradation
3. Dealing with *accidents* and *environmental disasters* deriving from natural or man-made hazards

In addition to these three priorities, there are a number of emerging environmental challenges at larger spatial scales that many cities will need to address in partnership with neighboring and/or higher levels of government, such as regional *urban-rural linkages* and global issues such as *climate change*.

Urban Lending for the Environment

World Bank lending for urban-sector projects addresses various environmental problems and issues, ranging from water-related problems (such as surface water pollution, and coastal/lake pollution) to cross-media problems (for instance municipal solid waste management), and inadequate water supply and

¹² In determining the priorities, consideration should be given to how many urban dwellers are affected, the number and size of cities affected, and the severity of the health impacts. For example, Lvovsky (2000) has analyzed the health burden of disease from major environmental risks and provides a causal framework that supports the above set of priorities.

sanitation.¹³ Projects focusing on the urban environment are cross-sectoral in nature, and demand multi-institutional efforts to address the issues. Urban projects differ with regard to their environmental focus, which may range from projects with primarily environmental objectives, to others in which environment is a component, to others still that produce positive environmental impacts.

An analysis of 43 urban projects with an environmental focus in the active portfolio in FY99¹⁴ (see figure 2) showed the projects to be classified as “urban development adjustment” (14 projects), “urban management” (13 projects), “urban environment” (11 projects), “other urban development” (4 projects), and “urban housing” (1 project). The total volume of Bank lending for these 43 projects was US\$3.6 billion (figure 3), with a total project value of US\$7.0 billion. The environmental components totaled US\$3.5 billion (50 percent of total project value); the average component cost was US\$81 million per project.

Figure 2. Number of urban projects with environmental focus by sub-sector

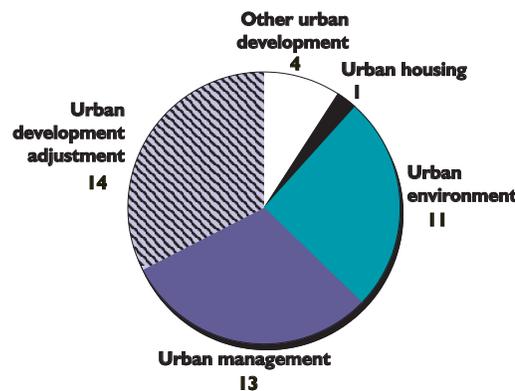
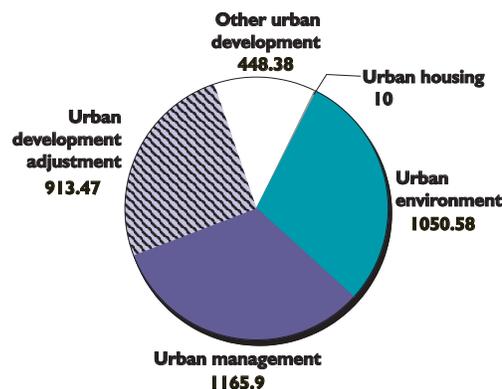


Figure 3. Volume of urban lending on environment by sub-sector (US\$ millions)



¹³ It is important to note that lending on water and air pollution-related issues in urban areas is also provided by the Water and Sanitation, Transportation, and Energy sectors; this discussion focuses only on Urban Sector lending for the environment.

¹⁴ This study of the urban environment portfolio was conducted by Bharat Dahiya (1999).

Environmental Focus in Urban Sector Projects

This study undertook a systematic study of urban-sector projects, with regard to both their design components and the environmental issues they addressed. Based on this analysis, projects were grouped under three categories:

1. *Primarily environmental projects* (category P), in which components aimed at improving environmental quality
2. Projects with *environment as component* (category C), that had one or more component dealing with specific urban environmental issues
3. Projects that have *positive environmental impacts* without a specific environmental component (category I).

According to this categorization about half of the Bank's urban projects have "environment as a component" in their design in all sub-sectors, and the rest are almost equally divided in the other two categories. Most of the projects in "Urban Environment" (8 of 11), two projects in "Other Urban Development," and one project in the "Urban Management" sub-sectors have primary environmental objectives (see table 1).

