Environment&Urbanization Brief – 13

Ecological urbanization

SUMMARY: Amidst all the debates and disagreements on urban environmental and ecological issues, some consensus is emerging:

- *Although there is little agreement on whether urbanization can be more "ecological", the need to explore how it might be so, rooted in particular cities, is increasingly acknowledged.*
- *Proponents of the green agenda focusing on ecological sustainability vie for influence with proponents of the brown agenda focusing on environmental health – but there is some agreement that a concern for the well-being of future generations needs to be married to a concern for the well-being of current generations, including low-income urban dwellers who suffer very large and easily prevented environmental health burdens.*
- *Within the disagreements on the relative importance of local, regional and global action, there is recognition of the need for multi-scalar analysis and action. There is also recognition of how large impacts often stem from changes in people's (and politicians') everyday small decisions – how they decide to travel to work and to the shops, how they choose to organize their neighbourhoods and buildings, what they choose to recycle, how they use water. The combination of these small, everyday decisions, both conscious and unconscious, with large, planned decisions, is shaping how environmental benefits, and environmental burdens and risks, are differentially experienced by different social groups and in different areas.*
- *There are debates on whether solutions are mainly technical or social and political, and on whether the main means for implementing them are through the state, the market or community action. But there is also a growing consensus that politics is central to addressing urban environmental issues. This is not to downplay the importance of the ecological, since every function and every part of each city's physical fabric is developed around particular accommodations with the natural environment. Every city draws on environmental resources and services, continuously remaking the built environment, working around nature, obliterating it, transforming it and replacing it – and yet in a more fundamental sense remaining very much a part of it.*

I. INTRODUCTION

MOST PEOPLE WRITING on urban environmental and ecological issues, particularly in Asia, Africa and Latin America, agree on the importance of both addressing environmental issues and reducing poverty. Beyond this, if one looks at the full range of writings, there is much disagreement, even on the basics. There are environmental optimists and pessimists. There are those with "green" agendas, who focus on ecological sustainability and the well-being of future generations; and those with "brown" agendas, who focus on environmental health and the well-being of current urban citizens.[1] The critical scale for understanding urban environmental issues is variously identified as local, regional or global. The central challenge is sometimes described as technical, and at other times social, economic or political. The means to address this challenge is variously presented in terms of market mechanisms, state planning or community action. And of course, the more academic writers align themselves with (or occasionally against) their disciplines. There are also important trends in the evolution of academic ideas about sustainable urban development, not least with the growth of inter-disciplinary approaches and the rapid emergence of more theoretically driven work over recent years.[2] Not surprisingly, this can be a confusing terrain to chart, particularly if the goal is to give clear direction to practitioners.

In itself, the diversity of thinking about urban ecological issues is no bad thing. This is not to say that every theory or claim should be judged on its own terms, or is equally valid. But diversity can, in the right circumstances, create the basis for a more wide-ranging critical debate. The journal *Environment&Urbanization* (from whose April 2006 issue this Brief is drawn) is built on the premise that, when it comes to urban studies, researchers need to engage with practitioners and activists, and that much of the best research tries to build on and engage with, rather than replace, local knowledge of particular places and practices. Most of the papers published in this journal that are relevant to the theme of "Ecological urbanization" (Table 1) are discussions of problems and responses in particular

1. McGranahan G, P Jacobi, J Songsore, C Surjadi and M Kjellén (2001), *The Citizens at Risk: From Urban Sanitation to Sustainable Cities*, Earthscan, London.

2. See, for instance, Satterthwaite, David (editor) (1999), *Earthscan Reader in Sustainable Cities*, Earthscan, London; also Wheeler, Stephen and Timothy Beatley (editors) (2004), *The Sustainable Urban Development Reader*, Routledge, London. For a good overview of evolving work within the geographical literature, see Braun, Bruce (2005), "Environmental issues: writing a more-than-human geography", *Progress in Human Geography* Vol 29, No 5, pages 635–650.

This Brief of the April 2006 issue of the journal *Environment&Urbanization* on the theme of "Ecological urbanization" is based on Graham Haughton's and Gordon McGranahan's editorial, and draws on the papers in this issue. (The papers are listed on the back page, with details of how to obtain electronic copies of individual papers or the whole issue). This summary, produced with the support of the Royal Danish Ministry of Foreign Affairs (DANIDA) and the Swedish International Development Cooperation Agency (Sida) allows the journal's main findings to reach a wider audience.

