

- Jacobi, P. (1995), 'Environmental Problems Facing Urban Households in the City of São Paulo, Brazil', Stockholm Environment Institute, Stockholm.
- Oliveira, C. and Leitmann, J. (1994), 'Urban Environmental Profile: São Paulo', *Cities*, vol. 11, no. 1, pp. 10-14.
- Rolinik, R., Kowarik, L., and Somekh, N. (1990), 'São Paulo, Crise e Mudança', Editora Brasileira, São Paulo.
- Saldiva, P. (1995/96), 'Efeitos da Poluição Atmosférica na Saúde', in *Debates Sócio-Ambientais*, vol. 3, no. 26, Centro de Estudos de Cultura Contemporânea, São Paulo.
- SEMA (1996), 'Balanço da Operação Respira São Paulo', Secretaria do Meio Ambiente, São Paulo.
- Sobral, H. (1995), 'O Meio Ambiente e a Cidade de São Paulo', Makron Books, São Paulo.
- Stephens, C. et al (1994), 'Environment and Health in Developing Countries: an Analysis of Intra-Urban Differentials Using Existing Data', Monograph, London School of Hygiene and Tropical Medicine.

11 Sustainable Urban Development and the Urban Poor in Rio de Janeiro

DAVID J. EDELMAN, PAUL PROCÉE AND CLAUDIO ACIOLY JR.

Introduction

Environmental degradation resulting from cities is not primarily a result of either the urbanisation process or a shortage of environmental resources such as land and fresh water. It is rather caused by economic and political factors. In many cases, local governments lack the means and instruments to manage the process of urban development effectively. Poor governance is at the root of the resulting problems, which include failures to control industrial pollution, to provide basic sanitation services to city-dwellers, to ensure that sufficient land is made available for housing development, to generate resources and investments and mobilise the participation of key actors, to maintain green and recreational areas and to enable the appropriate disposal of wastes. This ineffective governance is often linked to economic weakness and an unstable political situation characterised by a short-term planning perspective and, moreover, corruption.

Urban Environmental Management, Cities and Sustainable Development

Urban environmental management is best seen as a subsidiary process taking place within the overall process of urban management. It is an all embracing concept covering not only the physical environment, but also issues related to the urban economy, incomes, infrastructure, investments and institutions, all of which must be seen in relation to the political, social and cultural environment of any urban area. Conceptually, all basic principles of urban management also hold for urban environmental management.

The density of many different kinds of human activities taking place within a relatively small location, attracting resources from far beyond the administrative borders of the city, has obvious advantages or potential advantages for meeting the goals of sustainable development (Mitlin and Satterthwaite, 1994) and tends to maximise the benefits of economies of scale. These include:

- effectively responding to social and health needs;
- minimising the use or waste of non-renewable resources;
- sustainable use of renewable resources; and
- keeping wastes generated by city producers and consumers within the absorptive capacity of local and global sinks.

However in the absence of effective urban governance, the advantages and potential advantages pointed out previously can be transformed into enormous problems, especially when local governments are not well-equipped to deal with the complexity of urban development. The high concentration of industries near households can generate health problems that can be easily be transmitted to a large number of people. Problems with water management and flooding can be substantial since the water from large catchment areas flows into single streams whose volume can increase tremendously and cause disasters in and around cities. In addition, poor and illegal settlements are often constructed in flood plains and on steep slopes in many cities of developing countries as a result of the absence of a planning framework. Inadequate housing supplies can induce informal urbanisation and overcrowding, leading to the occupation of land unsuitable for human settlements. Thus, for these and many other reasons, cities are indeed hazardous to the world's ecological system if not properly managed.

Urban Governance in Brazil

Brazil's municipalities have enjoyed a significant level of autonomy since 1934 and which have the power to adopt laws, to levy and collect taxes, to organise their administrations, to define budgets and priority areas for investment, to conduct of urban planning and provide housing and urban

services to their inhabitants and to oversee the welfare of the population. Municipalities also have the right to formulate and approve their own organic laws, which act as municipal constitutions, as long as they do not conflict with the federal and state constitutions. Furthermore, the mayor, vice-mayor and the councillors of municipal legislatures are democratically elected. Aside from the period of military rule (1964-85), this level of responsibility and authority places cities in Brazil among the most powerful of those in developing countries vis-à-vis their national governments.

