



Appendix B.

Environmental Quality, Service Delivery, and Energy Efficiency

B1. ENVIRONMENTAL QUALITY

B1.1 Air Pollution

Is air pollution increasing or decreasing as measured by key indicators (for example, suspended particulates)? What are the health implications of air pollution—respiratory disease, working years lost, mortality? What set of measures would most effectively and drastically reduce air pollution—Closing firms exceeding emission standards? Changing fuel and automobile standards (normally national government functions)? Introducing polluter-pay policies? Banning certain fuels (for example, banning the burning of coal at street level, as Beijing did)?

B1.2 Wastewater and Water Quality

Is water quality improving or declining in key water bodies in the urban region? What is the wastewater system coverage, including that from non-conventional community cisterns and septic systems? At what percentage of capacity do existing wastewater systems operate? If operating problems exist, which is the norm rather than the exception in most developing cities, is this the result of lack of sustainable finance (energy for pumping, chemicals), technical capacity, and so on?

B1.3 Pollution Sources

What and where are key point sources of air and water pollution? What would be the impact of closing the bottom x percent of polluters (for instance, heavy-polluting industries)?

B1.4 Sustainability and Safety of Water Supply

Is the water supply sustainable? Will abstracting the groundwater result in insufficient water to supply the forecast demographic and economic growth? How safe is the water for human use? Is it subject to toxic accidents?

B1.5 Loss of Agricultural and Environmentally Sensitive Land

What is the annual loss (and time-series trend line) of first-class agricultural land to urbanisation? What are the implications for agricultural production (by value and key crop output) in the extended urban region (EUR)? Have measures been taken to limit this loss—for example, establishing growth boundaries, setting land quotas, zoning urban expansion away from first-class agricultural land? How effective have these measures been? If there's a problem, is it a result of poor policy design or a lack of enforcement? To what extent is land being removed from environmentally sensitive uses—for example,

wetlands, steeply sloped land, land with scenic or heritage merit—through conversions to urban uses?

B1.6 Amenity

Particularly in the case of middle-income cities, how attractive is the city to residents, tourists, investors, retirees, students, potential in-migrant talent?

B1.7 Natural Hazards

What natural hazards threaten the city? Can land-use policies, emergency preparedness, building codes, and so forth be used to lower the risk?

B2. SERVICE DELIVERY AND POLICY FRAMEWORKS

B2.1 Demand for Services

What socioeconomic trends, particularly demographic, underpin the demand for public services—for example, population growth relative to the supply of basic public services?

B2.2 Delivery of Basic Needs

What percentage of the population (coverage) have their basic needs—water supply, garbage pickup, basic sanitation, electricity—met? Are low-income neighbourhoods served? What are the trend lines in terms of coverage? Are user fees charged? Are the user fees sufficient to ensure sustainable delivery of basic services? Are basic services affordable (what percentage of the population can afford a given service)? Are rate structures customised according to neighbourhood economic status, ability to pay, and so forth?

B2.3 Health, Education, and Literacy Status

What is the health, education, and literacy status of city residents as measured using key indicators? By sub-area of the city? By household economic cohorts (if data available)?

B2.4 Quality of Basic Services

What is the quality of basic services—for example, primary education and health care—measured against benchmark institutions in comparable cities?

B2.5 Delivery of Services to Migrants

Are services available to migrants in both city core slums and peri-urban areas? If not, what precludes migrants from getting access? Local registration requirements? Lack of local facilities and programmes? Lack of capacity at facilities?

B2.6 Public Health

What are the key causes of sickness and death? How healthy are the city's residents compared with those in other cities of comparable economic development? What are the rates of infectious disease, such as HIV–AIDS? How effective are programmes to address infectious disease? How could they be improved? How prepared is the city for new health threats (for example, an influenza pandemic)? What are traffic death and injury rates? What measures are being taken to reduce traffic deaths of pedestrians, bicyclists and motorcyclists, and vehicle occupants?

B2.7 Efficiency in Delivery of Environmental Infrastructure

Are appropriate technologies being used to deliver basic environmental services—solid waste disposal, provision of potable water, and so on—given the physical conditions and the level of economic development? Are the unit costs of infrastructure delivery (both capital and operating) higher or lower than in comparable cities?

B2.8 Maintenance

How well are environmental systems maintained, measured as a percentage of operating capacity?

B2.9 Energy and Environmental Policy Frameworks

What policy frameworks are in place to encourage firms, households, and infrastructure providers to change behaviours affecting environmental quality and resource and energy consumption (see Figure 3)? Are they enforced? What changes in policy frameworks would have the greatest positive benefits, bearing in mind that greater economic benefits can often be realised by changes in policy frameworks (for example, user fees for garbage pickup above a certain weekly volume) than by capital expenditure (for example, building additional landfills).

B3. ENERGY EFFICIENCY

B3.1 Energy Consumption

What is energy consumption (latest year available and time series) per capita? Per unit of GDP? By key industrial processes in the city? By energy source?

B3.2 Urban Form and Energy Consumption

Does the existing urban form conserve energy? What financial savings would be realised through changes in urban form, particularly if it meant lower transportation costs and unit costs of infrastructure

delivery? What are the trends in and current levels of density and sprawl as measured by conventional urban density, sprawl, and form quantitative indicators (see Schneider, Seto, and others 2003)? Such indicators were used effectively in assessment work for the Chengdu CDS.

B3.3 Demand Management

In managing energy consumption, what is the balance between demand management and supply enhancement strategies? How is demand managed? How is new supply determined and financed?