Table 1. Urban projects by degree of relevance to environmental issues: By sub-sector

<i>Urban sub-sector</i>	<i>Primarily environmental projects (P)</i>	<i>Projects with environmental component (C)</i>	<i>Projects with positive environmental impacts, without specific environmental component (I)</i>	<i>Total</i>
Urban environment	8	3	0	11
Urban management	1	9	3	13
Urban development adjustment	0	7	7	14
Other urban development	2	2	0	4
Urban housing	0	0	1	1
Total	11	21	11	43
(Percentage)	(25.6%)	(48.8%)	(25.6%)	(100%)

Scope of Urban Environment Projects

Urban sector projects supported by the World Bank focus on several of the priority environmental problem areas identified above, as shown in table 2. Several important areas are typically not dealt with in the urban sector projects, such as indoor and ambient air pollution (which are primarily covered by the transport and energy sectors) and global environmental challenges (primarily

environment sector projects). Also, a review of the active portfolio in FY99 revealed that there were 45 water supply and sanitation sector projects and 10 transport sector projects with a predominantly urban environment focus. While the latter projects are not discussed here, it does point to the need for a more comprehensive review of Bank lending across sectors to fully understand the Bank-supported effort being made to improve the urban environment in client countries.

Table 2. Environmental issues addressed by urban sector projects: By Region

<i>Problem area</i>	<i>AFR</i>	<i>EAP</i>	<i>ECA</i>	<i>LAC</i>	<i>MENA</i>	<i>SAR</i>	<i>Totals</i>
<i>Provision of basic environmental services</i>							
Access to safe water supply, sanitation, drainage, solid waste collection, and health education	13	12	6	5	4	2	42
Improved waste disposal	6	9	2	4	1	1	23
Reduced indoor air pollution	0	0	0	0	0	0	0
<i>Urban air quality and watershed management</i>							
Ambient air pollution	0	0	0	1	0	0	1
Water pollution	0	2	2	0	0	1	5
Land and ecosystem degradation	1	1	0	0	0	1	3
<i>Environmental hazards</i>	1	4	1	2	2	0	10
<i>Global environmental challenges</i>	0	0	0	0	0	0	0

That more than one-half of all urban environment interventions take place outside the urban sector raises a number of questions. Institutional, technical, financial, social, and other aspects critical to urban sustainability may not be addressed in one-off investments. Spreading the portfolio among sectors may provide opportunities for more integrated projects, but could also result in a watering down of the reform agenda, a dilution of skills, and difficulties in assuring quality control and consistency of client policy dialogue.

Provision of Basic Environmental Services

Access to Safe Water Supply, Sanitation, Drainage, Solid Waste Collection, and Health Education

The highest number of urban projects (42 out of 43) provide lending to increase household- and community-level access to safe water supply (10 projects), sanitation (36 projects), drainage (26 projects), solid waste collection (28 projects), and/or health or environmental education (2 and 4 projects respectively). Thus, urban sector projects seem to prioritize environmental issues related to human health. The majority of these projects are community upgrading type projects, but some have primarily environmental objectives. The small number of projects with health education components shows that the urban

sector needs to focus on this issue in future projects, and could benefit from the experience and resources of the health sector.

Improved Waste Disposal

Solid and hazardous waste disposal issues were addressed in 23 urban sector projects, which have included the following measures: siting and design studies for sanitary landfills; construction of sanitary landfills incorporating impermeable liners, leachate collection and treatment, and landfill gas control; earthmoving equipment for landfills; siting and construction of transfer stations; facilities for treatment and final disposal of hospital wastes; construction of composting facilities; and closure or rehabilitation of old solid waste dumping sites. Healthcare waste management is an area of particular concern for local authorities and the health sector.

Indoor Air Pollution

No urban-sector projects deal with this issue. There are, however, a number of energy-sector projects focusing on indoor air pollution, not particularly with an urban focus, but related to introducing cleaner burning cooking and heating devices, cleaner fuels, and/or improved household ventilation. The ESMAP program has carried out most of these projects.

