# Editorial: Towards a real-world understanding of less ecologically damaging patterns of urban development

Most of the growth in the world's population over the next 20 years will be in and around urban centres in low- and middle-income nations – which are heavily concentrated in Africa, Asia and Latin America (Box 1). These regions already have three-quarters of the world's urban population: China's urban population is now as large as Europe's, and India and Africa both have larger urban populations than Northern America. Urban areas in these regions are also likely to house most of the increase in pollution and greenhouse gas emissions. They also have a large and growing proportion of the population that is most at risk from storms, floods and other climate change-related impacts.(1) How this growth in urban production and population in Africa, Asia and Latin America is planned for, managed and governed has enormous implications for local and regional environmental impacts in and around each urban centre, and for the cumulative impact of all human activities on the planet.

The achievement of less ecologically damaging patterns of urban development will conflict with the priorities and profits of many powerful local and global interests. It will require a competence and capacity within urban governments and accountability to citizens that are absent or only partially in place in most urban centres. It will also require national frameworks that ensure urban governments address ecological concerns beyond their boundaries – both for the regions surrounding them and for the planet. And it will require a careful balancing of economic, social, environmental health and ecological goals for each urban centre. Without this, a drive for ecological concerns is often anti-poor – poorer groups may be evicted from watersheds or newly created parks or reserves, or controls on development may restrict access to land needed by lower-income groups for housing. Zoning and development controls are so often used to protect environmental quality for the rich and powerful, while in the more deprived areas, the ecology of waste, water and infectious disease continues to threaten people's health and well-being.

What is needed most is a real-world understanding of how cities can move towards more ecologically sustainable patterns of production and consumption – an understanding, that is, that recognizes the complex political economy in each city and the many powerful vested interests that have little interest in ecological issues or that strongly oppose measures to reduce ecological costs. Wealthy Indian families, driving at week-ends to their "farmhouses" outside city boundaries (often in their 4-wheel drive/SUVs), and enjoying increasing amounts of air travel, will be as loath to pay carbon taxes as wealthy Los Angelites or Londoners. The new airlines that have sprung up, offering cheaper flights, will be just as reluctant to pay. Foreign and domestic investment will generally avoid any city that has effective measures to reduce its Ecological Footprint, especially its greenhouse gas emissions. As cities expand (and often sprawl), they build into their structure an increasing dependence on private automobile use for large sections of their population. There are few controls to limit this, and those controls that do exist can generally be ignored by powerful vested interests.

In addition, ecological issues hardly seem to figure in the plans and dreams of most city politicians in Africa and Asia. Their dream is to attract new (and, where possible, foreign) investment – with little consideration of the needs of low-income citizens, or consideration of the local, regional and global environments. Their

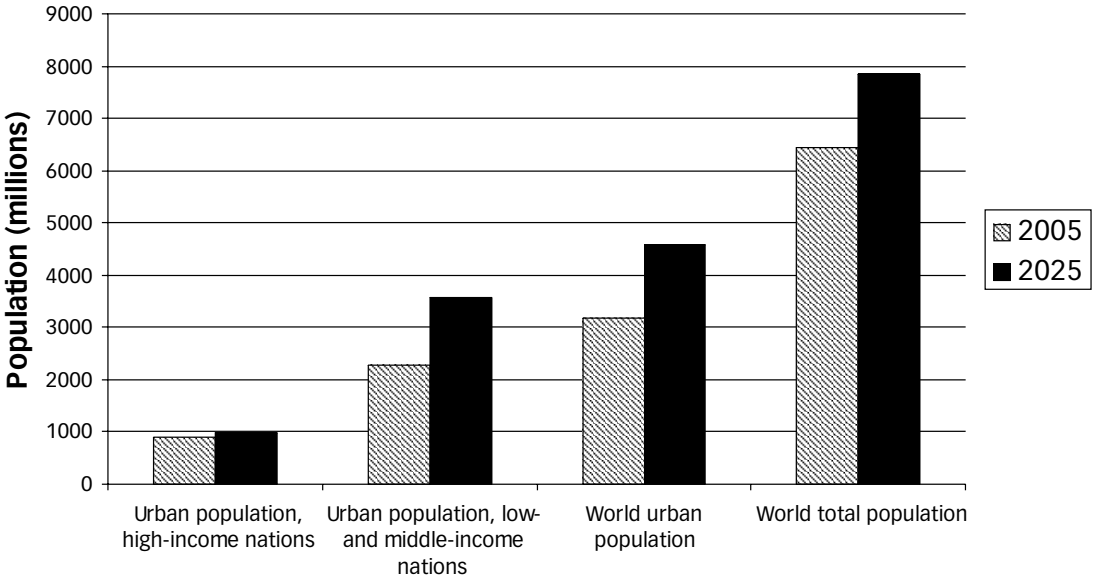
**Acknowledgment: The editorial team is grateful to Gordon McGranahan, Anirban Pal and Virginia Roaf for their help in preparing Book Notes. Thanks also to Miles Irving for doing much of the graphics work, and to Deborah Shannon for translating from German the text in Figure 7 of Hermann Knoflacher's paper.**

1. The April 2007 issue will be on "Reducing risks from disasters in cities (including those related to climate change)".



