

For more information, please contact:

Peri-urban Research Project Team  
Development Planning Unit  
University College London  
9 Endsleigh Gardens  
London WC1H 0ED  
United Kingdom

Tel. +44 (0)20 7388 7581  
Fax: +44 (0)20 7387 4541  
Email: [dpu@ucl.ac.uk](mailto:dpu@ucl.ac.uk)

PUI website:

<http://www.ucl.ac.uk/dpu/pui>

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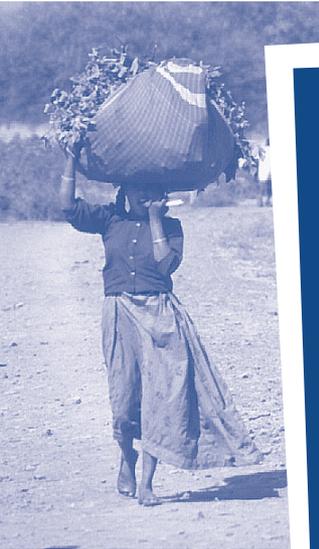
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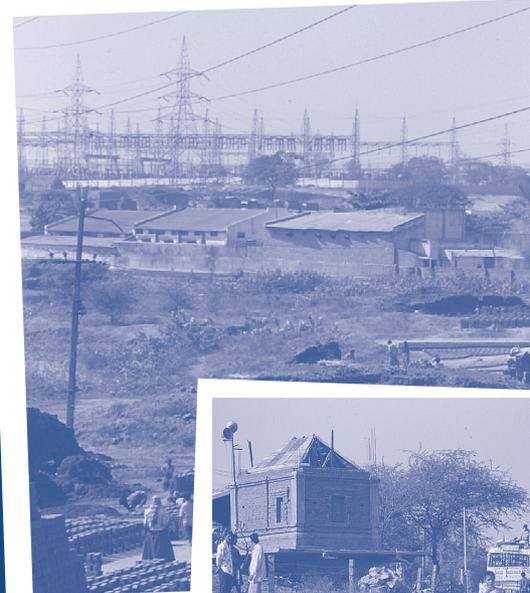
# Living between urban and rural areas

Shaping change for improved livelihoods  
and a better environment



Volume 3

## Environmental planning and management initiatives for the peri-urban interface: Learning from experience



### Guidelines for strategic environmental planning and management of the peri-urban interface

Produced by the Development Planning Unit (DPU),  
University College London (UCL), United Kingdom  
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United Kingdom



**dpu**

The Development Planning Unit  
University College London

**These guidelines have been formulated by critically reviewing and consolidating the existing knowledge and experience world-wide concerning environmental issues and actions at the peri-urban interface and then discussing the results with representatives of government, non governmental organisations, community based organisations, universities, and business and with citizens in and around the five cities of: Hubli-Dharwad, (India), Kumasi, (Ghana), Manizales, (Colombia), Curitiba, (Brazil), and Chennai, (India). Local collaborators gathered information and opinions, and organised workshops for these discussions. Pre-existing research in Hubli-Dharwad and Kumasi provided a wealth of information about their peri-urban interfaces and effects upon the livelihoods of the poor of a kind and a depth that is unique. In addition, representatives of more than ten international development support organisations - including ICLEI, UNCHS, USAID, DFID and IIED - provided critical commentary on the draft recommendations.**

**Later, local collaborators in Hubli-Dharwad, Kumasi, and Manizales conducted activities to field test various means of disseminating the guidelines. These included a project website, posters, street plays, a video and leaflets, as well as a set of three booklets of which this is volume 3.**

#### Volume 1

### Understanding change in the peri-urban Interface

This introductory volume provides a contextual analysis of the peri-urban interface, the processes of change arising from the interaction of rural and urban areas and the problems and opportunities arising from this interaction.

#### Volume 2

### Developing an environmental planning and management process for the peri-urban interface: guiding and working principles

This volume presents the key Guiding Principles to lead the environmental planning and management process of the peri-urban interface and then elaborates on the Working Principles and Components that must be applied in order to benefit the poor and enhance the sustainability of the natural resource base.

#### Volume 3

### Peri-urban environmental planning and management initiatives: learning from experience

This volume provides an overview of some of the initiatives that are being undertaken with respect to the environmental planning and management of the peri-urban interface by development agencies, NGOs, research institutes and government authorities.

# Introduction

**This volume provides a world wide view of the recent and current programmes and projects that focus themselves upon the peri-urban interface and the people who are affected by it. Used in conjunction with volume 2 this volume will show practical examples of the components and principles outlined.**

This volume consists of an overview of programmes supporting environmental planning and management of the peri-urban interface. Following from this is an analysis of the experience identified at project level. Case studies are used to highlight efforts and lessons learned about land-use change, increases in solid waste generation and natural resource use.

## **Existing Experience 1**

Whilst the programmes and projects used within this volume are extensive, they are by no means exhaustive. There are many projects underway, which do not specifically refer to the peri-urban interface but which do deal with the management of areas affected by it, probably in conjunction with urban areas. What becomes apparent is that agencies working on the peri-urban interface tend to use one of two different interpretations of the peri-urban interface. Some agencies use the definition a variation of which is presented within these volumes, of the peri-urban interface as the meeting of rural, urban and natural activities, whilst others regard peri-urban interfaces as areas on the urban fringe, most commonly, newly urbanised or urbanising places, and thus not very different from urban areas themselves.

Agencies which tend to consider the peri-urban interface as the urban fringe tend to support interventions with an urban focus, commonly concentrating upon the lack of service infrastructure, and seek to provide drinking water and sanitation systems, and community health education. Those agencies which have a more rural focus by considering the peri-urban to include the rural activities affected by the city are often concerned with natural resources management, including urban agriculture and the impacts of pollution. These tend to focus upon new practices for improved and sustainable livelihoods, rather than the provision of infrastructure.

**1** For a detailed review of initiatives undertaken by different international agencies to improve different aspects of EPM for the PUI see Budds and Minaya, 1999, downloadable from [www.ucl.ac.uk/dpu/pui/output2.htm](http://www.ucl.ac.uk/dpu/pui/output2.htm)

# Programmes supporting environmental planning management of the peri-urban interface

## **Water and sanitation programmes**

Most water and sanitation programmes tend to conceptualise the peri-urban interface as the built-up areas in the immediate periphery of cities. Such programmes tend to consider as key to addressing environmental problems the lack of access, mainly of the poor, to the most basic water and sanitation services.

Another dimension of water and sanitation programmes is the emphasis on building capacity and strengthening the institutions responsible for water supply and sanitation. The World Bank sanitation programme argues that until national government capacities are strengthened at all levels of government, the high degree of reliance on international agencies and non-governmental organisations will continue.

In current water and sanitation programmes top priority is given to the provision, with little consideration for the overall impact of polluting sewage effluent on freshwater and soil ecosystems. Another area that receives little attention is whether the basic provision of infrastructure in peri-urban areas induces further migration and accelerates urban growth in the periphery of the city.

## **Urban agriculture programmes**

Urban agriculture is sometimes related to the peri-urban interface. Urban agriculture programmes tend to conceptualise the peri-urban interface as villages located in the periphery of urban areas upon which urban processes have a direct influence. Goals of urban agriculture projects attempt to improve household food security, income generation, public health and waste and land management.

## **Natural resources programmes**

Natural resources programmes tend to characterise peri-urban interfaces as having strong urban influences and producing easy access to markets, services and other resources to those in rural activities, but creating relative shortages of land and risk from pollution and urban growth.

## **Urban environmental planning and management programmes**

Although most of these programmes do not deal specifically with the peri-urban interface, many learning experiences can be obtained from them that can be used to assist in the environmental planning management of the peri-urban interface.

