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LIVEABLE CITIES

THE BENEFITS OF URBAN ENVIRONMENTAL PLANNING

Cities Alliance
Cities Without Slums

·I·C·L·E·I·
Local
Governments
for Sustainability

UNEP

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THE BENEFITS OF URBAN ENVIRONMENTAL PLANNING

A Cities Alliance Study on
Good Practices and Useful Tools

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Cover Photo: Aerial View of the city of Bangkok at dusk—a large metropolis coping with the effects of population growth and its impact on the local environment.
Photographer: © Mike Kemp/Corbis

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FOREWORD

From time to time one reads a really refreshing and forward-looking report on the quest for sustainability. This one, focusing on the urban challenge, brings together concrete case studies from cities around the world which are struggling, but also in many cases succeeding in tackling issues from waste and transportation to river and air pollution.

Capturing and sharing experiences and lessons learnt is essential. The world and its people do not have time on their side if the threats of climate change, over-exploitation of natural and nature-based resources and poverty are to be managed and overcome.

Therefore the experiences of these 12 urban areas—from coastal cities such as Alexandria, Egypt, Bayamo in the Caribbean island of Cuba and a sub-Saharan setting such as Nakuru, Kenya to the rapidly developing city of Yangzhou, China and an industrialised one like Calgary, Canada—are more than a good read.

They offer lessons on what has worked, what may work and what may fail elsewhere—lessons that can, if sensitively and carefully considered, offer mayors and managers of urban environments across continents the chance to test innovative ideas that others have proved successful elsewhere.

The report uses the unique approach of highlighting the simple message of, "Why this Case Study is Important". It also showcases some intriguing options for sustainable urban development. The city of Bayamo in Cuba, faced with a situation where motorised transport was available to just 15 percent of local commuters, has in 2004 reverted to horse-drawn carriages. Horse-drawn services now take care of around 40 percent of local transport needs, demonstrating that motorised transport is not the only solution to a public transport problem.
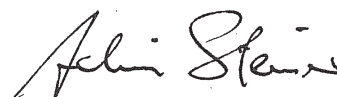
There are many 'take home' messages—environmental management can boost the budgets of cities, prove a strong marketing tool for attracting investors and contribute to public health and poverty eradication.

Another is that many urban areas are actively pursuing Local Agenda 21 policies, underlining how agreements forged 15 years ago in Rio at the Earth Summit remain very much alive and well and relevant to the demands of the early 21st century.

Above all, the report underscores how any successful sustainable urban strategy must involve the participation and support of local groups, communities and individual citizens if it is to blossom and flourish.

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T his report arose out of a decision taken at the Cities Alliance Consultative Group Meeting at Marrakech in 2005 to more systematically integrate the environment into urban development programmes. This had become more imperative as issues of climate change, environmental pressure on coastal zones where most of the world's cities are located, and the consequent threat to the health and sustainability of humanity remain on the increase.

Commissioned by the United Nations Environment Programme (UNEP) and the Cities Alliance Secretariat, with support from the United Nations Human Settlements Programme (UN-HABITAT), the report discusses good practices and useful tools undertaken by mayors and city managers who are at the forefront in taking action to address environmental challenges, working to balance the urban environment, economic growth and poverty reduction nexus. The actual research was undertaken by the International Council for Local Environmental Initiatives (ICLEI—Local Governments for Sustainability), a membership organisation of local governments committed to global sustainability.

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ACRONYMS

The following acronyms are used in this publication:

AQM	Air Quality Management
CA	Cities Alliance
CAS	Chinese Academy of Science
CBD	Central Business District
CBO	Community-based Organisation
CDS	City Development Strategy
CIDA	Canadian International Development Agency
ECP	Eco City Plan
EF	Ecological Footprint
EMAS	Eco Management and Auditing Scheme
EMS	Environmental Management Systems
EPM	Environmental Planning and Management
EU	European Union
GDP	Gross Domestic Product
GTZ	Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Co-operation)
ICLEI	International Council for Local Environmental Initiatives
IDP	Integrated Development Plan
IMEP	Integrated Metropolitan Environmental Policy
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
NATO	North Atlantic Treaty Organization
NGO	Non Governmental Organisation
ODPM	Office of the Deputy Prime Minister

OECD	Organisation for Economic Cooperation and Development
SCP	Sustainable Communities Programme
SEA	Strategic Environmental Assessment
SU	Slum Upgrading
SWOT	Strengths, Weaknesses, Opportunities and Threats
TESDA	Technical Education and Skills Development Authority
UN	United Nations
UNCHS	United Nations Centre for Human Settlements (now UN-HABITAT, United Nations Human Settlements Programme)
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WCED	World Commission on Environment and Development
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

EXECUTIVE SUMMARY

A successful city cannot operate efficiently in isolation from its environment. It must balance social, economic and environmental needs. A successful city must offer investors security, infrastructure and efficiency, and should also put the needs of its citizens at the forefront of all its planning activities. Poor urban planning and management can have grave results for the urban economy, the environment and society. Poorly managed urban settlements will be unable to keep pace with urban expansion, and unserviced slums will proliferate, bringing with them poor health, poverty, social unrest and economic inefficiency. Environmental hazards are responsible for the most common causes of ill-health and mortality among the urban poor.

Local governments have an enormous influence on how urban-environment relationships develop, and on how their cities interact with their hinterlands and with the wider global community. Effective local governance can make cities more competitive, more efficient and more attractive to investors and workers by promoting the sustainable development of the urban environment.

Sustainable development is multi-dimensional. It requires an understanding of complex and often conflicting relationships. These issues call for an integrated approach and an integration culture. A variety of strategic approaches to integrating the environment into the urban planning process exist. Environmental activities can be targeted at different levels. Cities can also use different instruments to integrate the environment into urban planning and management approaches: policy instruments, process instruments, planning instruments and management instruments. This report investigates how these instruments are applied in several well-established approaches to integrated urban planning. It examines the characteristics, strengths and weaknesses of Integrated Development Plans, City Development Strategies, ecoCity Planning, ecoBUDGET© and Strategic Environmental Assessment, all of which are defined and illustrated.

The report also outlines the information which urban managers should receive from support programmes to assist them in the development of their urban devel-

opment strategies. It argues that when making proposals for support, cities should be encouraged to include environmental considerations right from the start. They can be supported in this with a range of information materials. Proposals for support should also include suggestions on how to sustain environmental action within the context of the urban strategy, on how to raise municipal and public awareness of the importance of the issue, and how to monitor implementation.

Twelve case studies of cities that have worked to integrate the environment into their planning processes, contained in the annex to this publication are drawn from throughout the world, Africa, North and South America, Asia, the Caribbean and Europe. Population size in these cities range from 142,000 in Bayamo, Cuba, to 10 million in Bangkok, Thailand. The municipal budgets range just as widely, and each city faces a different set of urban challenges and opportunities. What all these cities have in common, however, is a clear understanding of the important role of the environment in sustainable development, and a desire to ensure that the environment is properly integrated into urban development decisions. In all cases, a better urban environment is seen as integral to sustainable socioeconomic development.

Perhaps the most important sections of each of the 12 case studies are those that explain why the case study is important, and how it can be replicated. While all cities and urban settlements are unique, each case study highlights an urban issue faced by cities the world over. This may be urban poverty, economic or political transition, hazard management or pollution. It may also be civic participation, budgeting, resettlement or urban health. The common denominator between all the case study cities is their inclusion of environmental considerations in their urban planning and management approaches. Each city has managed to find an entry point in its urban management system which supports and in its turn is supported by environmental action. The case studies examine these entry points, and point out how successful experiences can be replicated in other cities.

It is worth noting that all the city experiences reviewed highlight the importance of citizen participation, although each city approaches this in a different way. All case studies also mention the importance of communications and dissemination, of making environmental information available to the general public, whether through bulletins, published indicators, workshops and training or other media. Finally, most cities stress the usefulness of partnerships at a variety of levels. These can be partnerships with international organisations, with the private sector or simply with different line ministries.

The report is divided into four main sections. Section One, which sets out the general context for the report argues that a well-managed urban environment is key to economic development and poverty alleviation. Today, there is almost universal recognition in governments at all levels that it is essential to incorporate environmen-

tal considerations into urban planning and management. This provides significant benefits in every area of urban life, cutting across issues such as health, poverty, security and economic development.

Section Two outlines the basic framework to urban environmental planning. It defines entry levels, barriers to integration and provides an overview of instruments for environmental integration. It then documents some of the policy, process, planning and management instruments that can be deployed in the process of integrating the environment into urban planning.

Section Three examines a number of approaches to the application of some of these instruments: Integrated Development Planning (IDP); City Development Strategies (CDS); Eco City Planning; ecoBUDGET©, a copyrighted management tool developed by ICLEI; and Strategic Environmental Assessment.

Section Four concludes the discussions and proffers some recommendations for urban environmental planning targeting city leaders, urban decision-makers and their partners. This is followed by Annexes of twelve case studies illustrating different city approaches to urban environmental planning, Instrument Toolkit examples, a bibliography and a list of useful websites.

CITIES AND THE URBAN ENVIRONMENT

T his section examines how cities affect and are affected by their environment. It shows how a successful city cannot operate efficiently in isolation from its environment, and how the environment can be integrated into urban development processes. The section also discusses the health-environment-poverty nexus and underlines the advantages of formally integrating environmental considerations into urban planning.

Urban Life—The Face of the Future

Cities and urban settlements in general are the face of the future. Today, some 50 percent of the world's population lives in urban areas. In 2005, the world's urban population was 3.17 billion out of a total of 6.45 billion. The year 2007 marks a watershed in human history, when for the first time, half of the world's population will be living in cities. How will this fact affect the cities of the future?

Cities are centres of excellence, bringing together innovators, entrepreneurs, financiers and academics. They attract a rising tide of humanity, of people hoping for a better life for themselves and their children. Cities provide opportunities, economies of scale, a future with more choices. And yet cities have also been blamed for causing environmental catastrophes, for marginalising communities, for diminishing the quality of life of the poor. They have been castigated as centres of disease, social unrest and insecurity. Cities are also at risk from industrial hazards, natural disasters, and the spectre of global warming.

A successful city must balance social, economic and environmental needs: it has to respond to pressure from all sides. A successful city should offer investors security, infrastructure (including water and energy) and efficiency. It should also put the needs of its citizens at the forefront of all its planning activities. A successful city recognises its natural assets, its citizens and its environment and builds on these to ensure the best possible returns.

Today's cities are part of the global environ-
ment. Their policies, their people and their quest
for productivity have an impact far beyond the
city borders. City level experiences are essential
to the formulation of national policies, and city
and national policies in turn translate onto the
global level. Today, global policy makers recog-
nise that cities have a tremendous impact on
issues ranging from local economic stability to
the state of the global environment.

Over the past 50 years, cities have expanded
into the land around them at a rapid rate.
Highways and transport systems have been built
in tandem to support this physical growth.
Valuable farmland has been eaten up and car-
dependency has increased. Urban populations
are expected to grow by another 2 billion people
over the next three decades, and it is expected
that cities in developing countries will absorb
95 percent of this increase. Most worryingly, as
UN-HABITAT's *State of the World's Cities*

Report for *2006/7* points out, is the fact that in
many cases urban growth will become synony-
mous with slum formation. Already, Asia is
home to more than half of the world's slum pop-
ulation (581 million) followed by sub-Saharan
Africa (199 million) and Latin America and the
Caribbean (134 million) (UN-HABITAT 2006).
Cities and urban settlements must be prepared to
meet this challenge. To avoid being victims of
their own success, cities must search for ways in
which to develop sustainably.

No single recipe for managing change can be
applied to all cities. Cities are affected by their
location, their climate and natural features. Cities
and urban settlements don't operate in isolation—
they are part of a national structure, subject to
central government, strengthened or limited by
regional and national infrastructure, budgetary
policies, development priorities, decentralisation

What Is Sustainable Development?

The 1972 UN Stockholm Conference focused international attention on environmental issues, especially those relating to environmental degradation and "transboundary pollution." Over the decades following Stockholm, this concept was broadened to encompass environmental issues that are truly transnational in scope, requiring concerted action by all countries and all regions of the world in a universal manner in order to deal with them effectively. Such important global environmental problems include, for example, all kinds of pollution, climate change, the depletion of the ozone layer, the use and management of oceans and fresh water resources, excessive deforestation, desertification and land degradation, hazardous waste and depleting biological diversity.

In the years that followed, it also came to be recognised that regional or local environmental problems, such as extensive urbanisation, deforestation, desertification, and general natural resource scarcity, can spread to pose serious repercussions for broader international security. Environmental degradation in diverse parts of the developing as well as the developed world can affect the political, economic and social interests of the world as a whole.

International recognition of the fact that environmental protection and natural resources management must be integrated with socio-economic issues of poverty and underdevelopment culminated in the 1992 Rio Earth Summit. This idea was captured in the definition of "sustainable development," as defined by the World Commission on Environment and Development, also known as the Brundtland Commission, in 1987 as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The concept was designed to meet the requirements of both the supporters of economic development as well as of those concerned primarily with environmental conservation.

Today, it is recognised that social, economic and environmental considerations are completely interconnected. In the city context, this means that sustainable urban development is not a choice but a necessity if cities are to meet the needs of their citizens. Urban centres must be socially equitable, economically successful and environmentally sustainable if cities are indeed to be the home of humanity's future.

(http://www.un.org/jsummit/html/basic_info/unced. html, accessed February 2007).

policies. To meet the urban challenges of today, and the challenges to come, appropriate management frameworks must be available, through which cities can apply innovative approaches suitable for their local circumstances.

Urban settlements can learn from the natural world—cities can be seen as ecosystems. In the same way that a natural ecosystem like a rainforest or coral reef is a complex system of interlinkages between elements, everything in a city is connected to everything else. If land use is changed in one area of a city, it will affect the transportation system, infrastructure and economy in other areas. Local governments today play a leading role in developing new approaches to treat the natural and built environment, and the people that interact with it, as one interconnected "city ecosystem". Their innovation and creativity in striving for sustainable urban development will reach into all areas of policy development and decision-making.

The Environment—An Essential Asset for Cities

Managing environmental resources as a group of strategic assets that are crucial to a municipality's goals, important to ecosystem health, and benefi-

Benefits of the natural environment—farmlands in Antananarivo, Madagascar.

- Clean air is essential to a healthy environment.
- Rivers and water bodies provide drinking water and act as natural pollution filters.
- Biodiversity is essential for food, materials, medicine and improved quality of life, not just locally but also globally. Biospheres range far beyond the boundaries of a city, and urban activity in a single location can damage forests thousands of kilometres away, or disrupt migratory patterns. Biodiversity increases the resilience of ecosystems to environmental change.
- Forests serve as watersheds, habitats, carbon sinks, leisure amenities and tourist destinations. If managed sustainably, forests are also a source of energy and building materials.
- Wetlands filter and process waste and act as a nursery for fisheries.
- Sand dunes, coral reefs and mangroves protect cities from storm surges, prevent erosion and siltation, and in the case of the latter two act as nurseries for fisheries. Attractive coasts draw tourism.

cial to the community is key to successful urban management. What are the ways in which the environment can be viewed as an asset for cities?

The natural environment provides cities with countless ecosystem services. Some of these are so fundamental to urban liveability that they may seem invisible to urban managers: air, water, open space. Environmental resources are frequently taken for granted, rather than being utilised, enhanced, and invested in.

These are just some of the countless examples of the services that the natural environment provides to urban settlements:

Costa Rica's Payments for Environmental Services Programme

Costa Rica was one of the first countries to recognise the value of 'environmental services' when it established the Payments for Environmental Services Programme. The programme requires those who benefit from the environmental services of forests to pay for those services. Those payments go into a national forestry fund, which is used to contract private landowners of forestland to pay for forest conservation and sustainable management practices.

■ Parks and greenbelts act as sinks for carbon dioxide (CO_2) and counteract the heat island effect of large built-up areas. They also provide essential open space for urban residents, flora and fauna, counteract traffic noise and improve the general 'liveability' of a city.

To assess just how valuable the natural environment is to cities, let's look at the role that forests on the outskirts of a city play. If a forest is cut down for firewood and to permit city expansion, the value of the forest is reduced to the value of the wood as fuel, and the value of the land for development. However, forests help watershed protection, and their removal can jeopardise urban water supplies. In addition, clear-cutting forests often results in serious erosion, damaging surrounding agricultural lands and causing urban flooding. Sprawling urban development imposes much higher costs on the provision of infrastructure such as roads, sewers, water and power. It is therefore more cost effective for a city to maintain its forest ecosystem as the city's watershed, benefiting from all of the environmental services that the forest provides—drinking water, erosion control, soil protection, flood control, recreation, biodiversity—and to harvest the wood products at a sustainable rate from the forest in perpetuity.

Making sure that a city's environmental assets are used sustainably is important to the urban economy for many reasons, in addition to the reduction of costs. As society and the economy marches inexorably towards globalisation, cities across all regions must compete with each other to attract enterprise, investment and employment. The quality of life or 'liveability' which a city offers is important in ensuring its future economic performance.

Environmental resources are assets to a city: investment in environmental protection helps the economy and reduces city budget expenditure. It is far less costly to avoid environmental degradation than it is to live with its consequences, or to repair its damage. Interestingly, many municipal activities ultimately do protect the environment, even if that was not the primary intention: for example, actions to improve transport, protect water catchment areas or develop tourism also improve air quality, benefit sensitive wetlands and address coastal pollution. The case study of Goiânia included in this report shows that certain urban plans and projects resulted in huge environmental gains, but these were a by-

Attracting Investment: The Role of the Environment in Hong Kong

According to a 2006 survey by the American Chamber of Commerce in Hong Kong, almost four out of five professionals based in Hong Kong were thinking of leaving, or knew others who had already left, because of the quality of the environment. 95 percent of respondents were worried about the air quality in Hong Kong and the potential long-term effects on the health of themselves and their children. In addition, more than half—55 percent—of respondents knew of professionals who had declined to move to Hong Kong because of the quality of its natural environment. The same survey showed that "quality of the natural environment" topped a list of seven factors in terms of importance when selecting a place to live: 94 percent ranked it as either the most important or the second most important factor. The Hong Kong example shows that if the environment were cleaner and the air quality better companies would invest more money in the city. A healthy environment is vital to attract and keep investment capital.

Source: American Chamber of Commerce, (2006).

Filtering out air pollution in Tokyo, Japan.

product of the main goal: concern for the environment was not the main driver.

The most successful urban centres have a mutually rewarding relationship with the environment which builds on the city's natural advantages and which in turn reduces the burden which the city places on its surroundings. Urban life provides opportunities for economies of scale in regard to human energy and material requirements. This has been referred to by William Rees as the "urban sustainability multiplier", or the process through which the high density of urban living significantly shrinks the *per capita* ecological footprints by reducing energy and material needs. (Rees, 2003.) These factors include:

- High population densities, which reduce the *per capita* demand for occupied land;
- Lower costs *per capita* of providing piped treated water, sewer systems, waste collection, and most forms of infrastructure and public amenities;
- A high proportion of multiple-family dwellings, which reduces *per capita* consumption of building materials and services infrastructure;
- Increasing interest in forms of cooperative housing with mass transit facilities, which reduces demand for individual appliances and personal automobiles; and,
- Easy access to the necessities for life and to urban amenities by walking, cycling, and public transit. This further reduces the demand for private automobiles, thereby lowering fossil energy consumption and air pollution (Rees, 2003).

Despite the essential services offered by the environment, however, cities tend to view environmental considerations as supplementary to economic and spatial strategies, or as issues which can be dealt with through infrastructure programming based on conventional civil engineering standards (Cities Alliance, 2006). In other words, the environment has not been viewed as a matter of primary importance. Instead, prominence is given to the economic growth/public investment in

Fora de Risco: Good Environmental Results from a Housing Programme in Brazil

The Municipality of Goiânia's *Fora de Risco* (Out of Risk) programme aims to move 7,000 families from slum settlements in environmentally sensitive, flood-prone zones, and to provide these families with dignified, affordable housing and social assistance. Since the start of the project, no major flooding in risk areas have occurred, protected environmentally sensitive areas from which informal housing was removed have not been resettled, over 4,400 families have been helped, 1,325 housing units have been built in seven different project areas, and quality of life has improved for those affected by the project.

Source: www.iclei.org. Accessed February, 2007.

infrastructure/poverty eradication nexus as the foundation for social development, and sustainability is not given the attention it deserves (Swilling, 2006). This approach is typical in many urban centres, particularly but not exclusively in developing countries. Mayors are under pressure to focus on economic performance and capital investment in infrastructure during their term of office. In China, for example, while many mayors are interested in environmental management, their performance in office is assessed by the local GDP growth rate (Conference on Eco City Development Experience Exchange (ECODEE), Yangzhou, China, 2004).

If the environment is such an asset to cities, why is it often last on the list of priorities for urban managers? A key reason is the use of accounting systems that externalise real costs and do not account for natural capital. The planet's forests, watersheds, wetlands, minerals and other natural resources all have a value that must be accounted for: these are natural capital. While it is not difficult to place a capital value on an environmental asset, it can be difficult to calculate and to quantify the exact financial value of the benefits derived from that asset. A range of tools do exist, however, including environmental assessments, ecological budgeting and full-cost accounting methods. Some of these tools are outlined in an annex to this report.

Internal City-Environment Interactions

Misuse of the urban environment can have grave consequences for the city. Poor urban planning which permits construction on unsuitable land such as wetlands can result in damaging floods.

Key World Health Organization (WHO) Figures on Environment and Health

- An estimated 130,000 premature deaths and 50–70 million incidents of respiratory illness occur each year due to urban air pollution in developing countries, half of them in East Asia.
- Breathing Mumbai's air is the equivalent of smoking two-and-one-half packs of cigarettes per day.
- In Quito, Ecuador, infant mortality is 30 times higher in the slums than in wealthier neighborhoods.

http://www.who.int/social_determinants/features/en/index.html, accessed February 2007

Inadequate waste disposal leads to the spread of disease. Coastal cities which fail to manage their coastline efficiently will find themselves with erosion and siltation problems, and are likely to lose valuable income from tourism. Urban sprawl will damage urban biodiversity, and the costs of providing infrastructure will be significantly higher. Many urban settlements will be completely unable to keep pace with urban expansion, and unserviced slums will proliferate, with their attendant problems of poor health, poverty, social unrest and economic inefficiency. While healthy ecosystems provide cities with a wide range of services essential for their economic, social and environmental sustainability, damaged ecosystems have a very negative effect on urban residents, and in particular on the urban poor.

The Health-Environment-Poverty Nexus

Cities and urban settlements attract people because they offer the hope of a better future, but urban life can pose grave threats to human health. Cities and urban settlements can face a range of environmental hazards. These include a range of water and air related diseases and pollution. Cities may also be vulnerable to natural disasters such as earthquakes, floods, hurricanes

Reflecting under a tree shade with a view of the Cairo skyline.

or man-made disasters such as chemical explosions. Today, cities are also increasingly feeling the effects of global warming. Which groups of society are most affected by the environmental hazards of a city? Why?

Population Most at Risk

Not all urban residents are affected by environmental hazards in the same way. Environmental hazards are responsible for the most common causes of ill health and mortality among the urban poor. Environment-related infections and parasitic diseases thrive where there is a lack of clean drinking water, sanitation and drainage, and where air quality is poor (Nunan and Satterthwaite, 1999). They are exacerbated by un-

dernourishment, poor health and inadequate public health services such as waste collection.

Water Kiosks Fight Cholera in Kenya

In Nakuru, Kenya, the water supply provided only 35,000 m³/day, although water requirements were estimated at 75,000 m³/day. Nakuru residents cited water shortages as one of the town's major problems. A severe cholera outbreak in the low-income areas of Kaptembwa and Rhoda in 2000 was attributed to the consumption of contaminated water from unknown sources. As a result the Nakuru Municipal Council supported the creation of water kiosks to prevent further outbreaks.

Source: ICLEI/Africa/Resources/Case Studies. Accessed September 2007.

UN-HABITAT has started to highlight the "urban penalty", noting that urban poverty and its attendant ills are in many developing countries as severe as rural poverty (UN-HABITAT, 2006).

Poverty forces the urban poor into hazardous areas, unsuitable for habitation: flood plains, steep or unstable hillsides, parts of the city exposed to high concentrations of pollution. The urban poor live where nobody chooses to, because they have no other option. Of the three billion people who live in urban settings, an estimated one billion live in slums (UN-HABITAT 2006, WHO 2007). The exposure of the urban poor to environment-related health risks conflicts with the concept of 'equity', often regarded as one of the guiding principles of sustainable development (Fudge, 2003). The most physically and socially vulnerable groups tend to be the least influential economically and politically. In addition, the urban dwellers who are most dependent on local environmental services and conditions are the urban poor in low-income countries—better-off urban dwellers can find alternatives for many services (UN-HABITAT and UNEP, 2003).

Infants and young children, and some groups of workers, also suffer from a high degree of exposure to environment-related health risks. Children are considered to be at greater risk from air pollution than adults because their bodies are still developing and they spend more time out of doors on strenuous activities. Lead, in particular, has had a pernicious effect on the health of generations of urban children. Women and girls are often vulnerable to environmental hazards be-

© Mark Edwards/Still Pictures

Children playing by an open sewer in a Rio de Janeiro slum.

cause of the work they do, their role in society or the discrimination they face in terms of access to resources, income or housing (Nunan and Satterthwaite, 1999).

Environmental Health Risks and Hazards

In cities where governments fail to deliver adequate services and disease-carrying agents multiply, large concentrations of people living in close proximity to each other are particularly at risk from disease transmission.

A lack of access to clean drinking water coupled with inadequate sanitation and waste collection present the most serious environment-related health risks. In the developing world, up to 80 percent of all environment-related diseases are attributable to a lack of clean, safe drinking water. Diarrhoea is the greatest water-borne disease burden in developing countries and has been described as 'the silent killer of the slums' (UN-HABITAT, 2006a). Overcrowded living conditions can be breeding grounds for the spread of respiratory infections, tuberculosis and meningitis.

Air pollution affects cities in both the developed and developing world.

The use of biomass fuel, coal for cooking and heating in a confined living space can produce toxic fumes that damage lungs: indeed, indoor smoke can be a far greater risk to health than air pollution in city streets. Poor air quality in informal settlements is often exacerbated by the practice of burning household waste.

Outside the home, air pollution affects cities in both the developed and developing world. Particulate matter can affect respiratory and cardiovascular systems (for example, asthma) and accelerate mortality. Nitrogen dioxide (NO_2), at relatively high concentrations, causes inflammation of the airways and long-term exposure may affect lung function. Exposure to carbon monoxide (CO) reduces the capacity of the blood to carry oxygen and deliver it to tissues. Sulphur dioxide (SO_2) causes constriction of the airways and may cause acute mortality. Exposure to high levels of lead (Pb) affects the haemoglobin, the kidneys, gastrointestinal tract, joints and reproductive system and damages the nervous system (Greater London Authority, 2002a). It is estimated that 800,000 people die prematurely each year due to urban air pollution (WHO, 2002). Traffic fumes are a particular cause of ill-health,

and in addition to this, traffic itself is a significant physical hazard in the urban environment.

It should be noted that cities in developing countries often lack detailed and accurate databases of environment-related diseases and longer-term health implications. In the absence of comprehensive data, the environment-related health risks identified are those that are easily measured, and which usually affect middle and upper income groups (Nunan and Satterthwaite, 1999). More information is needed about the health-environment-poverty nexus, including poverty-mapping (UN-HABITAT and UNEP, 2003).

Five of the cities case studies prepared for this report highlight the health-environment-poverty nexus (Bangkok, Bohol, Cape Town, Goiânia and Nakuru).

Traffic: A Major Health Hazard for Urban Residents

In spite of nightmarish congestion, motor vehicle use in developing cities is soaring. In 1980, the developing world accounted for only 18 percent of global vehicle ownership. By 2020 about half of the world's projected 1.3 billion cars, trucks and buses will clog the streets and alleys of poorer countries.

The World Health Organization considers traffic to be one of the worst health hazards facing the urban poor, and predicts that road accidents by 2020 will be the third leading cause of death.

http://www.who.int/social_determinants/features/en/index.html, accessed February 2007

where to live and work; the power to ensure strong and robust local economic development patterns; the power to address land tenure and land rights in the city; and the power to develop creative financing tools for mobilising investment towards sustainability. Even in cases where decentralisation is not very far advanced, cities wield important influence over building codes and zoning by-laws and can adopt flexible standards governing construction and infrastructure. They have the capacity to encourage participation and engage with citizens and local organisations, and their role in the implementation of Agenda 21 at the local level is essential.