Vol 18(2): 267–273. DOI: 10.1177/0956247806069598 www.sagepublications.com

**BOX 1**
**Projections for the increase in the world's population and its urban population, 2005–2025**




| | Population (millions) | | Increase in population (millions) |
|---|---|---|---|
| | 2005 | 2025 | 2005–2025 |
| Urban population, high-income nations | 906 | 995 | 90 |
| Urban population, low- and middle-income nations | 2,266 | 3,584 | 1,317 |
| World urban population | 3,172 | 4,579 | 1,407 |
| World total population | 6,454 | 7,851 | 1,398 |

SOURCE: United Nations (2004), *World Urbanization Prospects: the 2003 Revision*, Population Division, Department for Economic and Social Affairs, ESA/P/WP190, New York, 323 pages. Obviously, some nations currently classified as "middle-income" may be reclassified as "high-income" during this period, which would change the distribution of urban population between "high" and "low- and middle-income" nations. But the point of the figure and table is to highlight how much of the growth in urban population 2005–2025 is likely to take place in nations that are currently "low- and middle-income" nations.

These figures are projections based on certain assumptions. They may not be realized – for instance, a serious and prolonged economic crisis affecting most of the world would generally reduce the growth in urban populations (through reducing net rural to urban migration). There are certainly doubts as to whether many low-income nations will continue urbanizing rapidly, unless they can achieve a better economic performance. However, the speed with which many national economies are growing, especially in China and India (which have the world's largest total and urban populations), supports the suggestion that most of the growth in the world's population and production between now and 2025 will be in low- and middle-income nations.

dream seems to be to turn their cities into Shanghai. They rarely consider the local environmental implications – and almost never the global ones. Wherever possible, they secure funding for large infrastructure projects (often with international loans), which are designed and implemented with little concern for poorer groups in their cities. They often see the poor

inhabitants of their cities, whose labour and services form such a critical part of the city economy, as "the problem". So new infrastructure investments (most often roads and highways) often forcibly displace large numbers of people from informal settlements. If there is any provision for resettlement for those who are displaced, it usually involves pushing them to poorly developed settlements on peripheral locations far from income-earning sources, schools and other services – and all their social contacts.

In terms of local environmental improvements, progress on water and sanitation in urban areas in most of Asia and Africa and much of Latin America has been very limited. Fifteen years of international support for water privatization has not produced the hoped-for expansion in private investment in water and sanitation systems or in expanded provision, or even in improved management.(2) It is difficult to get accurate statistics on the quality and extent of provision for water and sanitation, but available literature on cities in low-income nations and most middle-income nations suggests that a high proportion have serious water shortages, inefficient water management (with a high proportion of all water unaccounted for), poor water quality, intermittent services and large sections of the population unserved by piped systems.(3)

## I. DRIVERS OF CITY GROWTH

Perhaps the leading question is why has so much city growth in Africa and Asia (and parts of Latin America) been accompanied by environmental deterioration and by a lack of basic infrastructure for growing numbers of people. It is often not a question of cities being too poor to address these issues – many of the cities with the most serious problems have economies that have expanded greatly over the last few decades. To answer this question, it is important to understand the factors that drive city growth. Ultimately, cities are created through a self-reinforcing set of forward and backward linkages, which arise as producers try to locate close to suppliers and to their customers, and vice versa.(4) The competition for location is a key influence on how, where and in what form a city grows physically. Private investors choose to concentrate their productive and/or profit-seeking enterprises spatially (and so compete for locations), and the workforce seeks homes within reach of work opportunities (thus also competing for locations). Cities also concentrate government institutions and public services and their workforces – both for city government and often for higher levels of government (provincial/national). The concentration of consumers attracts retailers and service providers.

A city's expansion is the end result of all these decisions, made within local frameworks of infrastructure investments and political or physical controls. More ecological patterns of urban development – patterns that reduce local, regional and global ecological costs – require effective policies to manage urban expansion. Any city undergoing economic development and/or demographic growth has complex and changing demands for "undeveloped" land, especially in areas immediately around it – often termed the urban fringe or peri-urban areas. This is not a uniform band circling the built-up area. Certain parts are more desirable for accommodation or investment than others because of their location in relation to (among other things) employment, infrastructure, "natural" hazards, pollution, good climate and quality of government. Some peri-urban areas become upper-class suburbs, others contain large concentrations of informal settlements. There is a large demand for housing in districts or neighbourhoods that are separate from concentrations of enterprises.