Examples of such initiatives can be seen in the table on the following pages.

## Programme name

Cities Feeding People

## Agencies and partners

CFP, IDRC (Canada), CIDA.

## Actors involved

Poor communities practicing urban agriculture; researchers from national institutions, NGO's, and CBO's.

## Objectives

Support research to remove constraints and enhance potential for urban agriculture to improve food security, income generation, public health, and waste and land management.

## Methodology and activities

Activities to improve land tenure, property rights, and production systems in PUI; research on space-intensive production systems, use of organic waste in farming, and policy to enhance urban farming; funding for research reports.

## Geographical focus

West Africa.

## Programme name

Natural Resources Systems Programme (NRSP)

## Agencies and partners

DFID; and research institutions in the UK, Ghana and India.

## Actors involved

Peri-urban farmers; researchers; government agencies.

## Objectives

To develop policies for better management of peri-urban interface natural resources that benefit the poor.

## Methodology and activities

Systems-based approach to peri-urban interface (and five other) production systems; cross-cutting socio-economic methodologies component; participatory methodologies.

## Geographical focus

Kumasi, Ghana; Hubli-Dharwad, Calcutta, India.

## Programme name

FAO programmes: UPA (Urban and Peri-urban agriculture) Programme; AGSM (food supply and distribution to cities); AGPD (peri-urban horticulture); FORC (urban and peri-urban forestry)

## Agencies and partners

FAO, CIDA.

## Actors involved

Poor communities practicing urban agriculture; researchers from national institutions, NGO's, and CBO's.

## Objectives

To help provide answers to the consequences of rapid urbanisation on the efficiency and dynamism of food supply and distribution systems (FSDS), and ultimately on the food security of urban consumers.

To intensify urban and peri-urban agriculture to secure year-round market supply of fresh horticultural produce; to promote urban employment and income.

## Methodology and activities

Assistance in the formulation of FSDS development programmes at urban, peri-urban and rural levels; inter-spatial, interdisciplinary, and inter-institutional approach.

Document and disseminate information and technical assistance in urban and peri-urban forestry to member countries; awareness-raising, increasing documentation and accessibility of information.

## Geographical focus

West Africa.

## Programme name

Innovations in Development for Environmental Action (IDEA) Programme

## Agencies and partners

DFID; Commonwealth Partnership for Technology Management.

## Actors involved

Policymakers and planners; community leaders; NGO's; industrialists; local government leaders.

## Objectives

To examine institutional frameworks and management strategies and techniques which constrain or enhance environmental/development programmes; to identify pilot projects to serve as examples of institutional mechanisms for mediation at policy, strategy and project levels of environmental issues; to identify lessons for the management and assessment of development programmes in order to review current management practice.

## Methodology and activities

Network approach; action research methodology; training; environmental advisory service; development of mechanisms to reduce pollution and promote watershed management; improvement of institutional coordination to reduce watershed pollution; establishment of cooperative arrangement for common waste-water treatment facilities; development of policy guidelines and institutional arrangements for management of mineral exploitation.

## Geographical focus

Malaysia, Mauritius, Zimbabwe, Zambia, Ghana, Nigeria, Guyana.

## Programme name

Urban Management Programme (UPM)

## Agencies and partners

World Bank; UNDP; UNCHS.

## Actors involved

Municipal authorities; public, private and community sectors.

## Objectives

Improving the way cities do business; improving the use of existing resources; improving the provisions of local public services.

## Methodology and activities

Addressing health impacts on peri-urban populations of biomedical waste disposal; breakdown of traditional water supply systems affecting domestic and agricultural consumption; environmental hazards and land management; living and working conditions of waste pickers.

## Geographical focus

Latin America; West Africa; Middle East/North Africa.

## Programme name

Sustainable Cities Programme (SCP).

## Agencies and partners

UNCHS (Habitat).

## Actors involved

Municipal authorities; public, private and community sectors.

## Objectives

Improving EPM capacity; sanitation and compost for agriculture in peri-urban areas (Chennai); natural resource management, peri-urban agriculture and urban expansion (Dar es Salaam); water management, agricultural development and urban expansion (Ismailia); Integrated regional EPM for erosion and flooding control (Concepcion); peri-urban land degradation/soil contamination (Ouagadougou).

## Methodology and activities

EPM techniques; city consultations and working groups, demonstration projects on the city level using EPM; replication and scaling-up on the national level; information exchange at regional and global levels; development of reusable tools and procedures; operational support

## Geographical focus

India, Tanzania, Egypt, Chile, Burkina Faso.

## Programme name

Localising Agenda 21

## Agencies and partners

UNCHS.

## Actors involved

Municipal authorities; public, private and community sectors.

## Objectives

Support for the development and implementation of broad-based but local environmental action plans; enhancement of capacity of local and provincial authorities to integrate action plans into strategic urban development plans; focus on urban revitalisation, buffer zone development, solid waste management, and revenue rationalisation; exploring synergy between cities and nearby fragile ecosystems.

## Methodology and activities

Strategic Structure Planning approach; EPM of geologically sensitive areas and protection of community-based water boreholes in peri-urban areas (Nakuru); EPM on the city edge/dunes front to arrest urban expansion (Essaouira).

## Geographical focus

Kenya, Morocco.

## Programme name

Local Initiative Facility for Urban Environment Programme (LIFE)

## Agencies and partners

UNDP, World Bank.

## Actors involved

Local actors in low-income settlements.

## Objectives

To improve the urban environment by locally addressing linkages between urban poverty and environmental degradation.

## Methodology and activities

Promotion of local-local dialogue; strengthening of local institutions; focus on local solutions through process of participation and partnership of local actors in low-income settlements

## Geographical focus

12 countries in Africa, Asia, the Caribbean, Latin America, and Middle East.

## Programme name

Sustainable Cities Initiative

## Agencies and partners

USAID.

## Actors involved

Control and municipal governments, local and international NGO's, public, private and community sectors.

## Objectives

Inclusive participatory approach in the development of new types of public-private partnerships for long-term solutions to urbanisation problems. Approaches are geared towards support of a development process based on citizen participation.

## Methodology and activities

Programme support concentrates upon city demonstrations. Consultative process among stakeholders, decentralisation of authority, best practices, partnerships and a consolidation of existing USAID urban programmes.

## Geographical focus

Africa, Asia, and Latin America.

# Experience identified at the local level

The projects identified as dealing with the peri-urban interface identify it in distinct ways. Firstly, in some projects it is seen as an interface between the urban and rural spheres, in which activities traditionally classified as urban (e.g. industry) or rural (e.g. agriculture) co-exist. In others it is seen merely as the periphery of the urban area, possibly areas where the city has expanded onto previously non-urbanised land. In most cases, the peri-urban interface is characterised by low-income settlements with severe lack or absence of infrastructure and services and insecure livelihoods.

Project interventions that deal with the peri-urban interface were found to focus upon diverse themes, primarily natural resource management, urban planning, infrastructure provision and the promotion of economic growth.

## Project Strategies

**Data collection:** Most projects start with the collection of baseline information. Often involving the collection of preliminary information regarding the basic characteristics of the settlement or area targeted.

**Community participation:** A fundamental component of most projects is participation, and local people and communities have multiple roles in this respect, including decision-making power, voluntary labour and financial contributions.

**Community labour:** The dominant method of undertaking specific project initiatives, in particular the installation of service infrastructure, is to use community participation in the form of labour contribution.

**Micro-credit:** Aside from contributing labour, communities are increasingly expected to contribute financially to project interventions, especially where infrastructure is provided by a privatised agency.

**Education and training:** Capacity building within the community is another important method of reinforcing community participation.