Local governments and local government leaders also have the potential to contribute to global sustainability by using lessons from

Local Governments and the Urban Environment

Local governments have an enormous influence on how urban-environment relationships evolve, and on how their cities interact with the hinterland and with the wider global community. Effective local government can make cities more competitive, more efficient and more attractive to investors and workers by promoting the sustainable development of the urban environment.

The power of good planning and effective management in strong, empowered city governments is critical to propelling cities towards sustainability. Depending on the degree of decentralisation, cities may have the power to pass legislation; to plan and design transportation systems that support rational choices on

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Family life in a Manila slum—poverty needs to be monitored at the municipal level.

innovative urban management practices at the local level to inform national and even international policy. Today, a wide range of organisations actively focus on city networking,

encouraging the sharing of lessons of experience, lobbying for greater recognition of the value of urban management experience in central government, reaching out beyond national borders to share know-how with other cities at the regional and global level. Local governments today play a leading role in developing new approaches to the management of the natural and built environment.

Integrating Environmental Considerations into Urban Planning: The Advantages

We have seen how disregarding environmental issues has a significantly damaging effect on cities and urban settlements. What are the advantages and benefits of formally including environmental considerations in urban planning and management systems? How can municipal decision-makers best manage the social, economic and environmental demands placed on the city? Where are the entry points for integrating environmental considerations into urban planning and management? What are the arguments for integrating the environment into city development strategies?

The arguments for sustainable development are clear and universally accepted. For a city to grow and develop in the long term, it cannot disregard its environment. The environment cuts across all sectors, income groups and management areas. An *ad hoc* approach to environmental issues is fragmentary, expensive and inefficient. For a city

A Municipal Response to Industrial Damage: Development and Sustainability in Bulgaria

In the city of Bourgas, Bulgaria, the Mayor and municipal staff have sought ways to alleviate the environmental impacts of the municipality's intensive industrialisation. The Municipal Development Strategy for 2007-2013 recognises the need for an integrated long-term approach to balance current development with resource protection and sustainability.

The new strategy places greater emphasis on the inter-connections between environmental policies and other aspects of municipal life. The majority of municipal responsibilities are formally linked to environment (for example, procurement, public transport, urban planning, energy management), and policy-making attempts to address economic and social issues in synergy with environmental questions.

Pollution from copper mine in Bulgaria.

The social, economic and environmental challenges which urban settlements face today, coupled with the speed of urban expansion, have encouraged the development of new and innovative approaches to local governance. Local governments are becoming increasingly aware of the benefits of citizen participation in urban decision-making. Governance approaches which encourage urban stakeholders to have a say in the management of their city provide several entry points

to be effective and efficient, it must consciously integrate the environment into its planning and management mechanisms.

Reducing Poverty and Improving the Environment and Citizen Health in Brazil

Favelas (slums) are a primary feature of urban development in Brazil. These informal settlements often occupy environmentally precarious areas such as steep hillsides and riverbanks, and usually lack key infrastructure, in particular sanitation and sewerage systems. This has resulted in increased rates of disease and mortality. Brazil has, however, made significant steps in addressing the problems which beset the favelas.

The Municipality of Goiânia's "Fora de Risco" (Out of Risk) Project was driven by three motivating factors: poverty reduction, environmental improvement and citizen health. Most of Goiânia slum settlements are located in sensitive watershed areas, primarily on urban riverbanks and springs. Conditions were very unhealthy, due to a combination of flooding and open-air sewage. The project addressed the environmental factors in relation to the social and economic issues, and was able to achieve successes in all areas. The key has been the social inclusion of the community at risk. Up to 20 community groups were involved in the project and thus the Fora de Risco has acted as a catalyst for social development.
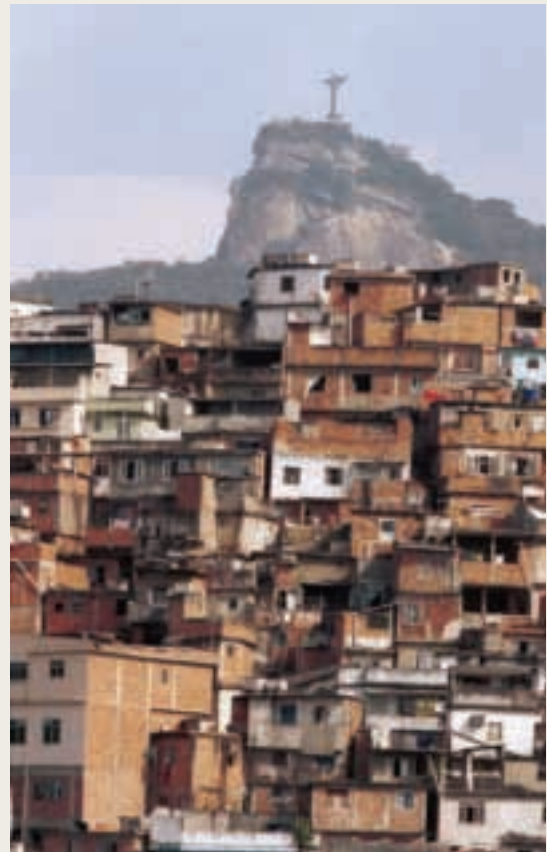
Hillside favela in Rio de Janeiro, Brazil.

EnviroSystem: How Calgary Works Towards Its City Vision

In Calgary, the environmental management system that is used is referred to as Enviro-System. It describes the City of Calgary's strengths, accountability to itself and its citizens, and commitments to protect the natural environment. EnviroSystem enables the city to uphold its vision of "working together to create and sustain a vibrant, healthy, safe and caring community". It allows the city to manage the impact its activities have on the environment.

EnviroSystem has improved internal communication significantly as it provides a strong link across all business units. In addition, it has created a culture of environmental caring and an understanding of the importance of protecting the watershed, preserving natural areas and green space, and protecting the air. While the results within the municipality have been impressive, the benefits extend to the community by improving citizen perception of the city as an environmental leader, attracting industry, people and business. The EnviroSystem report, which is made public and readily available, highlights major achievements in air, land, water, and materials management along with summaries of the city's accomplishments.

Courtesy of Calgary Economic Management

City of Calgary skyline.

for the inclusion of environmental issues in urban planning.

Donors, in turn, are focusing on providing aid in a more integrated and effective manner. The Paris Declaration on Aid Effectiveness, agreed in 2005, saw over one hundred ministers, heads of agencies and other senior officials commit their countries and organisations to increase efforts in harmonisation, alignment and managing aid for results with a set of monitorable actions and indicators. A growing focus on aid delivery through general budget support puts the prioritisation of issues in the hands of the recipient country, freeing up further avenues for the integration of environmental issues in urban planning and management.

Several of the case studies in this report show that some cities do integrate the environment

into their urban planning and development strategies. Key drivers for this depend on local circumstances but include commitment by the political leadership and the administration (Bangkok, Bayamo, Bourgas, Calgary, Cape Town and Yangzhou), European Union (EU) Directives and standards (Bourgas and London) and the influence of an external agency (Bangkok, Bourgas and Yangzhou).

A number of case studies also highlighted city promotion of environmental assets in the course of city marketing. Bohol, Bourgas and Cape Town all recognise the importance of their natural ecosystems as tourist attractions and the beneficial impact of tourism on the local economy. Calgary recognises that its environmental credentials are persuasive marketing assets. A healthy and attractive environment is important in urban marketing: it is virtually impossible for an unattractive city to move into higher value economic activity (Cities Alliance, *Guide to City Development Strategies*, 2006, p. 4).

A city's environmental credentials, and therefore its marketability, are strengthened if prospective investors can see that sustainable resource use has been factored into the city development strategy, especially the cost of known restraints such as finite water supplies, energy costs, the economic and job-creating potential of eco-efficient industries (for example, waste recycling and renewable energy), and local urban agriculture (Swilling, 2006).

Aside from the goal of sustainable development and the impetus to maximise economic, social and environmental benefits, integrating the environment in urban planning and management has additional attractions on a very local scale. The city budget may benefit from environmental policies which encourage recycling and

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Commercial street scene in Shanghai, China.

produce income from the sale of recyclable resources, while at the same time needing less landfill space. Energy efficiency can reduce municipal spending. Eco-efficiency can result in lower operating costs for local businesses, giving the city a competitive advantage (Swilling, 2006). Energy systems planning could enhance the competitiveness of local industry, while solar water heating, district heat and power systems,

micro-cogeneration (combined heat and power systems) and methane production all benefit the local economy (Moffatt, 1999). Circular Economy methods like local industrial planning have the potential to reuse water resources. (Shi Lei, 2004 and Zhu Dajian, 2004).

An integrated environmental policy can help stimulate the local economy by planning for sustainable neighbourhoods. This might include sustainable construction involving energy efficiency and the use of compact fluorescent lighting, rainwater tanks/water-conserving irrigation systems, renewable energy alternatives (such as solar water heaters, insulation, geothermal heating and cooling systems), and neighbourhood-based sewerage systems (Swilling, 2006). In addition, modest income-generating activities that provide some income for the urban poor, such as water vending, the provision of toilet facilities, biogas, waste recycling, and composting (UN-HABITAT and UNEP, 2003) also have environmental benefits.

An integrated environmental policy also works to reduce environmental hazards and health, especially those which affect the urban poor. Absence due to sickness among the workforce adversely affects the economic efficiency of local industry, competitiveness and the attractiveness of the city to external investors. Moreover, localised environmental hazards especially in peri-urban areas are potential sources of pandemics (Cities Alliance, 2006), and run counter to the principles of equity and social inclusion.

Examples of How Environmental Actions Can Help Reduce Poverty or the Deprivations Associated with It

Environmental actions	Direct effects	Other effects
Improved provision of water and sanitation services	Can bring a very large drop in health burdens from water-related infectious and parasitic diseases and some vector-borne diseases—and also in premature deaths (especially for infants and young children). Safe disposal of excreta from home and neighbourhood is a great health bonus.	For income earners, less time off work from illness or from nursing sick family members. Better nutrition (for example, less food lost to diarrhoea and intestinal worms). Less physical effort needed in collecting water. Lower overall costs for those who, prior to improved supplies, had to rely on expensive water vendors.
Less crowded, better quality housing—through supporting low income groups to build, develop or buy less crowded, better quality housing	Can bring a large drop in household accidents (often a major cause of serious injury and accidental death in poor quality, overcrowded housing) and remove the necessity for low income groups to occupy land sites at high risk from floods, landslides or other hazards. Can also help reduce indoor air pollution.	Lower risk for low income groups to lose their homes and other capital assets to accidental fires or disasters. Secure, stimulating indoor space an enormous benefits for children's physical, mental and social development.
Avoidance of hazardous land sites for settlements	Reduces number of people at risk from floods, landslides or risks from other hazardous sites. The damage or destruction of housing and other assets from, for instance, floods or landslides can be the 'shock' which pushes low income households into absolute poverty.	Sites within cities that may be hazardous for settlements are often well-suited to parks or wildlife reserves.
Promotion of cleaner household fuels	Reductions in respiratory and other problems through reduced indoor and outdoor air pollution.	Reduced contribution of household stoves to city air pollution.
Improved provision of solid waste management services	Removes garbage from open sites and ditches in and around settlements. Greatly reduced risk of many animal and insect disease vectors and stops garbage blocking drains.	Considerable employment opportunities in well managed solid waste collection systems where recycling, reuse and reclamation are promoted.
Support for community action to improve local environment	If well managed, lots of low-cost ways to reduce environmental hazards and improve environmental quality in informal settlements.	Employment creation; minimum incomes help households avoid poverty. Can reduce sense of social exclusion.
Support for more participatory plans	Low income groups with more possibilities of influencing city authorities' priorities on environmental policy and investment.	Precedents set in participatory local Agenda 21s and other action plans can lead to low income groups getting greater influence in other sectors.
Improved public transport	Cheap, good quality public transport keeps down time and money costs for income earners of low income groups getting to and from work.	Can reduce air pollution and its health impacts. Can reduce the disadvantages of living in peripheral locations and help keep down house prices.

Source: *Shaping the Urban Environment in the 21st Century—A Resource Book,* http://www.oecd.org/dataoecd/24/19/1956241.pdf, accessed February 2007

HOW TO INTEGRATE THE ENVIRONMENT IN URBAN PLANNING STRATEGIES

H ow can the environment be integrated into urban planning and development? At what levels can this be implemented? Sustainable development is multi-dimensional. It requires an understanding of complex and often conflicting relationships, which require an integrated approach and an integration culture. After all, the city is a mosaic of different neighbourhoods with different functions, qualities, problems and opportunities (Rijkens-Klomp *et al*, 2003). Although a city development strategy which fails to take due account of the environment may achieve its other objectives, it will not contribute to the ultimate goal of sustainable development.

Committing to Sustainability in Calgary, Canada

In practical terms, many cities have made the commitment towards sustainability. In Calgary, Canada, the city council committed itself to "creating and sustaining a vibrant, healthy, safe and caring community that works for all today and tomorrow". Since that commitment in 2001, all of the policies, programmes and projects that have been implemented to further the city's sustainability goals can be traced back to these commitments made by council.

Entry Levels

A variety of strategic approaches to integrating the environment into the urban planning process exist. A city can choose to target its environmental activities at different levels. It may choose to take action for the city as a whole, using *supra-sectoral concepts and strategies* such as Localising Agenda 21, which has provided many local authorities with an innovative and effective approach to urban management which combines social, economic and environmental aspects, or the Eco-City Planning approach. It may chose to focus on *integrated local environmental management,* util-

ising information systems, environmental monitoring and eco-budgeting. Urban managers may decide to implement *ecological construction and living policies,* using sustainable construction material, technologies and supply systems and encouraging ecological user behaviour. Cities may also choose *integrated strategies for certain sectors and environmental commodities.* These can include reducing energy consumption, controlling air pollution in urban areas, reducing industrial and traffic emissions, improving water quality, reducing the amount of solid waste generated, or developing overall strategies for traffic and transport which avoid negative impacts on the environment. Another way that urban decision-makers can make environmental interventions is through the *development of institutional, legal and market-policy frameworks.* These can include legal and political regulations, management instruments, technical consultancies, private sector involvement, citizen participation and public relations, the introduction of cooperation arrangements, and partnerships with the private sector.

Barriers to Integration

Barriers to integration of the environment into urban policy and planning remain, however. The institutional structure of local governments sometimes creates a "silo mentality" among the staff of individual departments that can obstruct policy integration. Building staff capacity is often necessary to create an awareness of the need for policy integration and of how this can best be achieved. Mayors and urban managers must also be made aware of benefits offered by urban policy integration (GTZ, 1999). A multi-disciplinary approach to integration requires a basic understanding of how systems fit together on the part of all professions dealing with the environment.

Instruments for Environmental Integration: An Overview

This section presents some of the instruments that a city can use to integrate the environment into urban planning and management. Instruments can fall into several categories: policy instruments, process instruments, planning instruments and management instruments. *Policy instruments* provide guiding principles for urban decision-makers. *Process instruments* provide ways of doing something, steps that can be taken to reach a desired goal. *Planning instruments* offer a variety of methods by which urban development plans can be developed and implemented. *Management instruments* provide tools to direct and administer urban planning decisions. Many environmental instruments are supported by specialised tools or toolkits, and samples of these are included in the next chapter.

Policy Instruments

A variety of policy instruments are available to cities. These can be broken down into four main categories: information, voluntary, economic and regulatory.[1]

Information Instruments

Information instruments can include written, internet or face-to-face advice. Some cities have

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[1] The information on environmental policy instruments in this section is taken from "The Government's Strategic Review of Diffuse Water Pollution from Agriculture in England: Types of Environmental Policy Instruments", UK Department for Environment, Food and Rural Affairs (DEFRA) 2003. http://www.defra.gov.uk/environment/water/quality/diffuse/agri/reports/pdf/dwpa03.pdf, accessed February 2007

Courtesy of GTZ, China

A community action planning (CAP) workshop in Yangzhou, China.

set up environmental information offices to provide the general public with information on environmental issues. Information instruments can also include training, research and development, and awareness raising campaigns. Information campaigns work best to redress a situation where a lack of information about how best to reduce environmental impacts is in itself a significant barrier to people changing their behaviour. Other information instruments can take the form of clearing house mechanisms where communities can learn about other city experiences, such as Germany's "Agenda Transfer" initiative.[2]

Voluntary Instruments

Voluntary instruments work best where people already have an incentive to change their behaviour. Just bringing different players in the market together and helping them agree to common aims, or providing a scheme for people to join may be enough to change environmental behaviour. For example, companies may work towards attaining environmental management standards because it provides them with a marketing advantage, and helps to reduce potential environmental liabilities or environmental liability insurance costs. Examples of voluntary instruments include voluntary product labelling or branding, voluntary codes of practice or standards, voluntary (but externally accredited) environmental management standards or audits, and voluntary agreements.

Economic Instruments

Economic instruments come in many different forms, but generally work by making people face the environmental costs they impose on society. Economic instruments can include charges or

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[2] http://www.agenda-service.de/

mental improvements, including production subsidies with environmental pre-conditions, tax breaks, tax rebates, financial support or tax credits. Lastly, economic incentives also include enforcement incentives such as fines for non-compliance with regulations, legal liability for

Courtesy of GTZ, China

Street scene with children in Yangzhou, China.

taxes on emissions or products. These provide an economic incentive to reduce production or use of harmful substances. There are also tax refund schemes where environmental taxes are refunded in proportion to the taxpayer's environmental performance improvement. Deposit/refund schemes encourage people not to discard empty containers or used products. Tradeable permits or quotas can be used to control the overall level of a particular type of pollution or the use of a specific resource but allow individuals to buy or sell permits to meet their own requirements.

Economic instruments can also come in the form of direct public spending subsidies for environ-

environmental damage, and environmental performance bonds.

Regulatory Instruments

Regulatory instruments are useful where a general improvement in environmental performance is desired, and it is impossible to dictate exactly what changes in behaviour would be appropriate for a wide range of operators and local environmental conditions. Regulatory instrument are used where a high level of certainty of outcome is required, or where there is little flexibility allowable on the timing or nature of the outcome required. Regulatory instruments include controls on emissions, activities, use of resources and toxic substances through bans, permits, quotas and licensing, or controls on the choice of technology or standards for the environmental performance of technology. Regulatory instruments can also include extended producer responsibility, a range of mandatory environmental management standards, mandatory environmental audits, mandatory environmental labelling or product standards, mandatory training or operator licens-

ing. Lastly, economic regulation which promotes competitive markets can also have a significant environmental impact. For example, utility companies should not be given disincentives to make environmental investments.

Often a single instrument does not operate in isolation. Combinations of different types of instruments can be used together to achieve a desired environmental outcome. Some elements of the package may have an effect in the long run, others may work in the short run. The mixture of instruments in the package can continue over time to adapt to changing circumstances.

Process Instruments

Urban planning processes take many shapes and forms, from the top down and centralised to the

Stakeholder participation at a meeting in São Paulo, Brazil.

highly participatory. Today, it is generally recognised that increasing the level of stakeholder participation in the planning process results in greater focus, relevance and enhances execution in urban planning strategies. The urban planning process can be used to build consensus, to develop horizontal cooperation and create new partnerships. It can be used to prioritise issues and to create a vision or roadmap for the future, offering a highly effective entry point for the integration of environmental issues.

Visioning

A visioning conference brings together all stakeholder groups to produce a city vision. It is based on the theory that, by working together for a concentrated period, individuals with diverse backgrounds, knowledge, interests and responsibilities are able to take a holistic view of the issues, recognise that their concerns are linked, and produce a common idea of the future city. Additional benefits of a visioning conference include: awareness is raised, the public is motivated to become involved, a sense of identity is fostered within the city, everyone's view is valued, partnerships are formed that can assist implementation, and a basis for conflict resolution is established.

Visioning conferences generally require one or more experienced facilitators, perhaps hired from an outside agency, to lead the discussion. Participants should be encouraged to assume some level of responsibility for the event by fulfilling certain roles (for example, discussion leader, time keeper, recorder and reporter). To ensure full involvement, a steering group should be set up to plan and organise the visioning con-

Slum dweller groups participate at a Cities Alliance Public Policy Forum in Durban, South Africa.

ference and encourage participants to attend all sessions. The results of the visioning conference should be published in a report that contains a list of community assets and the agreed long-term vision for the city. The visioning report should be submitted to the city council and made widely available, including to the media. Visioning methods are time-consuming both for elected members and staff, but they provide a firm foundation for policy formulation.

Creating a City Vision: The Calgary Experience

imagineCALGARY is a city-led, community owned initiative to create a 100-year vision and plan for a sustainable Calgary, "in order to ensure a prosperous economy, clean environment and high quality of life for the people who live there in the decades to come". imagineCALGARY is the first project of its kind in Canada and one of the few in the world to have such a broad scope and include so many citizens—approximately 18,000—in developing a vision for a sustainable community.

imagineCALGARY has three stages. The first stage, the visioning process, asked Calgary citizens what they valued about Calgary and what they hoped for the future of their city. This resulted in a long-term vision of a sustainable Calgary that captures the values of today's citizens and inspires action. The city of Calgary has committed itself to aligning its key plans to the 100-year vision. Many city plans are being updated within the next few years.

The second stage of imagineCALGARY saw the creation of 30-year strategies and targets, guided by the 100-year vision, as a reference point for the community to determine individual and collective action. The targets focus on key systems of the city-built environment, natural environment, social, governance and economic.

imagineCALGARY is currently entering the third and final, or "legacy", phase, which will ensure progress towards the vision through the actions of public institutions, community organisations and business, as well as individual citizens. While developing the vision and strategies has been city-led and resourced, the legacy is to be community-owned and supported.

Baseline Studies

Often the visioning process starts with the compilation of a list of city assets. These vary from one neighbourhood to another but might include a strong sense of community spirit, a relatively low crime rate, green spaces within the inner city, and a large number of mature urban trees. The compilation of such a list is seldom contentious: it helps stakeholders to work together and focuses minds on what needs to be conserved. Secondly, a list of environmental problems and issues should be compiled—problems and issues that stakeholders feel must be resolved to protect community assets or to create a better living environment in the longer term.

Participatory Methods

Public participation is important in integrating environmental considerations into urban planning and management, because, as direct users of the city environment, urban residents have first hand experience of environmental challenges. They are also keenly aware of the economic impact of environmental actions, but may not be aware of the impact of these actions beyond their neighbourhood. Public support is essential in ensuring that environmental action plans are workable; this is greatly enhanced through their involvement in the decision-making process.

Public participation can simply mean keeping local people informed about urban planning activities and decisions, but can range all the way up to working in partnership with local stakeholders, including representatives of the local government, the business community and civil society and providing skills and resources to enable them to make an input into urban planning and management. In

between, there are numerous ways to consult and involve the public. They can be invited to participate at any stage in the preparation and implementation of an urban planning and management strategy but city administration benefits by inviting the public to participate as early as possible in the planning stage.

By involving the public, improving communication, and achieving results that are more relevant to the public's needs, the city strengthens its administration, makes its decisions more sustainable, and increases respect for the work it undertakes. Everyone benefits. Input from the general public provides local knowledge, experience, time and skills. It eases the workload of the city administration and contributes to the future development of the area. Technical experts have an important part to play in the preparation and implementation of urban planning and management strategies but they do not have a monopoly on knowledge. Local stakeholders are key to the identification of priorities. In addition, by participating in the planning process, the general public gains a sense of ownership of the process and is likely to be more committed to its implementation.

Participation means active co-operation, through partnerships between and amongst the public, the business community, decision-makers and support staff from the city administration to the benefit of all concerned. It is an ongoing process, not a one-off event. It is important that participation and influence is genuine when it comes to real issues of tough choices and is not a wish list that does not include negotiated priorities. Participation can be time-consuming both for elected members and staff. However, it also reduces the likelihood of confrontation between stakeholders and the city administration in the

future, as long as stakeholders can see a positive response to their input.

In some countries, public participation is written into the national constitution, for example, Thailand, Sections 76 and 78 of the Constitution. Legislation may also be used to ensure that the public is part of the city administration's decision-making processes and actions.

Street scene in Havana, Cuba.

Planning Instruments

Process and planning instruments are intricately related, with specialised planning instruments often providing key support to the planning process. These include:

Identifying Environment-Development Interactions: The Bayamo Environmental Profile

In Bayamo, Cuba an environmental profile of the city was prepared in consultation with more than 100 actors. This was then documented in the Bayamo Urban Environmental Profile (Diagnostico Urbano-Ambiental de la Ciudad de Bayamo). It was the first step in the process of integrating environment into development.

The profile identified the sectors and institutions involved in local development and their links with the environment. It described urban and environmental risks and resources, and identified the existing mechanisms for information exchange, coordination and decision-making. The profile is very innovative compared to traditional diagnoses, because it marks the first time that the interactions between development and the environment have been analysed. One of the profile's key purposes is to serve as a common information base for all project partners. By presenting the urban environment institutional framework, the profile helped stakeholders to identify institutional strengths and weaknesses which could be addressed.

Environmental Profiles

An environmental profile is a specialised urban planning tool which focuses on the environment. It works to: provide a common understanding of how a city's economic sectors interact with the environment in terms of resources and hazards; it provides information about the institutional framework a city's management systems; and, it helps both to identify and mobilise local stakeholders with interests in development and the environment (United Nations Centre for Human Settlements [UNCHS now UN-HABITAT] and UNEP, 1999).

An environmental profile is normally quickly assembled from existing information and data, not through expensive and time-consuming research. As such, it is a form of rapid urban environmental assessment. The environmental profile is used to help stakeholders participate in the urban decision-making process, and is widely available. It is written in a simple style, free from jargon.

Girl walking along rail track in Cairo, Egypt.

SWOT Analysis

A SWOT—'Strengths, Weaknesses, Opportunities, Threats'—analysis is an assessment of internal strengths and weaknesses (within the control of the city administration) and external opportunities and threats (outside the jurisdiction and therefore not controlled of the city administration). A SWOT analysis is very helpful in describing the benefits of the environment. It can also be used to underline the impact of environmental neglect in urban planning.

A SWOT analysis can be used to support different stages of the strategic planning process, during visioning for example. It can provide a rapid, up-to-date picture of a local situation and can help the city administration to determine its ability to act. The use of SWOT analysis allows a note of realism to be quickly injected into strategic thinking (GTZ, 2002).

Internal factors in the analysis might include:

■ Resources, including people, management, natural and man-made assets, economic resources, information;

■ The present strategy of the city administration or one of its departments;
■ Policy consensus within the city council;
■ The ability and capacity of the city administration to implement policies; and,
■ The level of autonomous funding and thus the extent of local discretion to take action.

External factors might include:

■ Resource constraints, such as the availability of energy at affordable prices;
■ Forces such as the political balance of power at the provincial or national levels;
■ Institutional arrangements or private activities outside the control of the city administration;
■ Public support or opposition; and,
■ Legal mandates.

Rapid Ecological Footprint Assessment

An ecological footprint (EF) is the area of ecologically productive land required to provide the resources consumed by a city and to absorb the wastes it generates expressed in terms of hectares *per capita* for a specific year. When compared to global standards, it indicates whether a city uses natural resources sustainably.

In 2001, the global average EF was 2.2 hectares per capita, although there were only 1.8 haectares per capita of biologically productive land available on Earth (Global Footprint Network *et al*, 2005). In other words, it took more than twelve months for nature to replenish the renewable natural resources used by human activity in a single year. This challenge will intensify because it is estimated that the biologically productive land per capita will decline to 1.44 hectares in 2050, due to global population growth (Best Foot Forward, 2002).

Most cities in the developing countries of Africa, Latin America and Asia have an EF below the global average, although neighbourhoods within those cities often show sharp differences.

Monitoring Systems and Indicators

Effective monitoring is central to strategic planning. It is a vital management tool which enables cities to keep track of progress in implementing a plan to manage urban change (Cities Alliance, 2005). Monitoring is time-consuming, as it involves data collection, analysis and reporting.

Monitoring involves taking measurements at regular intervals, recording and storing data for easy recall, making data available to local stakeholders, keeping track of events, analysing trends, and recommending corrective action where it seems that a target will not be reached.