Table 1: Papers in *Environment&Urbanization* that are relevant to the theme of "Ecological urbanization"	
Theme of papers	**Focus**
Ecological urban futures	Papers on Panjim and Cape Town (18:1)*
Ecological impacts of cities, including Ecological Footprints	William E Rees's 1992 paper on "Ecological Footprints and appropriated carrying capacity" (4:2) Discussions of Ecological Footprints (two papers, 18:1) Role of technology transfer (4:2) Case studies of Bamenda (10:2) and Bangkok (12:2) Loss of agricultural land to urban expansion in Buenos Aires and Saharanpur (12:2)
Innovative Local Agenda 21s or environmental management initiatives	Curitiba (4:2) Manizales, Chimbote, National Campaign in Peru, Essaouira, Vinh City and Nakuru (10:2) Ilo (11:2) Leicester, Nakuru, Surabaya (12:2) Rufisque (13:2) Xiamen (18:1)
Recycling and solid waste management (many with a focus on community action and/or waste pickers)	General paper on Asian cities and paper on Bogotá (4:2) Quezon City, Cotonou (10:2) Madras/Chennai, Quito (11:2) Benin City, Mexicali (12:2) Bamako and Bangalore (14:2) Cairo (17:2)
Integrating disaster prevention and development	Case studies of Caracas (4:2) and Istanbul (11:2) Overviews (12:2 and 15:1)
Community-level environmental plans and programmes	Overview of Asian cities (4:2) San Juan de Milaflores in Lima, Pikine in Dakar (4:2) Pampas de San Juan in Lima, Olivares in Manizales (11:2) Pogolotti in Havana (17:1)
Urban agriculture	Overview (4:2) Mexico City (10:2) Havana, Lagos and Port Harcourt (11:2) Beijing (15:2) West Africa (17:2)
Environmental management	Mexico City (11:1) Overview of participatory environmental planning and management (11:2) Guidelines and precedents for sustainable industry (11:2) Environmental management options (11:2) Porto Alegre (14:2) Xiamen, China (18:1)
Environmental indicators	Manizales (10:2) Cape Town, low-income communities in Lucknow (11:2) Mar del Plata and Necochea-Quequén (13:1)
Developing a national campaign for Local Agenda 21s	Peru (10:2) (update in 16:2)
Community action for housing and/or basic services (especially water and sanitation)	Surabaya, Pikine in Dakar (4:2) West Java (5:1) Chittagong (7:2) Pune (12:2) Urban areas in sub-Saharan Africa (14:1) Water and sanitation and children (15:2) Many papers in 13:1 and 15:2 (including papers on cities in India, and on Karachi, Dhaka and Chittagong) Dar es Salaam (16:1) Bangalore, Moreno, Buenos Aires (17:1)
Wastewater management, including its use in agriculture	General (10:1 and 15:2) Hubli Dharwad, Kumasi (15:2) Kunming (18:2)
Transport	Curitiba's bus system (4:2) Reducing automobile dependence (8:1) The eco-city and transport; transport and air pollution (18:1)
Cities and watershed management	Guadalajara (15:2) Santo Andre (13:1) Morelia (18:1)
Other papers	The limits of the concept of sustainability (10:2; 18:1) Links between population, environment and security (10:2) Children's environments in cities (11:2) The politics of sustainable development (12:2) The deterioration in provision for water and sanitation in East Africa (12:2) Water resource management in Tigre, Buenos Aires (16:2)

* The numbers in brackets refer to the volume and issue numbers where the articles are published. All articles in volumes 7:1 to 16:1 can be accessed free of charge at http://eau.sagepub.com/

cities or city-districts. This local knowledge is itself inherently diverse. If, more generally, no one school of thought holds the monopoly on urban ecology, it is almost certainly a good thing.

Urban ecology has become a meeting ground for debate across the physical and social sciences. The result is a growing sophistication in our understanding of complex issues that cannot be pigeonholed into particular disciplines or policy arenas. Thus, ecologists increasingly are integrating consideration of human behaviour and built environments into their understanding of ecosystem dynamics rather than treating them as external factors. Likewise, social scientists are busily rethinking their understanding and appreciation of how ecological processes must necessarily inform our understanding of economic, political and even social systems. There is common ground too in the growing appreciation of multi-scalar approaches within both physical sciences and social sciences. This is exemplified in the urban literature, with a shift away from single-scale analyses, and even from an hierarchical understanding of urban systems (local, regional, global), in favour of more relational approaches. The very notion of urban ecology has become multi-scalar, extending from individual urban systems to systems of cities and towns, and from ecosystems within urban settlements to urban settlements as ecosystems, to the ways in which cities and towns shape ecosystems beyond, as well as within, urban boundaries. We are still grappling with how to conceptualize such issues adequately, and translate them into meaningful material for policy makers.