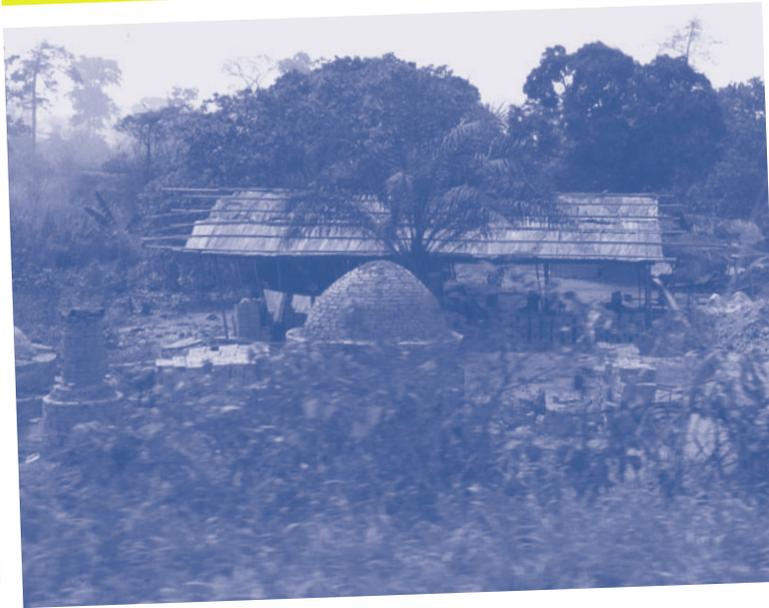
**Provision of infrastructure:** A focus of many development agency projects is the provision of infrastructure and services to peri-urban communities, because they are often lacking in this respect.

**Institutional relationships:** Many project interventions seek to establish partnerships with local government agencies or privatised public service agencies, and this strategy is now replacing previous strategies whereby development agencies themselves provided facilities. An important component of interventions is to improve the capacity of such agencies in order to improve services to the communities.

**Sustainability:** The wider objective of most agency intervention projects is sustainability, meaning the continuation of the project by the community without the assistance of the development agency.

**Recommendations for policy:** Finally, certain projects aim to evaluate processes and make recommendations based on good practice, on the assumption that lessons from intervention will be incorporated into policy and into other future projects.

# Dealing with changes in land use





## Case study 1 The Sustainable Ismailia Project, Egypt

Ismailia is a medium-sized Egyptian city located 140 kilometres north-east of Cairo. Agricultural activities in the peri-urban interface form the largest segment of the economy, followed closely by the service sector, which is dominated by government employment. The city's urban services and infrastructure are fairly well developed, with the exception of pockets of informal settlements within the peri-urban interface.

Ismailia's key environment/development challenges are as follows:

- 1 **water and wastewater:** extensive water networks in the city overpower the inadequate sewerage system, leading to health hazards and groundwater and lake pollution,
- 2 **solid waste management:** collection delays, inadequate collection coverage, open site disposal, and the burning of wastes have negative consequences for public health and for air pollution,
- 3 **industrial waste:** agro-industries in the peri-urban area are discharging untreated liquid effluents due to inadequate industrial waste treatment and management,
- 4 **water scarcity and agricultural development problems:** growth in the agricultural sector has increased pressure on water resources, and land availability is severely constrained by urbanisation, poor soil fertility and high salinity.

The Sustainable Ismailia project was initiated in 1993 by UNCHS/UNEP, and was supported by a SCP technical support unit and a consulting firm. The initial phases of the project included the preparation of an environmental profile and background papers on major thematic issues, the identification of key stakeholders, and the creation of a steering committee to guide the process. Four broad themes were identified: agricultural management and land reclamation; management of industrial development; managing Ismailia's lake; and urban expansion. In mid-1993, a three-day consultation resulted in consensus on broadly defined issues, the establishment of stakeholder working groups, and agreement on the goal of supplementing government investment and action with private and popular sector involvement.

Logical framework tools (such as 'problem trees' used to diagram cause and effect relationships) were employed as a part of a strategic development planning process. Sectoral national and regional plans were also reviewed to uncover areas where local authorities could have an impact. The strategic process concluded with a decision to focus on: 1) management of solid waste and industrial pollution affecting the lake; 2) the introduction of environmental issues into urban expansion and upgrading; 3) the promotion of small-scale and agricultural industry; and 4) the organisation of stakeholders in informal settlements to encourage their participation in development management. Stakeholders agreed on issue-specific strategies in a final environmental strategies review workshop.

The implementation of the action plans followed two parallel processes. Actions that were characterised as short-term, low-cost, urgent, and having a high level of consensus were implemented using local resources. Examples of these actions were community greening, swamp filling, the relocation of the main bus terminal away from the congested centre of the city, laying sewer infrastructure in some areas to mitigate lake pollution, and efforts to clean up the lake. Larger-scale capital investment projects were listed separately. These were screened and prioritised using environmental, economic and social factors as key criteria for assessment. Financial, technical, and pre-feasibility studies were prepared for nine high-priority projects.

The institutionalisation of environmental management principles in Ismailia was addressed deliberately through the formation of a task force to consider options for incorporating the strategic planning process in the governorate's structure. The task force's main recommendation, to establish a broad-based 'Council for Sustainable Development of Ismailia', was adopted by the governor.

## Key lessons from the project

- Intersectoral co-ordination and stakeholder participation was central to the success of the project.
- Transparency – the widespread sharing and scrutiny of information and the interaction between policymakers and stakeholders – made the process more effective and encouraged participation.
- Several factors, including the city's modest size, the high level of political support and visibility of the project, the availability of technical support, and generous financial support for working group meetings all helped to improve the chances of success.
- Limited private sector involvement and insufficient flexibility to deal with urgent issues were negative factors that had to be overcome.
- The two years allocated to the project were insufficient to fully institutionalise the environmental planning and management process.
- More flexibility in the sequencing of project events and phases would have helped to integrate institutionalisation from the beginning of project.

Source: UNCHS / UNEP, 1997, Environmental Planning and Management Sourcebook, Volume 2, UNCHS/UNEP, Nairobi, pp. 71-74.



## Case study 2 Environmental planning and management on the city edge to arrest urban expansion, Essaouira, Morocco

Local Agenda 21 (LA21) is working in Essaouira on a number of different projects relating to the sustainable development of the city and its surrounding peri-urban area. In alignment with the principles of LA21, the aim is to improve health and living conditions in the selected urban and peri-urban areas, through management of the environment, within an urban or peri-urban planning framework. One of the key areas of action proposed is the attempt to curb the urban sprawl at the border between the town and dune forest interface. Part of this project will be to create an Urban Park in the area for the purpose of helping to increase the quality of life in general through the provision of 'green' spaces for those living in urban areas, thus producing an environmental planning management process for the peri-urban interface.

One of the main issues relating to the success of LA21 is the absolute need for the Municipal Council to share the same visions of sustainable development and to be in agreement over the actions needed to be taken in order to work towards achieving these visions.

Towards the end of the 1990s, Morocco underwent a national shift of Governors. The relocation of a number of political representatives obviously will impact on the relationships forged between the previous Council and the Local Teams of LA21. In fact, whilst increased animosity has been reported in some areas, excellent collaboration has been reported in others. Political stability therefore, on top of the need for excellent relations between council and team, plays a pivotal role towards successful sustainable development planning in urban or peri-urban areas under the LA21 programme.

### Intervention

At the core of all LA21 development plans are tasks that can be divided into three main sections: vision, action and communication. One of the main factors of LA21 is to try and aid the capacity of the Municipal Council to carry its own planning functions in the future, through a participatory approach.