Indicators must relate directly to the economic, social and environmental objectives of the urban planning strategy, derived from the city vision and the views of local stakeholders. An indicator is derived from an objective and is used to track progress towards a target relative to an initial base-line measurement. A target must be achievable, include a time element, be measurable, and have the active support of local stakeholders.

Strategic Environmental Assessment (SEA)

A Strategic Environmental Assessment ensures that the environmental impact of policies and programmes in a development strategy (for example, a City Development Strategy) are identified, assessed, mitigated, communicated to decision-makers and the public and monitored. In the European Union, SEA has become an important instrument to help

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Aerial view of Solingen, Germany.

Budgeting for Environmental Expenditures in Guntur, India

In 2006 the Municipal Corporation of Guntur, India, created a Master Budget for environmental expenditures in order to manage their natural resources in the same budgetary way that financial resources are managed. Municipal staff in Guntur identified the green surface area of the municipality as an environmental indicator and set a baseline value of $78m^2/1000$ inhabitants. They then set a short-term target in 2007 of $100m^2$ and a long-term target of $200m^2$ for 2010. They will use these targets as spending limits for the given years and in this way are internalising the true environmental costs of a decision.

cities to work towards the long-term goal of sustainable development in public planning and policy making (EU Directive 2001/42/EC). SEAs are best conducted as early as possible in the development strategy planning process, while the strategy is still in early draft stage.

Key benefits of a SEA include:

- It enables the environment to be integrated into a development strategy;
- It provides opportunities for local stakeholders to be involved;
- It contributes to the long-term goal of sustainable development;
- It strengthens the planning framework within which strategic decisions are made;
- It forms part of an iterative process that is carried out very much in parallel with the preparation of the CDS.[3]

Other Planning Instruments

The planning instruments described in this section are just some of the range available. Others include: Power-Interests-Analysis, Participatory Organisational Appraisal (POA)/Rainbow Model, Participatory Urban Appraisal, EIDOS (formerly known as ThinkTools—for systemic analysis, strategic planning and monitoring) SINFONIE, and general institutional development in environment appraisal.

Management Instruments

Management instruments are used to direct and administer urban planning decisions. This section provides two examples—one using environment budgeting techniques, and the other using environment quality management techniques.

Environmental Budgets and Audits

An environmental budget is based on environmental indicators measured in physical quantities. It does not attempt to place a monetary value on natural resources and environmental goods. The environmental budgeting cycle runs in parallel with the financial budgeting cycle with which the public, decision-makers and senior administrators are already familiar. Environmental budgeting is rooted in the Aalborg Charter of 1994 which calls for environmental budgeting instruments to manage natural resources as efficiently as money.

Environmental budgeting goes hand in hand with environmental auditing. Originally, private companies used this method for their own environmental management purposes. In 1999, eco-audit specialists concluded that both systems should complement each other. Without eco-audits, the potential for continual improvement would be neglected; without environmental budgets, local authorities would neglect political decision-making. ICLEI's ecoBUDGET system complements the European Union's Eco-Management and Audit Scheme (EMAS) and ISO 14001. ecoBUDGET is described in more detail in Section 3, and the ecoBUDGET cycle is described in the Toolkit in Annex 2.

Other Environmental Management Instruments

Numerous other environmental management instruments are also in use. They include: Cost Cutting Procedures (for example, for urban traffic and transport), Profitable Environmental Management (PREMA), Profitable Urban Management (PRUMA), Cleaner Production Audits (legal regulations), Environmental Monitoring, Impact Monitoring Systems and Mediation (conflict management).

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[3] http://www.sea-info.net/content/overview.asp?pid=94

Overview of Instruments for Environmental Integration

Instrument type	Options	Tool examples
Policy instruments	Information: Written, internet, face-to-face advice, information offices, training, research and development, awareness-raising campaigns, clearing house mechanisms	Internet, electronic newsletters, outreach media
	Voluntary: Product labeling, branding, voluntary codes of practice or standards, externally accredited environmental management standards or audits, voluntary agreements	EMAS, sustainable procurement, product life cycle analysis, eco-labelling
	Economic: Emission charges & taxes, tax refund schemes, deposit & refund schemes, tradable permits, public spending subsidies, fine, legal liability for environmental damage, bonds.	City twinning projects through which developed cities will support climate-related initiatives in developing cities
	Regulatory: Controls on emissions, activities, resource use, toxic substance use through bans, permits, quotas and licensing, extended producer responsibility, mandatory environmental management standards, environmental audits, labeling or product standards, training and operator licensing	Regulations, polluter pays principle
Process instruments	• Visioning • Participation	Metaplan, task forces, round tables, expert panels, workshops, etc.
Planning instruments	• Environmental profiles • SWOT analysis • Rapid Ecological Footprint Assessment • Monitoring systems and indicators • Strategic Environmental Assessment	Indicators, guidelines and documentation from a range of programmes and organisations (for example, UNEP's GEO Cities, UN-HABITAT's Rapid Urban Sector Profiles [RUSPs]).
Management instruments	• Environmental budgets and audits • Environment quality management	• ecoBUDGET • Air quality management
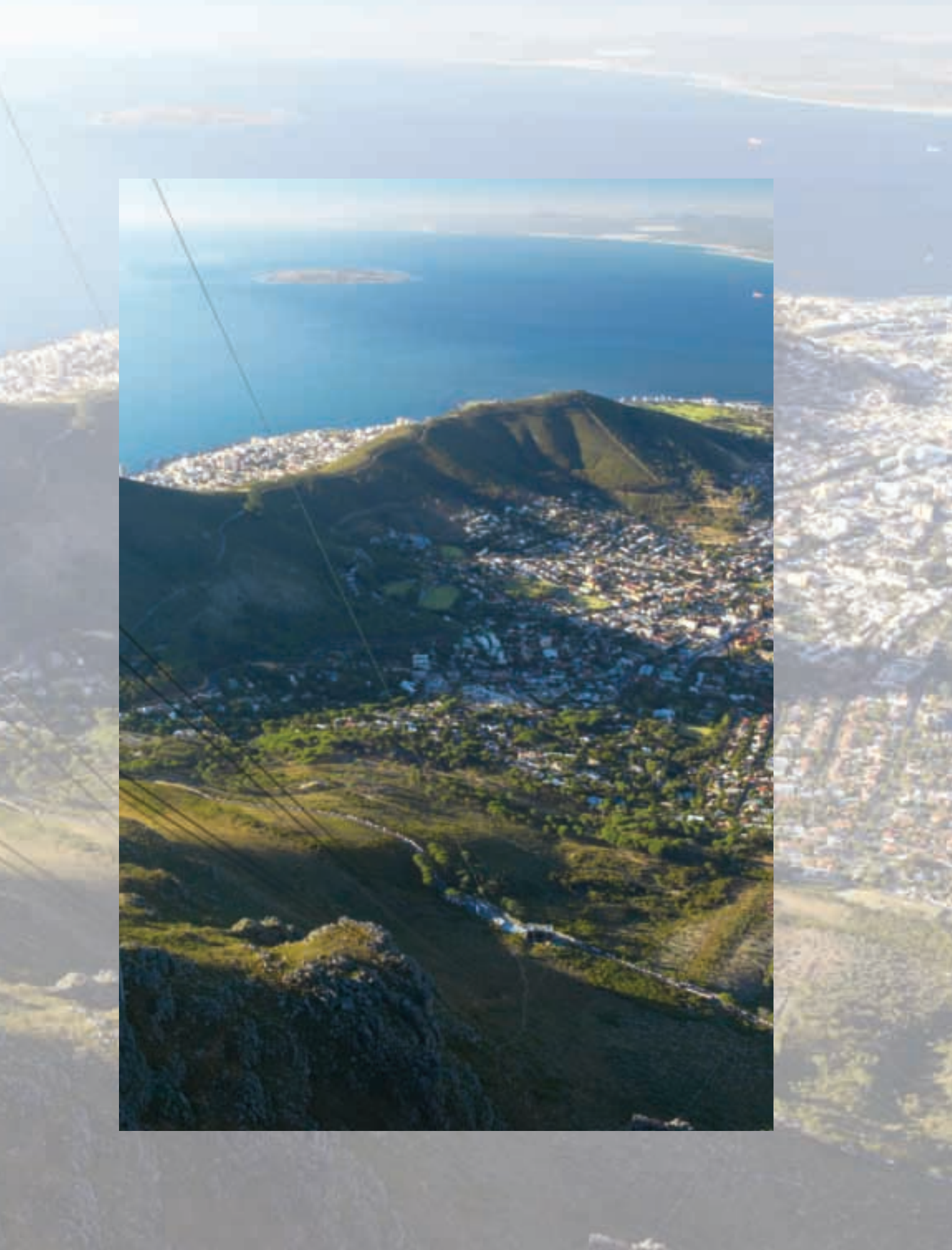
SOME EXAMPLES OF ENVIRONMENTAL INTEGRATION

I n the preceding section, we looked at entry levels and instruments for urban environmental integration. How has this been applied in practice? This section examines a number of examples.

The first two examples, Integrated Development Planning (IDP) and City Development Strategies (CDS), focus on planning. IDPs can be regarded as supra-sectoral, while the CDS approach is somewhat more selective, concentrating on integrated strategies for certain sectors and environmental commodities. The third example, ecoCity Planning, also uses a supra-sectoral planning approach, but has environmental issues at its heart from the beginning. The fourth, ecoBUDGET© uses management as its delivery vehicle, and generally works at the supra-sectoral level. The final example, Strategic Environmental Assessment, uses assessment as the delivery vehicle, and is also generally supra-sectoral.

1: Integrated Development Planning

Key characteristics: Integrated Development Planning, with its statutory citywide strategic development plan and development framework to promote urban integration (Pieterse, 2004), seeks to integrate horizontally across departments at the same level and vertically between governments at different levels, for example, municipal, provincial and national. An important IDP strength is that it operates on a nationwide level, and that it is linked to government fiscal transfers and subject to government monitoring.

The IDP links a statement of purpose with plans, sector policies, institutional design and practices, performance targets, monitoring mechanisms and financial flows. The IDP approach provides for other associated strategies: for example, an Integrated Metropolitan Environmental Policy (IMEP) forms a framework policy for a series of environmental strategies and programmes, such as air quality, water

demand management, waste management, energy/climate change, and environmental education.

Methods and tools: IDP methodology focuses on institutional strengthening and reorganisation to integrate and co-ordinate urban development. For example, municipal staff are re-oriented towards implementation. Openness and transparency in the selection processes for service providers is also emphasised. The IDP approach also employs political methodologies, for example, intensive interaction between elected officials and the public, CBOs, NGOs, and the private sector. As politics are central to addressing urban environmental issues (*Environment & Urbanization,* 2006) this provides a good entry point in IDPs for the inclusion of environmental considerations. Local politicians in some cities make public leadership pledges to implement environmental policies (City of Cape Town, 2003). IDPs also feature public-private partnerships.

Other methodologies and tools used in the IDP approach include: medium and long-term visioning; five-year strategic objectives and policies for each sector, including environmental sustainability; goals, strategic interventions, objectives, programmes, indicators and targets; Environmental Management Systems (EMS), cost benefit analy-sis, life cycle cost analyses, and risk assessments; and an active environmental awareness raising and education programme.

Limitations: The IDP places a heavy emphasis on public involvement, and as a result its success depends on the amount of time that politicians are willing to devote to the task, and the willingness of the municipal administration to train sufficient numbers of facilitators. Because the IDP approach is complex, it may challenge the patience of the public, whose main concern is results, that is, they want to see rapid improvements in the brown environmental agenda.

IDP is a recent approach. It is technically sound but can be difficult to put into practice.

Street scene in Johannesburg, South Africa, where the IDP methodology was used.

Implementing a City Development Strategy in Alexandria, Egypt

Under the leadership of the Governor, Alexandria embarked on a City Development Strategy in 2004. During the 2004–2006 phase, Alexandria prepared a Comprehensive Strategic Development Plan for the city within the framework of the Alexandria CDS. The CDS was developed using methodology rested and developed by Cities Alliance.

The implementation of the Alexandria CDS has greatly helped decision makers, private sector, NGOs, and the community at large to come together for a common strategic vision and unified their efforts towards setting up a strategic plan for development. By using a consultative process to tailor the development plan, the results reflect all stakeholders' commitment to work towards its implementation. By having such equal participation, all of the players knew their roles, duties, responsibilities, and benefits. Likewise, the CDS provided the opportunity for all stakeholders to exchange views, develop positive dialogues, and be well informed regarding their city development strategic plan. Transparency, in this context, led to the formulation of teams and working groups taking care of the various components of the plan. The full participation of all community stakeholders led to the utilisation of local potential and created a community spirit that has ensured the success of CDS' implementation.

Aerial view of Alexandria, Egypt.

Source: www.citiesalliance.org/activities-output/topics/cds/cds-guidelines.html, accessed June 2007

What needs further testing: To date, IDP has been strong on strategies and plans but questions remain on implementation and delivery. In particular, further testing is needed on the use of monitoring as a positive planning tool, including making ongoing adjustments to programmes.

Awareness raising programmes and environmental education among schoolchildren are laudable, and are likely to produce dividends in the longer term, but more work needs to be done to influence the general public in the short-term and to bring about a change of lifestyles of households in the most affluent neighbourhoods.

2: City Development Strategies

Key characteristics: City Development Strategies, promoted by Cities Alliance is also a planning system. A CDS can be prepared rapidly and amended quickly. The initial CDS is often prepared within 12 to 15 months but can then be adapted and refined to respond to changing demographic, economic and political circumstances. While a CDS does not need to be statutory, its implementation is strengthened by formalisation and integration into the formal decision process, for example, by being translated into a local authority's investment plans and budgets. In general, CDS areas of thematic focus have concentrated on livelihood issues (jobs, business start-ups, and household income); environmental quality, service delivery, and energy efficiency; spatial form and infrastructure; financial resources; and governance (Cities Alliance, 2006).

Some city development strategies include the theme, 'Living Environment and Social Life'. This incorporates strategies to deal with water and air pollution; integrated solid waste management; green facilities and recovery of the

green area; adequate sources of clean water; preparation for natural disasters; alleviation of poverty and unemployment; measures to strengthen social equity and protect citizens from crime; measures to prevent the occurrence of diseases; and public awareness raising (World Bank, 2001).

Methods and tools: The CDS process consists of the following steps (Cities Alliance, 2006):

- Rapid data assessment;
- Development of a shared vision;
- SWOT analysis;
- Preparation of strategic thrust (identification of key issues and actions designed to achieve a measurable target);
- Awareness building;
- Implementation;
- Monitoring & Evaluation (M&E).

CDS methods and instruments are designed to enable rapid initial preparation and place monitoring and evaluation at the centre of the process. Stakeholder groups participate in every stage of the process.

Monitoring and evaluation play a central role in every CDS project (Cities Alliance, 2005). The indicators chosen for monitoring purposes depend on the strategic thrust of a particular CDS and the key priority issues. Cities Alliance provides prospective applicants with M&E guidelines, which provide several principles for an effective M&E system and emphasises the importance of including M&E at each step of the initial CDS rather than regarding it as an optional extra.

Limitations: Although monitoring is central to strategic planning, experience shows that an effective monitoring and evaluation system has not been included in the CDS process in all participat-

ing cities (Cities Alliance, 2005a, pp. 42 and 54). Moreover, where an monitoring and evaluation system has been established, it is often unclear whether or not it will be maintained once Cities Alliance funding for the CDS project comes to an end.

In addition, while the Cities Alliance *Guidelines for the Submission of Proposals* includes the expectation that activities supported by the Cities Alliance will achieve significant environmental improvements, the selection criterion relating to the environment has not been well understood by cities and is often ignored.

What needs further testing: Although a CDS is capable of achieving sustainable development by balancing the complex relationships between environmental conditions and economic vitality, social cohesion, cultural identity and citizens' well being, mayors and city managers involved in the programme have not so far taken advantage of this capacity, as they have not viewed the environment as a matter of primary importance. The Cities Alliance and UNEP have embarked on a joint urban environment initiative to redress this gap, part of which is the publication of this report.

3: Eco City planning

Key characteristics: Eco City planning (ECP) uses strategic planning to establish a long-term direction towards sustainable development. ECP is holistic—it provides an over-arching umbrella for other more narrowly focused and shorter-term plans. According to Moffatt (1999), ECP planning addresses a broader range of issues over a longer time frame and with greater public accountability than most other planning approaches.

ECP consists of an ongoing process of data collection, monitoring, policy analysis and fine-

Donguan Gate, Yangzhou, China.

Courtesy of GTZ, China

tuning. This continuous process of research and analysis, and policy and implementation has a long term vision, but identifies key priority issues in the short-term, together with objectives, indicators and associated targets.

Methods and tools: Eco City planning relies heavily on data and research, and frequently a Geographic Information System (GIS) system. ECP could be seen as 'expert-driven', as it uses technical methods and specialised approaches such as material flow analyses/ecological foot printing and green building certification. It may also use the Circular Economy[4] approach, where energy planners try to develop local energy generation systems to create local jobs and enhance community economic development, or industrial planners form partnerships to re-use waste resources. For example, if a local industry uses a lot of water, planners look for other industries that could locate nearby and re-use the same water (Moffatt, 1999).

ECP also uses programmes to influence the private sector and the public. For example, some eco-cities have opened an information and communication centres in the heart of the central business district to increase public involvement, and to counteract the view that ECP is an expert-driven process. Such initiatives aim to reach out to individuals and influence their daily decisions, for example, purchases and consumption, travel arrangements, and waste generation and recycling.

Other instruments include environmental management systems that ensure that environmental policy is fully integrated into corporate

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[4] New developments are designed so that resources perpetually circulate in closed loops, maximising material value without damaging ecosystems (UN-HABITAT, 2006)

operations, and green building design guidelines including everything from the site and energy control systems in buildings (Moffatt, 1999). ECP may also include subsidiary actions such as spatial planning, municipal investment planning and budgeting

Limitations: The demands of data collection and analyses and in some cases, the high level of public involvement encouraged by the city administration may mean that a lengthy period of time is required to prepare an initial ECP. The Chinese Academy of Science (CAS) took four years to prepare the initial eco-city plan for Yangzhou, although it should be acknowledged that it was a learning process both for the municipality and the CAS. In cities experiencing rapid urbanisation, the ECP can be overtaken by events. The ECP also lacks analytical and forecasting tools for modelling urban development scenarios on a citywide level. Accounting for non-monetary indirect costs is also weak, because of an emphasis on short-term capital costs as opposed to life cycle costs (Moffatt, 1999).

What needs further testing: These questions:

- How can linkages between the eco-city plan and investment planning and budgeting systems be strengthened? ECP is a new discipline, whereas accountancy is an old-established profession determined to defend its turf.
- How can an ECP approach be practically applied in developing cities which face a scarcity of human and financial resources?
- How can the output of a four-year ECP exercise be made operational?
- How does this approach influence the private sector and the public?

Using ecoBUDGET to Fight Poverty in the Philippines

The coastal town of Tubigon in Bohol Province, Philippines, has a high degree of biodiversity and is rich in natural resources which support the livelihoods of the community. The municipality uses the ecoBUDGET approach. As Tubigon considers poverty and environmental degradation "twin problems", the ecoBUDGET approach is linked to poverty alleviation and to addressing the Millennium Development Goals in the areas of water, sanitation and human settlements.

One of the key lessons learnt through the Tubigon experience is that there is a significant overlap in social, poverty and environmental goals and indicators. Examples include household access to safe drinking water, access to sanitary toilets, environmentally sound waste water disposal and environmentally sound garbage disposal. ecoBUDGET, as a modular and flexible system, allows for managing natural resources and environmental quality in combination with social quality.

Housing project in San Isidoro, the Philippines.

Women working at the building site of an IT College, Hyderabad, India.

4: ecoBUDGET© [5]

Key characteristics: ecoBUDGET (eB) is a management system, focusing on the management of natural resources and environmental quality by cities. Paralleling the financial budgeting system on a periodic (annual) basis, ecoBUDGET routinely integrates environmental target-setting, monitoring and reporting into municipal planning, decision making and management (ICLEI 2004).

Every year a budget for natural resources and environmental quality is developed and approved by the city council. Accounts (indicators) are established for each natural resource, and annual targets as spending limits are derived from mid-term goals. The budget uses physical units, not monetary terms. Budget preparation involves the assessment of the expected environmental impact of ongoing operations and special projects in order to forecast the environmental expenditure and consider mitigation strategies. The municipal council discusses the draft budget, accompanied by media reports and public discussion. During the budgetary year, all departments manage their environmental ex-

penditure, that is, the use or pollution of natural resources, within the spending limits. After the budgetary year a balance sheet is prepared and performance reported to the council and public.

Once established as an annual routine, similar to financial budgeting, ecoBUDGET ensures that environmental quality is managed on an ongoing, rational and transparent basis, thus supporting accountability. Environmental aspects are woven into municipal policy making across departments. ecoBUDGET also makes the municipal leaders true resource managers, responsible for both financial and natural resources. ecoBUDGET is a crosscutting instrument, suitable for addressing all natural resources and areas of environmental quality.

Methods and tools: The ecoBUDGET system uses a participatory process. The general public and other stakeholders discuss the draft budget before its approval by the council, as well as the final statement (balance sheet) after each budget year. ecoBUDGET draws on tools such as indicators, monitoring and environmental impact assessment.

Limitations: ecoBUDGET involves technical work as well as political decision-making. Its introduction and implementation therefore re-

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[5] ecoBUDGET was developed and copyrighted by ICLEI.

quires political will and needs to be formally established through a city council decision. While it has the significant advantage of ensuring unwavering attention to environmental issues, it cannot simply be applied by the municipal administration, nor is it designed to deal with environmental issues on a case by case basis.

What needs further testing: ecoBUDGET has been pilot-tested by 15 cities in seven Asian and European countries with diverse political and administrative systems and cultures. It has proven to work equally well under various conditions. Further development will focus on the inclusion of social indicators/accounts and an ecoBUDGET software package.

5: Strategic Environmental Assessment

Key characteristics: A Strategic Environmental Assessment is a process that ensure that the environmental effects which policies, plans and programmes may cause are identified and assessed. SEAs ensure that environmental effects are mitigated, communicated to decision-makers, monitored and that opportunities for public involvement are provided.[6] An SEA examines the need for social progress, effective protection of

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[6] http://www.sea-info.net/content/overview.asp?pid=94, accessed March 2007

The Role of Strategic Environmental Assessment in Greater London, United Kingdom

One of the key lessons learnt by the city of London from its SEA exercise in 2000 was that an independent assessor must undertake the Strategic Environmental Assessment if the public is to have confidence in the process of incorporating environmental aspects into the city development strategy. Additionally, the assessor must undertake this task in a transparent way.

By subjecting policies in a city development strategy to an SEA the city government influences the mindset of policy makers and decision takers. By giving greater consideration to international debates and agreements on sustainable development and climate change, local politicians address longer-term resource issues and external costs. For example, traffic and transport within the metropolitan area have assumed increased importance for at least two reasons. There is concern among the public about air quality and the link with respiratory illnesses, especially among young and elderly people. Moreover, in 2000,

carbon dioxide emissions from transport movements amounted to about 27 percent of all greenhouse gases contributing to climate change.

In the case of Greater London, the city government has a statutory responsibility for preparing other strategies, for example, biodiversity, waste management, air quality, noise, and culture. Consistency must be achieved among all of the various strategies. The administration holds an annual "state of the city debate" open to members of the public to discuss these issues.

Looking over to the Tower of London and Westminster Abbey.

the environment, prudent use of natural resources, and economic growth (Entec, 2002). The appraisal and the city government's response are discussed at a public hearing on the final draft development strategy.

Public participation is central to the SEA approach. The city government must publish a state of the environment report containing information on air quality and emissions; water quality, discharges to water, and ground water levels; energy consumption and emissions contributing to climate change; natural resources; land quality; biodiversity; waste production, minimisation, recycling and disposal; and noise.

An SEA may include a cascading process, that is, local councils within the city must prepare statutory area-based plans that take full account of the city development strategy and other city-wide strategies. The city authority is responsible for monitoring and approving area-based plans.

Methods and tools: Strategic Environmental Assessment is a planning instrument, and involves extensive, ongoing research and analysis. The SEA system uses indicators, baseline data and targets for implementation and monitoring purposes, and a GIS.

Technical methods used include material flow analysis and ecological foot printing, and the "Pressures, State, Impact and Responses" analysis approach developed by UNEP for its Global Environment Outlook Cities (GEO) assessment approach.[7] Ecological foot printing measures the

Strategic Environmental Assessment Findings in Durban, South Africa

In eThekwini (Durban) South Africa, the Durban South Basin is an environmental 'hotspot' containing areas of heavy industry and residential development located in close proximity to one another in a topographically contained basin. Over the past several decades, the South Basin has become a focal point for community mobilisation around environmental quality and justice issues. The aim of the Durban South Basin Strategic Environmental Assessment was to develop sustainable development guidelines to address existing problems and guide future development in the area. The SEA highlighted the need for institutionalisation of public participation and conflict resolution processes in order to address the haphazard and piecemeal approach to public participation that is prevalent in Durban. The level of conflict in the Basin also suggested the need for area-based participation structures as a vehicle for building trust and a common vision at a scale that is meaningful to local communities.

use of renewable and non-renewable resources, the generation of solid and liquid wastes, water consumption and leakages, and the creation of greenhouse gases.

Various public participation methods are used to raise awareness among stakeholders of city-wide strategic issues affecting the environmental agenda.

Limitations: SEAs place considerable demands on the time and therefore the financial and human resources of the elected politicians and appointed staff. The preparation of city-wide strategies, the need to monitor and approve local area-based plans, and the quasi-judicial

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[7] http://www.sea-info.net/content/overview.asp?pid=94, accessed March 2007

hearings and debates involved are all time-consuming.

Private developers must refer to several strategies prepared at different points in time, raising questions about whether the strategies contain subtle differences in policy.

The SEA approach is statutory and must follow prescribed processes. As a result, it lacks flexibility to respond to rapidly changing events and may be unsuited to the challenges of urbanisation faced by many cities in the developing world.

What needs further testing:

- Improved public participation and facilitation methods are needed the better to engage the public in debates about citywide issues;
- The level of language used in drafting strategy documents should be reassessed so that 'ordinary people' can understand the text;
- Linkages between strategies, medium-term corporate investment plans and annual budgets should be improved.

Urban Sprawl in Mexico City

CONCLUSIONS AND RECOMMENDATIONS

Children in Bangkok slum. © Mark Edwards/Still Pictures

Conclusions

Cities today have to be competitive. They operate in a global marketplace, competing with other cities and urban settlements around the world for investment. A city cannot compete, however, if it cannot offer investors security, infrastructure and efficiency. Hardly any city can offer these elements without incorporating environmental issues into its planning and management strategies. The environment and the urban economy are inextricably linked.

Cities which integrate the environment in urban planning and management benefit in many ways. Such cities prove more liveable, more equitable, and more inviting to investors. Their citizens are healthier, and fewer working days are lost to environment-related illnesses. Urban space and infrastructure respond better to public needs. In addition, cities which integrate the environment into their planning and management support international action to combat global environmental threats such as climate change, which may endanger the future of many urban settlements. By incorporating the environment in urban planning and management, urban managers help to create cities which are prepared for, and more resilient to, environmental disasters.

Today, cities and urban settlements around the world employ a range of urban planning and development approaches, all of which provide opportunities for the integration of environmental considerations. A city can chose to integrate environmental issues right across the city, using supra-sectoral concepts and strategies such as Localising Agenda 21, or may focus on integrated local environmental management. Integrated strategies for certain sectors and environmental commodities are also an option, and institutional, legal and market-policy frameworks can be very useful in supporting environmental interventions. Ecological construction and living policies also offer a vehicle for introducing the environment to urban planning.

Congress of mayors in Washington, D.C., USA.

Local authorities are encouraged to use planning, management or assessment to include environmental considerations at any level of urban planning, in any sector. Planning offers a long-term overarching development framework into which more narrowly focused short-term plans can be integrated. Environmental management systems may be institutionalised in the city management structure, or may run in parallel to the city's financial management structure. Assessments evaluate the environmental effects of a policy, plan or programme.