In 1996, local governments invested 35% of the total financial resources of the public sector nation-wide, were responsible for 25% of the consumption generated by the governments and accounted for 17% of the total expenditures of the three levels of government (JB, 1996). Since the 1988 constitution was enacted, Brazil's cities have had unprecedented revenues and have spent heavily in the social sector. As a consequence, a number of innovative forms of municipal management and participatory planning have emerged in Brazil. Some valuable experiences are the participatory budgeting in Porto Alegre, Brasilia, Vitoria and Belo Horizonte; the popular councils in Vitoria and Fortaleza; the management of solid waste and recycling with 'social fares' in public transport in Curitiba; the self-management of mutual aid housing in São Paulo, and the paid mutual aid and reforestation programme in Rio de Janeiro, just to name a few.

The Municipality of Rio de Janeiro

While Rio de Janeiro with a metropolitan area population of more than 10 million and a GDP which is twice that of Egypt's is a thoroughly modern and professionally managed city known for its natural beauty, it is, at the same time, well known for its *favelas* or squatter settlements. During the eighties and beginning of the nineties Brazil suffered a severe recession. The housing situation deteriorated and the *favelas* and clandestine settlements - illegal land subdivisions undertaken by private developers in peripheral areas - mushroomed and rapidly increased in density. In 1991, 33% of the registered housing units in the municipality were located in *favelas*, illegal land subdivisions and low income public housing estates, providing accommodation to more than 2 million inhabitants (PLANRIO, 1993).

In addition, high inflation and disparities of income during the recession aggravated social tension and economic insecurity, and they resulted in a sudden and uncontrolled increase of violence and criminality never before experienced before in the city. Local government administration was absent in *favelas*, and the needs of the urban poor were neglected. The *favelas* were gradually taken over by outlaws and criminal organisations involved in drugs and weapons and various other illegal activities. In the absence of the State and the law, parallel and informal structures of power were established in several low income settlements by criminal organisations. This phenomenon was exacerbated by a weak and often corrupt police apparatus. The residents' associations - so active during the 1970s and 1980s - were intimidated and lost influence; sometimes people were murdered if they did not co-operate.

In addition to these socio-political difficulties, Rio's urban environment is characterised by a unique and vulnerable topography. Its 86 km of coastline are dominated by mountain ranges and massifs which delineate specific limits for the areas suitable for human settlement. A severe and long lasting housing shortage, coupled with land speculation, have pushed human settlements towards extremely vulnerable sites, which represent the only options left for the poor. The metropolitan area's 926 squatter settlements and illegal subdivisions have spread throughout the region according to IPLANRIO (1993); and many have been built on vacant land, subject to flooding, and on sloping areas up to 100 meters above sea level. The process of deforestation in these areas has further affected the retention capacity of the soil and the stability of slopes, and the increased erosion has resulted in sedimentation of rivers and streams.

Restoring Local Governance in Rio

The previous administration in Rio (1993-96) took office with a determined political will to put an end on what it called the urban chaos and the absence of governance. The municipality was restructured to ensure a more efficient management system. A new financial management procedure was introduced in order to be more responsive to externalities and take rapid decisions. Investments in public security, modernisation of the police apparatus and the development of social programmes gained prominent positions in the political agenda. A strategic planning process was launched and provided different mechanisms at different levels for participation of the stakeholders in the formulation of what is probably the

first strategic urban plan formulated in Latin America. This helped the municipality to design a realistic plan taking into account the opportunities and threats for the development of the city.

Furthermore, the urban property cadaster was computerised and linked to fiscal and budgetary management. Project teams were set up to manage specific sectoral plans and an urban reform initiative was launched through the execution of several strategic programmes and projects targeting the informal and the formal city. The programme that deals with informal settlement upgrading deserves particular attention here since it highlights the urban environmental improvement agenda for the city's *favelas*.