- 1 Development of a shared vision towards sustainable development:** The first step in any project is to create the same awareness of the problems and issues concerned in all stakeholders and interested parties. This must be done before any of the specific action projects are decided. In the Essaouira project, this was achieved through a series of work sessions, meetings and document preparation which evolved to slowly include more and more of the different stakeholders involved in planning issues.

2 **Priority Actions and Projects:** The shared vision of the problems means that all those involved will share the outlook of the aims and tasks set out in the ongoing planning exercises and aids towards their acceptability. Or at least this is the theory. Various areas were identified as priority actions and projects. Amongst these was the project relating to the development of a proposal to curb the urban sprawl at the border between the town and dune forest interface, assisted by the creation of an urban park in the area for the purpose of helping increasing the quality of life in general through the provision of 'green' spaces for those living in urban areas, to be addressed through planning of the specific peri-urban zone.

3 **Communication and Participation:** The LA21 approach to decision making is extremely effective in that it aims to involve representatives from the widest range/cross-section of the population. This permits inputs from all stakeholders and thus ensures wide spread acceptability and affordability of interventions among the target players. The training of local leaders in this approach is a vital step.

### Key lessons from the project

If we believe that good governance is the key to dealing successfully with changes in land-use resources, it follows that good governance:

- is about linking vision to action
- calls for clearly defined responsibilities for different partners
- cannot be achieved without rationalising municipal funding
- requires sustained capacity building of politicians and professionals

Source: UNCHS, 1999. Localising Agenda 21 – Action Planning for Sustainable Urban Development. Progress Report, pp. 27-37



## Case study 3 Practice of environmental planning and management: case study of APA - Litoral Norte, Bahia, Brazil

In 1992, the State government of Bahia, Brazil created an environmental protection area along 140 km of coastline to the north of the city of Salvador in north east Brazil, denominated “APA - Litoral Norte”, an environmentally sensitive area. The state government of Bahia and the municipal government of Salvador want to promote tourism along a new road (linha verde) that has been built along the coast from Bahia to the state of Sergipe to the south. Private developers are already developing properties along this road.

### The project

The overall goal of the project is to promote sustainable development in the state of Bahia. The specific objective of this project’s contribution is to “facilitate this process by assisting the different State institutions, to collaborate, produce and implement a management and environmental planning programme for the APA-LN region, which will serve as a model for replication elsewhere in the State”.

The project takes a multi-disciplinary approach, and comprises the following stages:

- 1 Definition of mechanisms for institutional collaboration
- 2 Development of an environmental planning and management plan for APA-LN
- 3 Production of environmental planning and management guidelines
- 4 Creation of new income-generating opportunities for inhabitants of APA-LN
- 5 New environmental education campaigns and materials
- 6 Increase of the technical capacity of the staff and the other institutions involved

### Strategies and activities

- Working groups were set up around issues, e.g. infrastructure, and include representatives from agencies, NGOs, and community groups.
- Co-ordinate the short-term and long-term development priorities of the 5 municipalities making up APA-LN.
- Consultation with the private sector (e.g. investment banks and industry confederations) is an important management aspect.
- Pilot projects were implemented in one municipality before being replicated to the others.
- Stakeholders were identified using stakeholder analysis and divided into primary and secondary stakeholders.
- A bottom-up participatory methodology is used.

### Lessons and recommendations

- Working groups were found to be unrepresentative of all the agencies set out for inclusion. Each working group should have representatives from the full range of actors, i.e. institutions, agencies, communities, NGOs.
- The need for local staff training in data collection, social analysis and community liaison was identified. Project members should also be trained so that they can then train other members of staff.
- A detailed stakeholder analysis needs to be carried out once a pilot municipality has been identified.
- Vulnerable groups were more difficult to identify because they are less literate, they have less contact with health education or services, they are under-represented by community groups and associations, and they have less access to regular income. Such groups need to be identified using appropriate methodologies.

- Contact with all stakeholders should be maintained on a regular basis.
- Gaps for engagement between more advantaged and less advantaged stakeholder groups should be identified.
- The need to take low levels of literacy into account was identified when designing materials for dissemination. These should be in formats that are appropriate for the less literate, e.g. posters, cartoons, cassette tapes etc.
- The field offices established with the municipalities have the potential to provide excellent opportunities for work to begin with local communities.
- Attempts should be made to strengthen community organisations.
- Communities that are not directly involved in the project should be included in order that they remain enthusiastic about future participation.
- Gender issues should be considered throughout the whole process.
- It is useful to establish links with other environmental projects, e.g. Pirapama, to discuss timing, scope, methodology, outputs etc. and to learn lessons.
- Internal and external sources of funding should be identified, especially from the private sector.
- The importance of land tenure was raised - this did not form part of the project proposal, but turned out to be a crucial issue that determined private development; and also the legal aspects were a need that had to be investigated.

### DFID monitoring workshop

This was a workshop held between all the administrators in the environmental planning and management process, and not representatives from communities. The workshop included representatives from the state and municipal governments, NGOs and also a representative from the Brazilian Agency for International Co-operation (ABC).

#### Workshop methods:

- **Double wheel**, in which all participants stand in two parallel circles holding hands, and then the circles start moving in opposite directions and when they stop the two participants facing each other have to interact.
- **Surprise bag**, in which all participants take a coloured card from the bag and those with the same coloured cards organise into groups.
- **Focus groups**, within which discussions are held about the work of each group and activities to be carried out are identified.
- At the end of the workshop, each participant had to identify the three priority activities that had to be carried out in the planning of strategies and the actions of projects.
- These priority activities were compared and discussed in a plenary session.
- The workshop produced an output in the form of an aide memoire, i.e. a document for future reference.

Source: DFID (1998), Management and Environmental Planning Programme for the APA Litoral Norte Area, Inception Mission Report, 16-19 May.

# Dealing with changes affecting natural resources





## Case study 4 Watershed management in the Densu River basin of Ghana

Although small by African standards, the Densu river supplies fresh water to over two million people living in the city of Accra and the surrounding peri-urban communities, serving as drinking, drainage and irrigation. Not surprisingly it is known as the most important river in Ghana.

Great concern has arisen over pollution and siltation levels in the Weija reservoir on the Densu river, and their possible long-term effects. The main causes of the increased pollution have been attributed to rapid urbanisation arising from rural to urban migration across the peri-urban interface at Nsawam township. Also, intensification of agricultural and logging activities along the riverbanks have greatly contributed to pollution.

### Intervention

The IDEA (Innovations in Development for Environmental Action) group decided to address the pollution problems in the Densu river by taking a broader approach and looking at the whole of the Densu basin.

The IDEA activities, intended to create a transferable prototypical river basin management system, can be broken down into several phases:

- Identification of agencies that have significant control over activities in the area. Analysis of their management structures and legal/institutional frameworks.
- Creating awareness programmes so that all parties have a similar understanding of the problems/issues at stake.
- Bringing together different stakeholders, through mediation and communication, in order to share the

knowledge of different sectors and move the issue forwards, achieved initially through an extremely popular seminar

- Proposition of guidelines and recommendations including 1) establishing a river basin authority, 2) raising/continuing public awareness, 3) agency actions towards reduction of environmental degradation, 4) institutionalisation of EIAs (Environmental Impact Assessment)
- Implementation, monitoring and evaluation of progress

Through the creation of trained river management personnel and local action networks, the results of the IDEA efforts by 1998 were extremely positive: improved communication between stakeholders and an increasingly systematic watershed management.

### Key lessons from the project

- Information gathering and identification of responsible parties as a first step
- Awareness campaigns are a vital step to ensure all parties have a similar appreciation of the problem
- Establishment of communication lines are vital to permit dialogue and the flow of ideas in order to move the issue forwards
- Development/evolution of motivation and local mechanisms to maintain water-quality as new development pressures arise.