Various instruments are available to strengthen environmental inclusion at each stage of the urban planning and management process. Policy instruments, be these informative, voluntary, economic or regulatory, provide guiding principles for urban decision-makers. Process instruments offer approaches, steps or a roadmap to a desired goal. Planning instruments structure and strengthen the development and implementation of urban management plans. Lastly, management instruments provide tools to direct and administer urban planning decisions. A vast range of practical tools are already in use around the world to support each of these instruments. The case studies which follow in the next section exemplify some of these tools.

Recommendations for International Financing Partners

1. International programmes which support cities in the preparation of their urban planning and management strategies could inform cities of the benefits of including environmental issues in their strategies, and should encourage their inclusion.

2. Support programmes could inform applicant cities of the range of approaches, instruments and tools available that can be used to integrate the environment into urban development strategies. This information could be provided in a short user-friendly brochure.

3. Support programmes could build capacities in applicant cities by drawing their attention to relevant publications, programmes and international agreements such as the Millennium Development Goals and the Melbourne Principles for Sustainable Cities. Cities could also be guided towards useful publications such as OECD's *Shaping the Urban Environment in the 21st Century,* or HabitatJam's *Actionable Ideas*.

Recommendations for Mayors and City Planners

1. Cities and urban settlements seeking funding support for their planning and management strategies should incorporate environmental issues in their proposals. They should be able to demonstrate why this integration is important in the context of their city, and to suggest how it can be achieved.

2. Proposals for funding could also include a section on awareness—raising and capacity building for municipal staff and the general public.

3. Urban managers should seriously consider ways to to institutionalise and therefore sustain integration of the environment into planning strategies, and about how to manage implementation once funding ends. International programmes could make cities aware of the various environmental management approaches available, such as the ecoBUDGET system.

4. Urban managers could also incorporate a system for the ongoing monitoring of environ-mental quality and the use of natural resources in the city development strategy.

5. Once a proposal for funding has been approved, the urban planning and management strategies should undergo a Strategic Environmental Assessment. This assessment, which would include expected impacts and mitigation strategies could form part of the reporting requirements. It ensures that external funding will not lead to environmental damage and significant mitigation costs.

CASE STUDIES

T he case studies in this Annex share a common structure. Each starts with an explanation of why the case study is important, followed by a brief description of the urban context and the city's urban management approach. The main body of the case study is then presented, with a section that outlines the environmental entry point. Finally comes the section on results and lessons learned, wrapping up with another on replicability. The structure is designed to allow the reader to assess the relevance of the case study to his or her own city, quickly and easily. Contact details for further information and follow-up are provided at the end of each case study. The table following provides an at-a-glance view of the urban management approach used each case study city, and its environmental entry point.

At-A-Glance View of Urban Management Approach and Environment Entry Point

Case study	Urban management approach	Environment entry point
Alexandria, Egypt	City Development Strategy	Political leadership, participatory prioritisation of issues, environmental cost-benefit analysis.
Bangkok, Thailand	Local Agenda 21—long-term strategic planning	Integrated into the LA21 process from the start.
Bayamo, Cuba	Local Agenda 21	Integrated into the LA21 process from the start. Public participation prioritised key issues, and working groups supported a cross-sectoral approach.
Bohol, The Philippines	Integrated Development Plan, Medium Term Development Plan, Programme Framework on Poverty Reduction	Sustainable environmental management provided employment opportunities in the fight against poverty, and raised the standards of living for the poor.
Bourgas, Bulgaria	Integrated Environmental Planning and Management	Municipality inherited a damaged environment, and integrated environmental considerations right from the start.
Calgary, Canada	Environmental Management System (EMS or EnviroSystem as used by the city of Calgary)	Environmental considerations are integral to the city's urban management approach. City sees itself as a leader in environmental management.
Cape Town, South Africa	Integrated Metropolitan Environmental Policy (IMEP)	Environmental sustainability forms the backbone of its urban planning and management process.
Goiânia, Brazil	Fora de Risco (integrated participatory urban development)	Social, economic and environmental development have been integrated into the Fora de Risco project since its inception.
Manizales, Colombia	Local Agenda 21, Local Environmental Action Plan (BioPlan)	City has a 'culture of disaster prevention'. Employment generation is also an environmental entry point.
Nakuru, Kenya	Local Agenda 21	Social, economic and environmental issues have been included in urban planning and management from the beginning.
Porto Alegre, Brazil	Participatory Budgeting, participatory democracy	Unique system of integrated environmental management, based on citizen participation and public environmental management programmes.
Yangzhou, China	Eco City Plan	The environment has been the focal point of the city's planning and management since the adoption of the Eco City approach.

Aerial view of Alexandria, Egypt.

ALEXANDRIA GOVERNORATE

E G Y P T

Municipal Profile

Alexandria has a population of 4 million, and a total area of nearly 2,300 square kilometres. The population density is 1,739 per square kilometre, and the Gross National Income *per capita* is approx. US$1,570 (2005).

Key economic areas	Port, textile, chemical, fuel, primary metal, food, and tobacco industries
Urban management approach	City Development Strategy
Environment entry point	Integrated in CDS

Why this Case Study Is Important

The Alexandria case study shows how a CDS can be used to integrate environmental issues in city planning processes. It also shows how the leadership of an elected local government official can be

a key factor in prioritising the environment within a development strategy. In Alexandria, the sustainable development of the community is seen as an opportunity for economic growth and social inclusion.

Urban Context

Alexandria is one of the major cities on the Mediterranean Sea, and plays an essential role in Egyptian economy and cultural life as the country's oldest and largest port. Most of Egypt's foreign trade passes through the port, which has 75 percent of the total capacity of Egypt's Mediterranean ports. The city has a coastline of 70 kilometres and lies between the Mediterranean and Lake Marriout.

Alexandria is a powerful industrial base, home to over 4,500 industrial firms with an estimated workforce of 201,000. This represents 17.3 percent of the total labour force of the city. Industrial output in Alexandria's production

represents 40 percent of Egypt's total. Its most important industries are iron and steel, petroleum, cement, chemicals, petrochemicals, spinning and weaving.

Urban Management Approach

Alexandria is focusing on integrated strategies for certain sectors and environmental issues using CDS approach promoted by the Cities Alliance.

Case Study

Under the leadership of its Governor, Alexandria embarked on a City Development Strategy in 2004. During the 2004–2006 phase, the Governorate prepared a Comprehensive Strategic Development Plan for the city within the framework of the Alexandria CDS, developed using methodology tested by the World Bank, based on best practices developed by Cities Alliance, Cities of Chance and other donors. The first step of the CDS process, 'organising the effort', aimed to ensure the most appropriate institutional set up for a participatory process which would allow partners from the public, business and non-governmental sectors to work together. This 'Partnership Forum' identified economic and physical priorities for the city's development.

The economic priority was to develop a medium to long-term economic development strategy, which would investigate and build on the city's competitiveness. The aim was to diversify and augment the economic base of the city, enhance productivity and establish an enabling business environment. Specific strategies and initiatives were to be designed to create economic development opportunities, especially in low-income areas and squatter settlements.

Alexandria CDS Vision, 2005–2017

Alexandria will take advantage of its competitive endowments, better manage local assets, remove constraints to private sector-led growth, and ensure the socioeconomic integration of the poor in the development processes.

The physical priority was to develop a participatory urban upgrading strategy for the squatter areas and a land use plan for the Lake Marriout area, within a sustainable urban development framework. The strategy was to include definable measures to improve the living conditions of residents and prevent further environmental deterioration of the Lake area. It was also to help to establish a sound regulatory framework for the Governorate to manage the Lake and pursue participatory approaches to urban upgrading and security of tenure.

The Partnership Forum established three CDS Pillars:

- Formulate a local economy development strategy;
- Devise a comprehensive strategic development plan for Lake Marriout and the surrounding area;
- Develop a comprehensive urban upgrading strategy for squatter settlements.

Local and international consultants prepared five reports[8], which were used, together with

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[8] "Alexandria Local Economy and Competitiveness Assessment", "A Comprehensive Strategic Development Plan for Lake Marriout Zone", "A Strategic Development Plan for Land Surrounding Lake and Wadi Marriout", "A Squatter Settlements and Urban Upgrading Strategy", "Alexandria Tourism Development Strategy".

stakeholder consultations, to develop a shared long-term vision and key local economic development programmes for the city.

One of the major results of the CDS work was the development of the *Alexandria Governorate Pole Project,* which focused on sustainable economic growth and equity. Considerable attention was given to the environment in two areas: a) sustainable use of natural resources, and, b) environmental improvement and protection.

Three project development objectives were identified:

- Supporting Alexandria's economic development and utilisation of local assets through investments in environmental regeneration and land use development;
- Supporting private sector development through removing infrastructural and administrative constraints; and,
- Improving access of residents in squatter settlements to infrastructure, basic services and income-generating opportunities.

Several component areas were identified to achieve these objectives:

- Priority infrastructure to support local economic development—financing work and related services aimed at enhancing the wastewater treatment system surrounding Lake Marriout's main basin;
- Upgrading of squatter settlements to improve living conditions of residents in six settlements by providing basic infrastructure, community facilities and services, and increasing access to micro-credit and business support.

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An Alexandria squatter settlement.

Several new projects have emerged as a result of the implementation of CDS:

- Integrated coastal zone management—the policy aims to ensure that the protection of the coastal zone resources remains an integral part of the development priorities. It also aims at the coordination of the sometimes conflicting interests and uses of the coastal zone;
- Environmental Pollution Abatement Project (EPAP) Phase II—the second phase of EPAP aims to demonstrate that market-based financial/technical approaches are effective in reducing industrial pollution in selected hot spots areas in and around the Alexandria and Greater Cairo areas;

- Upgrading of three slum areas—the objective is to improve the standard of living for the inhabitants of El-Amrawy, El-Hadra and Naga El-Arab. The following operations began in April 2006, and some have already been accomplished.

A number of unexpected opportunities arose from the CDS process.

- A large number of enthusiastic stakeholders wanted to take part in the strategic planning process;
- A democratic and cooperative atmosphere dominated the workshop dialogues and discussions;
- There were beneficial outputs from the exchange of ideas and knowledge between local and international consultants;

- Interest from other donors in contributing to the strategic development plan increased;
- The central government was supportive.

Environment Entry Point

The CDS process proved to be an effective vehicle for integrating environmental considerations into Alexandria's development plan. Early on in the process, the CDS team benefitted from the Governor's strong support to improving local environmental quality. In addition, the multi-stakeholder approach to the Alexandria CDS meant that citizens became aware of the importance of sustainable development and the need to manage natural resources wisely.

Cost-benefit analysis relating to the environment for any development project was used during the CDS process. Environmental protection

Highlights of Upgrading in Three Slum Areas in Alexandria, Egypt

Naga El Arab	El Amrawy	Hadra El Gedida
Health Centre	Tree planting	Land for health centre (made available)
Police Station	Health centre (done)	Land for youth & sports (made available)
Primary school	Youth centre	Land for two schools (made available)
Youth & sports activities	Sanitary drainage	Sanitary drainage (done)
Fund for roads and public lighting (made available)	Paving roads	Water network
Wall off railway line (done)	Pedestrian bridge	Road paving
Tree planting (done)	Covering canals	Street lighting
Community centre	Market & workshops	Street widening and resettlement
	Bus stops	

became a top priority for both citizens and the local government, and programmes for pollution abatement became mainstream. Environmental concerns were a common feature in the stakeholder workshops, and preventing the further degradation of Lake Marriout was highlighted as a priority.

The *Alexandria Governorate Pole Project* focused on sustainable economic growth and equity. Within this, considerable attention was given to the environment, focusing on the sustainable use of natural resources, and on environmental improvement and protection.

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Families of Lake Marriout fishermen.

Results

Although it was not the primary driver for the Comprehensive Strategic Development Plan, the plan succeeded in incorporating the environmental dimension in all components, programmes, projects and activities. Social and economic achievements are clearly visible in the upgrading of slum areas. Stakeholder councils have been formed for each slum community, and they take part in managing the upgrading process. It is clear that when residents fully participate in the process which touches upon their livelihoods, sustainability is possible.

Lessons Learned

Support and leadership from the Governorate were essential elements. The cooperation of both the Governor and Secretary-General has been a key factor in achieving a highly significant improvement in the quality of life for Alexandrians.

The solid, multi-stakeholder CDS team played an important role. The team, which included senior government officials, the Alexandria Businessmen's Association, the University of Alexandria, and major civil society organisations of the Governorate, is still intact and overseeing the implementation of the plan.

Through the CDS process, the municipality of Alexandria recognised the importance of coordination, stakeholder participation, and of having a realistic approach towards implementation as part of the planning process.

Replicability

The Alexandria experience shows that City Development Strategy offers an excellent opportunity for citizens and urban managers to integrate environmental issues into an overall city development framework. However, each city has its own unique needs, and it is necessary to understand the local community culture in order to tailor the CDS process successfully. The Alexandria case highlights the importance of having a local champion for the process who is interested in environmental issues. It is also important to have

a CDS team with developed communication skills to ensure that stakeholders, regardless of their background or affiliations, participate actively in the process. Environmental issues are clearly important to urban stakeholders, who are likely to support the integration of environmental issues within the CDS process in other cities.

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View of Bangkok skyline from the Chao Phraya river.

BANGKOK METROPOLITAN REGION
THAILAND

Municipal Profile

Bangkok Metropolitan Region has a population of 10 million, and a total area of 1,570 square kilometres. The Gross National Income *per capita* is US$2,190 (2005).

Key economic areas	Administration, services, industries and tourism
Urban management approach	Localising Agenda 21
Environment entry point	Environmental profiling, urban management, policy actions

Why this Case Study is Important

The Bangkok case study shows how a long-term strategic plan supports the decision-making process for policy-makers, local government officials

and the private sector. Bangkok's long-term plan is based on bio-physical and socio-economic conditions and trends, and must be able to address emerging issues, the current environmental status and contemporary urban policies.

Urban Context

The city of Bangkok is struggling to deal with the effects of population growth, and the impact on the local environment. Heavy traffic has resulted in congestion and serious air pollution. In addition, odour and smoke from incomplete combustion at crematoria—a problem unique to Bangkok—has a damaging effect on air quality, and respiratory disease is rising among the urban population. River and water supply quality is also deteriorating. Canal water pollution is very severe because untreated wastewater is often discharged into the public sewers. Most households rely on septic tanks, so groundwater contamina-

The Ten Points of Bangkok Agenda 21

The strategy for a sustainable Bangkok: a safe city with a high quality of life

- Lead urban economy toward sustainability;
- Use urban planning to improve quality of life;
- Reorganise traffic and transport to raise the quality of air in neighbourhoods;
- Invest in green urban areas;
- Make Bangkok a clean city;
- Focus on good governance in the BMA to meet the challenges of the future;
- Secure easy access to information in the BMA;
- Use human resources as a strategic tool in social and economic development;
- Involve citizens in the development of a better Bangkok;
- Environment, culture, and tourism are top priorities. The Agenda also aims to combat poverty, the growth of slums, drugs and HIV-AIDS.

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Bangkok children rummaging through a refuse heap.

tion is high. Various sectors of the economy such as agriculture, industry, transport, and households, compete for limited freshwater. Other consequences of rapid urbanisation include noise pollution, large volumes of garbage, land subsidence and growth of slums.

Urban Management Approach

Bangkok Agenda 21, was initiated in 1998 as the blueprint for development for the next 20 years aims to improve Bangkok's urban environment and quality of life. It has a ten-point development agenda, developed through public consultation and review, which also sets out the responsibilities of the Bangkok Metropolitan Administration (BMA).

Case Study

The Metropolitan Master Catalogue is the driving force for the physical development of Bangkok. Containing overall development targets for the metropolis, and an overview of urban functions and infrastructure, the Metropolitan Master Catalogue links physical development to the city budget and enables the administration to guide urban development. It comprises 50 District Catalogues—online databases updated by each district on a semi-annual basis. The District Catalogues help the district offices both to influence and to implement the strategic plans for the metropolis. Each Catalogue includes a plan based on the strategic agenda, community regulations concerning land use, building and the environment, and a databank based on a GIS system. The databank provides basic analytical and planning tools. In addition, a *Sustainable Urban Management Handbook* is distributed to each unit within the

Bangkok Municipal Administration. A Bangkok Comprehensive Plan, updated every five years, is used for development planning and maintenance, and for resource allocation.

The Bangkok Comprehensive Plan highlights targets and strategies on air pollution abatement. Efforts focus on the development of mass transit, establishing vehicle emission testing points to identify polluting vehicles, promoting non-motorised transportation like bicycles and the use of alternative fuels such as ethanol or natural gas.

Over-extraction of groundwater in Bangkok has aggravated land subsidence. Impacts of this subsidence include changes in the elevation and slope of streams, damage to roads and storm drains, high tides reaching farther inland, floods and tides receding more slowly, soils becoming salty and unproductive and well pipes rising out of the ground. In response to this, policies and regulations concentrating on groundwater extraction have been put in place. Six large-scale wastewater treatment plants have been constructed to protect water quality, and policies on effluent standards have also been implemented.

To deal with Bangkok's waste, the BMA provides separate containers for food waste, recyclable waste and hazardous waste to collect the more than 9,472 tonnes of garbage generated each day. Households are encouraged to sort their waste. Collection and disposal efficiency have been a priority for the BMA.

Bangkok Agenda 21 has also paved the way for greater public participation. The BMA organised the Communities Love Canals Project, where representatives from all communities took part in identifying solutions to garbage dumping and wastewater discharge in the canals.

The BMA also set up the BMA Environmental Protection Volunteers to help raise environmental awareness, and to develop environmental projects, particularly on air quality management. These volunteers come from schools and communities. In addition, an intensive communications campaign has been carried out in schools and communities, using meetings, printed materials and other media. Factories and other businesses were provided with workshops on cleaner production. The BMA also developed a Green Areas Master Plan which aims to increase green public areas, and through which residents are encouraged to plant trees in their front yards.

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River boat market women plying their goods in Bangkok.

Environment Entry Point

As Local Agenda 21 initiatives are focused on economic, social and environmental issues, Bangkok Agenda 21 included environmental considerations from the start.

Results

Bangkok Agenda 21 has set the city's course for environmentally, socially and economically sustainable development. The development agenda has provided basic principles for the numerous activities implemented by the BMA. A detailed assessment of the status of the environment and the creation on the Metropolitan Master Catalogue ensured that physical development takes environmental and social concerns into account.

Policies and regulation on water quality, waste management, air quality and energy security were put in place to better manage resources. Infrastructure was also improved, for example, storm drains and dikes along roads have been constructed or upgraded to prevent flooding.

The Metropolitan Master Catalogue has proved its use as an analytical and planning tool.

In addition, the skills of the BMA staff in GIS tools and methodologies has been enhanced. The BMA remains steadfast to its commitment to improve the quality of life in Bangkok.

Replicability

The Bangkok experience demonstrates that localising Agenda 21 can work even in very large cities. Environmental considerations were built into the urban management structure from the start, and communications was used to involve the public and stimulate community involvement. The case study proves again that public involvement is an important component in highlighting environmental concerns and ensuring sustainable development.

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Aerial view of Havana, Cuba.

MUNICIPALITY OF BAYAMO
REPUBLIC OF CUBA

Municipal Profile

Bayamo, Cuba, has a population of 142,000, with a population density of 102 people per square kilometre. The Gross National Income *per capita* is US$2,700 per annum.

Key economic areas	Food processing and construction industries, social services (health and education) and administrative services.
Urban management approach	Localising Agenda 21 (LA 21)
Environment entry point	Local Agenda 21, urban transport & mobility, agriculture, solid waste management, river basin management.

Why this Case Study is Important

The Bayamo case study demonstrates how local capacities to conduct urban environmental plan-

ning and management processes can be strengthened through the active participation of local actors during the formulation, consultation and implementation stages of an overall city planning strategy. The Bayamo Project is an important example of a shift from a one-dimensional local planning approach to a multi-dimensional strategic city planning approach. Bayamo LA21 can also show other local governments and communities how to identify and address urban environmental priorities through participatory processes and partnership mechanisms at the local level. The case study also demonstrates a formal approach to replication, based on training and learning from experience.

Urban Context

Bayamo is a twentieth century city built on the remains of San Salvador de Bayamo, the second settlement founded in Cuba by the Spaniards in 1513. The capital of Granma province, Bayamo

is situated in eastern Cuba on the banks of the Bayamo River. Granma still remains underdeveloped in relation to the Cuban average. However, regional development is taking place, with the provision of specialised infrastructure for administration, health, education, and transport. Bayamo attracts these services partly because Cuba's central road, the Carretera Central, passes directly through the city.

Urban Management Approach

The Bayamo Local Agenda 21 project aims to support the decentralisation process by stimulating local capacity building.

Case Study

In the 1980s, the Cuban government began to move from a centralised towards a more decentralised administration. Although certain functions such as the development of international tourism and the management of hard currency became more centralised, a range of activities and responsibilities were transferred to the local level. This provided an opportunity for the development of local participatory processes, and urban initiatives to build and strengthen local capacities.

The Bayamo LA21 project, was launched in 2001 aimed to mobilise local, provincial and national partners to address key urban environmental problems together. An environmental profile was prepared in 2002, in consultation with more than 100 actors. The profile identified the sectors and institutions involved in local development and their links with the environment. It also offered a description of urban and environmental risks and resources, as well as an identification of the existing mechanisms for information exchange, coordination and decision-making.

The Bayamo Urban Environmental Profile is an innovative document as it analyses the interactions between development and the environment. By presenting the urban environment institutional framework, it made possible the identification of institutional strengths and weaknesses that the project could address. The profile also served as a common information base for all project partners. Through dialogues with local authorities, sector representatives, four priority areas for redress were identified.

- The degradation of the Bayamo River;
- Poor solid waste management (collection and treatment);
- Insufficient public spaces and services at the neighbourhood level; and
- Insufficient urban transport.

These four priority areas formed the objectives of the Bayamo City Consultation. A four-day workshop was organised in 2003, and brought together over 200 representatives from all sectors of the society. These included representatives from the community, local government administrators, elected officials, representatives of the private sector and so on. Participants discussed the problems of the urban environment and development, and identified the institutional mechanisms to address them.

It should be noted that the selection of the four objectives was based on their cross-sectoral nature, the potential impact of action on the most vulnerable populations, political priorities at the time, and whether they could be achieved

considering the limited availability of resources and financial constraints. Other key issues were identified but were not addressed. One, the problem of housing, was considered too difficult to address at the local level, and another, sewage disposal and water supply, was considered too expensive. This demonstrates the importance of the LA21 framework and process in supporting informed decision-making. Because sector representatives were involved, stakeholders were in a better position to select priorities that were attainable, as opposed to those that were desirable.

Other developments have taken place in parallel to Bayamo LA21, linking local and national strategies. As Bayamo is considered a pilot project for building sustainable planning capacity in Cuba, cooperation was established with the Institute for Physical Planning (Instituto de Planificacion Fisica or IPF). The IPF provides local institutions with a national framework of experiences in sustainable urban planning. It organises training programmes and develops education centres across the country to increase local capacities for sustainable urban planning and management. In 2003, a National Capacity Building Centre was set up in the city of Santa Clara by the IPF and the LA21 Programme. The Centre delivers an environment planning and management training course, jointly prepared and delivered by IPF, the Universities of La Havana and Santa Clara and the Bayamo LA21. The course is attended by two students from each of the 11 provincial capitals who attend lectures on the various steps and components of the environmental planning and management process, illustrated from real-life experiences from the Bayamo LA21 project. These practical exercises

Walking back from school in Havana, Cuba.

prepare the students to implement LA21 processes in their own municipalities.

The coordinated programmatic actions of UN agencies in Cuba have been another important element. UNDP's Human Development Programme at the Local Level (Programma de Desarrollo Humano Local or PDHL) has been instrumental in supporting the LA21 actions. Through its national, provincial and municipal representatives, the PDHL acts as a framework for the local coordination of various national and international actors: UN-HABITAT, UNICEF, UNDP, UNOPS, and UNIFEM; countries like Italy, Switzerland, France, Belgium, Sweden, as well as national and international NGOs. This facilitates the formulation and implementation of localised projects within the Cuban institutional structure. The programme also provides the technical cooperation framework for the LA21 project. Overall, it has established guidelines for the transfer of funds and the definition and management of projects at the local level, the relationship with line ministries, and the facilitation of local formalities. The LA21 Programme has provided the opportunity for developing approaches to

The Bayamo River Working Group was formed to address the environmental degradation of Bayamo River. Solutions identified included the setting up of a laboratory for quality control of the water as a preliminary measure, and an attempt to integrate and coordinate all the projects related to the river zone with the objective to create the "Suburban Park of River Bayamo." The park project will in turn address the decontamination and rehabilitation of river pollution and the reforestation on the river-banks. It also provided for the construction of a canal to collect and divert contaminated water through an oxidation lake for purification before it reaches the river. At a provincial level, it took into consideration other projects already implemented or to be implemented by the province of Bayamo.

The River Park project has proven critical in bringing different levels of local government and administration together to create a common vision and work plan, and in creating a momentum of cooperation and dialogue. The most important challenge has been to organise the divergent initiatives in one coherent project that integrates the River Park as a qualitative and unified public space in the city structure. The work of students from the Catholic University of Leuven, and more recently the University of Santiago de Cuba has been incorporated into the project. The project also resulted in an increased environmental awareness in both administrators and inhabitants.

urban environmental issues that reach a wide geographical and institutional base, within the framework of the PDHL.

Environment Entry Point

Bayamo's citywide consultation led to more horizontal integration and wider project participa-

tion. The "Urban Pact," established as one of the outcomes of the consultation, saw local actors committing themselves to contributing jointly to the sustainable urban development of Bayamo. Working groups were formed around each of the four priorities identified. These groups aimed to analyse the problems from the point of view of the different sectors, to negotiate and agree on how to tackle the problems identified in the Urban Profile and the consultation process, and to define a vision for the future and propose concrete actions for the short and medium term. The working groups also provided advice to the local authority. This encouraged the analysis of institutional relations, as well as the mechanisms for information, coordination, and decision-making and implementation at the urban community level.

As each working group carried out its responsibilities, it became clear that addressing the problems identified also involved addressing a variety of other issues, both directly or indirectly, present-day and long term. This was a breakthrough, as previous actions had tended only to meet immediate needs. The Bayamo River Working Group is a good example. Their main objective was to address the degraded environmental conditions of the river, but their solution called for a much more integrated approach than had been initially anticipated (see box).

Working groups were also established to focus on waste, public space and urban transport. Solid waste collection was improved, a landfill was created, and a unit set up to sort and store recyclable waste to support urban agriculture. The working group on public space concentrated on the revitalisation of public spaces, creating sidewalks on non-asphalted streets and developing a square with shops and markets.

The urban transport working group was very successful, and led to the establishment of a new transport route, served by horse-drawn coaches. It is hoped that this initiative will stimulate the formulation of a municipal strategy for sustainable urban mobility identified within the Urban Pact. It shows that, through public engagement, the LA21 process can bring together local insights and technical solutions that encourage innovative approaches to sustainable environmental city planning development.

Results

Bayamo LA21 has had a variety of positive results:

- Urban environmental profiles have been prepared in consultation with more than 100 actors, and through a city consultation, key actors were mobilised to identify and prioritise urban environmental problems;
- Inter-sectoral cooperation and citizen participation has been strengthened in addressing priority urban environmental issues. The mechanisms identified by the project to perform inter-sectoral and participatory processes have been institutionalised as a new way to undertake environmental planning and management activities;
- Three secondary cities—Santa Clara, Cienfuegos and Holguin—have been selected to replicate Bayamo's LA21 experience, and are currently in the consultation process;
- The action plans developed serve as frameworks to guide priority actions to address the most pressing urban environmental problems;
- Pollution in the Bayamo River has been reduced, as a result of the water quality control laboratory having identified pollution sources for elimination;

The Urban Transport Working Group recommended the creation of a new transport route in the Zona Norte, an area that had not been completely urbanised and had poorly developed transportation services and public spaces. The group recommended that the Zona Norte should be improved and integrated into the city through a new transport route, serviced by horse-drawn coaches, with improved public infrastructure, coach stops and pedestrian routes. This unusual but environmentally-friendly approach was reached by considering the conditions at the time (scarcity of fuel), the availability of resources, and the feasibility of solutions. At that time, motorised transport was only available to 15 per cent of local commuters. Horse-drawn coach services, inaugurated in July 2004 have taken care of about 40 percent of the local transport needs, demonstrating that motorised transport is not the only solution to a public transport problem.