An extremely interesting point here is that this programme was initially self-financed by the municipality. Rio is one of the few large Brazilian cities with an up-to-date cadaster and a geographic reference database which is continuously processed and improved by IPLANRIO. It provides a solid source of revenue from municipal property taxes, reaching US\$ 770 million in 1992. By the end of 1995, the municipality had managed to build up a reserve of US\$ 1 billion for investments. It issued municipal bonds and sold them on the international market, generating a small surplus of US\$ 125 million to be used as well to finance its investment plans.

The availability of finance allowed the municipality to launch two important urban reform programmes. The first, the Rio Cidade Programme, was intended to renew 19 neighbourhoods and recapture the city for its citizens, while the second, the *Favela Bairro* Programme, was formulated for informal settlement upgrading. The latter programme is the focus of the following analysis.

The Profile of *Favelas*

Although the profile of *favelas* is widely known, it is worth mentioning a few characteristics of the areas in which the urban poor live in Rio. In 1991, the census registered 412 *favelas*. After IPLANRIO's survey in 1993, 570 settlements were registered with an estimated 1.3 million inhabitants. The settlements are characterised by the precarious provision or total absence of urban infrastructure and public services. The access roads are very narrow and hardly follow any alignment; the plots are irregular in form and size, and there is rarely any open space for leisure. There is no tenure formalisation either, except where the local government is carrying out upgrading and formalisation projects. The dwellings are

built with wood or ceramic bricks, but the percentage of wood-based dwellings has decreased rapidly over the last 10 years.

During this period, *favelas* have also been consolidated and their housing stock transformed, and this was tolerated by the local government. However, many *favelas* increased in density over the last 10 years by building upward, while others expanded onto steep hills and higher areas. This hindered accessibility, increased the risks of landslides and aggravated other local environmental conditions. The deforestation and occupation of steep areas also caused severe environmental impacts at the city level, with heavy rains in 1995 causing substantial material damage and loss of life in the city through flooding.

A New Housing Policy Framework

In 1994, the municipal government established the Municipal Housing Secretariat (SMH) with the specific mission to formulate, co-ordinate and execute municipal housing policy. Several initiatives and projects were launched to achieve a sustainable solution for the housing shortage in the municipality. In order to cope with the acute housing problem, the SMH created the Upgrading of Popular Human Settlements Programme (PROAP/RJO), also called the *Favela Bairro* Programme, with the following objectives (SMH, 1995):

- to bring the informal city as close as possible to the regular city, through integration and settlement upgrading;
- to transform *favelas* into neighbourhoods through upgrading, land titling and community and public services delivery;
- to expand the basis of urban property titles over *favelas*, residences, plots and housing estates; and
- to broaden building opportunities through the occupation of vacant land and available serviced land parcels.

Implementation was initially undertaken with municipal resources. However, the SMH later managed to mobilise finance from the Interamerican Development Bank (IADB) allowing the budget of the upgrading programme to be increased to US\$ 300 million.

Selection Criteria for Upgrading

During the period of preparation of the *Favela Bairro* Programme, a methodology was developed to assist in the selection of the target settlements; selection criteria included:

- the size of the *favela*;
- the balance of constraints and possibilities for upgrading;
- the level of existing infrastructure; and
- the socio-economic needs of the inhabitants.

Due to the very high total costs that would be necessary to upgrade large settlements, 114 *favelas* with more than 2,500 families each were excluded. In addition, small settlements were also excluded due to high relative costs. The most cost effective size was determined to be between 500 and 2,500 households or between 2,000 and 11,000 inhabitants. After a survey using indicators of urbanisation was completed and the results analysed, 85 *favelas* were finally selected.