Urban Air Quality and Watershed Management

Ambient Air Quality Management

Only one urban project deals with the problem of ambient air pollution: the Urban Environmental Management Project in Colombia, which primarily involves technical assistance aimed at studies on air pollution and the development of sectoral strategies and action plans. However, it is important to note that at least 10 active urban transport projects address ambient air pollution problems through components on air pollution abatement, air quality monitoring, and noise pollution reduction. In addition, a number of projects in the energy sector (such as coal gasification) and the industrial sector (industrial pollution abatement and control) are focused on reducing urban air pollution. It is important to note that there are areas where urban actions can contribute to air quality management including, for example: reduction of biomass burning, refuse burning and landfill fires; household conversion to cleaner fuels; and reduction of re-suspended particulates through improved road maintenance and street sweeping.

Water Quality Management

Water pollution is a serious environmental and health concern that has been addressed partially in five urban projects through various measures including: institutional development for water-quality monitoring, coastal zone planning and

management, flood management, waste-minimization programs, and the creation of an environmental-pollution control fund. Another eight urban projects deal with municipal pollution-control investments through such sanitation services measures as: construction and/or rehabilitation of municipal wastewater/sludge treatment plants and pumping stations; wastewater outfall systems; lagoon construction; and industrial pollution control through sewerage and treatment facilities for industrial parks.¹⁵ In addition to these urban-sector projects 25 projects in the water and sanitation sector concentrate on water pollution abatement and control. Of particular interest are several water quality management projects in urbanized river basins in Brazil (for example, the Guarapiranga watershed).

Land and Ecosystem Degradation

Only three urban projects have dealt with land and ecosystem degradation issues, including urban coastal zone protection and lake or lagoon restoration projects. Population encroachment into sensitive areas by poor people seeking available land is a particular concern that could be headed off by guided development or by requiring upgrading or resettlement actions.

Environmental Hazards

Natural environmental hazards such as earthquakes and flooding have been addressed by 10 active urban projects. These projects cover such areas as: post-disaster reconstruction projects aimed at rebuilding urban infrastructure; improving the policy framework and institutional capacity for better disaster management and mitigation; flood prevention or mitigation projects to improve drainage systems and realign or protect existing utility services, such as water mains, sewer mains, and telephone and power cables. Again, the resettlement of poor squatters away from hazard-prone areas is sometimes a necessary preventive measure.¹⁶ A related important issue of traffic safety and accidents is addressed in the transport portfolio.

Global Environmental Challenges

While there were no active projects in the urban portfolio dealing with global environmental issues, the GEF has financed two projects for port reception facilities for shipboard wastes that are linked to improvements in urban waste management systems. Also, the GEF has recently funded (or is about to fund) a

¹⁵ A recent review of Bank lending for wastewater and sanitation (W&S) found a total of 194 sanitation projects approved since FY94, two-thirds of which are outside the W&S sector including 54 in the urban sector (Bösch and Travers 2000). The study found that 53 percent of urban sector sanitation projects included sewerage and 24 percent included wastewater treatment components.

¹⁶ The World Bank's Disaster Management Facility (DMF) identifies sound environmental management and land use planning as a key way of reducing human suffering and economic loss from natural disasters (Kreimer and Arnold, 2000).

number of projects for methane reduction through landfill gas recovery and utilization, and composting projects that earn carbon credits. In general, addressing the pollution agenda of cities can contribute significantly to the global agenda.

Other Issues

While addressing environmental problems, urban sector projects also deal with issues related to capacity building, governance, and economic and financial aspects. These factors contribute significantly in making cities “livable”, “competitive,” and “bankable” and help them to attain “good governance and management.”¹⁷ Environmental indicators play an important role by providing concrete feedback on the environmental outcomes/impacts of various projects. Thus the portfolio assessment analyzed capacity building, governance, and economic and financial aspects in urban sector projects. It also looked into the type (or lack) of environmental indicators utilized in these projects and their usefulness for determining environmental outcomes.

Capacity Building

Capacity building is one of the four building blocks of the Bank’s new *Global Urban and Local Government Strategy*; it emphasizes technical assistance, training, and policy work along with institutional strengthening. Urban sector projects provide capacity building for the following functions: city development strategies (1 project), legislative and regulatory frameworks (2 projects), technical studies (18 projects), planning (16 projects), financial management (16 projects), institution building (2 projects), land titling (1 project), mapping (5 projects), policy development (3 projects), project preparation (2 projects), project implementation support (9 projects), and community awareness/education (3 projects). Within these capacity building components, institutional strengthening and training activities were targeted at a variety of agencies and groups with a stake in urban environmental management: municipal and local governments (8 projects), central and provincial governments (11 projects), sector agencies and parastatals (11 projects), legislators (2 projects), and NGOs (1 project).