II. POLITICS TO THE FORE

URBAN ECOLOGICAL THINKING can help bring politics to the fore, and can be sensitive to the different ways in which powerful and less powerful groups both engage with formal political institutions and respond to politically charged urban ecological processes. From a global perspective, it is difficult to imagine how to achieve the transition to sustainable cities – to put it crudely, very poor urban centres lack the capacity and very wealthy ones lack the incentive.[3] However, a case study in Cape Town, where extreme poverty and affluence co-exist, shows that such a transition is not only imaginable but also necessary, starting now, and it could bring major benefits to low-income groups – as addressing inequality is also placed at the centre of this analysis. But the conventional "environmentalist" pressures for change are not likely to produce this.[4]

One of the arguments to which environmental sceptics tend to point in highlighting the dangers of taking major pro-environmental policy leaps is that many Western cities have actually improved aspects of their environment over the past 50 years, particularly regarding air pollution. This is largely because classical environmentalism addressed some environmental issues in some cites.[5] Unfortunately, a new generation of urban environmental problems has arisen, including many that exert their major impacts well beyond urban boundaries and contributing, for example, to global climate change.[6] Equally important, a range of long-standing environmental hazards continue to affect the life chances of a large proportion of the residents of the cities and smaller urban centres in low- and middle-income nations – the same groups who are most vulnerable to many of the new environmental hazards. Classical environmentalism does not have the solution to the newly emerging burdens of affluence, or the persistent burdens of poverty.[7] This is a challenge, not only to environmental sceptics but also to optimists striving to map out a route to sustainable and equitable cities. It also provides a lens through which to judge the more optimistic assessments of how to address the environmental challenges that face people who live in cities.

In South Africa, the government has shifted its approach in recent years, away from an overtly pro-privatization strategy to one where the state is seen as the main driver, promoting fundamental changes in society. But the new development strategy is still insufficiently sensitive to urban environmental issues, not least in its ability to provide the conditions for improving urban infrastructure in ways that are socially and environmentally progressive. Cape Town is being developed in ways that are leaving it increasingly dependent on imported resources such as oil. Each future increase in oil prices will see money flow out of the domestic economy into global financial circuits, to the benefit of distant financiers rather than the urban poor – a timely concern given the record profits for a UK registered company, Shell, on the back of rising oil prices. But it is possible to envisage a clear agenda for improving the conditions of the urban poor in Cape Town by developing housing and neighbourhoods in ways that seek to minimize car dependence, water and energy demands and the need to pay for waste disposal – and this also protects low-income households from likely rises in prices for water and fossil fuels.[8]

A case study of Panjim, the capital of Goa (India), also shows the possibilities of a more equitable and ecologically sustainable future. Although the case study is not optimistic about the present state of Panjim, there is considerable optimism for the future if a "*RUrban*" approach is developed. This approach was developed drawing on inputs from both experts and citizen groups, and it involves a reworking of the relationship between city and countryside.[9] Cities can be redesigned so that they contribute to ecological services rather than act as a drain on external natural assets. It is possible to

3. See the paper by Kai N Lee listed on the back page.

4. See the papers by Mark Swilling and by Kai N Lee listed on the back page.

5. See the paper by Kai N Lee listed on the back page.

6. The April 2007 issue of *Environment&Urbanization* (Vol 19, No 1) will be on "Reducing risks from disasters in cities" (including those related to climate change).

7. See the paper by Kai N Lee listed on the back page.

8. See the paper by Mark Swilling listed on the back page.

9. See the paper by Aromar Revi, S Prakash, R Mehrotra, G K Bhat, K Gupta and R Gore listed on the back page.

do this, while also achieving high quality living standards and a successful economy. But this requires a multi-faceted approach, which includes addressing issues of governance as central to achieving success.