The Method and Process of Upgrading Favelas

The *Favela Bairro* Programme was intended to integrate *favelas* with the formal city, turning them into neighbourhoods and integral part of the urban structure. Physically, then, the programme has emphasised accessibility, the opening and paving of roads and defining public spaces. Most important, it has provided each settlement with an integrated urbanisation plan in which the settlement layout, including both public and private areas, is well defined. This is essential for the formalisation of land tenure and the citizenship of the inhabitants. The squatter residents thereby become part of the real estate property cadaster and subject to the city's taxation. At the same time, they receive the rights to demand from the municipality access to and the provision of infrastructure and public services. Citizenship implies rights and obligations for both the citizen and the State. Box 1 below summarises the expected results of the *Favela Bairro* Programme.

In 1994, the SMH in co-operation with the Brazilian Institute of Architects organised a public competition to develop upgrading

methodologies. Planning and architecture offices were invited to present proposals and ideas to upgrade the *favelas*, and 34 different proposals were received. Fifteen of them were selected. The winners were then contracted to develop detailed upgrading plans in pre-selected settlements. These teams were responsible for approaching and working with the communities, for carrying out all necessary fieldwork, for developing concepts and initial plans, for formulating detailed design plans and for delineating action plans.

Box 1: Expected Results from the Favela Bairro Programme

- Integration of the *favela* with the city;
- Improved accessibility, roads, sanitation and public lighting;
- Organised solid waste collection and urban cleansing;
- Improved health conditions;
- Improved opportunities for community and social interaction through the provision of public spaces and community facilities;
- Support to children of pre-school age;
- Reduction in the risk of flooding;
- Improved internal and external environmental conditions; and
- Improved sense of citizenship and belonging to the city.

Source: SMH, 1995.

The SMH organised its staff in teams of project managers to supervise both the formulation of the plans and the actual implementation. The main role of these managers was to guarantee that the development of the projects and their implementation are carried out according to the established principles and norms for public tendering in Brazil. Project managers were the pivots between the planning teams (elaboration of projects and intervention plans), the building contractors who are awarded contracts to implement the projects (construction activities) and the community associations (final users and beneficiaries). The execution of the physical works has also been subject to public tendering; and the contractors were selected according to their experience, their capacity, their prices and their ability to manage and execute public works of this

nature. The results of a typical project under the *Favela Bairro* Programme are summarised in Box 2.

Box 2: A Typical Favela Bairro Project

In October 1996, the municipality of Rio de Janeiro officially turned over the partially completed upgrading programme in the Serrinha *favela* to its inhabitants. A total of 5,000 m² of pavement (new roads, alleys and pathways), 2.4 km of sewerage network, 2.5 km of water supply network, 400 household connections to the sewerage system, 360 water points, 1.5 km of staircases, 1.8 km of drainage gutters, protection of slopes from landslides, as well as the resettlement of 2 families who were living in areas at risk, were implemented during the project. These interventions represented 70% of the entire project, with an investment US\$ 4.365 million.

Source: SMH, 1995.

After the initial phase of implementing projects of this type and scale, other settlements were selected for an expansion of the programme. The great success of the *Favela Bairro* Programme played an important role in the results of the last municipal election. For the first time in history, the population re-elected the governing political party. The new mayor is an architect who once led IPLANRIO and who designed the city's rehabilitation programme (Rio Cidade) and promoted the *Favela Bairro* Programme.

The degree of satisfaction of the inhabitants of the *favelas* is high, and a significant part of the city's population approves of the urban transformations which were carried out by the previous local administration. Multiplier effects of the programme are already visible in the upgraded *favelas*, and they need to be monitored properly. Public investments are also generating private investments for improving buildings, and there is a notable response in terms of management and maintenance of the services and equipment provided. There are also many signs that the 'narco-traffic' is relocating to other sites. The opening of roads and better accessibility of the *favelas*, i.e., their integration with the surrounding neighbourhoods, result in more spatial transparency and easy access of the police and public security forces. An underlying, but not

often explicitly articulated, objective of the *Favela Bairro* Programme has been to neutralise the influence of organised crime in the *favelas* of Rio and to bring back the presence of the State to these areas, reinstate governance and restore municipal authority, along with its laws, norms and values after decades of neglect. It appears to have been successful in doing so.