Governance

Good governance and management is one of the main pillars of sustainable cities. Urban projects seek to strengthen good governance primarily through community participation and private sector participation. Community participation components include activities aimed at: community awareness-building (3 projects); community mobilization (4 projects); and community participation in planning, design, implementation, operation and maintenance (15 projects). Eight urban projects involve the private sector in the provision of urban

¹⁷ For the definition of these concepts, see *Cities in Transition: World Bank Urban and Local Government Strategy*, World Bank, 2000.

environmental infrastructure and services, while two projects assess the potential for private sector participation in such areas as water supply and sanitation, landfill operation, and construction/operation of wastewater treatment plants.

Economic and Financial Aspects

The economic impacts of health and environmental improvements in cities are most often measured by increases in the productivity of urban populations, reductions in healthcare expenditures and averting behaviors, changes (mainly increases) in property values, and increases in amenity values. Valuing these impacts has been attempted for the environmental components in 24 of the urban projects. Across those projects, the economic rate of return (ERR) ranges from 12 percent to 58 percent. The main valuation methods include willingness to pay (contingent valuation), property value differential (hedonic pricing), and cost of productivity loss. In seven projects where ERR could not be calculated owing to lack of information, cost-effectiveness analysis was carried out on alternative investments. For three projects, the financial rate of return (FRR) was calculated for the corresponding environmental components; values were found to range between 10 percent and 17 percent.

Urban Environmental Indicators

In the urban sector projects under study, four kinds of environmental indicators have been used:

- Environmental health indicators (such as infant mortality rates)
- Environmental quality indicators (such as water and air quality measures)
- Pollution reduction indicators (such as tons of pollution-load removed)
- Proxy operational indicators (such as percentage of population served, percentage of solid waste going to a sanitary landfill, and so forth)

Most urban projects reviewed (21 of 43) used proxy operational indicators; only two projects utilized environmental quality indicators, another two projects utilized pollution-reduction indicators, and none used environmental health indicators. There is a clear need for improvement in the type of indicators used, moving from proxy measures to health and environmental outcome measures.

Environmental Objectives in Urban Projects

The assessment of urban sector projects that address environmental issues shows that they pursue four categories of objectives. Two of the objectives are improving “*environmental quality*” (13 projects) and “*quality of life/living conditions*” (6 projects) in urban areas. The largest group (20 urban projects) are aimed at “*improving environmental infrastructure and services.*” Only four urban projects that concentrate on the objective of capacity “*strengthening institutional capacity*” also address environmental issues. The distribution of urban projects

by degree of relevance to environmental issues (as defined earlier) and objectives is shown in table 3.

Table 3. Urban projects by degree of relevance to environmental issues and by objectives

<i>Objective category</i>	<i>Project category</i>			<i>Total</i>
	<i>Primarily environmental projects</i>	<i>Projects with environmental component</i>	<i>Projects with positive environmental impacts without specific environmental component</i>	
Improving environmental quality	9	4	--	13
Improving quality of life/living conditions	1	3	2	6
Improving infrastructure and services	--	14	6	20
Strengthening institutional Capacity	1	--	3	4
Total	11	21	11	43
(Percentage)	(25.6%)	(48.8%)	(25.6%)	(100%)

It is noted that projects aimed at improving environmental quality are usually, but not always, classified as primarily environmental projects, while projects aimed at improving environmental infrastructure and services are never classified as primarily environmental projects. Moving from an output-based to an outcome-based approach to project design, many more urban projects could rightly be classified as primarily urban environment projects. Box 1 offers examples of two urban projects that clearly have environmental objectives.

Box 1
Urban Projects with Environmental Objectives

Colombo Environmental Improvement Project: Statement of objectives

The overall objective of the project is to contribute to a sustainable environment for the long-term economic and social development for the CMA [Colombo Metropolitan Area]. Specific objectives of the project are to:

- (a) Improve municipal solid waste management and services in the Colombo Municipal Council and participating local authorities
- (b) Reduce wastewater pollution in the Beira Lake catchment area and selected industrialized zones
- (c) Develop the capabilities of local governments and institutions to plan and manage municipal services in a sustainable, environmentally beneficial, manner
- (d) Assist in mobilizing private participation in the development and operation of urban infrastructure services.