Source: Carley M. & Christie I, 2000, *Managing Sustainable Development*. Earthscan, London, 2nd edition, pp. 220-222



## Case study 5 The sustainable Concepción project, Chile

Concepción is Chile's largest metropolitan area, with a population of 820,000 in an area of 2096 square kilometres. It sits on the banks of the Bio Bio river. The region's topography includes coastal lowland marshes, a low coastal mountain range, a rich, fertile interior valley, and the Andean mountain range. Over one third of the population is employed in services, and about 40% in commerce and industry. Only five percent of the population is employed in the agricultural sector. Poverty is a serious problem in parts of the city; in Lota, 57% of the population lives below the poverty line. Between 1940 and 1992, the population of the metropolitan area grew 4.5 times – at twice the rate of the region as a whole. The growth of the city has been associated with a deterioration of air and water quality, increasing population density, and serious levels of vehicle congestion.

The key environment/development issues in metropolitan Concepción include the following:

- 1 **Water pollution:** the area's water resources (rivers, lakes, and coastal waters) are polluted with organic and inorganic solid waste, chemicals and bacteria originating from industry, fish factories, coal washing facilities, wood processing plants, and domestic and industrial waste.
- 2 **Improper solid waste management:** some urban land has been rendered useless by an inappropriate solid waste disposal system, characterised by a lack of co-ordination between municipalities. Vermin, odours, and health hazards plague uncontrolled dumps outside the city.
- 3 **Erosion and flooding:** intensive and extensive forestry and mining in the peri-urban interface has led to soil erosion and deforestation, as well as increased risks of fire and landslides. During rainy periods, squatter housing built on flood plains is vulnerable to inundation.
- 4 **Air pollution:** fish factories and chemical plants in the peri-urban zone emit air pollution, often close to populations who are therefore increasingly exposed to chemical leaks and explosions.

The environmental planning and management process in Concepción has gone through all phases, including institutionalisation and scaling up. It began with the creation of a project team, which included an economist and two architects initially, and later incorporated professionals from other fields. An urban environmental profile was prepared, followed by four months of sectoral stakeholder meetings. Two issues emerged as priorities in the identification and prioritisation process: deficiencies in water resource management and in urban land planning and management. Initial consultations resulted in a declaration signed by 150 key actors, which indicated the commitment of these stakeholders to develop environmental action plans within a common framework.

Six working groups were formed, which concentrated on: 1) industrial emergency planning; 2) a development strategy and action plan for a rural county in the region; 3) a poverty alleviation program for Lota; 4) the upgrading of Lota's peri-urban fisherman village; 5) the restoration and management of urban lakes; and 6) the development of an urban management agency for Concepción. Supported by the project team, the working groups clarified problems, identified objectives and alternative strategies, and ultimately formulated action plans.

Implementation began with a process of taking inventory of implementation capacity, financial resources, technical capacity, and institutional responsibility. Action plans focused on existing resources at the local, regional, and national levels. Several plans were successfully implemented, such as a lake clean-up program, a training program for small entrepreneurs, and hydroponic crop development carried out by poor families inside the peri-urban interface. Regional and technical committees were established to deal with technological emergencies and the safe transport of hazardous materials.

The institutionalisation process focused on increasing the capacity of existing institutions to exchange information, prepare joint strategies, and co-ordinate action plans through intersectoral working groups.

## Key lessons from the project

- Improved participatory approaches, clear identification and inclusion of stakeholders, high levels of co-ordination, and linked objectives, procedures and expected results all contributed to the success of the project.
- Transparency and a well-structured process facilitated the inclusion of additional stakeholders as the project progressed.
- Positive results in working groups had a catalytic, multiplier effect when participants applied similar approaches in their own institutions.

Source: Tapia, L, 1997, Concepción: Following Through and Scaling-up the EPM Process. In Environmental Planning and Management Sourcebook, Vol. 2: City Experiences and International Support. UNCHS/UNEP, Nairobi.



## Case study 6 Practice of environmental planning and management: case study of Pirapama river basin, Pernambuco, Brazil

The Pirapama River Basin (PRB) in the state of Pernambuco, Brazil covers an area of 600,000 km<sup>2</sup>, extending over a large part of four municipalities and parts of four others. Two thirds of the river basin is located in the Recife metropolitan region.

Recife experiences several problems with water. Firstly, water shortages are caused by population growth and increased industrial demand in Recife, and have been exacerbated by recent droughts. Tourism has also increased pressure on water resources. Secondly, there has been increased pollution of reservoirs/rivers in the PRB, due to the location of an industrial zone next to the river and the major port at the river mouth, leading to a reduction in water quality and poor health. Pollution is largely attributed to the following causes:

- Discharges from distilleries
- Run-off from fertilisers and agrochemicals
- Untreated human waste and solid waste
- Leaching from landfills

### The project

The overall goal of the project is to improve public health conditions in Recife through the sustainable supply of clean water for domestic and industrial uses. The objectives of the project are to assist state and municipal institutions within the remit of CPRH, and the production and implementation of a sustainable development plan for the PRB. The project aims to achieve a balance between the different and conflicting objectives related to sustainable

economic growth, environmental management and social development in the PRB.

The project employs the following approaches:

- Inter-institutional
- Multi-disciplinary

The project aims to produce the following outputs:

- Mechanisms for institutional collaboration
- Sustainable development plan for PRB
- Guidelines for environmental and social appraisal of new development in PRB
- Plan for clean-up/environmental improvement
- Environmental monitoring system
- New environmental education materials
- Capacity-building of state and municipal government
- MSc courses at UFPE

### Strategies and Activities

- The working groups include representatives from the state water company, university, metropolitan development agency, rural development agency, and five of the municipalities. They are organised around the following themes: socio-economic issues, water pollution, land-use/agriculture, environmental assessment/management, GIS/cartography.
- CPRH and the water company developed an environmental monitoring system.
- Stakeholders were identified using stakeholder analysis and were divided into primary and secondary stakeholders. Primary stakeholders were identified as

those who are worst affected by the poor water supply, drainage and sanitation. They comprise: community based organisations, farmers, fishermen, women's groups, rural workers, small scale producers, favela organisations.

- A management council was established at the start of the project to represent secondary stakeholders.
- A steering committee has been established, but there has been a lack of participation from state-level agencies.
- River basin committees will be established as well as an overall PRB committee. These will comprise representatives from the state government agencies, municipal authorities and civil society. Eight groups of civil society have been identified:
  - university
  - NGOs
  - industrialists
  - sugar cane producers
  - women's groups
  - community/favela groups
  - fishermen
  - small-scale producers
- A community forum will also be established.

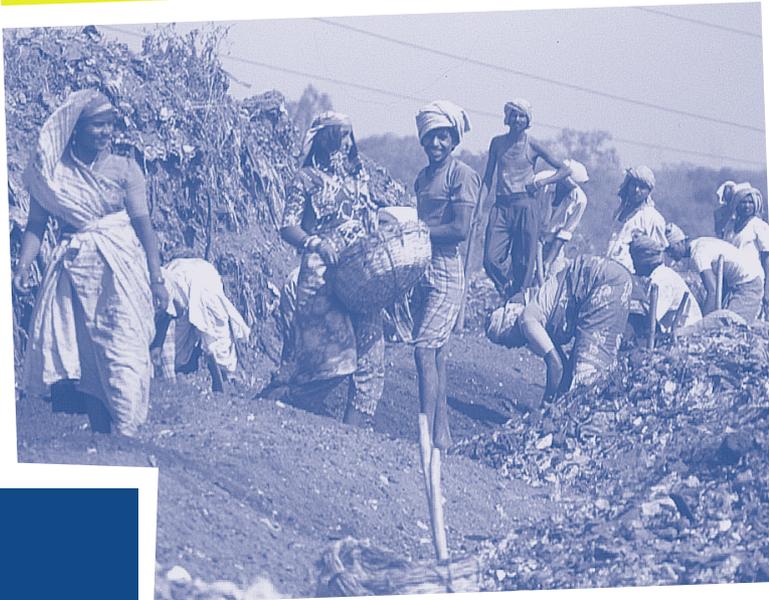
### Key lessons and recommendations

- The process of stakeholder analysis needs to be revised and updated during the course of the project in order to identify new stakeholders.
- The use of focused working groups was extremely effective for encouraging local ownership and institutional co-operation. Participatory workshops could be a useful tool in this respect.