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Horse-drawn carriage in Havana, Cuba.

- Waste collection trucks and the creation of small-scale manual sanitary landfill sites has resulted in a more efficient solid waste management system. Replication of these projects has been requested by the other cities;
- Urban transportation has been improved by using horse-drawn carriages as a main source of public transport. It has also opened access routes to integrate isolated neighborhoods that are inhabited by the most vulnerable populations;
- The urban initiatives identified by the four working groups of Bayamo LA21 are included in the Master Plan. The Master Plan is to be reviewed and submitted by the IPF to the Municipal Council for its approval and implementation.

In 2006 the local LA21 team based in the municipal planning office organised a consultation to present a revised City Master Plan to local actors and stakeholders. The main objective was to integrate the key issues identified by the LA21 project into the city's master plan. The master plan itself was established with good participation from citizens and institutions. This was an innovative event within the Cuban spatial planning context, as it was the first time that a public consultation was organised for a Plan. Previous consultations were always related to a certain theme or topic area. This success shows that the LA21 findings are being institutionalised.

Lessons Learned

It was important for Bayamo to move away from short-term, one-dimensional projects that only dealt with immediate needs with limited and uncertain resources, to projects that consider the social, economic and environmental dimension, while making the best possible use of local limited resources.

The LA21 process creates conditions that allow participants to better understand the concepts and principles of a LA21 framework. It creates a better public perception of the decision-making process and the importance of transparency.

Throughout the process, environmental concerns and issues became and remain a key concern for participants, with the advantage that they are analysed while reviewing a wide range of other considerations. Thus, the process has allowed the identification of opportunities that in the past may have been overlooked.

Replicability

Bayamo was chosen as an example for replication at the regional and level by the central government, which recognised the positive outcome of the project. It selected Bayamo as a pilot project for escalating sustainable planning capacity in Cuba. In the second half of 2003, the project issued an open call for candidate secondary cities, leading to the selection of three towns—Santa Clara, Cienfuegos, and Holguin—for the replication of the LA21 Bayamo project. These cities are currently in the process of implementing LA21 frameworks within their respective constituencies, based on the experiences and processes implemented in Bayamo. While each city has its own unique circumstances, they have already shown interest in implementing projects that tackle similar issues—waste management, and sustainable mobility systems.

For successful replication, municipal commitment (both political and administrative) must be present from the start. Staff involved in the

first project should be part of the replication team. Lastly, being part of a regional and/or national programme provides a useful technical cooperation framework (coordination of national and international actors that facilitate the formulation and implementation of localised projects), and provides the opportunity for a LA21 framework to develop approaches that address urban environmental issues at its core.

Bayamo LA21 is a good example of how participatory processes and partnerships mechanisms, institutionalised at the local level, are a viable means to identify and address urban environmental priorities. The Bayamo programme also shows how the environment can be incorporated into a city's planning and management strategy, and included in the formulation of the municipal budget.

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The Famous Chocolate Hills of Bohol Province.

BOHOL PROVINCE
THE PHILIPPINES

Provincial Profile

The province of Bohol, Philippines, has a population of 1,137,260, and a land area of 4,117 square kilometers. The Gross National Income *per capita* is US$ 1,080 and the provincial budget is US$11.8 million (2005).

Key economic areas	Agriculture and tourism
Urban management approach	Integrated development plan
Environment entry point	Biodiversity conservation, coastal and forest resource management, eco-tourism

Why this Case Study is Important

The Bohol Province case study shows how poverty and environment are connected. The poor are heavily dependent on natural ecosystems and resources for their livelihood, but they are also most vulnerable to environmental hazards, and their health suffers directly from the impacts of pollution. Dealing with poverty and ensuring environmental sustainability requires a balance between these pressing priorities.

Urban Context

The island province of Bohol consists of 47 municipalities and one city. The economy is heavily dependent on agriculture and fishing. Bohol province is known for its eco-tourism attractions, among them the famous Chocolate Hills and pristine white beaches. Identified as a tourist hub and a haven for scuba divers, the coastlines are internationally famous for their coral reefs. Bohol's provincial government was the first local government in Southeast Asia to acquire an Environmental Management Systems certification.

The Manila skyline.

Urban Management Approach

Bohol's urban management approach is rooted in the Medium Term Development Plan (MTDP), mandated by the national government for regional, provincial and municipal authorities. Bohol's MTDP for 2004–2009 is based on the 1998–2003 development plan, which focused on eco-tourism and agro-industrial development. The Programme Framework on Poverty Reduction which local officials initiated aimed to ensure a common basis for formulating poverty-focused policies, plans, programmes and projects, integrated within the MTDP.

Case Study

The MTDP calls for the strengthening of local government institutions to deal with multi-dimensional problems that cut across the responsibilities of sectoral departments. The 2004–2009 Plan identified five development sectors: Social development, economic development, environmental management, development administration and Infrastructure development.

Preparation of the MTDP took six months, not counting the time spent in monitoring and reviewing the Plan for 1998–2003. The Plan went through a series of consultations and revisions. Municipal mayors submitted their five-year municipal development plans which were then studied by the Provincial Planning and Development Office (PPDO). The office, in consultation with other provincial departments, prepared a final document collating and synchronizing the development goals of the municipalities which was submitted to the Provincial Development Council for approval. The council is composed of municipal mayors, district representatives, community-based organisations like farmers, fisherfolks associations and NGOs. After the council's approval, a resolution was passed to the Provincial Council for approval and adoption.

Following the adoption of the Programme Framework on Poverty Reduction and the MTDP for 2004–2005, the provincial government pursued various initiatives to improve the health, living standards and livelihood of people. Programmes that strengthened institutions, built capacity and provided financial and technical assistance in the areas of education, health and nutrition, water supply and sanitation, and urban development and housing, among others were initiated.

Bohol's development plan reflects the province's commitment to the Millennium Development Goals which are focused on reducing poverty and hunger, disease and premature death, inequal-

[9]Detailed information on the 10-Point Agenda is available from www.gov.ph/listings/10ptagenda.asp.

ity and inequity. Development is anchored on pro-poor and environmentally sustainable growth. It also supports the Philippine President's 10-Point Agenda, which called for the stabilisation of economic growth, global competitiveness and good governance.[9] The plan, developed through extensive consultations with the provincial stakeholders, summarises the kind of development that the Boholanos want.

To attain the objective of establishing projects that can expand the outreach of basic services to disadvantaged groups and to ensure sustainable economic growth that benefits the poor, the MTDP has set specific targets. In the social development sector, for example, the targets include:

- Reducing the number of households living below the poverty line from 47.3 percent to 38 percent;
- Reducing the population growth rate from 2.9 percent to 2.6 percent; and,
- Reducing households without access to sanitation by 75 percent.

On the other hand, the environment and natural resources management sector aimed for qualitative, rather than quantitative targets such as:

- Institutional monitoring and evaluation systems for biodiversity conservation;
- Establishment of a water quality monitoring body; and
- Rehabilitation of small watersheds.

The sectoral targets determine the public investments for the five-year period of the MTDP. They define the priority areas where government funds should be directed to.

Bohol's Programme Framework on Poverty Reduction led to the establishment of the Local Governance Poverty Database Monitoring System (LGPDMS), which records and ranks levels of deprivation. Developed in partnership with the Bohol Local Development Foundation, the software has 18 indicators; child mortality, child malnutrition, crime, disability, electricity, food shortage, food threshold, garbage disposal, literacy, income threshold, meals, health insurance, sanitation, school drop-outs, tenure status, unemployment, water, and waste water disposal.

The database can identify and rank levels of deprivation at the municipal, village and household level. It is currently being expanded to include more environment-related indicators. As a tool, it accurately identifies households and villages for projects in need of poverty reduction support. It can also track the impact of specific interventions including their correlation over time. This database is invaluable in that it provides data on which policy decisions can be made.

Environment Entry Point

As part of its fight against poverty, the provincial government carried out initiatives and offered management tools to preserve the natural heritage and provide employment opportunities. These included the creation of the Bohol Biodiversity Conservation Framework, the founding of the Biodiversity Research Centre, the implementation of the Biodiversity Monitoring System and the implementation of the Coastal Resource Management (CRM) Certification System. Successful projects include the organisation of eco-tours to Pamilacan Island and the Candijay Mangrove Sites.

In addition, the province, with a grant from the European Union's Asia Urbs Programme, is currently implementing ecoBUDGET, an environmental management system developed by ICLEI for local governments.

Results

Performances in basic education generally improved compared to previous school years. Non-vocational and technical courses were offered by Technical Education and Skills Development Authority (TESDA) and the Department of Education on eco-cultural tourism and agro-industrialisation, reflecting Bohol's development strategy.

Health gains were significant—life expectancy rose, and mortality rates dropped. Improvements in nutrition levels resulted in Bohol receiving the Consistent Regional Outstanding Winner in Nutrition Award. With aid from the private sector international agencies the province implemented projects for children that reduced birth defects among newborns, and improved child health through immunisation.

Initiatives were undertaken to provide access to safe water supply and sanitation. In poor communities which have security and other problems, livelihood projects to redress these are ongoing.

Lessons Learned

As is the case for most in the Philippines local authorities, while the Provincial Government of Bohol was able to come up with a comprehensive development plan, the main challenge was always the availability of resources. Even with fiscal prudence and transparency in governance, many well-meaning projects are put on hold because of the lack of financial resources. This has also affected the quantity and quality of staff working for the local authority. To address this problem, the provincial government is building partnerships with development institutions. It has also prioritised the development of its database, a major criterion required by agencies that provide aid.

To support poverty reduction, one of Bohol's strategic goals is to transform all private and public institutions into instruments for good governance. Even with adequate resources, poverty reduction will not be achieved without good norms and practices related to pro-poor processes, systems and procedures at all levels and in all institutions.

The Provincial Government regards the MTDP as an effective tool for setting the course of development, recognising which issues are urgent and how public resources should be allocated. In addition, the plan calls for "shared accountability" over resources, responsibilities and aspirations.

Replicability

Bohol Province used a wide-ranging, supra-sectoral approach, anchored in national policy, to deal with the problem of poverty in the province. The case study shows how a firm commitment at every level is instrumental to ensuring a successful outcome. Replication lessons can be drawn from the provincial government's innovative use of national development structures for provincial ends and the focus on heavily on good governance, an approach also suitable for replication in other urban settlements.

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Street scene in Sofia, Bulgaria.

MUNICIPALITY OF BOURGAS
BULGARIA

Municipal Profile

Bourgas, Bulgaria, has a population of 226,000 and a land area of 48,200 hectares. The Gross National Income *per capita* is US$2,740 (2005).

Key economic areas	Chemical industry, ship-ping, food industry, & eco-tourism, banking, culture and education
Urban management approach	Integrated environmental management
Environment entry point	Environmental Planning, Environmental Management, and Energy

Why this Case Study is Important

The Bourgas case study shows how central and eastern European states are dealing with the environmental and social legacy of the Soviet regime.

This legacy included economic stagnation and poverty, as well as inadequate urban planning and widespread environmental pollution. The case study highlights how a city can build its sustainable development activities by participating in international development projects, and by taking advantage of the support offered by a range of donors and partners.

The study also illustrates how external pressures can affect environmental activities at the national and local levels. External pressure in this case is the *acquis communautaire*, the set of European Union laws, directives and standards which must be integrated into national statutes before a country can gain entry to the EU. Bulgaria, as one of the former socialist states seeking entry to the EU, has drastically revised its legislative framework in order to comply with the *acquis communitaire*. Environmental criteria are prominent amongst the *acquis communitaire*, and have

strongly influenced the actions of the officials of the Municipality of Bourgas as they seek to improve quality of life and encourage prosperity in their community.

Urban Context

Bourgas is the fourth largest city in Bulgaria situated the Black Sea coast. The municipality encompasses the city of Bourgas and fourteen smaller villages in the surrounding area. It is an important seaport and industrial centre and is economically vital to the Bulgarian economy. Bourgas' population has been declining slowly in recent years, due to a range of factors which include the emigration of young people, increased mortality in an ageing population, and a falling birth rate. The city is also affected by illegal settlements. Both problems are intricately linked to the process of transition in eastern and central European states and are by no means unique to Bourgas. Bourgas maintains a well-developed healthcare system, offering general and specialised centres and hospitals to all inhabitants as a basic right.

Bourgas has a multi-sector economy. A duty-free zone was established in 1989 which has successfully attracted foreign investment due to the municipality's well-developed transport and knowledge infrastructure, and well-educated society. The municipality is a popular destination for national and foreign tourists, resulting in the growth of the service sector.

Manufacturing remains the largest sector in the economy. Bourgas is home to the biggest oil refinery on the Balkan Peninsula and hosts a range of other industries. However, the cost of intensive industrial development has been high, and Bourgas is considered an environmental 'hotspot' in Bulgaria. The rapid and ill-planned industrial expansion of the socialist era resulted in high levels of air, water and soil contamination. The municipality has had to work hard to counter this pollution and has also faced problems with waste management and energy provision in the area. Preventing recurrences of such problems and securing a sustainable future is central to the strategic planning of the municipality.

Urban Management Approach

Bourgas has sought means to alleviate the environmental impacts of the municipality's intensive industrialisation since the early 1990s, and as a result its approach to urban management integrates environmental considerations at all levels. This was facilitated by the transition from a socialist to a liberal regime and economy, which presented an opportunity to integrate environmental management into wider strategic planning for the municipality and to raise the profile of the city on an international level. The strategic planning process complements the national goal of EU integration, and meets the EU demands for compliance with pre-existing EU regulations.

Case Study

Bulgaria's goal of EU integration means that issues such as environmental impact assessment, waste management, nature protection, industrial pollution, risk management and nuclear safety are considered to be priorities across the country. Local issues—including industrial contamination of water sources, air pollution, land contamination, waste management and energy efficiency— were additional considerations for Bourgas.

New local and national policies have increased the importance of environmental management and its level of integration within the strategic planning cycles of the municipality. Bourgas undertook its first *Environmental Monitoring Report* in 1998, assessing the extent of inherited environmental problems and identifying the measures required to solve these problems. The report's findings allowed Bourgas to embark on a campaign of upgrading the status of their local environment and creating a forward thinking policy in sustainability issues.

In May 2000, municipal government announced the 2000–2006 Municipal Strategy for Sustainable Development of the City of Bourgas. The strategy underlined the environmental priorities identified in the *Environmental Monitoring Report,* and linked these to the economic and social needs and objectives of the municipality. In addition to the environment, the following areas were identified as integral to the future of the municipality: industry, transport, agriculture, communications, demographics, and education. An Advisory Committee on Sustainable Development was formed, with representation from the city administration and key stakeholder groups. This Advisory Committee is responsible for the elaboration and implementation of the municipal strategy.

Linked to this are several management programmes on air quality, waste, protected areas, and the environment, and plans for biodiversity. The Municipal Environment Management Programme for 2002–2007 aims to lower risks to human health and raise public awareness on environmental issues with the strategic objective of engaging all citizens in creating a more sustainable Bourgas. Concrete measures and actions in these priority areas form the Action Plan 2005–2007. For example, the Air Quality Monitoring Programme aims at monitoring and decreasing the impacts of air pollution. Ambient air quality is monitored, and reports are issued on the basis of data collected from five monitoring stations.

In the drive to modernise Bourgas it became clear that the capac-

Housing complex in Sofia, Bulgaria.

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ity of existing public utilities would have to be improved. Despite severe budget constraints, Bourgas made the following investments and municipal structure upgrades:

- *Air Quality*—Investments in new public transport infrastructure in a bid to improve air quality in the municipality;
- *Water Management*—Installation of new water pipes and the introduction of water meters across the city, leading to reduced loss and use of water. In addition, the 2002 Water Act means water is now managed within the context of the Black Sea basin, leading to more comprehensive regional planning and management;
- *Wastewater Treatment*—Construction of the 'Meden Rudnik' plant. With the existing sewage system only partially constructed, it was imperative that a fully functioning wastewater treatment plant was put in place to serve new dwellings, ensuring that quality of life would be raised. This plant was constructed with a European grant worth some EUR7.6 million; and,
- *Waste Management*—The Municipal Waste Management Programme for the 1998–2008 period was established. The programme focuses on the landfill site at Bratovo, which serves 270,000 people and was developed to manage the region's waste for a twenty year period and eradicate the numerous illegal landfill sites that had appeared in Bourgas and neighbouring municipalities. Moreover, the Bratovo landfill site was a component of the "Greener Bourgas" Project, one of several international projects that have supported the development and maintenance of the municipal waste management programme.

Participation in various other international projects has contributed to the sustainable development goals of Bourgas. For example, Bourgas is currently involved in the "Liveable Cities" project of the European Commission, which aims to combine environmental management and planning in order to improve the quality of life for citizens. This project will result in the publication of a model plan for sustainable cities, which will assist local governments worldwide in solving environmental problems and raising living standards. Other notable activities include the signing of the Aalborg Charter on sustainable urban development, participation in ICLEI's "Buy-It-Green Network" on sustainable procurement, and involvement in the EU project, "Urban Planning and Environmental Monitoring via GIS in Eastern Europe."

Environment Entry Point

Environmental considerations are fully integrated into Bourgas' urban planning and management strategy. Early activities to put environmental issues on the urban management agenda included the "Greener Bourgas" Project (1997 to 1999) which aimed to mainstream government and industry cooperation on environmental matters through a government-industry environmental action programme targeting four sub-groups: environmental monitoring, environmental management, waste management, and environmental education/public participation. The project resulted in actions in each sub-group, as well as the development of new initiatives such as an annual Environmental Week for citizens.

The municipality has been issuing a fortnightly *Eco Bulletin* since 1994, in an attempt to raise awareness about environmental issues. The

bulletin provides the public with information about sustainable development issues such as air quality and water management.

Bourgas has also participated in a number of international projects since the mid-1990s, which have helped to establish and mainstream sustainable development within strategic planning for the municipality. Such projects have been supported by international donors and partnerships with other cities and states, as well as through utilisation of EU structural funds that assisted transition countries in the years immediately after the end of socialist rule and in the subsequent accession process. Bourgas has also developed contacts with international organisations, such as the European Commission, USAID, ICLEI, Eurocities and the Regional Environmental Centre (REC) for Central and Eastern Europe, proving the municipality's eagerness to engage in the development of efficient planning and management structures, and to achieve sustainability in environmental, social, financial and health concerns.

Three international projects, which ran from 1995 to 1996 and from 1999 to 2000, have influenced the waste management agenda in Bourgas. These were:

1. Biogas extraction and utilisation at municipal landfill sites. Biogas extraction helps to reduce or eliminate water and air pollution and contributes towards the production of electric and heat energy;
2. The European Commission and REC helped Bourgas in a project dedicated to the management of hazardous medical waste, with the outcomes integrated into the Municipal Waste Management Programme;
3. The Netherlands Government, who provided financial assistance for the "Greener Bourgas" project, also provided input to a project aimed to improving waste management in the port of Bourgas.

Results

An important outcome of Bourgas's sustainable development activities has been the formation of the Greener Bourgas Foundation, a non-profit organisation which team of experts works closely with the municipality to improve the standard of ecological services in Bourgas. Experts have also contributed towards studies such as the North Atlantic Treaty Organization (NATO) Advanced Study Institute on "Risk Assessment Activities," which sought to quantify the environmental legacy of Cold War facilities. Funding for this independent, non-profit foundation comes from a wide spectrum of international organisations, including the EU, NATO, Ecolinks and REC. The foundation helps the municipality to showcase successful projects and provide guidance to others who wish to follow.

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Street scene in Sofia, Bulgaria.

Bourgas has also joined forces with the Union of Black Sea Local Authorities and the Black Sea NGO Network to affect change regionally. The municipality's experience in balancing the protection of coastal resources with economic development has led to its involvement in various EU and national initiatives centered on the concept of integrated coastal zone management. A common goal for coastal zone management in Bourgas is to ensure that legislation, investments, resource use and spatial planning do not compromise life and health.

Within the municipality, the Air Quality Management Programme has produced evidence showing the impact of air pollution upon public health in the municipality, thereby strengthening the argument for reducing harmful emissions. Respiratory diseases and heart conditions are two afflictions strongly linked to ambient air quality, with young and old affected in the form of illnesses including asthma, cardiovascular diseases and strokes. Between 2001 and 2004, by monitoring air quality and reducing emissions, Bourgas was able to maintain a relatively stable number of hospital discharges for respiratory diseases, and actually reduced the number of patients suffering from diseases of the circulatory system. In the same period, the levels of both respiratory and circulatory diseases rose dramatically across Bulgaria. In this context, the policy decisions taken by Bourgas appear to have had a positive impact on the daily lives of citizens.

Furthermore, the stabilisation and improvement of health conditions has occurred in parallel with a period of economic growth. Between 2001 and 2004, the total number of registered unemployed in Bourgas fell by more than 50 percent. Linked to this is rising direct foreign investments in Bourgas, which rose six-fold between 2002 and 2004. The majority of these were linked to industrial investments and the growth in the construction and tourist sectors. As a popular tourist destination, investing in the natural environment supports tourism. In short, Bourgas has been able to improve its environment, public health and economic situation all at the same time through the development of a coherent and comprehensive strategy that aims for sustainable development in all sectors.

The municipality has also undertaken a gasification programme, which from 2006–2010 will build the necessary infrastructure to supply 20,000 end-users and 100 percent of the industrial sector in the west and south industrial zones. The gasification programme will result in 190 kilometres of pipelines, enabling drastic emissions reductions, with near-eradication of sulphur dioxide emissions. The programme will also have the effect of lowering natural gas prices for consumers, increasing energy efficiency and securing energy supplies.

Having demonstrated its commitment, gained experience and been able to showcase successful results, the municipality of Bourgas has taken on the position of acting in a consultant capacity to the national government during the drafting of the "Bulgarian National Capacity Self-Assessment for Global Environmental Management". This, together with the aforementioned participation in numerous international projects, campaigns and fora, has raised the profile of the municipality and enhanced its credibility in the field of sustainable development.

In the new Municipal Development Strategy for the 2007–2013 period, Bourgas recognises the need for an integrated long-term approach to balance current development with resource protection and sustainability. This is an issue of particular relevance to coastal communities and

explains the municipality's choice of an integrated coastal management model. Moreover, the new strategy places greater emphasis on interconnections between environmental policies and other aspects of municipal life.

Finally, Bourgas is exploring tools to assist in decision-making, such as the ecoBUDGET sustainability management system. While Bourgas has used indicator systems to monitor progress and has extensive experience in reporting, it now seeks to plan and manage its future sustainable development as the economy grows and investment levels rise. The ecoBUDGET sustainability management system will assist Bourgas in planning and managing environmental resources, and will clarify municipal priorities in sustainable policy in the form of as report that can be presented to the public. This system for accounting environmental priorities and monitoring progress will support the municipality's overall strategy.

Lessons Learned

The Bourgas experience shows that by integrating environmental management into long-term strategic planning, cities in transition like Bourgas can make the most of limited financial resources and still establish a development strategy that is sustainable. By engaging in international projects and learning from the experiences and expertise of others, Bourgas has been able to attract investment and to mainstream sustainability in its city planning. This in turn has heightened the profile and status of Bourgas internationally, regionally and nationally, making it an excellent mentoring partner for cities facing similar challenges.

Bourgas' achievements have been attained despite considerable pressures, particularly fiscal and legal, as Bulgaria has had to rapidly adjust to a new type of economy and adopt new legal frameworks in its preparations for EU accession. Moreover, the municipality has had to work hard to engage its citizens and openly admits that public participation levels could be better—it may be that the historical experiences and the political culture of Bulgarians makes some citizens reluctant to engage, especially on the complex issue of strategic urban planning. In this type of political climate, it is therefore vital that the municipality attempts to engage with its citizens and promote transparency in policy-making through mechanisms such as the *Eco Bulletin* or Environment Week.

Finally, Bourgas has benefited enormously from its engaged and committed municipal staff. Additionally, being a member of organisations committed to sustainable development has been an enormous advantage.

Replicability

Many aspects of the Bourgas experience are possible to replicate. In particular, other communities could adopt the proactive and positive approach of the municipality in engaging stakeholders within the local and international community to secure funding, co-operation and the exchange of expertise and know-how.

Bourgas city officials strived to develop strategic plans and engage stakeholders in the process. The financial support leveraged from international agencies enabled Bourgas to implement specific projects, and create a comprehensive strategy against which progress can be measured.

Bourgas' efforts in sustainable urban planning have attracted the attention of the national government and other local governments in Bulgaria.

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One view of the Calgary skyline.

CITY OF CALGARY

CANADA

Municipal Profile

Calgary, Canada, has a population of 1,167,700 (2006) and a land area of 722 square kilometres. The municipal budget for 2004 was CAD$1.1 billion.

Key economic areas	Technology, manufacturing, financial and business services, transportation and logistics, and film and creative industries.
Urban management approach	Environmental Management System (EnviroSystem)
Environment entry point	Environmental management systems, energy efficiency, climate change and air quality, long-term sustainability visioning and planning.

Why this Case Study is Important

The Calgary case study demonstrates how a city well-known for its environmental focus uses specific tools to integrate environmental concerns into city development strategies. The tools and concepts are readily available to any municipality, but the execution of the tools is unique to Calgary. The city's experience can inform other municipalities interested in learning from their know-how.

Urban Context

The city of Calgary is located at the point where the Canadian prairies meet the Rocky Mountains, at the junction of the Bow and Elbow rivers. It is Canada's fifth largest city, with just over one million inhabitants. It is the second largest centre for head offices in Canada, boasting a highly educated and skilled workforce.

Technology, manufacturing, financial and business services, transportation and logistics and film and creative industries are examples of the many industries contributing to Calgary's growth and prosperous outlook.

Urban Management Approach

Environmental considerations are integral to Calgary's urban management approach. The city regards itself as a leader in environmental management.

Case Study

Calgary uses three specific tools to help incorporate environmental aspects into its city development strategies. The first of these tools is an Environmental Management System (EnviroSystem), used to control the environmental impact of Calgary's operations and decisions. This was the first widely recognised tool Calgary applied and it has played a large part in the successful use of other sustainability tools. The second tool is the Triple Bottom Line framework, which city council has identified as an important tool for achieving sustainable development. The third, most recently initiated tool goes beyond the local government's corporate activities to a community-led 100-year visioning process and plan for a sustainable Calgary.

EnviroSystem describes the city of Calgary's strengths, accountability to itself and its citizens, and commitments to protect the natural environment in which citizens work and live. It allows the city to manage the impact its activities have on the environment. It empowers the city to meet the commitments outlined in its environmental policy and to comply with environmental legislation and other environmental requirements. It also helps to conserve resources and prevent pollution, and to improve environmental performance on an ongoing basis. As part of EnviroSystem, the city established long-term forecasts that fit into the city's new three-year business plans, reviews environmental impacts on an ongoing basis and establishes new goals, policies and procedures, and develops staff competencies. In addition, the city checks the effectiveness of systems and identifies additional actions necessary, and reviews performance at all levels of management and council to make informed decisions that will enhance performance.

Each year the city produces an EnviroSystem annual report to track its environmental performance, highlight significant advances in environmental policy and document new goals and targets moving forward. The third annual EnviroSystem report highlights major achievements in air, land, water and materials management along with summaries of the city's accomplishments.[10]

Triple Bottom Line (TBL) Policy and Framework was endorsed by the Council in 2004 to ensure a more comprehensive, systematic and integrated approach to decision-making by council and administration. The purpose is to advance council's vision to create and sustain a vibrant, healthy, safe and caring community. In addition, the adoption of TBL has meant that it has become embedded into the city's corporate policies, performance measures, actions and implementation procedures, and enhances the city's decision-making processes. It is envisioned that

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[10]Detailed information on Calgary's EnviroSystem is available at www.calgary.ca

imagineCALGARY, a city-led, community-owned initiative.