Concluding Remarks

The *Favela Bairro* Programme has focused on the general improvement of public spaces and collective needs from the perspective of environmental improvement. It has had the twin objectives of defining and improving leisure spaces, parks and areas for social interaction and sports, as well as of solving the problems of the brown agenda. The second is particularly important in that the majority of *favelas* dispose of their waste in natural drainage courses that lead to important water courses of the city. There are strategic linkages between the improvement of sewerage and drainage systems in the *favelas* and the pollution alleviation programmes of the main water courses and Guanabara Bay (financed by IADB and Japanese funds). Unfortunately, this integrated vision is not strongly present throughout the city government, nor among the citizens at large. This emphasises that the success of this programme is just one of the many that must occur if the management of a megacity like Rio de Janeiro is to achieve sustainable improvement.

Although there has been a high level of acceptance for the *Favela Bairro* Programme, it has followed the orthodox formula which assumes that public investments will generate private investments at the household level. In fact, in economic terms, the *Favela Bairro* can be characterised as a programme of public investment, and there is hardly any concern with cost recovery. The municipality has played the traditional role of provider, although it utilised the participation of the teams of architects and planners who have acted as consultants and intermediaries between the government and the inhabitants. Although there have been several public-private partnerships in the squatter upgrading programme, the municipality of Rio opted to recapture governance in an orthodox way. However, the lack of cost recovery threatens the possibility of extending the programme to most *favelas* and leaves unsolved a basic urban management problem.

The fact is that the population of Rio has recovered its optimism and

responded positively to the revitalisation programmes, of which *Favela Bairro* is one. Crime has decreased, and there are more employment opportunities. However, the critical environmental problems of the city remain unresolved because they depend on the specification of roles and responsibilities of the city and other levels of government and good coordination among the 14 municipalities that form the metropolitan region. Solving urban environmental problems piecemeal within individual settlements provides no sustainable solution to the environmental problems of Rio, no matter how popular and successful any particular upgrading programme might be.

References

- IPLANRIO (1993), *The City of Rio de Janeiro*, IPLANRIO, Rio de Janeiro.
 JB (*Jornal do Brasil*) (1996), 'Prefeitos Colhem Frutos da Sítbíta Riqueza das Cidades', 18 August, Rio de Janeiro, pp. 15.
 Mitlin, D. and Satterthwaite, D. (1994), 'Cities and Sustainable Development', background document for the workshops, presentations and discussions in *Global Forum '94*, 24-28 June, Manchester, United Kingdom.
 SMH (Secretaria Municipal de Habitação) (1995), *Política Habitacional da Cidade do Rio de Janeiro*, Prefeitura da Cidade do Rio de Janeiro, Rio de Janeiro.

The Challenge of Environmental Management in Urban Areas

Edited by
ADRIAN ATKINSON
JULIO D. DÁVILA
EDÉSIO FERNANDES
MICHAEL MATTINGLY

Ashgate

Aldershot • Brookfield USA • Singapore • Sydney

Other Titles in the Series

**Environmental Strategies for Sustainable Development in Urban Areas:
Lessons from Africa and Latin America**
Edited by Edésio Fernandes
ISBN 1 84014 155 7

Integrated Pollution Control
Change and continuity in the UK industrial pollution policy network
Adrian Smith
ISBN 1 85972 597 X

The Ecological City and City Effect
Essays on the urban planning requirements for the sustainable city
Franco Archibugi
ISBN 1 85972 653 4

International Environmental Agreements and Domestic Politics
The case of Acid Rain
Edited by Kenneth Hanf and Arild Underdal
ISBN 1 84014 394 0

Debt and Adjustment: Social and Environmental Consequences in Jamaica
Patricia Lundy
ISBN 1 85972 114 1

Contents

© Adrian Atkinson, Julio D. Dávila, Edésio Fernandes and Michael Mattingly 1999

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.