A study of provision for water, sanitation and wastewater management and of water policy in the city of Morelia (Mexico) over the last 450 years is a reminder of the social and political influences on resource use and waste management. This example shows the interplay between the politics of development in the locality and the politics of those outside. The way in which problems are perceived and responded to always reflects the priorities of dominant social and political actors who are in a position to influence the provision of infrastructure, in particular major landowners, the church and the state. In Morelia, differential access to water and provision for sanitation has always had distinctive socio-spatial dimensions, where the poor struggled to gain access to reliable, affordable provision. Running parallel to this have been continuing problems of financing sufficient infrastructure to cope with growth, and the control over access to water exerted by local elite groups and the state. If these are the constants, then the study reminds us that a dynamic element is always present in the shape of new technological options and changing legislation, which means that there are continuing struggles to exert control by elite groups alongside resistance from the politically marginalized.[10]

Of course, political pressures from those who are marginalized or impoverished by urban development, and the form of state response to this, have profound effects on city form and living standards – especially for low-income groups. This is particularly relevant in China, which has the world's largest urban population and one of the world's fastest growing urban populations. China's very rapid economic growth has been accompanied by the creation and rapid growth of a new urban underclass formed by recently laid-off workers (linked to state reforms to increase efficiency that reduced job security and permitted the dismissal of workers), underpaid and underprivileged migrant workers from the countryside, and others who have fallen into penury.[11] How the state responds to this – and to the growing wave of protests – has major implications for China's urban development (and thus for a significant proportion of the world's urban population).

III. ECOLOGICAL FOOTPRINTS

ONE OF THE most important aspects of ecological urbanization is the reduction in ecological damage that arises from urban-based production, consumption and waste generation – both in and around each city and in the more distant regions on which wealthier cities increasingly draw for resources and ecological services.

There is also the issue of the large and growing contribution of urban-based production and consumption to greenhouse gases and thus to human-induced climate change, with its very worrying implications.[12] Fifteen years ago, William E Rees developed a new concept, "Ecological Footprints", through which to assess the reliance of cities (or nations) on the resources and ecological services of what he termed "distant elsewheres".[13] The concept of the Ecological Footprint is now one of the most widely discussed ideas in contemporary urban environmental management. In effect, this is a resource accounting tool that can help local governments manage their ecological assets and support their sustainability efforts.[14] It can also be used to review the differences in individual or household Ecological Footprints – highlighting the fact that wealthy households have much larger Ecological Footprints than low-income households. For instance, in Cape Town, the Ecological Footprint of the wealthiest 7 per cent of households is around 15 times that of low-income households.[15] But those who use the technique often ignore its limitations, especially when comparing the Ecological Footprints of different jurisdictions. Many also claim that the technique provides a rationale for detailed policy proposals, when it is not actually designed to prove clear causal links between human activities and their impacts.[16]

IV. NEW MODES OF ENGAGING CITIZENS AND OTHER STAKEHOLDERS

THE STUDY OF the Mexican city of Morelia, noted above, highlights the successes and limitations of new possibilities for low-income groups to engage with governments in order to get basic environmental services. One example of such a new mode of engagement for China is "adaptive urban environmental planning" in Xiamen. Central to this approach is a greater receptiveness by planners to multiple sources of information and the range of knowledge of a wider group of stakeholders. The resulting decision-making processes have been successful in engaging with local communities to gain acceptance for plans. Public participation, seen as the most effective way to make planning more "adaptive", requires a range of modes of engagement for different groups of citizens and experts.[17] But any shift to more ecologically sustainable cities also requires city residents to accept changes that

10. See the paper by Patricia Avila Garcia listed on the back page.

11. See the paper by Dorothy Solinger listed on the back page.

12. IPCC (2001), *Climate Change 2001; Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 1032 pages. The April 2007 issue of *Environment&Urbanization* will have several papers examining the risks that climate change brings to urban areas.

13. Rees, William E (1992), "Ecological Footprints and appropriated carrying capacity", *Environment&Urbanization* Vol 4, No 2, October, pages 121–130.

14. See the paper by Mathis Wackernagel, Justin Kitzes, Dan Moran, Steven Goldfinger and Mary Thomas listed on the back page.