TBL will make a contribution to global sustainability. The policy states that council and staff will consider and address the social, economic, environmental and smart growth impacts of all city business. To help staff and council understand the TBL implications of decisions, the TBL Policy Framework was developed. It summarises existing city policies that touch on economic, environmental and societal aspects of the city. Over 300 policy statements were summarised into 20 themes under the headings, Economic, Social, Environment and the integrated category of Smart Growth. The primary application of the TBL framework is for reports to standing policy committees and council.

imagineCALGARY is a city-led, community owned initiative to create a 100-year vision and

City Plans which Align with the 100-year Vision of Calgary

- The Calgary Plan (Municipal Development Plan)
- The Calgary Transportation Plan
- Fair Calgary
- Environmental Action Strategy
- Centre City Plan

plan for a sustainable Calgary "in order to ensure a prosperous economy, clean environment and high quality of life for the people who live there in the decades to come" (www.imaginecalgary.ca/imaginecalgary_long_range_plan.pdf) accessed Sept. 07. imagineCALGARY is the first project of its kind in Canada and one of the few in the world to have such a broad scope and include so many citizens. No other project has tried to engage as many people, approximately 18,000, in developing a vision for a sustainable community. There are three stages to the initiative. The first stage, visioning, asked 18,000 Calgary citizens what they valued about Calgary and what they hoped for the future of their city. This resulted in a long-range vision of a sustainable Calgary that captures the values of today's citizens and inspires action. The city has committed itself to aligning its key plans to the 100-year vision. Many city plans are being updated within the next few years.

Key community organisations and agencies will also be encouraged to align with the 100 year vision. Many leaders of key organisations are involved in the process through their advisory role on the mayor's panel on urban sustainability. Dozens of other people with literally hundreds of affiliations to organisations and interests in the community make up the members of the Round Table and Working Groups.

The second stage of imagineCALGARY saw the creation of 30-year strategies and targets, guided by the 100-year vision, as a reference point for the community to determine individual and collective action. They were developed using a wide range of research, expert analysis and the

collective wisdom of participants in the multidisciplinary working group process. The targets focus on key systems of the city—built environment, natural environment, social, governance and economic.[11]

The imagineCALGARY project is currently entering the third and final, or legacy, phase. The legacy of imagineCALGARY will ensure progress toward the vision through the actions of public institutions, community organisations and business, as well as individual citizens. While developing the vision and strategies has been City-led and resourced, the legacy is to be community-owned and supported.

Environment Entry Point

From the staff to council level, the city of Calgary takes its commitment to sustainability seriously. In 2001, council committed to "creating and sustaining a vibrant, healthy, safe and caring community that 'works' for all today and tomorrow" in their declaration of council priorities for 2002 to 2004 (http://www.imaginecalgary.ca/). Then, in 2005 it re-affirmed its commitment to this vision in its most recent statement of Council Priorities. All the policies, programmes and projects that help to further the city's sustainability goals can be traced back to these commitments made by council.

Results

The EnviroSystem tool has been important in protecting the environment and the quality of life

Calgary Economic Development

One view of the Calgary skyline.

in Calgary. It has created a culture of environmental caring and an understanding of the importance of protecting the watershed, preserving natural areas and green space, and protecting the air. EnviroSystem provides the foundation for moving beyond compliance and liability issues to achieving environmental goals, capturing Council priorities, and engaging all employees. The benefits extend to the community by improving citizen perception of the city as an environmental leader, attracting industry, people and business.

The Triple Bottom Line (TBL) Outlook was prepared in April 2005 to support and inform the city's strategic planning and new three year business planning and multi-year budget process. The Outlook provides relevant and timely information on current social, economic and environment issues and trends. The list of trends is not exhaustive, but rather a summary of selected issues that will affect life and business in Calgary over the next five years. It also identifies recent trends that may have a broader scope or longer timeframe.

The trends are organised along seven major themes: Land, Air and Water; Economy; People;

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[11] More information can be found on the imagineCalgary website: http://www.imaginecalgary.ca/.

Housing; Communities and Families; and Calgary the Corporation. The themes aim to help departments be more aware of and better understand the issues that will affect, or will be affected, by their respective projects and programmes. By viewing issues in this interlocking manner, city staff can more easily describe how their business plans and budgets anticipate and address those issues and enable the city to achieve its social, environmental and economic objectives.

Lessons Learned

Since EnviroSystem was the first standardised and widely recognised tool the city of Calgary used to control its environmental impact, it has helped to inform not only the refinement of the EnviroSystem itself, but also future tools and policies that will further Calgary's sustainability goals. Some of the significant lessons learned from the EnviroSystem are:

- EnviroSystem is successful because it is more than a traditional "corporate focused" EMS;
- EnviroSystem has improved internal communication significantly, as it provides a strong link across all business units;
- A commitment to educating staff on implementing the EMS must be made to ensure its success;
- The accountability framework provides direct-line reporting to the city manager and helps all levels of the corporation be involved and accountable.

The city council's endorsement of the TBL Policy is a very significant and high-level declaration of the city's commitment. It firmly establishes coun-cil's dedication and demonstrates how seriously council takes its responsibility to sustainability. The success of many of the city's projects and policies can be linked back to this initial TBL policy endorsement.

Once the TBL Policy was in place, council and staff realised that a TBL Policy Framework needed to be developed to help staff and council understand the implications of the decisions they made on the triple bottom line. However, developing and distributing the Framework still were not enough. Staff and council needed specific training on the policy, its implications, and how they could apply it in their day-to-day work in order to fully understand and implement the TBL Policy.

Replicability

EnviroSystem was the first municipally registered ISO 14001 system. Since ISO 14001 is an international standard, it lends itself well to being easily replicated. An EMS is as much about reducing environmental impacts as it is about having a proper framework management system in place to implement it. Since the environmental impacts of a given city will differ based on various factors such as local conditions, jurisdiction and areas of activity, the framework management system can facilitate replication without dictating specific solutions to environmental issues. That said, Calgary's annual EnviroSystem report highlights the activities the city has used to reduce its environmental impact in areas such as air, land, water and materials management. Many of these activities could be refined and replicated in other jurisdictions.

ISO 14001 is not limited only to local governments. A city government that has obtained ISO certification can, from a position of strength,

promote replication of acquiring ISO Certification from other stakeholders in the city, particularly the private sector where a properly and strategically implemented EMS can have far-reaching and long-term impacts.

Triple Bottom Line as a term and concept was coined by John Elkington in his book, *Cannibals with Forks: the Triple Bottom Line of 21st Century Business*. While it stems from a business, or bottom line perspective it is beginning to resonate amongst local governments as a tool for implementing sustainability. Calgary has used it in the form of a policy framework, while other local governments have used it in various ways as a tool to support decision-making at the council or staff level.

Calgary is one of 27 members of the PLUS Network, a network of cities and communities sharing learning on integrated long-term planning for sustainability managed by the International Centre for Sustainable Cities.

The sharing of experiences amongst the network is resulting in better models of long-term planning; the development and application of different tools and techniques; the establishment of strategies and short-term goals that enable those long-term plans to be implemented; and the creation of benchmarks, measurable indicators and action plans to start on the pathway to sustainability. All the cities in the PLUS Network presented their findings and their 100-year strategies at the 2006 World Urban Forum held in Vancouver.

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Approaching Table Mountain in Cape Town.

CAPE TOWN
S O U T H   A F R I C A

Municipal Profile

Cape Town, South Africa, has a population of 3.2 million, a land area of 2,487 square kilometres, with a population density of 1,291 people per square kilometre. The Gross National Income for Cape Town is US$3,410 *per capita*, however, there is a great diversity between rich and poor. The municipal budget for 2005 is around 18 billion Rands (approx. US$2.8 billion).

Key economic areas	Tourism, agriculture, energy (oil, gas and renewable energy), craft, clothing, film, information communication technology, business outsourcing.
Urban management approach	Integrated Metropolitan Environmental Policy (IMEP)
Environment entry point	General environmental policy, energy and climate change: air quality management, biodiversity, environmental education.

Why this Case Study is Important

The Cape Town case study shows how a strong environmental policy framework can guide sustainable environmental management, by forming the backbone for municipal decision-making. It also demonstrates how key international agreements and conventions can be integrated and implemented at the local level, and how investing in education, marketing, communication and training of the political, administrative and civil society organisations as well as partner groups is important for securing strong commitment and support for environmental issues from different sectors. The stability of a management process within an ever-changing political environment is also highlighted.

Urban Context

Cape Town is located on the southwestern tip of Africa, and is considered to be one of the most

beautiful and environmentally rich cities in the world. The city surrounds Table Mountain, and is itself surrounded by mountains and sandy flats. This provides a dramatic scenic backdrop but also a number of challenges for urban growth. With 3.2 million residents, the city is one of the largest cities in South Africa. Growing urban sprawl has increased the need for resources such as water and energy, and services such as waste management. Cape Town's demand for electricity was expected to peak in 2007, but the city was left in the dark when this target was reached in 2006. Cape Town is expected to run out of water by 2010. Of the city's major landfill sites, four will close in the coming six years, resulting in a landfill crisis.

Between 15 and 20 percent of the city's residents live in informal settlements, and there is currently a housing backlog of over 260,000 housing units. HIV-AIDS and TB are escalating. Unemployment stands at 19 percent of the labour force. Over the period 1994 to 2000, the greater Cape Town administration structure was reduced from some 65 local municipalities to one authority, reflecting the changing context of government in South Africa after the fall of apartheid in the early 1990s. The restructuring of the city, combined with a close balance of political power has meant that Cape Town has had a significant number of changes at political level. For example, the city has had four changes of mayors between 2000 and 2006.

Cape Town is unique in that the city is located at the heart of the Cape Floral Kingdom, the smallest and richest of the world's six floral kingdoms. The Kingdom has almost 9000 different plant species and many animal species. Cape Town itself is known internationally as a global biodiversity hotspot, with over 3000 plant species. It is home to 261 sites of biodiversity significance, 22 local nature reserves, a provincial nature reserve, a

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Cape Town is one of the world's six floral kingdoms.

national park, parts of two biosphere reserves and two world heritage sites. The city has over 307 kilometres of coastline, and a unique marine environment which supports many different marine plants and animals. Biodiversity is a key draw in attracting tourists to the city. However, Cape Town is also one of the earth's mega-disaster areas—an area that already has lost or is on the verge of losing a significant part of its biodiversity. The extinction rates for the city are the highest for any metropolitan area in the world.

Balancing Cape Town's unique environmental situation with its socio-economic needs is a huge challenge. However, city authorities recognise that conservation of the natural environment is not a luxury but a necessity. Section 24 of the Constitution states that everyone has the basic right to a clean, safe and healthy environment and a suite of national, provincial and local legislation has been adopted to ensure the protection of environmental resources.

Urban Management Approach

Cape Town implements an Integrated Metropolitan Environmental Policy (IMEP). This is a statement of intent, a commitment to certain principles and ethics and a set of high order commitments to the environment based on 15 key sectors. Sectoral

strategies have been established to give effect to these higher order commitments and principles. These strategies establish the targets, programmes and actions needed to ensure sustainable resource use and management of Cape Town's unique environment, for the benefit of all communities.

Case Study

Since the early 1990s, Cape Town has been increasing its capacity to deal with environmental and sustainability issues, within the city, nationally and internationally. Initially, the city was involved in many environmental projects without an overall focus. However, in 1996, Cape Town adopted its first Environmental Policy, which aimed to establish an environmental framework for the city. This policy was prepared quickly, with little input from stakeholders and the public. In the late 1990s, the city embarked on a process to establish a comprehensive environmental policy for the city, well researched and widely consulted with the public. The first step in this process, which was cyclical, was to commission a *State of the Environment Report* based on key environmental indicators in the city.

In October 2001, the city adopted its first IMEP. It established strategies for sectors such as coastal zone management, energy and climate change, air quality management, environmental education and training, heritage and biodiversity management. Many of these strategies, while dealing with local issues, also protect global common goods such as air and water.

Africa's first local authority *Energy and Climate Change Strategy* was adopted by the City of Cape Town in early 2007. A number of programmes and projects aimed at reducing the city's contribution to climate change are already

flowing from this strategy, which promotes a more sustainable use of energy, and identifies the communities and ecosystems most vulnerable to the impacts of climate change. The strategy sets targets for energy efficiency and the improvement of energy management and supply, and takes into account not only the needs of Cape Town, but also national and international energy and climate change commitments.

The strategy grew out of a five-year process which began with a partnership programme between Sustainable Energy Africa and the city of Cape Town: the Sustainable Energy, Environment and Development Programme (SEED). The programme initially focused on two projects: making low income houses more energy and environmentally efficient; and helping the municipality to increase energy efficiency within its own municipal buildings. In the first project, Cape Town was asked by South-South North, a local NGO, to participate in a pilot project that linked climate change with energy efficiency at the household level. The Kuyasa Low Cost Housing retrofit project was born, and turned out to be the first cleaner development project approved on the African continent, and the first international Gold Standard-rated project. Lessons learned from this project have guided national government housing policy, making ceilings a standard element in new houses. Lessons from the clean development mechanism (CDM)[12] side have contributed to the establishment of a new category of small scale projects for

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[12] The clean development mechanism (CDM) defined in the Kyoto Protocol of the United Nations Framework Convention on Climate Change provides for developed countries to implement project activities that reduce emissions in developing countries to help meet their emissions targets under the Kyoto Protocol. The CDM focuses on activities that reduce emissions. (see http://unfccc.int/kyoto_protocol/mechanisms/clean_devel opment_mechanism/items/2718.php for more information).

CDM in the international carbon trading arena. As part of its business plan, Cape Town showcases its work on energy efficiency at local, national and international events. For example, the 2004 inaugural Bonn Renewable Energy conference allowed Cape Town to make various commitments on renewable energy targets, and to look at best case examples in Germany.

Courtesy of ICLEI

Enjoying the view of Cape Town from Table Mountain.

Cape Town's *Biodiversity Strategy* has seven strategic objectives at its core:

- Primary biodiversity (Conservation areas and biodiversity nodes);
- Secondary biodiversity (Conservation through corridors, links and mixed use areas);
- Conservation of biodiversity in freshwater aquatic systems;
- Invasive alien species management;
- Biodiversity legislation and enforcement;
- Biodiversity information and monitoring system; and,
- Biodiversity education and awareness

A number of programmes and projects have been established to mainstream the biodiversity strategy. These include identification of key areas of biodiversity and the establishment of structures to manage these initiatives. In addition, Cape Town has been instrumental in the establishment of Local Action for Biodiversity, an international cities and biodiversity project, currently being coordinated under the auspices of ICLEI.

Cape Town's 307 km of coastline includes two of the largest bays in South Africa, Table Bay and False Bay, and is one of the city's greatest economic assets. Although the coast is under pressure and faces many challenges, significant opportunities exist to put management interventions in place that will enhance, protect and optimise this resource. An integrated, citywide *Coastal Zone Management Strategy* has been adopted, and individual sustainable coastal zone management plans have been established for various coastal areas. The integrated coastal zone management strategy guides departments in day-to-day coastal operations, such as resort management, waste removal, coastal access and maintenance. The strategy recognises the coastal zone as a unique and significant natural asset in the city, and commits the city to the management of this resource in an innovative and integrated manner that will ensure the environmentally sustainable functioning of the natural systems, while optimising the economic and social benefits. Its goals are as follows:

- Effective, efficient and transparent management of the coastal zone;
- Sustainable development of the coastal zone;
- To ensure that Cape Town is recognised as having some of the best beaches in the world;
- The maintenance of an appropriate balance between the built, rural and wilderness coastal areas;

- To optimise social and economic benefits from the coastal zone.

Cape Town is aware of the importance of environmental outreach, and has also established an *Environmental Education, Training and Awareness Strategy*. This aims to guide decisions regarding environmental education and training in the city of Cape Town, to address issues and concerns to do with environmental education and training, and to ensure that good practices are maintained. Several flagship environmental programmes have been established. The Youth Environment Schools (YES) Programme for example brings together over 35,000 school children from various parts of the city to participate in one of South Africa's largest environmental education programmes, and has recently been expanded to include all of the city's environmental initiatives throughout the year.

Environment Entry Point

Environmental sustainability forms the backbone of Cape Town's urban planning and management process.

Results

Cape Town's IMEP has been successful in coordinating the city's environmental management resources. The city administration increasingly takes a cross-sectoral team approach to environmental issues.

Lessons Learned

Cape Town's overarching environmental policy is an important model for the environment within South Africa and even for Africa as a whole. It has influenced several cities to develop similar approaches. It also impacted the development approaches of various line functions within the city, notably waste management, health (air pollution) and water services. However, some of the line functions within the city have not bought into the overall concept of the IMEP. This was a result of the frequent change of political and management in the city, which means that capacities have to be rebuilt in new management members.

One important lesson has been that wide consultation with various departments and stakeholder groups is essential to obtain support for the policy. Marketing, communications and awareness-raising is critical in circulating the policy and obtaining buy-in from various groups.

Cape Town's IMEP and various strategies are funded by core funds from the city. Funding from the Environmental Resource Management Department has been complemented with funds from other city line functions such as waste, water, electricity, and the mayor's office. In addition, funds have been sought from external partners to assist these functions. Some of the initiatives, however, would not have started if the various partner agencies had not supported capacity-building within the local authority during the initial period.

Moving from small-scale pilot projects to the larger-scale roll-out throughout the city has been a significant challenge. The lack of capacity and resources have often hindered this process. Cape Town is exploring ways to overcome these barriers, for example by working with national and international development banks and agencies and with civil society organisations, yielding increased support from funding agencies.

Replicability

The Cape Town experience shows that an environmental framework with associated strategies, programmes and plans can form the foundation for long-term institutional buy-in to a process in any city. The strategies provide a guiding base for municipalities to manage various key environmental resources in cities.

The process of developing an environmental base can take a long time—it has taken Cape Town over ten years to reach its current level of environmental integration. This has required substantial efforts from both internal and external Cape Town stakeholders. At issue is the creation of a vision and plan, and the need to work towards these.

Staffing and resources can be supported by working with the internal and external stakeholders of the city. Community based organisations, volunteers, NGOs, the business community, universities and other sectors and institutions have supported Cape Town's IMEP and related strategies with funding, staff and on-the-ground project resources.

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Typical architectural style in Brazil.

GOIÂNIA

BRAZIL

Municipal Profile

Goiânia, Brazil, has a population of 1.2 million, and a land area of 740 square kilometres, with a population density of 1,530 people per square kilometre. The municipal budget is around US$440 million (2005).

Key economic areas	Industries, services, cattle farming
Urban management approach	Integrated participatory urban development
Environment entry point	Fora de Risco (Out of Risk) programme

Why this Case Study is Important

The Goiânia case study illustrates how a city can address a nationwide problem at the local level. It also shows how social, economic and environ-mental issues can be integrated within a single project. In this case study, Goiânia's *Fora de Risco* programme addressed a national problem of income inequality, social exclusion and a paternalistic, unilateral relationship between citizens and state at the local level. The municipality's approach went beyond the traditional one-dimensional paradigm of public housing provision to incorporate social, economic and environmental aspects of urban development into a single project.

Urban Context

Goiânia is the capital city of the state of Goiás, located in central Brazil within the *Cerrado* ecosystem. The *Cerrado* is one of the main eco-systems in Brazil, encompassing over 1.9 million square kilometres, including the entire state of Goiás. It is a biologically diverse area filled with rolling hills and plateaus, rivers and streams, and is widely regarded as a prime agricultural

region. Goiânia is connected to 17 regional municipalities and the rest of the nation by a system of highways, and via two airports.

Goiânia is considered a planned city, as it was built from the ground up to accommodate a future population. The city is based on a concentric radius design, with a civic plaza at the centre. It was originally designed for a population of 50,000 inhabitants. Today, Goiânia's population is approximately 1.2 million, and it suffers from a deficit of around 58,000 housing units. Illegal or informal settlements have sprung up, with 7,000 housing units located in environmentally hazardous areas. These include the banks of rivers and streams and places subject to periodic flooding. Slum settlements have been overwhelmingly built in sensitive watershed areas, primarily on urban river banks and springs. The 7,000 housing units in risk areas are the target of the *Fora de Risco* Project.

Urban Management Approach

Goiânia uses a city master plan and a municipal housing policy.

Case Study

The *Fora de Risco* programme was born after years of struggle on the part of Goiânia's community-based social movements in the 1970s and 80s. Following years of inaction on the part of the municipal government in response to calls for low income housing, the struggle for land tenure and adequate housing finally began to influence local politics by the mid 1980s. The first concrete result was the establishment in 1986 of a Commission for Urban Possession, which aimed to meet local housing demands.

The proposal for *Fora de Risco* was developed by the city of Goiânia with assistance from the Municipal Company for Works and Housing (COMOB), the body that would become the primary executing agency for the Project. COMOB would eventually manage not only the architectural and engineering aspects of the project, but also social, economic, and environmental interventions as well. COMOB also coordinates environmental initiatives with the Municipal Secretariat for the Environment. This integrated interdisciplinary approach, that is, planning the social, environmental, physical, and economic aspects of urban development as an inter-related whole, was the first of its kind in Goiânia. The project, rooted in Goiânia's Master Plan and Municipal Housing Policy, started officially in 1997. Its goal is to improve the quality of life of 7,000 families living in environmentally hazardous risk areas, using social (education, counseling, and training programmes), physical (housing and infrastructure provision, and environmental recuperation) and legal (land tenure legalisation) interventions.

The project fits into citywide Municipal Housing and Environmental (watershed management) strategies. It is implemented through two sub-projects, Pró-Moradia, a 1997 municipal initiative and Dom Fernando, a 2001 Inter-American Development Bank initiative. The primary driver for *Fora de Risco* was the poverty-environment-health nexus, in particular the unsanitary conditions caused by periodic flooding and open-air sewage. Local and national land use regulations to protect watersheds were used as the legal basis for the project.

Integration of social, economic and environmental considerations are key to the success of *Fora de Risco*. Citizen participation has been iden-

Planning to meet the needs of the slum dwellers.

tified as one of the most significant success factors. Participation in pre-project planning is usually through meetings with technical specialists from the municipal government, including social specialists. The Inter-American Development Bank (IDB), through the Habitar Brasil BID programme, requires structured participation in the *Fora de Risco* projects it funds. This includes 80 percent approval of beneficiary populations for some initiatives; meanwhile Caixa Econômica Federal (the Federal Economic Bank [CEF]) provides technical support to the municipality (specifically the COMOB) for involving local populations through research and decision-making. Levels of participation vary widely within the project, and final decisions are always made by COMOB.

Fora de Risco targets low-income populations earning between approximately US$159 and US$477 per month. The resettlement process involves the following steps: 1) COMOB provides an estimate of the value of the resident's old (informal) dwelling; 2) the value of the new home provided by the municipality is reduced by the assessed value of the old home, and a subsidy of up to 50 percent is provided depending on the number of children in the family; 3) payments on the new home cannot exceed 20 percent (for

houses) and 40 percent (for apartments) of family income; 4) balances to be repaid vary between approximately US$ 3,300 and 3,800 (May 2006 figures). This usually means a monthly payment of US$11–21 per month for a period of between 15 to 20 years. According to both municipal statute and IDB regulations, resettlement must take place within 6 kilometres of the original housing site. New housing is provided in the form of either houses or apartments, maintaining where possible the same proximity to family and neighbours as the original settlement. New neighbourhoods have a full range of urban services, including drainage, pavements, light, gas, green spaces, recreation areas, educational centres and access to public transport.

Provision of land and housing titles to resettled residents is a project priority, although relatively few titles have been issued so far. This is due in part to the intent to convey titles within the year after construction has been completed: in many cases construction is still continuing. Difficulties have also arisen from complex municipal legal frameworks, and from the compensation of private landowners. Titles cannot generally be sold, units rented or transferred while the houses are being paid off (they remain the property of the municipality in the interim), in order to prevent real estate speculation from gentrifying the residences.

Education and preparation is very important to the success of *Fora de Risco*. Social assistance teams from COMOB prepare residents to tackle the day-to-day aspects of managing a house or apartment, including the costs (such as utilities, mortgage and common fees) associated with the move. Workshops on the importance of caring for public and community-owned equipment and common areas are held, and on interpersonal and intra-familial conflict resolution. Specialists from

the Caixa Econômica Federal and COMOB point to this as one of the most critical aspects determining a project's success.

The two boxes on the following pages describe the story of two communities which benefited from *Fora de Risco*. For both communities, environmental factors—including clear environmental legislation—were the primary reason resettlement was chosen over upgrading. The city of Goiânia would rather upgrade settlements than uproot citizens. Upgrading preserves intra-community links as well as other economic and social connections amongst residents. In the case of Jardim Botânico, however, the entire population had to be moved due to the environmental degradation of the area. Upgrading was simply not a possibility.

Environment Entry Point

Social, economic and environmental development have been integrated into the *Fora de Risco* project since its inception, as these are key goals for the success of the resettlement projects.

Results

Although the *Fora de Risco* project is not yet complete, results are encouraging. Since its inception, no natural disasters resulting from flooding in risk areas have occurred, protected environmentally sensitive areas from which informal housing was removed have not been resettled, over 4,400 families have been helped, 1,325 housing units have been built in seven different project areas, and quality of life has improved for those affected by the project.

Financial arrangements for residents in new homes place a great deal of responsibility on heads of households to financially manage the

housing unit. While exact retention rates are unclear, it seems certain from those interviewed that at least 80 percent of residents are managing to remain in their homes, and possibly more. In the view of CEF, the sharing of financial responsibility between state and citizen has gone a long way towards eliminating the paternal and unilateral way in which these two sides have traditionally interacted. COMOB specialists think the project has made significant progress toward improving the self-esteem and self-worth of local residents as well.

Residents have not been relocated from any new slum settlements in Goiânia in the last five years. This can be attributed to a recent city of Goiânia slum prevention programme whose priority is to "catch [slum building] in the beginning of the process," in other words, preventing new slum settlements from taking root in environmentally sensitive areas in the first place. This policy is carried out by two departments SEPLAM and FEMA. SEPLAM, the Municipal Planning Secretary, approaches slum prevention policy from the perspective of the legality of subdivisions in areas not designated as environmental conservation units. SEPLAM identifies and clears settlements from illegal subdivisions on public or private land. FEMA, the municipal Secretary of the Environment, identifies and removes illegal subdivisions and settlements in environmental conservation units. These departments focus on the prevention of slum settlements, and not on their removal. Established settlements are the target of integrated programmes such as *Fora de Risco*.

Riverbank areas once settled by irregular housing have been rehabilitated, and green parks and plazas established in resettled communities. The Municipal Secretariat for the Environment

The Story of Jardim Goiás and the America Latina Condominium

Before *Fora de Risco,* the Jardim Goiás community lived in an overcrowded slum on the banks of a small stream, with many surrounding springs. As the community was encircled by impermeable parking lots and roadways, Jardim Goias was frequently flooded. Injuries, disease, low community-self esteem and a death had resulted from the lack of adequate infrastructure and continuous flooding. Housing was so densely packed that access to the interior of the community was only possible on foot, and then only at particular points. The community had no access to formal city services. The lack of sewers made living conditions particularly miserable and disease-prone.

Fora de Risco began in Jardim Goiás in 1998, with the removal of 370 families (a total of 1,800 residents) from flood-prone areas, and accompanying urbanization projects for resettlement. During the construction of the America Latina condominium apartment buildings, to which many resettled residents would later move, COMOB actively worked with the local community to prepare them for the new responsibilities and tasks that would be required of them as future condominium residents.

Once settled in the condominium, local residents elected "Adão" the famous soccer player as superintendent. In the view of representatives from CEF and COMOB, Adão's dedication to consensus-based decision-making and conflict resolution has proven decisive in the smooth functioning and successful transition of local residents to a new way of life. Adão oversees a residents' council of ten representatives (one per housing block) who meet once a month and in special sessions to address conflicts (including intra-family strife) or to make pressing decisions regarding community vigilance and security, for example. Under his leadership, the America Latina condominium boasts a 100 percent success rate in terms of residents paying back common charges and mortgages.

This may be because the commission has developed innovative ways of dealing with financial hardship. For example, in the event a particular family is unable to pay common fees on a given month, families are able to pay by agreeing to provide a needed service for the condominium, such as gardening or cleaning. In addition to this, representatives from the Secretariat for the Environment point to the commission's success in mobilizing over 100 volunteers for plantings in common areas such as parks and plazas.

Specialists from COMOB and CEF highlight the involvement of the surrounding community in Jardim Goiás. This is noteworthy because Jardim Goiás is located in a particularly wealthy part of Goiânia, and wealthy local residents have been following what one COMOB specialist calls "a good neighbour policy." The results include the establishment of several civil society organisations targeted to address social and economic needs in the Jardim Goiás. One such group, the Instituto Flamboyant Social, provides vocational training to local residents.

prioritises maintenance of the natural characteristics of urban waterways involved in the Project and does not pave over them. The project is also part of a municipal initiative to comply with Federal regulations regarding Permanent Preservation Areas (APP) for set widths along the banks of waterways (Federal Forest Code (Law N° 4.771, of 1965).

