

# Optional Sectoral Module

## ENVIRONMENT



In a resilient city, environmental considerations are effectively mainstreamed into sectoral plans, programs and investments (*coordinated*). Stability of the urban ecosystem is maintained through guided growth and implementation of environmental regulations (*robust*). Environmental protection agencies monitor changes to the environment and are able to take early action to prevent environmental degradation (*reflective*). In a resilient city, natural resources and ecosystems are managed as public goods, including beyond municipal boundaries, and are used to buffer impacts of shocks and stresses (*robust and coordinated*). Accessibility and knowledge about effective use of ecosystem services is encouraged among the poor as a means of reducing food scarcity and improving livelihood options (*redundant and inclusive*).

TOPIC	GUIDING QUESTION	APPLICABLE RESILIENCE QUALITY	RELATIONSHIP TO RESILIENCE QUALITY
Institutional Capacity	Who manages and protects the environment, natural resources and ecosystem services* in the city? If there are several agencies, are they well-coordinated in terms of management, environmental planning and implementation of environmental requirements? With which agency/department does the main responsibility lie?	Coordinated	Close coordination among agencies responsible for environmental protection facilitates better management of natural resources and ecosystem services, exchange of data and information, environmental planning and enforcement of environmental regulations. Having a responsible agency for environmental protection allows for better coordination of activities and accountability.

Institutional Capacity	Have environmental considerations been formally mainstreamed into relevant city departments? Are there systems for evaluation and accountability?	Coordinated; Reflective	Efficient planning of environmental assets relies on alignment of environmental concern with the plans, programs and actions of institutions that drive sectoral development in the city. Systems for evaluation and accountability help ensure that departments meet predetermined environmental objectives and learn lessons for improving their environmental performance.
Institutional Capacity	Does the city have baseline data about the environment? Does the city regularly assess and monitor land use changes and other development activities impacting the environment?	Reflective	Cities that have environmental baseline data and regularly monitor changes to the environment are able take early action to prevent environmental deterioration.
Institutional Capacity	Does the city staff participate in regular training and knowledge-sharing events about environmental challenges, and how these relate to climate change?	Robust	Climate change has numerous impacts on the environment (e.g., increasing occurrence and severity of floods, droughts and forest fires; sea level rise; heat waves) - depending on the region. City staff that regularly draw upon the expertise of in-house environmental agencies and/ or external experts are better able identify appropriate coping strategies to deal with current and future environmental challenges within their own departments.
Finance	What are the funding sources for environment and nature management? To what degree are funding sources and uses coordinated across agencies?	Robust	Reliable funding allows for sustained and up-to-date environmental and nature resource management. Coordination among agencies (both public and private) helps improve environmental planning and implementation of environmental regulations.

Finance	Does the city have an environmental contingency fund set aside to clean up and restore the environment after man-made (e.g. pollution; hazardous waste etc.) and natural disasters?	Redundant	An environmental contingency fund covers unexpected release of hazardous materials into the environment and impacts of natural disasters on the environment (unless these natural disasters are adequately covered by other funds). A contingency fund could also help overcome sudden changes in demand for environmental control and management due to rapid urbanization.
Planning	Is environmental planning and environmental management coordinated with urban planning? Do land use plans indicate where development is permissible and where it would be damaging for the environment? Are land use plans enforced?	Coordinated	Integrated environmental and urban planning facilitates consistent land use development. For effective environmental protection, land use plans must include legally binding indications on where development is (not) permissible. Effective environmental protection depends on the protection of environmental zones outlined in land use plans and enforcement of zoning laws.
Planning	Are there environmental licensing requirements for new developments? Who manages and approves environmental licenses for new development in the city?	Robust	License requirements are put into place to make sure that a specific activity, especially construction, is consistent with the intended land use – as defined in the area’s zoning plan, and development on sensitive/at risk land is being prevented.
Planning	How well integrated are the city’s disaster risk management policies, strategies and implementation plans into existing environmental development, natural resources, and ecosystems management plans?	Coordinated	Disasters can have significant impacts on natural resources and their effective management. Natural resources and ecosystems can also be used to help manage the impacts of disasters (e.g., water retention ponds, mangroves, etc.).

Urban Growth	<p>Have the city's settlement patterns shifted recently? Do new settlements pose threats to the environment and the balance of the urban ecosystem? Are the new settlements vulnerable to natural hazards and adverse climate change impacts?</p>	Robust	<p>Land use change, from natural vegetation to built-up areas, is often the main cause of environmental degradation and loss of biodiversity. New developments can disrupt the balance of the urban ecosystem and exacerbate impacts of natural disasters.</p>
Regional Impacts	<p>Are there any regional environmental problems that impact livability in the city (i.e. air pollution, pollution of rivers and coastal areas, etc.)? Are there any urban activities that have environmental impacts beyond the city's administrative boundaries (e.g., ecological disruption and resource depletion)? To what extent are the environmental management strategies coordinated across administrative boundaries?</p>	Coordinated	<p>Environmental impacts are rarely contained within administrative boundaries – pollution from the outside can affect life in the city and pollutions/natural resource depletion within the city can have regional consequences. Local and regional governments need to collaborate with governments beyond their own administrative boundaries to effectively manage environmental effects.</p>
Accessibility	<p>Are all residents able to use and benefit from the city's natural resources, ecosystem services, and recreation areas? Does the city have programs for improving accessibility and knowledge about effective use of ecosystem services for all segments of the population?</p>	Inclusive	<p>Equal access to the city's natural resources, ecosystem services, and recreation areas is a prerequisite for social cohesion and equal opportunity. Accessibility and knowledge about effective use of ecosystem services (e.g. agriculture, fisheries and/or water accessibility) can be a method for reducing food scarcity and improving livelihood options among the poor.</p>

Participation	To what degree do civil society organizations and citizens participate in the restoration, protection, and sustainable management of ecosystems services?	Inclusive	In many cities, uncontrolled urban growth and encroachment has a deteriorating effect on the environment. When restoration, protection and management of ecosystem services is done in consultation with affected communities and civil society groups, solutions are more robust because they include the nuanced needs of affected communities and the general public.
Participation	To what degree does the private sector participate in the development of environmental, natural resources and ecosystems management plans in the city?	Inclusive	A city's environmental planning, natural resource and ecosystem management is more robust when it includes the economic dependencies (e.g., natural resources that are necessary for current industries) and environmental risks (e.g., pollution) of the private sector.

\* Ecosystem services are all natural processes that humans benefit from – including provision of food and water; regulation of floods, diseases etc., and recreation (WRI, 2005).