- The need for more interaction between working groups was identified.
- The initial data collection was carried out by the working groups was beneficial because of the local knowledge of environmental problems and opportunities of the local people who participated.
- The success of the project has been partly attributed to strong leadership and ownership and a good and effective management team.
- The project has also been successful due to good institutional collaboration and reinforced political commitment to the project.
- Confidence-building needed to be carried out with local stakeholder groups due to their disillusion after past promises.
- Some NGOs were considered too political to be included in the project.
- Appropriate forms of dissemination identified include newspaper articles, brochures, videos, T-shirts and posters.
- The project also needs to be well-publicised by the local press and at local events. Appropriate dissemination methods need to be devised, and dissemination needs to take place via the Community Forum. Awareness of low-cost sanitation options needs to also be disseminated.
- It proved too difficult, due to institutional bureaucracy, to influence MSc courses at the UFPE (Federal University of Pernambuco).

Source: DFID (1998) Environmental Management and Planning of the Pirapama Basin, Monitoring Mission Report, 10-15 May.

# Dealing with increasing liquid and solid waste





## Case study 7 Co-operative wastewater treatment in the region of Kuala Lumpur, Malaysia

The industrialisation of Malaysia's national economy, since the late 1980s, is being led by the manufacturing sector. This sector includes food processing, textiles and metal finishing industries. The vast majority (90%) of these are small-scale, 'backyard' industries.

With increasing industrialisation it has been recognised that there is a need for stricter environmental control. The metal finishing industry, is a major producer of hazardous wastes such as acids and alkalis containing aluminium, chromium or nickel, for example. These may be extremely toxic.

A survey showed that over half of the metal finishers were located in the Klang Valley, the peri-urban interface surrounding the capital city of Kuala Lumpur. These are mainly small-scale industries and an important source of employment in the peri-urban interface. These have played an important part in development. However, there are many difficulties associated with trying to regulate small-scale businesses and this is a problem in many countries. However development, must account for both environmental and economic concerns if it is to proceed in a more sustainable and healthy manner. Livelihood improvement strategies must address environmental issues in unison with social and economic issues.

### Intervention

The IDEA (Innovations in Development for Environmental Action) programme aims at enhancing local management capability for addressing serious environmental problems through action networks. They realised the difficulty of the metal finishers waste production situation in Kuala Lumpur and the surrounding peri-urban area and redefined the problem as:

- **pollution concerns**
- **economic concerns:** viability of the enterprises, their contribution to industrial growth, costs of waste-metal removal from the effluent and the cost effectiveness of communal treatment run co-operatively
- **land use concerns:** incompatibility of industrial and residential uses
- **spatial concerns:** whether to relocate businesses near to waste treatment site, or transport waste from industries to a central facility.

Discharge standards and pollution control measures are stipulated by the Malaysian government. It has been the failure to comply to these, however, that has caused problems. Failure has been attributed mainly to financial, technical and spatial constraints.

(Continued on the following page)

## Case study 4 Co-operative wastewater treatment in the region of Kuala Lumpur, Malaysia

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Through the IDEA project, the government opted for the development of a common wastewater facility, which would be managed by a co-operative of metal finishers. Objectives were also defined:

- **Short term:** assessment of characteristics of the industry's wastewater along with pollution loads carried with in the peri-urban area of the Klang Valley.
- **Medium term:** reaching agreement between interested parties (governmental and industrial) on the acceptable pollution prevention/control methods.
- **Long term:** proposal for common wastewater treatment facilities within the Klang Valley

A working committee, composed of representatives from central and local departments, research institutes and the newly formed metal finishing society, has developed a proposal for co-operative waste treatment facilities, with and without relocation.

The formation of the metal finishing society was (and continues to be) aided by IDEA workers. Many of the metal finishing businessmen have small companies and are not accustomed to co-operative activities, especially in relation to the public sector. Dialogue and communication played an important part in the mediation process that occurred in order to gain co-operation of the metal finishers in pollution mitigation and environmental conservation strategies.

### Key lessons from the project

- The control/regulation of small industries may be achieved through a participatory approach and open dialogue.
- Co-operative initiatives are useful tools for finding solutions to environmental problems and avoiding conflict between the different parties.
- It may be useful to have an arbitrary, third party acting as mediators to aid co-operation between different groups.

Source: Carley M. & Christie I, 2000, Managing Sustainable Development. Earthscan, London, 2nd edition, pp. 224-226.



## Case study 8 Peri-urban land degradation due to industrial soil contamination and degradation - Ouagadougou, Burkina Faso

Ouagadougou is the administrative and political capital of Burkina Faso. The city's economy is dominated by the informal sector, which employs 73% of the economically active population. A significant segment of the population is engaged in peri-urban agriculture and livestock herding. Approximately 65% of Burkina's medium- to large-scale industries (in food, tobacco, paper, chemical, textiles, leather, metallurgy, etc.) are located in Ouagadougou. Since 1965, the city's spatial dimensions have doubled, and the population has increased tenfold. The subdivision of nationalised vacant peri-urban land, and migration from drought-stricken areas contributed to the in-migration in the 1980's. Much of the nationalised urban land suffers from inadequate infrastructure and public services.

The three main environmental problems facing Ouagadougou are as follows:

- 1 **Sustainability of water supply:** the city is unable to meet the demand for water from existing reservoirs, and only 55% of the urban population is served by piped water and community standpipes.
- 2 **Pollution of water resources:** water is brought into the city through the peri-urban interface by canals, which are often depositories of solid and liquid wastes. The water supply is further polluted by effluents from industries. The limited surface and groundwater supplies suffer from human, industrial, and solid waste run-off pollution.
- 3 **Land degradation:** urban and peri-urban land has been degraded by improper solid and industrial waste disposal and by wood-cutting for fuel. These activities have contaminated the soil and have resulted in widespread deforestation.

A national environmental action plan, the PSAO and the World Bank's second and third urban projects have all been opportunities for Ouagadougou to address its urban environmental problems. None of these initiatives, however, fully utilised an environmental planning and management framework, but some elements did correspond with such a process.

(Continued on the following page)

## Case study 8 **Peri-urban land degradation due to industrial soil contamination and degradation - Ouagadougou, Burkina Faso**

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The identification and clarification of urban environmental issues and problems in Ouagadougou has primarily been a top-down process; a variety of reports and studies were generated, mostly by and for external consultants or central ministries, and without the involvement of other stakeholder groups. Strategy development and action planning has also been limited. Efforts were focused on problems in specific sectors (the assumption being that each sectoral project would be dealt with by the appropriate central ministry) rather than taking a more holistic, strategic view. The third urban project, which was prepared by local consultants, has been somewhat more intersectoral and inclusive of various ministries and stakeholders.

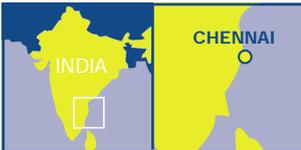
Implementation has been limited by the fact that all proposals were predicated on external financing – which has been attained for only one urban project. This project has been able to improve solid waste management through a consultative process, which has led to the privatisation of collection services, increased cost recovery and a clearer division of responsibilities.