Daycare and educational centres provide employment opportunities for local women, education, and common spaces in which to train in trades such as handicraft making. The provision of daycare allows parents to return to work.

COMOB and the Municipal Secretariat for the Environment make efforts to involve the local community in planting vegetation in public

green spaces such as parks and plazas, and in the maintenance and upkeep of these areas. Workshops are held regarding solid and liquid waste handling and collection.

The Dom Fernando-Itamaracá sub-project features photovoltaic panels on the roofs of a daycare and nursery school: the panels are used to heat water for the showers.

Lessons Learned

Several important lessons have emerged from the *Fora de Risco* experience. Firstly, it is critical to involve affected populations in the decision-making process of public authorities. Secondly, the establishment of suitable housing, infrastructure and the accompanying social programming improved the quality of life of those living in environmental risk areas. Thirdly, according to specialists from CEF and COMOB, the involvement of the local population in the planning of the project, to the limited degree that this occurred, created a sense of empowerment and self-esteem among beneficiaries. Fourth, according to the CEF, the resettlement of families served as a wake-up call to the municipality regarding the difficulties involved with this process, whether these were caused by the lack of available land, legal complexities or real estate speculation. Fifth, strong local leadership can mean the difference between success and failure in assuring the success and sustainability of a project. It is therefore important to support and encourage local leaders.

An array of obstacles was encountered. Administrative difficulties arose from a per-

Building social, economic and environmental interventions into city planning.

ceived paternalistic culture, where associates benefit from personal relationships. Beneficiaries were resistant to the idea of making payments on their homes, and due to lack of municipal administrative capacity it is still not clear exactly how many families are not making payments. It is difficult to earn the trust of the locals, since empty promises are often made, especially during elections. Representatives from COMOB identified opportunism as a particular challenge. They describe situations in which locals disputed the assessed values of their old homes, the measurements of their home, or even the size of their family, often resulting in the last minute renegotiation of terms. Regarding vocational training, difficulties in finding work after graduation and supply shortages have caused feelings of frustration among beneficiaries. Finally, COMOB points out that bureaucratic inefficiencies leading to delays in the work programme have caused suspicion and doubt among beneficiaries.

Many of these lessons have informed the programming for Dom Fernando and Itamaracá, which is why COMOB feels that this sub-project has been successful. They also feel that some of

these obstacles can be overcome in future projects by guaranteeing financing for all elements of the project (such as community centres, parks, vocational training and supplies) from the beginning. This strategy will prevent difficulties stemming from a change in political administration during project implementation.

Replicability

The *Fora de Risco* project demonstrates that a range of social, economic and environmental interventions can be built into a traditionally one-dimensional project such as housing provision. While other cities operate in different contexts and with different institutional structures, the *Fora de Risco* experience shows that an integrated interdisciplinary approach has enormous potential. Goiânia's investment in education and social preparation is particularly noteworthy as much of the project's success depended on ensuring that the resettled population had the skills to maintain and benefit from their new housing. This approach demonstrates that while participation in decision-making is important in ensuring sustainable development, investment in social development is also important.

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Santa Clara Cathedral in the Plaza Bolivar, Bogota, Colombia.

MANIZALES

COLOMBIA

Municipal Profile

Manizales, Colombia, has a population of 358,000 (1997), and an urban land area of 42.9 square kilometres. The Gross National Income *per capita* is US$2,000 (2005).

Key economic areas	Coffee production and processing, steel and other metal manufacturers, car parts manufacturing, food industry and educational services.
Urban management approach	Local Agenda 21
Environment entry point	Local environmental action plan (BioPlan)

Why this Case Study is Important

This Manizales case study demonstrates how a local environmental action plan can be integrated into both the municipal development plan and the municipal budget. It also describes an innovative environmental indicators programme which is used to track progress and to raise public awareness of environmental issues.

Urban Context

The city of Manizales is located in central Colombia, near the Nevado del Ruiz volcano. Founded in 1849, Manizales is the capital of Caldas, one of the smallest Colombian departments. The city is the main centre for the production of Colombian coffee and an important hub for higher educational institutions—in fact Manizales has the most universities *per capita* in Colombia. Manizales is situated in the watershed of the Rio Chinchiná and the sub-river basin of the Guacaica River. Environmental hazards include earthquakes, landslides and volcanic eruptions.

Manizales is well-known for its work in Localising Agenda 21 in the 1990s. However, in common with other Colombian cities, today it

Participatory planning benefits all, more so children.

faces economic and social problems associated with the growth of urban and rural poverty. Much of this is linked to armed conflict, as internal migrants, displaced from their homes by violence, come to the city. This has resulted in unplanned urban growth, deforestation and the invasion of public space. Many settlements have developed illegally on unstable hillsides, creating a high risk of localised landslides.

Urban Management Approach

Manizales is implementing an Agenda 21 known as Manizales BioPlan. BioPlan is made up of 11 communal environmental agendas (urban groupings) and seven village environmental agendas. The municipal development plan of Manizales has incorporated the Manizales Bio-Plan since 2000.

Case Study

Manizales' main economic activity for more than a century has been coffee production. During the

1970s, coffee growing areas in the region were greatly expanded in response to market demand. This resulted in large scale deforestation and subsequent soil erosion. The eruption of the Ruiz volcano on the outskirts of the city in 1985 damaged investor confidence, and many businesses left. The city worked hard to stimulate new industrial development, and several new enterprises were established, but the increased industrial activity damaged the city's waterways. In 1994, the coffee market collapsed, seriously damaging the economy of the city.

In addition, Manizales faced a rapidly growing population, brought about partly by the influx of internal migrants who had come to the city to escape the armed conflict that was ravaging other parts of Colombia, and partly as a consequence of internal migration in the coffee growing region as a result of the economic crisis. Informal settlements sprang up, most located on the steep, landslide prone hillsides.

The Manizales BioPlan developed out of a series of environmental interventions dating from the early 1990s onwards, a period which marked the start of effective environmental policies in the city's planning. At the beginning of the decade, the municipality focused on social and environmental improvements. People living on high-risk hillsides were relocated, and the areas were reforested. Landslides lessened, and urban ecosystems started to recover. Eco-parks were established and educational programmes initiated. By the middle of the decade, Manizales was already regarded as a leader in urban environmental planning. Administrative and fiscal decentralisation in Colombia changed how municipalities did business. The city saw a period of economic growth, and was able to allocate a portion of the municipal budget to environmen-

tal policy. Economic, social, environmental and disaster-prevention/land-use dimensions were integrated into a sustainable development concept.

There were some fluctuations in the fortunes of the Manizales BioPlan towards the end of the decade, but in 2000, the BioPlan became the principal tool of the municipality's environmental policy. The private sector started to participate in management, and an integrated management structure was created. A key achievement was the establishment of sustainable development observatories. Today, action plans to decrease poverty in the city and to reduce the social and territorial segregation of people displaced by violence are being implemented. BioPlan Manizales is focusing on helping the vulnerable and the poor. It aims to build a safe and healthy environment, and to support environmental regeneration in the marginalised central area of the city. It also advances equality through social and spatial integration, encourages information for all and promotes participatory planning.

Environment Entry Point

Manizales was affected by the eruption of the Ruiz volcano in 1985, which destroyed the village of Amero and other small communities where 35,000 people lived. This has generated a culture of disaster prevention which has become an integral part of planning approaches in the region as a whole. Employment generation is another important entry point for environmental issues, through activities ranging from ecotourism to waste management and recycling. Manizales is a pioneer in recycling and its plant mainly recycles plastics, paper, glass, card and scrap iron. The

municipality still faces problems in organic waste management, and the recycling plant is not profitable. However, it is still one of Manizales' most important social and environmental investments, advising other mayors and municipalities, helping to establish a recycler's association, coordinating a programme to promote waste separation at source and working in public education.

Results

Communities and civil society groups in Manizales have created local environmental action plans and have set up environmental projects which aim to integrate displaced persons both socially and economically.

The Manizales Recycler Association provides advice to many community organisations in managing and treating waste and offers good working conditions for recyclers, improving their social and economic status and ending the social exclusion they would suffer as informal sector waste-pickers on landfill dumps.

Urban eco-parks and protective/productive forests are part of BioPlan and are included in the city's development plan.

Observatories for sustainable development allow citizens to participate in the monitoring system which supports local urban management. These observatories provide citizens with regularly updated economic, social and environmental indicators. The most visible features of the observatories, the Quality of Life Traffic Lights, are placed in strategic locations around the city. The electronic billboards display the quality of social, economic, and environmental indicators for the city's eleven districts or neighbourhoods, using a famil-

iar, distinctly urban symbol (traffic lights) and colour scheme (green, yellow and red).[13]

Lessons Learned

Management of the urban eco-parks is somewhat difficult due to usage conflicts, ecosystem fragility, housing and cultivation pressure and lack of continuity in environmental education programmes. It is important to show that sustainable development offers new income-generating opportunities.

Despite political changes, environmental issues have been a consistent focus for local government in Manizales since the beginning of the 1990s. Environmental interventions have offered opportunities for poverty reduction and employment generation. Recycling cooperatives and worker solidarity have contributed to improve quality of life for the very poor.

Partnerships at all levels are an essential component in the success of BioPlan. Strong partnerships have been formed between the municipal government and other agencies, a local university, the private sector, international agencies and citizens. Multi-stakeholder involvement in the development of the BioPlan has been

crucial in gaining credibility and legitimacy and the partnerships have provided the city with technical and financial support.

Replicability

The Manizales experience is fixed in local circumstances, both environmental and economic. However, the municipality's experience in developing and institutionalising integrated urban environmental planning provides a useful reference for other urban centres. In addition, Manizales' experience in integrating marginalised communities holds many useful lessons for other cities trying to build more equitable cities.

Partnerships with the university, the private sector and other levels of government, together with national-level legislative changes that empower local governments, have worked to strengthen the local government of Manizales. Taxation powers and access to international support for specific projects have increased the available resources. With these legislative and financial powers, and by working in a participatory and consensus-oriented manner, the city has been able to develop and implement a concrete strategy for a sustainable community.

Key Contacts

http://www.alcaldiamanizales.gov.co/Manizales_Alcaldia

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[13]Luz Estella Velasquez, *Sustainable Development Observatories in Manizales, Colombia,* http://www.iied.org/NR/agbioliv/pla_notes/documents/plan_04513.pdf

Famous Lake Nakuru and its flamingoes.

NAKURU

KENYA

Municipal Profile

Nakuru, Kenya, had a population of 400,000 in 2005, which was growing at a rate of 7 percent per annum. It has a land area of 188 square kilometers which includes Lake Nakuru National Park. Gross National Income is US$460 *per capita*.

Key economic areas	Agricultural service centre, agro-industry, tourism (Lake Nakuru), administrative centre.
Urban management approach	Local Agenda 21
Environment entry point	Water and sanitation, tourism, biodiversity

Why this Case Study is Important

The Nakuru case study highlights how the LA21 approach supports innovative local solutions to environmental problems at the sectoral level and how environmental solutions can address social and economic concerns at the same time.

Urban Context

Nakuru Town is the fourth largest town in Kenya. The town serves as the administrative headquarters of the Rift Valley Province, as well as the Nakuru District Headquarters. Founded in 1904 as a railway outpost, Nakuru is located along the east-west transport route across the country which links the Kenyan Coast with the Lake Victoria region and Uganda. It is situated at an altitude of 1,859 m above sea level between the Menengai Crater and Lake Nakuru, famous for its flamingoes. The Lake Nakuru National Park is a tourist attraction with great economic value for the country. During the dry season however, Nakuru is engulfed in whirlwinds of dust.

Nakuru's has experienced dramatic population growth, from 57,000 inhabitants in 1957 to more than 400,000 in 2004. This has led to

Water shortage is a major problem in Nakaru, Kenya.

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which provides for the city development strategy and activities. The plan integrates environmental policies, acts, projects, methodologies and tools to manage environmental issues.

Case Study

The municipal council of Nakuru is work-ing together with UN-HABITAT's Localising Agenda 21 programme, a collaborative initiative to enhance local capacities for sustainable urban planning and management. The Nakuru Strategic Structure Plan was developed through the LA21 Nakuru initiative, and was approved in 2000. It provides guidance on how development issues can be addressed through to 2020. The plan calls for a participatory approach to tackle various interdepartmental issues. It has helped Nakuru council to accept inclusive governance by linking partners both internally within the local government and externally, and by managing to leverage much needed resources.

As part of the LA21 consensus-building process, the Nakuru Municipal Council and UN-HABITAT organised a Consultative Workshop in 1995, supported by the government Belgium. This brought together a wide range of stakeholders in Nakuru, including councillors, officers of the council, the district and provincial administration, research and training institutions, NGOs and industry. The workshop examined the factors promoting and hindering the sustainable development of the city. Work-

increased pressure on municipal services, a factor that is responsible for the low quality of service delivery as demand has outstripped available capacity. Several industries in the area provide important employment opportunities for Nakuru residents—factories are producing cooking oil, batteries, blankets, and agricultural implements—but some of these facilities emit toxic effluents which find their way to the Lake. A five-year integrated Lake Nakuru National Park Plan (2004–2009) initiated by the municipality is designated to addresses this and other concerns.

Urban Management Approach

Nakuru is implementing Local Agenda 21. This informs the Nakuru Municipal Strategic Plan,

Children were most at risk from the cholera outbreak of 2000.

ing groups stressed environmentally conscious development, promoting Nakuru as a "People's Green City." Nakuru was envisioned as:

- An eco-town, integrating natural and human imperatives;
- A railroad town;
- A centre of eco-tourism;
- A regional capital and service center; and,
- A prototype town for the East Africa highlands.

As a result of the workshop themes for the Localising Agenda 21 framework were identified. These themes deal with building consensus for a long-term vision, streamlining urban development and upgrading the environment, institutional strengthening focusing on the municipal council, and on stimulating innovative partnerships.

One of the first projects resulting from the Localising Agenda 21—Nakuru framework was the creation of a reliable water source for low income residents. Water shortages were a major problem for the town, and the gravity of the problem was reinforced in 2000, when a severe cholera outbreak occurred in the low-income areas of Kaptembwa and Rhoda. The cause of outbreak was attributed to the consumption of contaminated water from unknown sources. Community representatives at the consultative workshop advocated for water kiosks in areas within a short walking distance that would be accessible to low income residents. This would provide a reliable source of clean water to those individuals who previously were forced to use unknown (and unmonitored) water sources.

The municipal council then approached the international community with a proposal to fund the implementation and construction of five water kiosks in low income areas. Components of the project included training and awareness raising, the construction of water kiosks, pipe connection to the kiosks, operation and maintenance and documentation of the activity. A contract was signed between the municipal council, via the LA21 Coordinating Office, and the Nakuru Artisans group to carry out the construction of the water kiosks. The kiosks were built on sites approved by the municipal council, with one of these being used as an office as well. The labour cost of the kiosks was 54,000 Kenyan Shillings (KES), equivalent to US$745. The municipal council provided all of the materials required for construction. As part of the project, the municipal council required that tree nurseries be established in schools where the water kiosks were located as well as private nurseries at road reserves in areas where other kiosks were located. This

measure was being implemented in order to improve the low forest coverage: Kenya's tree coverage is minimal at 1.6 percent.

Using the LA21 approach, the project was operated through a community-based organization, the Naroka Greeners Self Help Group, along with other stakeholders. This group identified the community needs, and worked to sensitise its members on environmental issues such as safe liquid waste disposal, safe water use and proper water management. The group also provided labour to dig trenches where the water pumping network would be laid, and was in charge of managing the water kiosks. The Nakuru municipal council provided technical expertise, and sold water in bulk to the Naroka Greeners who in turn would sell the water at a retail price. The council also monitored the progress and evaluated the project management and execution. The Local Agenda 21 Coordinating Office ensured that there were adequate linkages and coordination with international Agenda 21 standards and processes.

The first water kiosk is a master kiosk managed by Naroka Greeners Self-Group. In addition to providing a reliable source of potable water, it acts as an office for the group. Four other water kiosks offer reliable sources of water to residents of the Rhoda/Kaptembwa low-income residential areas and other areas. The group, according to its 2005 Annual Report, has averaged nine to ten employees. The 2005 annual turnover was US$16,940.70, with a surplus of US$6,139.60. The group has already started projects for garbage collection services in the area and is licensed by the Nakuru council as another service provider to the community. Other plans for the group are to supply water to communities far from the water kiosks through the use of a water tanker; con-

struct a water reservoir tank; and to build more water kiosks.

An important side benefit is the fact that water vendors can make a living out of this initiative by delivering water by bicycles, thus further contributing to the use of non-motorised transport in the area. A community-based water vendor group has also been registered, ensuring that its members get water from the water kiosks for sale to commercial entrepreneurs and residential houses.

Results

The project benefited the community in many ways. Firstly, it provided access to clean water and thus reduced the risk of diseases associated with poor sanitation. Secondly, the time spent

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Lining up for water.

by women walking in search of water was significantly reduced, freeing up time for other productive activities. Thirdly, the water kiosks created employment opportunities for a variety of community members. Lastly, the water kiosks generate revenue for the city council through the sale of safe and reliable drinking water to industries.

The Nakuru municipal council strategic plan has set targets up until 2020, aiming to make water accessible to low income groups in peri-urban areas by constructing water kiosks close to these communities. The corporate plan of the Nakuru Water and Sanitation Services Company (NAWASSCO), a fully owned municipal council public company, states that it will "open up water kiosks to low-income earners by involving communities in conservation and management as a short term practice based on needs."

The municipal council of Nakuru and UN-HABITAT are planning a follow-up activity to link areas with water kiosks and improve accessibility by non-motorized transport through the construction of bicycle and pedestrian lanes.

Environment Entry Point

The Localising Agenda 21 approach includes social, economic and environmental issues in urban planning and management from the beginning. Nakuru council uses a variety of environmental methodologies and tools. These include Environment Impact Assessments (EIA), environment audits and monitoring, environmental restoration, conservation and easement orders, and annual reports on the state of environment in Kenya.

Lessons Learned

The Nakuru case demonstrates the importance of community involvement in identifying local priorities and deciding on solutions. In addressing the issue of water supply, the community was also able to deal with social and economic concerns. The water kiosks served to create employment, mitigate disease outbreaks, and reduce poverty within the community.

Replicability

Nakuru's experience shows the importance of a strong integrated approach and the use of stakeholder consultations in decision-making—key replication factors for other communities. Nakuru's water kiosks are an innovative model for increasing local water access that can be replicated globally. Of particular interest for replication are the following:

- Participatory community planning when undertaking projects or developmental projects is very important;
- Capacity building within community-based organisations is needed to ensure proper management of the water kiosks;
- Inclusive governance ensures that the management of sustainability initiatives is more diversified;
- Linking and leveraging resources both internally and externally can bring about developmental changes.

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A typical coastal city skyline in Brazil.

PORTO ALEGRE

B R A Z I L

Municipal Profile

Porto Alegre, Brazil, has a population of 1.3 million, and a land area of 497 square kilometres. The Gross National Income *per capita* is US$3,090 (2004).

Key economic areas	Services: 64 percent; Commerce: 33 percent; Industry: 3 percent.
Urban management approach	Integrated urban management, participatory budgeting
Environment entry point	Integrated environmental management, citizen participation, public environmental management programmes

Why this Case Study is Important

The Porto Alegre case study demonstrates how a change in ruling regime and a move towards decentralisation can greatly strengthen citizen participation in urban governance.[14] It also shows how participation linked to the allocation of resources can change investment in the city.

Urban Context

Porto Alegre, the largest city in southern Brazil, was founded in 1742. The city sits on the banks of Lake Guaiba, and has a very hilly topography. The lake hosts a unique ecosystem, with the city environs itself home to 28 percent of the native flora of Rio Grande do Sol, over 9,000 species. Fauna is also highly diversified. With extensive

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[14]This case study is taken from Celina Souza's article 'Participatory budgeting in Brazilian cities: limits and possibilities in building democratic institutions', *Environment & Urbanization*, Vol 13, No 1, April 2001, and from Rualdo Menegat's paper, 'Participatory democracy and sustainable development: integrated urban environmental management in Porto Alegre, Brazil', *Environment & Urbanization*, Vol 14, No 2, October 2002.

lake and river coastlines, the city is an important economic and cultural centre in Brazil.

Urban Management Approach

Porto Alegre uses an integrated urban management approach that focuses heavily on citizen involvement.

Case Study

Citizen involvement in administration has been on the increase in Brazil since the 1970s. Even under the former military regime, a small number of municipalities governed by a segment of the then MDB (Brazilian Democratic Movement) adopted participatory policies as a way of putting pressure on federal and state levels controlled by the military. Participatory budgeting, in which citizens take part in the budgetary decision-making process, was first tested in the 1980s, with limited success. In 1988, the Brazilian Constitution changed, allowing many municipalities to improve their financial situation. This gave an additional boost to the concept of participatory budgeting, which was further strengthened in Porto Alegre in 1989, the year after the Workers Party (PT) took power.

Initially, participatory budgeting was slow to take off in Porto Alegre. Financial resources were lacking, the government structure was disorganised and the poor were not mobilised. Where civic organisations existed, they had a history of confrontation with the government, or they were dominated by clientelism. In Porto Alegre, the local government dealt with this problem by contracting community organisers to positions within the administration. Participatory Budgeting representatives would visit unmobilised

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Election fever in Porto Alegre.

neighbourhoods, looking for new leaders and spreading information about PB. The continuous dialogue with community organisations ensured "that the process soon based itself in elements of reality and not in theoretical orientations, enlarging its chances of success."[15]

Porto Alegre's PB programme is based on district and thematic plenary assemblies which gather in different parts of the city to participate in the budget-writing process. Additional preparatory meetings on a smaller scale also take place. During the first round of assemblies, local government officials present the audience with general

[15]Navarro 1996, p. 9

information about the city budget. Neighbour-hood meetings are then held, in which residents draw up their list of priorities for infrastructure investment. In the second round of assemblies, each district elects two representatives and two alternates to the city-wide municipal budget council. Negotiations then take place between the delegates of the various district budget fora to create district-wide 'priority lists' of infra-structure projects in several investment cate-gories. The municipal budget council decides how funds will be distributed for each priority among districts, and each district quota is applied following the priority list of the district. Spend-ing is monitored year-round by the municipal budget council and the district budget fora, and regular discussions are held with local govern-ment personnel on general service provisions. The budget council is responsible for overseeing the plans of each city agency.

In Porto Alegre, citizens have chosen to allocate resources mainly for street paving, sewer-age, housing and community equipment. Inter-estingly, PB has shown that what administration thinks will be a priority for citizens is not always what citizens themselves prioritise. In the first year of PB in Porto Alegre, the administration expected that the priority issue for the poor would be public transport. In fact, what the peo-ple voted for in the PB process was water supply and sewerage.

Following the success of citizen involvement in budgetary decision-making, it became clear that a purely physical planning model, operating in isolation from key actors, was not compatible with participatory democracy. The PB process was restructured in 1994; sectoral public assemblies were introduced to give citizens the opportunity to discuss specific issues relevant to the city and discussion forums were set up around five sec-toral themes:

- Urban planning and development, sub-divided into environment and sanitation, and city plan-ning and housing;
- Traffic management and public transport;
- Health and social welfare;
- Education, culture and recreation; and,
- Economic development and taxation.

Significant changes were made to the city's culture of urban management, giving extra attention to issues that affected the city as a whole. A series of city conferences, bringing together representatives from civil society, was launched in 1993. The first, '*Porto Alegre: City of Democracy*' asked, 'What kind of city do we want for the future?' The pol-icy recommendations which came out of this conference advised that the future Porto Alegre should practise democratic and decentralised urban management, and combat inequality and social exclusion. The city should also promote high standards of living and environmental qual-ity, be culturally rich and diverse, attractive and competitive, and should seek to establish partner-ships between the public and private sectors. It should adopt effective financial strategies, and assume its responsibility as the focal point of the metropolitan area.

In 1995, the second city conference, '*Porto Alegre: City for All*' debated the reformulation of the urban development master plan, which now included environmental issues. The confer-ence produced a set of resolutions that formed the basis of the new urban and environmental development master plan, which was approved

by the city councillors in 1999 following lengthy discussions. The third city conference in 2000, '*Building the City of the Future*' sought to synthesise the city's social and strategic policies, and coincided with the four-yearly planning exercise which, until then, had been undertaken only by municipal planners and technical staff. For the first time, the 2000 plan involved the general public in setting targets for the next long term.

Environment Entry Point

Porto Alegre has instituted a unique system of integrated environmental management. The system is based on citizen participation; public environmental management programmes; comprehensive knowledge of Porto Alegre's natural and built environments; and environmental education.

Results

Porto Alegre has the highest standard of living and the highest life expectancy of any Brazilian city. Virtually all its people have water piped to their homes and most have good-quality sanitation and drainage. The garbage collection system reaches virtually all households and has included a separate collection of recyclables since 1990; other programmes enforce industrial pollution control (including special provision in garages and petrol stations), keep down polluting motor vehicle emissions and ensure the re-utilisation of organic wastes from parks and restaurants. The city has 14 square metres of green space per person and a million trees along its streets.

Among the many environmental outputs visible in Porto Alegre are:

- Programme for the management of green areas;
- Urban tree planting;
- Oil pollution control in the service sector programme;
- Industrial water pollution control programme;
- Atmospheric pollution control programme;
- Integrated solid waste management;
- Waste collection and recycling programmes;
- Waste disposal programmes.

Porto Alegre published the *Environmental Atlas of Porto Alegre* in 1998. This was created with the express intention of building citizen capacities to participate in urban and environmental management in a meaningful way. In order for citizens to make informed decisions, they need adequate information and knowledge about the natural and built environments. Following the publication of the *Atlas,* an environmental education programme was also set up.

Lessons Learned

Participatory budgeting has increased government transparency while discouraging negotiations based on vested interests. It encourages increased accountability on the part of local government, which has responded with better public information and with satisfaction surveys. Increased citizen participation in this area resulted in a far greater citizen participation in other areas, notably in integrated environmental management.

Replicability

The Porto Alegre experience is specific to Porto Alegre, but it demonstrates how changes in citi-

zen participation in one area can have important spill-over effects in other areas. Porto Alegre's experiences with political and citizen commitment is a very useful learning resource for other municipalities.

Key Contact

http://www2.portoalegre.rs.gov.br/portal_pmpa/

Street scene in the old city of Yangzhou.

YANGZHOU

PEOPLE'S REPUBLIC OF CHINA

Municipal Profile

The Prefecture of Yangzhou, China, has a population of 4,536,100, and a land area of 6,638 square kilometres. The Gross National Income *per capita* is $1,781 (2003), and the municipal budget is US$487,000,000 (2005).

Key economic areas	Agriculture, heavy industries and eco-tourism.
Urban management approach	Eco City Planning
Environment entry point	Eco City planning, eco-tourism, urban conservation

Why this Case Study is Important

The Yangzhou case study shows how the environment can be used to guide the urban planning and management process in a large city.

Urban Context

Yangzhou has a history of almost 2,500 years. It was founded in the Spring and Autumn period, an era in Chinese history between 722 BC and 481 BC. Yangzhou is located in central Jiangsu province, on the northern edge of the Yangtze River Delta. Yangzhou has seen considerable social and economic growth since 1978. However, the city has faced many environmental problems, including damage to wetlands, water shortages and deteriorating water quality. In 1999, city administration took the deliberate decision to create an eco-city. For its efforts Yangzhou received the UN-Habitat Scroll of Honour in 2006 for its work in conserving the old city and improving the residential environment.

Urban Management Approach

Yangzhou is using EcoCity planning to achieve sustainable urban development.

Case Study

China's Eco City initiative was launched by the State Environmental Protection Administration (SEPA) in 1996, the same year SEPA first issued application guidelines for classification as an "Eco City." Eco City development calls for the integration of strategies for social progress, resource management, economic development, transportation, land use and industrial management through cooperation and education. The Eco City initiative generated considerable attention from Chinese local government as interest in Agenda 21 principles and environmental solutions grew throughout the country. Nearly 500 local governments registered to be pilot areas. Of these, 10 municipalities have submitted Eco City Plans to SEPA, with Yangzhou among them.