Published by
Ashgate Publishing Ltd
Gower House
Croft Road
Aldershot
Hants GU11 3HR
England

Ashgate Publishing Company
Old Post Road
Brookfield
Vermont 05036
USA

British Library Cataloguing in Publication Data

The challenge of environmental management in urban areas. -

(Ashgate studies in environmental policy and practice)

1. Urban ecology 2. Environmental management 3. Land use,

Urban - Cross-cultural studies 4. Urban policy -

Environmental aspects

I. Atkinson, Adrian, 1943-

333.77'16

Library of Congress Catalog Card Number: 99-72605

ISBN 1 84014 525 0

Printed and bound by Athenaeum Press, Ltd.,
Gateshead, Tyne & Wear.

Acknowledgements ix
Contributors xi

1 The Challenge of Environmental Management in Urban
Areas: An Introduction
Adrian Atkinson and Julio D. Dávila 1

PART I: POLICY

2 Policy and Politics in Urban Environmental Management
Edésio Fernandes 13

3 Creating Metropolitan Environmental Strategies
Kalyan Biswas 25

4 Issues of Inequality in Managing Water Supply in Asian Cities
P. B. Anand 37

5 Environmental Management in the Cape Metropolitan Area
Amanda Younge 51

6 The National Urban Parks Programme in Santiago, Chile
Sergio F. León Balza 63

7 The Governance of Waste Management in African Cities
J. M. Lusugga Kironde 75

8	What's Health Got to Do with it? Using Environmental Health to Guide Priority-setting towards Equitable Environmental Management in Cities <i>Carolyn Stephens</i>	89
PART II: MANAGEMENT		
9	Management of the Urban Environment <i>Michael Mattingly</i>	105
10	Air Pollution in São Paulo: The Challenge for Environmental Co-responsibility and Innovative Crisis Management <i>Pedro Jacobi and Nelson Gotveia</i>	115
11	Sustainable Urban Development and the Urban Poor in Rio de Janeiro <i>David J. Edelman, Paul Procee and Claudio Aciofy Jr.</i>	127
12	Solid Waste Management in Copenhagen <i>Jeff Cooper</i>	139
13	The Social 'Nature' of Floods in Buenos Aires: Rainfall Increase or Higher Vulnerability? <i>Oswaldo Girardin and Gabriela Greco</i>	151
14	Solid Waste Management in Colombo <i>V. U. Ratnayake</i>	163
15	The Working Group Approach to Environmental Management under the Accra Sustainable Programme <i>Ben K. Doe and Doris Tetteh</i>	171
16	The Development of a Systematic Approach to Urban Environmental Planning and Management in Thailand <i>Adrian Atkinson</i>	181

PART III: ORGANISATION AND POLITICS

17	Organisation and Politics in Urban Environmental Management <i>Julio D. Dávila and Adrian Atkinson</i>	193
18	Beyond the Myths of the New Environmental Localism <i>Simon Marvin and Simon Gray</i>	203
19	Local-International Partnerships in Metropolitan Environmental Management: Latin American Experiences <i>Adriana Allen</i>	215
20	The Local Agenda 21 Process in the United Kingdom: Lessons for Policy and Practice in Stakeholder Participation <i>Chris Church</i>	225
21	Negotiating the Local-Central Government Relationship: Experience from Flood Hazard Management <i>John Handmer</i>	237
22	Decentralisation, Local Autonomy and Metropolitan Influence: The Case of Salvador, Brazil <i>Celina Souza</i>	251
23	Controversy over the Preservation of a Metropolitan Area's Fresh Water Reservoirs: Legal Instruments and the Politics of Environmental Management in Istanbul, Turkey <i>Ayşe Yonder</i>	261
24	Research-Management as an Approach to Solving Environmental Conflicts in Metropolitan Areas: A Case Study of the Manizales-Villamaria Conurbation, Colombia <i>Luz Stella Velásquez and Margarita Pacheco</i>	275
25	Community-Based Environmental Management in Urban Tanzania <i>Alphonse G. Kyessi</i>	287