There has been no institutionalisation of the urban environmental planning and management process due to a lack of experience in this area and to the history of highly centralised decision-making in Burkina.

### **Key lessons from the project**

- The lack of institutional co-ordination and co-operation has seriously hampered the environmental planning and management process.
- There is a misconception in this case that urban environmental problems can be solved with economic 'fixes' and by simply 'getting the prices right'.
- Excessive centralisation, competition amongst stakeholders, and a lack of policy co-ordination have all been obstacles to a strategic management process.

Source: Bazie, J., 1997, Ouagadougou: Combining Experiences from Participation in International Projects. In Environmental Planning and Management Sourcebook, Vol. 2: City Experiences and International Support. UNCHS/UNEP, Nairobi.



## Case study 10 Improving solid waste management in Chennai, India

The Chennai Metropolitan Area (CMA) is home to over 3.7 million people, in an area of 1177 square kilometres. The CMA is growing at the rate of 25% per decade. Large industries and commercial establishments form a firm base of the city's economic activity. Most major industries are located on the outskirts of the city in the peri-urban interface. Informal settlements in Chennai have grown due to a large influx of migrants from the surrounding state of Tamil Nadu. Nearly one third of Chennai's population lives in the city's 1500 slums. Infrastructure and services have not been able to keep up with the spatial growth of the city into the peri-urban interface.

The key environment/development issues in Chennai are as follows:

- 1 Improper waste management: the CMA government has not been able to manage increasing levels of waste produced by population growth and the development of unplanned settlements, particularly in the peri-urban area. Most solid waste accumulates on the streets, and what garbage is collected is dumped in insanitary fills.
- 2 Lack of sanitation: untreated sewage is often discharged into water bodies, and the resulting insanitary conditions pose a health hazard to urban dwellers.

- 3 Water quality and availability: public water supply, which is 100 litres per capita at best, periodically falls to 70 litres per capita during dry seasons.

In this case, aspects of the environmental planning management process were taken on by Exnora, an NGO whose purpose is to improve environmental sanitation in Chennai and to raise environmental awareness among its citizens. Identification and prioritisation of solid waste as a main issue was the result of Exnora's founding members' concern about cleanliness and the opportunity for citizen co-operation in a Municipal Corporation initiative to replace street dustbins.

In 1989, Exnora began to develop a strategy and action plan to ensure that the new garbage containers would be used instead of dumping on the streets. The strategy involved seeking the participation of local residents and ragpickers. Ragpickers were reclassified as 'street beautifiers', and were given new responsibilities for household collection and street sweeping. They were also given monthly salaries and soft loans to buy tricycle carts, the costs of which were covered by residents who agreed to pay a monthly fee for the service.

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## Case study 10 **Improving solid waste management in Chennai, India**

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The successful implementation of the plan led to replication in other neighbourhoods, and institutionalisation happened rapidly. In Chennai, about 1500 civic Exnoras are in operation. Each one serves approximately 75 families, with a total coverage of around 450,000 people. Civic pride and community bonds have been strengthened through the process of bringing people together to work towards grassroots environmental protection.

In many cases, Exnoras have expanded their activities into other environmental areas, including monitoring waterway pollution, tree planting, rain harvesting for aquifer recharge, environmental education in schools, public information campaigns about environmental impacts of industrial development, and slum upgrading for poverty alleviation. The movement has spread to other regions of India, and a steering committee is looking at ways to spread the approach to Sri Lanka.

### **Key lessons from the project**

- High levels of participation and good human relations among key stakeholders such as street beautifiers, residents, and municipal authorities were central to the success of the project.
- Thorough and intensive community participation resulted in both better solid waste management and increased willingness to try new, innovative strategies such as source separation of waste.
- Partnership strengthening is needed between community-based efforts and the municipal service, which sometimes regards 'Exnora garbage' as outside their responsibility.

Source: Ramkuman, T.K. (1997) Madras/Chennai – Exnora: Strengthening Community Bonds through Improvement Actions at the Grass-Roots Level. In Environmental Planning and Management Sourcebook, Vol. 2: City Experiences and International Support. UNCHS/UNEP, Nairobi.



## Case study 11 Environmental planning and management within the peri-urban interface of geologically sensitive areas, Nakuru, Kenya

By the end of the 1990's, Kenya suffering financial crises driven by political upheaval, faced further concern in the form of large scale environmental damage. In this case de-forestation, occurring at Karura forest in Nairobi. Karura forest is an extremely important area in terms of biodiversity and as a water catchment area for several of Nairobi's major river systems.

As the de-forestation took hold, several neighbourhoods in Nakuru suffered outbreaks of cholera. The outbreak of the disease was attributed to the severe state of pollution of the River Enjoro. Although Nakuru Council acted relatively quickly, nearby areas, where Local Agenda 21 (LA21) had assisted in improving the sanitation of water draw-off points, suffered no such outbreaks.

In 1998, the Physical Planning Act of November 1996 came into effect for Nakuru and the surrounding peri-urban interface. Such physical planning action was badly needed, and so the Kenyan government requested the assistance of Habitat for reviewing the metropolitan growth strategy, including the LA21 strategic structure planning process.

### Intervention

The LA21's Strategic Structure Plan (SSP) process can be divided into three main sections: vision, action and communication. The main objectives of the SSP are to give a strategic direction to urban (and peri-urban) development till 2020, and to expand the capacity of the municipal council so that it may carry out its own planning functions independently in the future. The following describes how this occurred in the Nakuru project.

- 1 Development of a shared vision towards sustainable development:** The first step in any project is to create the same awareness of the problems and issues concerned by all stakeholders and interested parties. In the Nakuru project, this was achieved through a series of work sessions, meetings and document preparation by the project partners so that all these were clear of the issues that were to be promoted.

The next step was to share the vision with the various stakeholders so as to be able to receive outputs and feedback from these on the initial SSP. This was achieved through setting up of a workshop attended by, elected officials, municipal officers, NGO representatives, community based organisations, the private sector and research community. Feedback was very positive and the workshop was successful in gathering and sharing ideas from the different sectors so that a final SSP was produced.

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## Case study 11 **Environmental planning and management within the peri-urban interface of geologically sensitive areas, Nakuru, Kenya**

(Continued from previous page)

- 2 **Priority Actions and Projects:** The shared vision of the problems means that all those involved share the outlook of the aims and tasks set out in the SSP aiding towards its acceptability. Various areas were identified for improvement. Aiming to improve health and living conditions in the selected urban and peri-urban areas (mainly low-income) by reducing the incidence of disease through management of the environment within an urban/peri-urban planning framework.
- 3 **Communication and Participation:** The LA21 approach to decision making is extremely effective in that it aims to involve representatives from the widest range/ cross-section of the population. This gives the capacity to include inputs from all stakeholders and thus ensures wide spread acceptability and affordability of interventions among the target players. Aiding and ensuring success of the overall project.

### **Key Lessons and recommendations**

If we believe that good governance is the key to dealing successfully with the protection of natural resources, it follows that good governance:

- is about linking vision to action
- calls for clearly defined responsibilities for different partners
- cannot be achieved without rationalising municipal funding
- requires sustained capacity building of politicians and professionals

Source: UNCHS, 1999, Localising Agenda 21 - Action Planning for Sustainable Urban Development. Progress Report.

# Glossary

**Environmental Planning and Management (EPM):** is a set of activities aiming at identifying environmental problems (before they turn into costly emergencies) and opportunities (in time to take good advantage of them), at agreeing on strategies and actions in response to these problems and opportunities, and at implementing strategies through co-ordinated public and private actions. EPM can take a strategic approach which seeks to make a balance between the formulation of long-term cross sectoral, dynamic strategies and the development of short-term action programmes or projects. A strategic approach to EPM focuses on essential interventions that can be implemented quickly, have a high chance of success, lay the grounds for dealing effectively with future environmental matters, and give priority to strengthening emerging institutions. EPM stresses a "holistic systems approach" in which planning is seen as a complex iterative cyclical process rather than a linear sequence of stages.