Yangzhou is running the Eco City Programme as a pilot project, along with the municipality of Changzhou. It is structured along the lines of the Eco City Planning and Management Programme, a Sino-German cooperative programme. Yangzhou's Eco City Plan was also developed in partnership with the China Academy of Sciences. Implementing partners are the municipal government of Yangzhou and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) on behalf of the German Ministry for Economic Cooperation and Development. The executing agency is the Department of Foreign Trade and Economic Cooperation (DOFTEC) of the provincial government of Jiangsu, China. The Programme will run from June 2002 to May 2007.

Yangzhou's Eco City Programme aims to encourage development that is socially, economically and ecologically balanced, as well as efficiently managed. It also aims to contribute to the strengthening of city strategies for a more sustainable urbanisation process.

SEPA Indicators for Eco City Development

- Economic Development
- Productivity (per capita GDP)
- Per capita financial revenue
- Per capita net income, etc.
- Efficiency of resource use
- Development potentials (tertiary industry development level, ISO14000 authentication ratio)
- Environmental Protection
- Forest coverage ratio
- Per capita public green space
- Proportion of conserved area
- Ratio of degraded land restoration
- Waste emission and regeneration
- Environmental quality
- Investment in environmental protection
- Social Progress
- Infrastructure level
- Urbanisation rate
- Quality of life
- Social equity
- People's capability (ratio of enrollment in higher education, input in science and education)
- Ecological awareness promotion
- People's satisfaction with their environment.

The Eco City Plan (ECP) covers a broader range of issues over a longer time span than all other existing plans. The philosophy underlying the Plan requires the public, private entrepreneurs and government staff to change their consumption habits. This will result in the conservation of energy, water and natural resources, and reduce waste and pollution. The ECP highlights the need for monitoring, evaluation and public participation to ensure sustainability. It contains both a long-term vision and short-term priorities for action. The ECP, however, is classified as a non-

statutory plan in China, unlike the spatial/ master plan which is required by law to be submitted by municipal governments.

China is a highly centralised state and the Constitution provides for one department to direct the work of the same department at a lower level. This creates strong vertical linkages in the same department at central, provincial, municipal and county/township government levels. However, horizontal linkages between different departments at the same municipal level are frequently weak. Recognising the need for a holistic approach to implement the ECP, the Mayor of Yangzhou, with support from executive vice mayors and department heads, established a special *ad hoc* office within the administration (known as the "3Cs Office") to coordinate decisions and actions horizontally across departments. The 3Cs office comprises at least one staff person from each key department of the administration—land use planning, environmental protection, five-year investment planning, budget and construction.

ECP emphasizes the importance of integrating implementation mechanisms. This would ensure that statutory plans, such as the urban master plan, and plans that reflect long-established administrative practice, such as the five-year investment plans and supporting sector plans, are all covered under the 'umbrella' of the municipal Eco City Plan. Because the ECP is supported by both the local executive and administrative bodies, departments make their decisions on investments, programmes and activities in a way that is consistent with its aims, priorities and the principles.

Child playing by housing complex in Shanghai, China.

Results

Urban Water Management

Through the Eco City Plan, Yangzhou has implemented measures to improve the water quality in numerous rivers and canals. Due to intensified urbanisation and industrialisation, water quality standards in China range between ISO grade III and grade V. In Yangzhou, the water quality standard was grade V and lower. In response to this, Yangzhou municipality, with the support of the Eco City programme, organised an interdisciplinary seminar on river rehabilitation in October 2005. The dialogue called for integrated water management, and shared accountability over adjacent watersheds. It also identified the reduction of direct and indirect pollution sources as issues to be addressed immediately.

Sustainable Urban Conservation

The ECP underlines the importance of preserving historical sites, particularly by protecting and upgrading the ancient settlements which bear the city's rich culture and history. Yangzhou has a

large expanse of traditional urban settlements in the city centre, an area of around 5.1 square kilometres. ECP discourages the development of large-scale projects in these areas, and the municipality has partnered with the Tongji University of Shanghai and the University of Technology, Berlin to link social development with urban conservation. This is also aimed at increasing the municipality's tourism potential, which is seen as an additional source of revenue.

Eco Industrial Park

To foster sustainable economic growth—a key goal of the Eco City Programme—Yangzhou established the Eco Industrial Park. The Park consists of vast areas of land along the Yangtze River set aside for industrial purposes where industries are required to use clean production techniques. This decision was supported by Chinese legislation tabled in 2003 which required business to reduce the environmental impacts of production, use clean energy and renewable materials and maximise the utilisation of resources. The Yangzhou Eco Industrial Park development is still in its early stages. To date, Yangzhou has conducted a feasibility study and has carried out initial dialogues with industries, technical exchanges, and field visits to the Park.

Eco Centre

The first of its kind in China, Yangzhou's Eco Centre serves as an environmental information and communications clearinghouse. Apart from raising general environmental consciousness, it aims to inform the public about the government's efforts and activities related to the urban environment. It is also a venue for citizens to present and discuss ideas they have to address environmental issues. An actual example is the pilot project on decentralised water management, where residents have been involved in the analysis of the situation and in the identification of solutions.

Environment Entry Point

The environment has been the focal point of Yangzhou's urban planning and management approach since the adoption of the Eco City approach.

Lessons Learned

Yangzhou's Eco City Plan uses a holistic approach that sets long-term direction and provides an over-arching umbrella for other more narrowly-focused and shorter plans (for example, spatial plans and investment plans). It also addresses a broad range of issues, and does not limit itself to environmental concerns.

The ECP allows Yangzhou to pursue its goals of economic advancement such as industrial development and tourism while at the same time ensuring social stability, improvement in the quality of life of residents through the provision of basic services such as water and environmental conservation like the adoption of the cleaner production principle.

ECP is based on participatory principles. The role of the general public is important in ensuring the attainment of sustainable development goals. ECP also emphasises the importance of partnership building, as in the case of the conservation of the traditional settlements and the development of the Eco Industrial Park, where the municipality established partnerships with the academe and the private sector.

Community power in city planning in Yangzhou.

One of the challenges that Yangzhou encountered is that preparation of the ECP took four years and required the expertise of external consultants. There is still room for improvement in terms of the quality and quantity of public involvement in the entire planning process.

As of now, pollution control and resource management are priority issues, thereby putting other concerns on the sideline. Climate change, for example, is very much viewed as a problem for cities in developed countries.

There is a pressing need for integration mechanisms to be implemented in order to ensure that statutory plans those that reflect long-established administrative practice, five-year investment plans and supporting sector plans are all covered. Public participation is essential to ensure the implementation, success and efficiency of municipal undertakings.

Replicability

The Yangzhou experience shows that an Eco City planning approach can balance social, economic and ecological priorities. The ECP is progressing successfully because it has the full support of the municipal administration and external partners. In principle, the plan is suitable for other cities and towns, but it must be adapted to the social context of the community, the availability of resources, and contemporary planning practices.

The establishment of the '3Cs Office' as an institutional mechanism is an innovative and effective strategy to achieve integration across departments in a holistic way. The decision and mandate of the mayor to use the ECP as the over-arching plan of all statutory and sectoral plans ensured that the municipal offices took the same direction and shared the same goals.

Public participation, generated through such initiatives as the Eco Centre, has been crucial in incorporating environmental concerns. It is by raising environmental consciousness that individual habits can be changed in favour of a more sustainable lifestyle.

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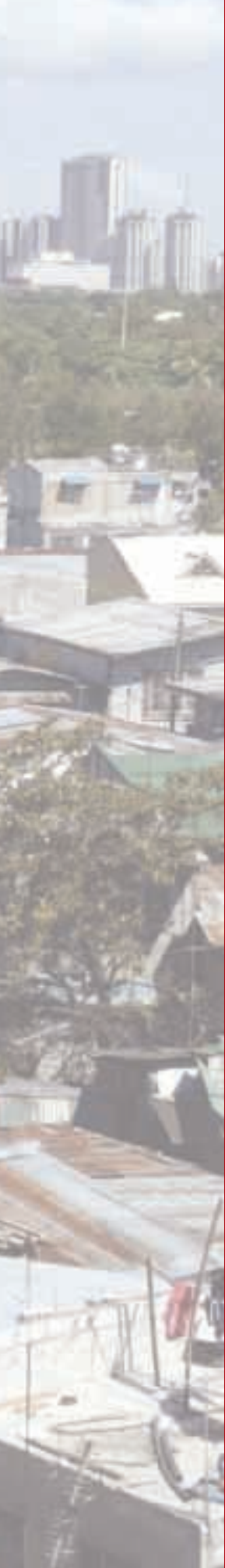
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INSTRUMENT TOOLKIT EXAMPLES

A bourgeoning slum against the Manila skyline. © Friedrich Stark/Das Fotoarchiv/Still Pictures

SUSTAINABLE PROCUREMENT
(ECO PROCUREMENT, GREEN PURCHASING)

A local authority which implements a sustainable procurement (green purchasing) policy bases its purchasing decisions for goods and services and the allocation of contracts both on environmental and social criteria, as well as cost and quality considerations. Sustainable procurement contributes to environmental protection at the local level, creates a market demand for green production methods, strengthens local jobs, and serves as a model for private companies, institutions and individuals (ICLEI, 2000a). ICLEI (2003) proposes the following step-by-step method for concerted action on eco-procurement:

1. Prepare a procurement inventory detailing the quantity of certain products purchased, the expenditure, and the sustainability considerations;
2. Set product specific targets based on the capacity and determination of the local authority, for example, to achieve 20 percent green electricity use by 2012;
3. Develop an action plan taking due account of existing contracts;
4. Implement the action plan;
5. Monitor progress and report results to the council and to the public.

Local authorities can base their green purchasing decisions on Life Cycle Analyses or eco-labels. In the absence of these green identifiers, a local authority may also identify a 'green' product by considering a simplified study of the product's life cycle (see Table on p. 123).

A **Life Cycle Analysis** examines the environmental impact of a product from its design to its disposal—from raw material extraction, manufacturing, packaging and transport to storage, use and after use. An environmentally preferable product or service has an overall minimal impact on the environment throughout its lifespan. This scientifically reliable method is widely regarded as "sophisticated" and, in practice, has limited applicability because of a lack of Life Cycle Analyses for products and services (see Table on p. 123).

Eco-labels are an alternative to Life Cycle Analyses. Some of the better-known and reliable eco-labels are 'Blue Angel', 'Nordic Swan', 'Austrian Tree', and 'EU flower'. The Global Eco-labelling Network's website (www.gen.gr.jp/members.html) is a useful resource for finding out if an eco-label is available for a certain product category.

An increasing number of local authorities are now implementing environmental management systems to motivate all parts of the administration to improve the environmental performance of their operation. EMS could have a big impact on a local authority especially as regards purchasing. Moreover, a local government may oblige its contractors to achieve EMS certification, for example, EMAS and ISO 14001.

Simplified Product Life Cycle Analysis

Product characteristics	Ecological alternative	Environmental consequences				Action
		Material	Energy	Emissions	Waste	
Material Composition	Recycled material	■	■		■	Use recycled toilet paper
	Renewable material	■				Use recycled crushed rock rather than gravel
	Non toxic substance			■	■	Use chlorine-free paper
Transport	Short distance		■	■		Buy local products
	Transport means		■	■		Make use of rail transport
Manufacturing	Taking environ-ment into account	■	■	■	■	Choose a producer with an EMS system
Packaging	Reduction	■			■	Buy without packaging
Product use	Durability	■			■	
	Reparability and upgradability	■			■	Choose computers that can be upgraded
	Compatibility with equipment/user habits	■	■	■	■	
	Energy requirements		■			Use low energy light bulbs
	Safety for users	■	■		■	Use alternative pesticides
End of life	Re-use potential	■			■	Buy refillable cartridges
	Recyclability	■	■		■	
	Disposal			■	■	

Source: ICLEI, 2000a, page 11.
Footnote: "■" indicates the influence each purchasing decision can have on that environmental factor

For further information, please see:

www.dti.gov.uk/social enterprise (for public procurement kit)

www.melbourne.vic.gov.au/sustainablebusiness

www.sustainable-development.gov.uk/sdig/

CHECKLIST FOR A VISIONING CONFERENCE

Step 1: Decide venue, dates and timing

- Consider holding a two-day weekend conference.

Step 2: Advertise the conference

- Use local media (press and radio).
- Leaflets and posters.

Step 3: Issue invitations to

- Local residents, women's groups and business people.
- Representatives from the city council.
- Representatives from the basic sectors.
- Service providers.
- Representatives from national government agencies.

Step 4: Consider format of the agenda

- Importance of lead person setting the tone and guiding the discussion.
- Reflect on the aims of the meeting.

Step 5: Identify community assets and hold first discussions

- Identify and categorise community assets.
- Identify local issues and question whether global issues affect the area.

Step 6: Reflect on outcome of early discussion points

- Illustrate complex interconnection between issues and highlight need to solve problems in a holistic way. Reflection should also help to identify common ground and to create ideal future scenarios.

Step 7: Feedback session

- Spokespeople feed back outcomes of discussions.
- Summary of general discussion and conclusions.

Source: GTZ, 1997

Additional source: *Guide to City Development Strategies: Improving Urban Performance,*
    http://www.citiesalliance.org/activities-output/topics/cds/cds-guidelines.html, page 49

For further information, please see:
    www.plusnetwork.org

GUIDES AND PROGRAMMES WHICH FOCUS ON PARTICIPATION

Numerous programmes base their work on public participation and their tools have been extensively documented. A couple are provided here as examples.

The Sustainable Cities Programme (SCP)—a global technical co-operation activity between UN-HABITAT and UNEP—works with local partners at the city level to strengthen their capacities for environmental planning and management (EPM). All SCP cities share a common approach, which includes an environmental profile, a long-term integrated vision, "broad-based participation by public, private and community sector groups" (UN-HABITAT and UNEP, 2001) and institutionalisation. Guidelines and lessons of experience from the programme are documented in the SCP Source Book Series.

German Technical Co-operation (GTZ) has prepared a Guide for local governments to encourage participation in five settings: a task force; a round table and an expert panel; a workshop; a Citizens' Advisory Group; and a Public Forum (GTZ, 2000a).

For each of the five practices above, the Guide clearly sets out:

- **Who** the actors are;
- **What** the roles of the different actors are;
- **How** the public could be approached;
- **What** needs to be done to gain good output;
- **What** hints can be provided about methodology for a moderator;
- **What** resources are necessary; and,
- **When** specific action is required.

> For further information on the Sustainable Cities Programme and the SCP Source Book Series, please see
> www.unhabitat.org/scp
>
> For further information on the GTZ Participation Guide, please see *Strengthening Local Urban Planning and Management: Handbook* (GTZ, 2002)
>
> For additional examples of participation, please see:
> www.naga.gov.ph
> www.iap2.org/

STRUCTURING AN ENVIRONMENTAL PROFILE

A typical environmental profile contains four sections:

Section 1: City Introduction

This section provides introductory information on the city, including the geographical and physical setting, social characteristics and the economy. A few basic maps may be used to illustrate the information.

Section 2: The Development Context

This section provides a description of:

- The city's economic sectors, for example, manufacturing industries, mining, service sector, construction, fisheries, etc.
- An outline of the use of environmental resources by each sector of the economy, (in terms of type, quantity and quality of resources—for example, the use of ground water by local manufacturing industry.
- An analysis of the impact of each economic sector on the environment. An economic activity might affect environmental quality, for example, polluting the air or local watercourses, or it might reduce the quantity of resources, for example, over-extraction of ground water. An economic activity might have an impact on environmental hazards, for example, the construction industry might develop wetlands, reduce water absorption capacity, and cause seasonal flooding.

Section 3: The Environment Context

This section identifies and analyses each of the city's principal environmental resources and hazards. Environmental resource use by each economic activity is aggregated, so that the total use of that resource can be assessed. A synthesis of the qualitative and quantitative impacts on a resource from different economic activities is made. The synthesis also highlights conflicts of interest, such as pressure on urban lakes.

Section 4: City Governance and the Environmental Management Context

This section describes how the city manages environment and development issues. It reviews the quality of governance, lists key actors and interest groups, identifies institutions involved in managing urban development and environment (who deals with policy formulation, co-ordination, and implementation), and assesses how the city's overall environmental management system operates with respect to development and environment issues.

Source: UN-HABITAT and UNEP, 1999

For further information, please see www.unhabitat.org/scp

SWOT ANALYSIS

Examples of the Terms 'Strengths', 'Weaknesses', 'Opportunities' and 'Threats' in the Context of the Strategic Planning Approach

Term	Example
Strength: An urban resource or asset	A natural or man-made feature (a river or historic building)
Weakness: A shortcoming of the city or neighbourhood	Illegal dumping or waste burning in parts of the city
Opportunity: A chance that arises externally that might enhance the city and the wellbeing of its citizens	A growing trend among foreign tourists to visit historic buildings could result in a growth in tourist numbers in the city
Threat: An external factor that might cause problems	Industrial discharge to a river, upstream of the city, may pollute the water supply, cause health problems and create foul smells

It is convenient to prepare a SWOT analysis on a single sheet of A4 paper, as set out below.

Strengths	Weaknesses

Opportunities	Threats

STEPS IN RAPID ECOLOGICAL FOOTPRINT ASSESSMENT

A rapid ecological footprint assessment has a number of specific steps:

1. Establish the total quantity of resources used by the city in a specific year.
2. Apply a relevant conversion factor (see www.footprintnetwork.org).
3. Calculate the area of ecologically productive land required to provide the resources consumed within and to absorb the wastes generated by a city.
4. Divide the total area of ecologically productive land (from Step 3) by the total resident population of the urban area to arrive at the City EF.

The following table provides a basic framework for the preparation of a rapid EF assessment (based on Best Foot Forward, 2002).

Framework for the Preparation of a Rapid EF Assessment

Resources	Quantity	Conversion factor	Total area of land (ha)
Energy consumption			
Electricity			
Gas			
Liquid fuels			
Renewable energy			
Solid fuels.			
CO_2 emissions generated from fossil fuels			
Materials			
Production			
Consumption			
Stock creation			
Timber			
Metals			
Chemicals			
Other raw materials			
Food: consumption by food type			
Waste: materials discarded by:			

Resources	Quantity	Conversion factor	Total area of land (ha)
Households			
Commercial undertakings			
Industry			
Construction sector			
Transport: passenger km and CO_2 emissions by:			
Car			
Bus			
Rail			
Air			
Other modes of movement			
Water:			
Consumption by sector			
Leakage			
Land use: a break down of land used within the city			
Total			

A city administration should compare its EF with the global average EF as a benchmark and those of other cities. In subsequent years, a comparison between the City EF for Year 1 with the City EF for say Year 3 would establish whether a city is becoming more (or less) sustainable.

It should be noted that the use of an EF as an indicator of sustainable resource use is still relatively new. The Global Footprint Network (GFN) highlights the importance of a consistent approach to methodology and analyses, in order to ensure that results are credible and that comparisons can be made between cities. Cities can refer to the GFN website to monitor progress in attempts to agree on standards.

For further information, please see:

www.footprintnetwork.org (GFN website)

www.ecologicalfootprint.com

www.citylimitslondon.com/

MONITORING AND INDICATORS

A wide range of literature on indicators is available, prepared by organisations including the UN Commission on Sustainable Development, OECD and UNEP. UNEP, for example, is developing indicators as part of city environment assessment methodology to analyse how urbanisation impacts on the environment through pressures on natural resources and urban ecosystems (UNEP, UN-HABITAT & UN-ESCAP, 2005).

When establishing a monitoring system, the following checklist should be considered from the outset. The basic steps involved in a rudimentary monitoring system are set out in the checklist below.

Actions	Check
Are hidden costs as well as overt costs involved?	
Should the output be available to the general public and, if so, how?	
Should monitoring be achieved in partnership with local stakeholders, individuals, and organisations, and, if so, how?	
Does the city council already have monitoring systems in place that could be used?	
Are existing monitoring systems available elsewhere in the city that could support attempts to establish an M&E system for the urban development strategy?	
How frequently should evaluation be undertaken and feedback reports prepared?	

Source: GTZ, 1997a

Actions	Check
Taking measurements and storing data.	
Establish a base line measurement for each indicator at the beginning of the monitoring period.	
Continue to measure each indicator at regular intervals, for example, on the first day of every month.	
Measure indicator against the target set for a specific date.	
Record and store data so that they can easily be retrieved.	
Provide a back-up system whether a computer or on a card index system is used.	

Actions	Check
Keeping track of events	
Use A4 graph paper and the monitoring data taken for an indicator at regular intervals.	
Draw the horizontal and vertical axes on the graph paper.	
Write "time" along the horizontal axis and "units of measurement" against the vertical axis.	
Divide the horizontal axis into equal time periods based on the monitoring interval.	
Calculate a scale for the vertical axis. This will differ for each indicator and will depend on the range of measurements involved.	
Plot monitoring data for each indicator on a separate sheet of graph paper (one at a time).	
Plot the base-line measurement at the start of the monitoring period.	
Plot each measurement of an indicator taken at regular intervals and produce a trend line by joining successive points.	
Plot the target proposed in the plan.	
Analyse the trend line and consider and document whether corrective action needs to be taken in the light of trends to date and the target ahead.	

Source: GTZ, 2000

When considering which indicators of environmental sustainability to include, cities could consider the following table drawn from MDG7 and current work by UNEP on city environmental assessment methodology.

Basic Indicators of Environmental Sustainability

Indicator	Benchmark	Baseline	Target
Population growth—total number of inhabitants over a ten year period			
Area and population of legal and illegal urban settlements (km² and number of inhabitants)			
Dwellings in low-income settlements to be upgraded—number of dwellings			
Land use changes from non-urban to urban use (km² of urban area)			
Proportion of city residents without access to secure tenure			
Gini index (social inequality)			

Indicator	Benchmark	Baseline	Target
Incidence of following diseases: diarrhoea, poliomyelitis and Hepatitis A, tuberculosis, worm infections, skin and eye infections, insect transmitted diseases for example, malaria, yellow fever, dengue (number per 1000 population per annum)			
Death rate per 100,000 residents per annum from cardiovascular and respiratory diseases, strokes, cancer, and HIV/AIDS			
Population with access to piped, safe drinking water—number and percent of total			
Population in dwellings without access to septic tank or an urban sewerage system linked to a wastewater treatment plant—number of inhabitants and volume of untreated sewage			
Generation of household solid waste—kg/per capita/per day or per annum			
Collection of household solid waste (percent of households)			
Emissions of CO_2 equivalent per capita/annum (tonnes) (2)			
Atmospheric emissions: volume (tonnes/capita/annum) and number of days/annum when WHO standards for PM_{10}, CO, No_x, C_6H_6, Pb & SO_2 at specific monitoring points are exceeded			
Consumption of gas & electrical energy (KWh/per capita/annum) (1)			
Water consumption litres per capita per day or annum			
Reduction of land covered by forest and woodland (ha)			
Loss of natural vegetation cover and green areas (ha)			
Area of environmentally-sensitive land protected to maintain biodiversity (ha)			

(1) GDP per unit of energy use is sometimes used
(2) CO_2 equivalent

It may be prudent to start small and to build the system up gradually so that it eventually covers the entire range of indicators, economic, social and environmental. By monitoring indicators at regular intervals, the stakeholders will have information available about interim and end term changes which have occurred as a result of actions taken. The information will show the stakeholders and the public whether targets have been reached, and will provide a basis for an evaluation and for feedback reports.

For further information, please see for Latin America:
http://www.pnuma.org/deat/gc.htm

and for Africa:
http://www.unep.org/DEWA/africa/Resources/resources.asp

STEPS IN STRATEGIC ENVIRONMENTAL ASSESSMENT

A Strategic Environmental Assessment undertaken in parallel with the development of an urban development strategy can be summarised in five steps.

Step 1: Context and Baseline

When starting to prepare a CDS, the city administration should consider the availability of background information, possible objectives and indicators, and who will undertake the SEA. These matters must be resolved before issues and options are developed for the CDS.

Step 2: Scope

The city administration, in conjunction with a local stakeholder group, must determine the likely scope of an environment report and the level of detail to be examined during the SEA. Any statutory environmental bodies should be formally consulted during this process in addition to being represented in the stakeholder group. It is at this stage, in a parallel activity, that alternative policies and programmes for the CDS are formulated.

Step 3: Assessment and Mitigation

An assessment is made of the likely impact on the environment of the alternative policies and programmes being developed as part of the evolving CDS. Where it appears that aspects of the CDS would have significant adverse effects on the environment, recommendations need to be made as to how the impacts could be reduced, prevented or offset. The assessment and mitigation measures are set out in the environment report.

Step 4: Consultation and Report

The environment report is a key component of the SEA process and must be made available for public consultation at the same time as the draft CDS. After responses to the two consultation documents have been received, a public statement must be made explaining how the environment report and the public response have been taken into account during revisions to the CDS.

Step 5: Monitoring the Implementation of the CDS

This activity ensures that action conforms to the expressed intention of minimising the impact of development on the environment. Monitoring highlights any unforeseen adverse effects of CDS policies. This step must include reporting and feedback activities to reassure elected members and the public that agreed mitigation measures have been honoured.

For further information, please see
    www.trl.co.uk/trl_sea/content/main.asp?pid=230
    www.environment-agency.gov.uk
    www.acdi-cida.gc.ca/CIDAWEB/acdicida.nsf/En/EMA-218131145-PHA (Strategic Environmental Assessment of Policy, Plan, and Programme Proposals: CIDA Handbook)

THE ecoBUDGET PHASES

Each annual ecoBUDGET cycle broadly comprises the following phases:

Phase 1: Preparation

The administration prepares the environmental budget, that is, the ecological spending framework based on maximum levels of natural resource consumption and environmental targets. The process of preparing an environmental budget is similar to that of a financial budget. The department in charge of environmental budgeting asks all departments to come up with their estimate of demand on natural resources for the upcoming budget year. The central department discusses and negotiates demands with the other departments and compiles a consolidated environmental master budget. The city council and its committees, accompanied by public discussion, publicly discuss the draft budget. The city council approves the ecoBUDGET.

Phase 2: Implementation

The administration implements the environmental budget, monitors, controls and accounts environmental expenditure, that is, natural resource use.

Phase 3: Balancing the Budget

The administration prepares the environmental budget balance, that is, a statement of environmental accounts presenting targets against performance for each account—for example, freshwater consumption, and a statement of environmental assets describing the increase or decrease of natural assets, for example, the capacity of a forest to serve as a CO_2 sink.

Sample of Part of a 'Master' Environmental Budget Sheet

Resource (Indicator)	Base year	Comparison 2004	Budget year 2005	Mid-term target	Comments
Climate stability: CO_2 emissions t/pa	1,400,000 (1990)	1,200,000	1,180,000	1,050,000 (2008)	
Air quality: # days/pa with O_3> =120ug/m3 (8-h av.)	45 (2001)	36	30	20 (2010)	
Land: Loss of agricultural land to urbanisation	100 (2000)	95	90	75 (2012)	
Water: Consumption of potable water (l/capita/day)	116.6 (2002)	112	111	108 (2008)	

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Useful Websites

Cities Alliance	www.citiesalliance.org/index.html
C4S site on Strategic Environmental Assessment	www.sea-info.net/
ecoBUDGET	www.ecoBudget.org/
European Environment Agency/OECD Database on instruments used for environmental policy and natural resources management	www2.oecd.org/ecoinst/queries/
HabitatJam	www.habitatjam.com/
ICLEI-Local Governments for Sustainability	www.iclei.org
Melbourne Principles	www.iclei.org/mp
OECD Shaping the Urban Environment in the 21st Century	www1.oecd.org/dac/urbenv/
OECD Policy Mixes: Packages of environmental policy instruments	www.oecd.org/document/46/0,2340,fr_2649 _34339_1835950_1_1_1_1,00.html
United Cities and Local Governments	www.citieslocalgovernments.org/uclg/index.asp
UNDESA Division for Sustainable Development	www.un.org/esa/sustdev/documents/agenda 21/index.htm
United Nations Environment Programme, Urban Environment Unit	www.unep.org/urban_environment/
United Nations Human Settlements Programme, Environment	www.unhabitat.org/categories.asp?catid=271
UN Millennium Development Goals	www.un.org/millenniumgoals/
UK Centre for Sustainability (C4S)	www.c4s.info/
WHO Health & Development	www.who.int/hdp/en/index.html
WHO The Urban Environment	http://www.who.int/heli/risks/urban/urban env/en/