(continued)

Box 1 (continued)
Urban Projects with Environmental Objectives

Second Shanghai Sewerage Project: Statement of objectives

The project is part of the next phase of the Shanghai Municipality's development program to improve environmental conditions and management. The overriding project objective is to provide a safe environmental setting for the long-term growth of Shanghai, enabling sustained economic and industrial growth. Specific objectives of the project are to:

- (a) Enhance wastewater and stormwater treatment management through expanding wastewater collection, pretreatment and disposal capacity and stormwater drainage facilities
- (b) Reduce urban pollution impact, while facilitating pollution control
- (c) Improve wastewater utility financial and operational management
- (d) Strengthen sector institutions through training, feasibility studies, and future investment project preparation in the environment area.

Source: World Bank Staff Appraisal Reports.

Environmental Indicators of Outcomes

The importance of indicators stems from the significance of the environmental outcomes that are achieved by the projects. Ideally, environmental health indicators provide the best measure of living conditions and quality of life in urban areas. None of the urban projects have made use of environmental health indicators (see table 4 below).

In the absence of information on environmental health, environmental quality indicators and pollution reduction indicators can be used to reflect environmental conditions causally related to environmental health. Table 4 shows that only four urban projects that have used environmental quality monitoring and pollution-reduction indicators have objectives directly related to addressing environmental issues. More specifically, of 13 urban projects addressing water pollution problems, only four have used water quality or pollution reduction indicators. This signals a clear failure to link objectives to outcomes.

Table 4. Urban projects by environmental indicators used and by objectives

<i>Objective category</i>	<i>Environmental indicators</i>		<i>Pollution reduction indicators</i>	<i>Proxy operational indicators</i>	<i>Total</i>
	<i>Environmental health indicators</i>	<i>Environmental quality indicators</i>			
Improving environmental quality	--	1*	1*	8	10
Improving quality of life/living conditions	--	1*	1	3	5
Improving infrastructure and services	--	--	--	10	10
Strengthening institutional capacity	--	--	--	--	--
Total	--	2	2	21	25

* These projects have also used proxy operational indicators.

Many (21 of 43) urban projects with environmental objectives have used proxy operational indicators. These are useful in cases when efforts are being made to reduce environmental risk but causal linkages, while not quantifiable, are strongly correlated (such as, percentage of population served by safe drinking water or sanitation). Nevertheless, outcome indicators are preferable, whenever they can be applied.

Many of the older projects in the current urban portfolio were prepared before the use of a logical framework became mandatory. Today it should be almost routine to link objectives to outcomes and introduce appropriate indicators, and much work has been done on the identification of both urban and environmental indicators. A more pressing need now is to *apply environmental health and quality indicators* at the urban project design level, and *ensure that they are consistently utilized in the preparation and updating of the CAS, CDF, and local CDSs*.

As urban environmental impacts occur at different spatial scales, it is often important to disaggregate indicator measurements to the appropriate household or neighborhood scale and not just work with city-wide averages. Geographical Information Systems provide a powerful tool for this type of spatial analysis.

It is also important to recognize that the provision of basic environmental infrastructure and services alone may not improve health without the corresponding adoption of hygienic behavior.¹⁸ Thus behavioral indicators may need to be monitored in conjunction with service and health indicators, as is shown in table 5 with specific reference to water and sanitation infrastructure and services.

Toward Better Design of Urban Environment Projects

The urban environment portfolio review suggests that while the Bank does considerable lending for projects that will enhance the living environment and health conditions of the urban poor in client country, seldom do such projects make explicit the linkages between urban poverty, environment, and health. The following are weak areas with regard to the Bank's past performance in addressing urban environmental issues:

- Projects focus more on technical and physical investments and less on development objectives (for example, improving human health) and environmental outcomes (for example, air and water quality improvements) and on the linkages between these objectives and outcomes.

¹⁸ See Bösch *et al.*, 2000.