15. See the paper by Mark Swilling listed on the back page.

16. See the paper by Phil McManus and Graham Haughton listed on the back page.

17. See the paper by Q H Fang, L P Zhang and H S Hong listed on the back page.

are not intended to improve conditions within the city but, rather, to reduce the ecological costs that are currently transferred from city-based production, consumption and waste generation to people and ecosystems beyond city boundaries. This includes the need for changes in approaches to transport, to address the ecological problems associated with urban sprawl and growing car dependence. One key principle in this is developing a "debate and decide" rather than a "predict and provide" approach, in essence a shift away from technocratic, expert planning solutions in favour of more participative approaches.[18] But the reluctance of most middle- and upper-income groups to curtail their consumption patterns because of the needs of distant people or future generations will be a factor even with these more participative alternatives

The need for transport policies that address local needs and take on board regional and global concerns is illustrated by a study of transport-related problems in Saharanpur, India.[19] This highlights how congestion and high levels of transport-related air pollution can be problems even in relatively small cities in low-income nations – in large part because of severe under-investment in transport infrastructure. The rapid growth in motor vehicle use and car ownership in cities such as Saharanpur will have major environmental effects, locally and beyond. The decisions made regarding how best to address these problems will also have major implications, not only for congestion and air pollution within Saharanpur but also for the contribution of the city's businesses and citizens to regional and global environmental problems.

18. See the paper by Jeffrey R Kenworthy listed on the back page.

19. See the paper by Shahab Fazal listed on the back page.

V. EMERGING CONSENSUS AMIDST DIVERSE VIEWS

AMIDST THE PLURALITY of approaches and the debates and disagreements, are the commonalities that hide within diversity. It is less common now to see the physical environment discussed in isolation from social, cultural and economic issues. Politics emerges as central to addressing urban environmental issues. This is not to downplay the importance of the ecological, which often gets lost in the urban environmental literature. Every function and every part of the physical fabric of the city is, in some sense, developed around particular accommodations with the natural environment. Every city draws on environmental resources and services such as soil, water and minerals, continuously remaking the built environment, working around nature, obliterating it, transforming it and replacing it – and yet, in a more fundamental sense remaining very much a part of it.

Environmental inequalities are often closely married to social inequalities, a fact that can itself hide the co-importance of ecological and social processes in generating these inequalities. The uneven social and racial impacts of the flooding of New Orleans in 2005 attracted widespread media coverage, while seemingly every day, in some part of the world, environmental protesters are up in arms against forms of development that impact most adversely on the poor. But such "topical" or media-worthy coverage of the urban environment should not distract us from the fact that it is the everyday degradations in the urban environment that cause most ill-health and premature deaths, especially in poorer cities and neighbourhoods. These may appear to be purely social – a simple reflection of poverty. But they are also fundamentally ecological, both in terms of the ecology of disease and of urban water and waste systems.

Similarly, the evident importance of big political and developmental decisions should not obscure the fact that big impacts often stem from changes in people's (and politicians') everyday small decisions – how they decide to travel to work and to the shops, how they choose to organize their neighbourhoods and buildings, what they choose to recycle, how they use their water. It is in the combination of the small everyday decisions and the large and planned decisions that we are consciously and unconsciously shaping how environmental benefits, and environmental burdens and risks, are differentially experienced by different social groups and in different areas.

Ordering this Brief, individual papers or *Environment&Urbanization*

To receive this and future Briefs electronically at no charge (as .pdf files), send your e-mail address to humans@iied.org. For those who are unable to receive the Briefs electronically, printed versions can be ordered (see our address at the bottom of the page). Multiple copies may be ordered but international agencies are requested to cover costs (UK£ 1/US$ 1.50 per copy, including postage). All Briefs can be downloaded at no charge from www.iied.org/human/eandu/eandu_briefs.html

The issue of *Environment&Urbanization* on which this Brief draws can be purchased for US$ 44; see http://eau.sagepub.com/. This website also contains details of how to subscribe to the journal and how to get access to any of the papers listed below (which may be purchased electronically for US$ 15). This site also has details of discounts available to those in low- and middle-income nations: the annual subscription cost for such institutions is US$ 95, while for individuals it is US$ 32 and for students US$ 21.

Electronic versions of these papers (in .pdf format) are available at no charge to teaching or training institutions, and to NGOs from Africa and low- and middle-income nations in Asia and Latin America; send requests to humans@iied.org.

Contents list of *Environment&Urbanization* Vol 18, No 1, April 2006

Human Settlements Programme
International Institute for Environment and Development (IIED)
3 Endsleigh Street, London WC1H ODD, UK
E-mail: humans@iied.org Website: http://www.iied.org/human

● **Designed by Smith+Bell** andymss@aol.com / 020 8347 6462 ● **Printed by Russell Press** 0115 978 4505