**Institutionalisation:** is defined as the process whereby social practices become sufficiently regular and continuous to be described as institutions that is social practices that are regularly and continuously repeated because they are accepted as part of an organisational culture or social culture. Institutions should not be confused with organisations. Institutions are the established underlying practices of organisations. The institutionalisation of EPM is defined as incorporating its practices and methods into the institutional structure and behaviour.

**Peri-urban interface (PUI):** defined, from an environmental perspective, by the meeting of an urban and one or both of a rural and a natural ecological systems. The meeting of ecosystems, when one of these is urban, gives rise to a dynamic situation because the urban ecosystem is usually changing. Consequently, problems and opportunities are created by the meeting of these eco-systems. They show their effects at particular locations, and these locations mark out the peri-urban interface. For the purpose of environmental planning and management, this is more appropriate than identifying an area defined by factors such as land uses or population density or at a predetermined location, such as the city periphery or the urban hinterland.

**PUI processes and flows:** are defined as any continued set of actions connected with the continuation, development, and change of urban-rural interactions. The focus on processes of interaction and flows rather than states of being is particularly important for the planning and management of the PUI because urban-rural interactions generate a dynamic situation of change which can generate opportunities and problems for different groups. Four main processes of environmental change usually take place in the peri-urban interface: land use changes, use of renewable resources, use of non-renewable resources, generation of wastes and pollution.

**Stakeholders:** a stakeholder is any person, group or institution who has an interest or "stake" in an activity, project or programme. This definition includes both intended beneficiaries and intermediaries, winner and losers, and those involved or excluded from the decision-making process.

Usually no distinction is made between stakeholders and actors. However, a useful differentiation recognises that not all those whose actions are part of an environmental matter recognise (or accept) they have a stake in an EPM process for the PUI. For example, an industry located in a city may be discharging harmful wastes into a river leading into the PUI, and its operators may not recognise or be interested in the problem which is the outcome of their activity. They do not see that they have anything to win or lose.

**Sustainability (of a natural resource base):** with regard to environmental matters, this is defined as protecting the environment and so that present and future generations will not be able to enjoy them.

The environmental sustainability of the natural resource base of the PUI is linked to the sustainability of the regional extraction patterns of renewable and non-renewable resources and the minimisation of environmental costs (waste, pollution) from rural and urban systems to the PUI. Similarly, the sustainability of both rural and urban areas can be affected by the dynamic and changing flows of commodities, capital, natural resources, people and pollution taking place in the peri-urban interface.

**Sustainable Livelihoods:** a livelihood is made up of the capabilities, assets (including both material and social resources) and activities required for living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future.

**Sustainable Livelihoods Framework (SLF):** is a tool to analyse livelihoods. It has three main components: assets, transforming structures and processes, and livelihood strategies and outcomes.

*Livelihoods assets.* At the heart of this SLF lies an analysis of the five different assets upon which individuals draw to build their livelihoods.

These are:

*Natural assets.* The natural resource stocks from which resources flows useful for livelihoods are derived (e.g. land, water, wildlife, biodiversity).

*Social assets.* The social resources (networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of livelihoods.

*Human assets.* The skills, knowledge, ability to labour and good health important to the ability to pursue different livelihood strategies.

*Physical assets.* The basic infrastructure (transport, shelter, water, energy and communications) and the production equipment and means which enable people to pursue their livelihoods.

*Financial assets.* The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihoods options.

**Transforming structures and processes:** transforming structures (public sector, private sector, civil society) and processes (legislation, policies, culture and institutions) are crucial because interventions at this level are likely to affect strategies and outcomes. They operate at all levels, from households to global, and determine access to assets, terms of exchange between different assets, and the returns (economic and non-economic) to livelihood strategies. Understanding transforming structures is especially important in the PUI, where institutional fragmentation and rapid change in the roles, responsibilities, rights and relations between different groups and organisations can result in growing social polarisation.

**Livelihood strategies and outcomes:** this is where rural-urban linkages can be more visible, for example in the form of different forms and types of migration, multi-spatial household organisation, etc. It is also where the opportunities and constraints characteristic of PUIs can be more easily identified, for example in the types of income diversification strategies available to different groups.

The sustainable livelihood framework is essentially a participative tool whereby people identify not only what livelihood assets are and also the major constraining forces or factors are (including structures and processes) that affect their livelihood options.

# Where to find more information

## Case studies:

**The Sustainable Ismailia Project** – UNCHS/ UNEP, 1997, Environmental Planning and Management Sourcebook, Volume 2, pp. 71-74.

*Contact:* Sustainable Ismailia Project, P.O.Box 191, Commercial Street, Sheik Zaid, Ismailia, Egypt; Tel: +20 64-344 585; Fax: +20 64-344 585.

**Sustainable Dar-es-Salaam Project** - UNCHS/ UNEP, 1997, Environmental Planning and Management Sourcebook, Volume 2, pp. 46-50.

*Contact:* Sustainable Dar-es-Salaam project (SDP), Box 9182, Dar-es-Salaam, Tanzania; Tel: +255-51-113659, 114014; Fax: +255-51-114014.

**Watershed Management in the Harare Region of Zimbabwe** - Carley M. and Christie I, 2000. Managing Sustainable Development, Earthscan Publications, 2nd edition, pp. 222-223.

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*Contact:* Sustainable Concepción Project, Rengo 370 A, Concepcion, Chile; Tel: +56-41-224 745; Fax: +56-41-223 342; e-mail: minvus@arauco.reuna.cl

**Community Based Water Boreholes in Nakuru, Kenya** - UNCHS/ UNEP, 1997, Environmental Planning and Management Sourcebook, Volume 2, pp.82-85.

*Contact:* Green Towns Project, Ministry of Local government, Box 54909, Nairobi, Kenya, Tel: +254-2-221 711; Fax: +254-2-221 600.

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*Contact:* DPPAC, 03BP7044, Ouagadougou, Burkina Faso, Tel: +226-307 098; Fax: +226-310086.

**Solid Waste Management in Chennai-Exnora** - UNCHS/ UNEP, 1997, Environmental Planning and Management Sourcebook, Volume 2, pp. 92-94.

*Contact:* Exnora International, 42 Giriappa Road, T. Nager, Chennai 600 017, India; Tel: +91-44-493 3527; Fax: +91-44-493 3527.

*For Additional Case Studies:* Institutional Development Group Bureau for Development Policy United Nations Development Programme, Rural-Urban Relations: An Emerging Policy Priority. Interim Report.

## Websites:

### **Cities Feeding People**

<http://www.idrc.ca/cfp>

### **Natural Resources Systems Programme (NRSP) (DFID)**

<http://www.nrsp.co.uk>

### **FAO UPA (Urban and Peri-urban agriculture) Programme**

<http://www.fao.org/urbanag>

### **FAO programmes**

<http://www.fao.org/unfao/bodies/COAG/COAG15/X0076e.htm>

### **Water and Sanitation Programme**

<http://www.wsp.org>

### **Urban Management Programme (UPM) (UNCHS)**

<http://www.unchs.org/unon/unchs/upm>

### **Sustainable Cities Programme (SCP) (UNCHS)**

<http://www.unchs.org/unon/unchs/scp>

### **Local Initiative Facility for Urban Environment Programme (LIFE) (UNDP)**

<http://www.undp.org>

### **International Council for Local Environmental Initiatives (ICLEI)**

<http://www.iclei.org>

## Readings

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