Table 5. Indicators for studying possible infrastructure and health linkages

<i>Indicators that assess the level of water and sanitation services</i>	<i>Indicators that assess the use of services and hygiene behavior</i>	<i>Indicators that assess the health situation (reported by households/clinics)</i>
<ul style="list-style-type: none"> • % of HHs with water supply connections • % of HHs with access to a public water delivery point within 30 meters of residence • Average distance to delivery point from HH • Number of people per public water-delivery point • % of population consuming less than 20 liters per capita per day • % of HHs connected to piped sewer system • % of HHs with access to functioning sanitation system within 10 meters of residence 	<ul style="list-style-type: none"> • Household water consumption • Household expenditure on soap • Household expenditure on detergents • Hand washing after defecation • Hand washing before food preparation, eating, and child care • Latrine maintenance 	<p>Child health</p> <ul style="list-style-type: none"> • Infant mortality rate • Childhood mortality rate • Prevalence of malnutrition <p>Incidence and prevalence of main diseases</p> <ul style="list-style-type: none"> • Diarrhea • Dysentery • Hepatitis A

- Similarly, clear links are seldom established between urban poverty and environmental issues, and environmental objectives are seldom linked explicitly with poverty-reduction goals.
- Environmental and development indicators have not been used extensively.
- Analytical work, strategies, and plans are not always translated into actions.
- Cross-sectoral approaches to address specific development/environment challenges are only infrequently applied.

The foregoing conclusions suggest that to achieve better design of urban environmental projects, project preparation should focus on the following:

- *Integrating urban environmental planning and management (UEPM) into the CDS framework, as well as into national urban strategies*

More effective tools are needed for taking stock of environmental issues in CDSs and proposing viable solutions. Similarly, policies and instruments should be identified at the national level that encourage cities to better address their environmental problems through the application of strategic planning, and help strengthen local capacity to manage priority environmental problems. Many strategic planning tools are now available at the sector level that respond to specific environmental priorities, such as strategic sanitation planning,¹⁹ strategic solid-waste planning,²⁰ and the

¹⁹ Wright (1997).

use of air- and water-quality modeling of emission-source reduction strategies.

- *Making UEPM more effective*

Strategic planning, if not linked with funding through (project level) action plans, does not translate into practical projects. Hence there is a need to introduce UEPM in the project-preparation phase, so that environmental strategies and action plans and capacity building components can be funded and implemented. At the community level, informed consultation mechanisms should be employed for engaging communities, especially the urban poor, in UEPM processes along with other key stakeholders.

- *Linking “environmental objectives,” “project design,” and “policy reform”*

If urban projects are to contribute to policy reform, it is important to link the environmental objectives and the design of these projects with the examination of a range of policy options and instruments. While some specific suggestions have been made in this report, this is an area that requires local examination and modeling of environmental conditions and causal factors coupled with sound economic analysis. Particularly with respect to the provision of basic environmental services for the poor, willingness to pay and affordability studies are essential tools.

- *Objectives and indicators*

This review shows the need for a more careful statement of urban environmental objectives and the introduction of matching indicators to measure environmental outcomes. The logical framework approach should aid in specifying these linkages during the project preparation process. Success also depends on a better specification of causal relationships and economic consequences, as noted above.

- *Integrated projects incorporating cross-sectoral and inter-jurisdictional approaches*

Many environmental problems cut across political and natural boundaries and can only be successfully dealt with through integrated approaches. While integrated projects are by nature complex, they should not be considered nor designed as “Christmas tree projects.” It is not possible to deal with water-quality problems (as in the Guarapiranga Watershed) or air-quality problems (as in the Valley of Mexico) without a set of coherent actions across several sectors and coordinated across multiple municipal, state, and central level governments. Outcome-focused approaches that

²⁰ ERM (1998).

define cross-sectoral responsibilities and resource allocations can help reduce complexity.

In tailoring this set of recommendations to the environment community within the Bank, it is helpful to stress that the methodologies and tools for spatially based strategic planning referred to above can and should be effectively incorporated into the environmental assessment (EA) process for urban projects.

Finally, to increase understanding and effectiveness of project design, the following activities should be emphasized in the urban and environment knowledge management programs:

- *Illustrating the linkages between urban poverty and urban environmental issues.* While some good studies highlighting the linkages between urban poverty, environment, and health are available, similar studies should be developed in each project city. Using such tools as rapid urban environmental assessment, comparative risk assessment, mapping of intra-urban differentials in income and access to housing and basic environmental services, and health indicators can provide quick and inexpensive measures of the linkages and relative importance of environmental issues.
- *Building examples of good practice.* Some examples of good practice have been identified through this limited review of urban projects. A more systematic effort is recommended to identify, evaluate, and document relevant cases of urban environmental planning and management in other sectors (transport, water, energy, health), as well as of UEPM as it is practiced in other international and national agencies.
- *Conducting a comprehensive portfolio review.* A significant shortcoming of this review of the urban environment portfolio is that it only covers urban sector projects. There are as many—or more—major urban environmental projects in other sectors, especially water and sanitation, transport, energy, industry, health, and even the environment sector. A comprehensive review could provide a complete picture of what the Bank does on urban environment, ensure that no lessons are lost, and help in the formulation of a common and consistent client policy dialogue and reform agenda for urban environment activities across all sectors.

References

- Baharoglu, Deniz, and Christine Kessides. 2000. "Urban Poverty." In *Poverty Reduction Strategy Sourcebook*. Washington, D.C.: World Bank.
- Bartone, Carl, Janis Bernstein, Josef Leitmann, and Jochen Eigen. 1994. *Towards Environmental Strategies for Cities: Policy Considerations for Urban Environmental Management in Developing Countries*. Urban Management Program Paper 18. Washington, D.C.: World Bank.
- Bösch, Christophe, and Lee Travers. 2000. "The State of Wastewater and Sanitation at the World Bank." In *Investing in Sanitation, 2000*. Water Supply and Sanitation Forum, Washington, D.C, April 5, 2000.
- Bösch, Christophe, Kirsten Hommann, Claudia Sadoff, and Lee Travers. 2000. "Water, Sanitation and Poverty." In *Poverty Reduction Strategy Sourcebook*. Washington, D.C.: World Bank.
- Dahiya, Bharat. 1999. *World Bank Lending for the Urban Environment: A Portfolio Analysis*. Urban Development Division Study. Washington, D.C.: World Bank (Draft report).
- ERM (Environmental Resources Management). 1998. *Planning Guide for Strategic Municipal Solid Waste Management in Major Cities*. Draft report prepared for the World Bank. London: ERM.
- ICLEI (International Council for Local Environmental Initiatives). 1996. *The Local Agenda 21 Planning Guide: An Introduction to Sustainable Development Planning*. Toronto: ICLEI, IDRC, and UNEP.
- Kreimer, Alcira, and Margaret Arnold. 2000. *Managing Disaster Risk in Emerging Economies*. Disaster Risk Management Series No. 2. Washington, D.C.: World Bank.
- Leitmann, Josef. 1994a. *Rapid Environmental Assessment: Lessons from Countries in the Developing World, Vol. 1, Methodology and Findings*. World Bank Urban Management Program. Washington, D.C.: World Bank.
- . 1994b. *Rapid Environmental Assessment: Lessons from Countries in the Developing World, Vol. 2, Tools and Outputs*, Urban Management Program. Washington, D.C.: World Bank.
- . 1999. *Sustaining Cities: Environmental Planning and Management in Urban Design*. New York: McGraw-Hill.

McGranahan, Gordon. 1995. "Health, Poverty, and the Environment: Lessons from a Three-City Study." In Ismail Serageldin, Michael A Cohen and K. C. Sivaramakrishnan, eds., *The Human Face of the Urban Environment*, Environmentally Sustainable Development Occasional Paper 6. Washington, D.C.: World Bank.

Lvovsky, Kseniya. 2000. *Health and Environment*. Environmental Strategy Background Paper, Washington, D.C.: World Bank. (Discussion draft)

World Bank. 1991. *Urban Policy and Economic Development: An Agenda for the 1990s*. Washington, D.C.: World Bank.

———. 1996. *Livable Cities for the 21st Century*, Directions in Development Series. Washington, D.C.: World Bank.

———. 2000. *Cities in Transition: World Bank Urban and Local Government Strategy*. Urban Development Division, Infrastructure Group. Washington, D.C.: World Bank.

Wright, Albert. 1997. *Toward a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries*. Water and Sanitation Program. Washington, D.C.: World Bank.