2. See Loftus, Alexander J and David A McDonald (2001), "Of liquid dreams: a political ecology of water privatization in Buenos Aires", *Environment & Urbanization* Vol 13, No 2, October, pages 179–199; also Budds, Jessica and Gordon McGranahan (2003), "Are the debates on water privatization missing the point? Experiences from Africa, Asia and Latin America", *Environment & Urbanization* Vol 15, No 2, October, pages 87–114. Both of these can be accessed at no charge from http://eandu.sagepub.com/; and Hall, David and Emanuele Lobina (2006), *Pipe Dreams: The Failure of the Private Sector to Invest in Water Services in Developing Countries*, Public Services International Research Unit, London, available at no charge from http://www.wdm.org.uk/resources/briefings/aid/pipedreamsmediabriefing.doc

3. See UN–Habitat (2003), *Water and Sanitation in the World's Cities; Local Action for Global Goals*, Earthscan Publications, London, 274 pages; also UN–Habitat (2006), *Meeting Development Goals in Small Urban Centres; Water and Sanitation in the World's Cities 2006*, Earthscan Publications, London, 288 pages.

4. Fujita, Masahisa, Paul R Krugman and Anthony Venables (1999), *The Spatial Economy: Cities, Regions and International Trade*, MIT Press, Cambridge, Mass, 367 pages.

Often, this demand extends to locations far beyond the city's contiguous built-up area (for instance, to settlements populated by commuters). Households, along with some enterprises, prefer less polluted locations, creating a general preference for upstream and upwind locations. The capacity to pay for more favoured locations often serves to segregate the housing of different income groups.

Any city's expansion is obviously shaped by land-owning patterns, by existing or planned infrastructure (especially roads and utility networks) and by bureaucratic or political regulatory frameworks, which influence what "development" is permitted. And of course, land-owning patterns and regulatory frameworks powerfully influence who benefits from the much-increased value of undeveloped land, generated by the competition for good locations in and around any growing city.

Much urban expansion, along with land use changes caused by proximity to the city, takes place in areas outside the city government's jurisdiction. Peri-urban areas are often favoured for waste dumps and wastewater release (and treatment if it is available). Often, some of the most polluting industries are forced out of the urban area into the surrounding "rural" zones. At the same time, it is common for some peri-urban areas to be set aside as protected natural areas or as green areas. More generally, the mosaic of diverse and changing land uses often supports considerable biological and other environmental diversity. Several studies have found that species diversity peaks in peri-urban areas.[5] This is perhaps not surprising given the lack of diversity in many rural agricultural systems and the ability of many species to adapt to both urban and peri-urban opportunities.

## II. GREENING CITY GROWTH

Some readers may be disappointed that this issue of the journal (like the previous issue, which was also on ecological urbanization) does not contain more papers on "solutions" such as solar and wind technologies, rainwater harvesting, urban agriculture, hydrogen-powered buses and ecological toilets. But much of the literature on such solutions does little to engage with the realities outlined above – or to explain how these solutions can be introduced in real-world contexts. This literature also, so often, focuses on one small part of a problem. However important these "solutions" may be in particular circumstances, they are no more than components or possibilities in a bigger picture – what is needed is an understanding of where, when and how "ecological solutions" might be possible in the real world.

It is relatively easy to say what urban development needs to achieve in terms of more efficient resource use and reduced waste within and around cities, and in terms of the form that spatial expansion takes. But it is more difficult to know how to get there in the real world of urbanization, driven largely by profit-seeking enterprises that will oppose any policy that increases their costs or which avoid cities with effective policies to do so.

Both this issue and the previous issue contain much that is relevant to this topic, as real-world examples are used to discuss the achievement of more ecologically sustainable patterns of urban development. As Graham Haughton and Gordon McGranahan noted in the Editorial in the April 2006 issue, urban ecological thinking can help bring politics to the fore, and can be sensitive to the different ways in which both powerful and less powerful groups engage with formal political institutions and respond to politically charged urban ecological processes. Peter Newman's discussion, in this issue, of how to reduce the environmental impact of cities is anchored in a real-life example of Sydney, where a sustainability assessment addressed liveability and economic opportunity as well as ecological issues. The paper by Sergio Graf Montero, Eduardo Santana Castellón, Luis Manuel Martínez Rivera, Salvador García Ruvalcaba and Juan José Llamas describes how 10 municipalities within one river basin in Mexico formed a collaborative association to reduce river pollution, and worked together to improve living conditions and promote more sustainable management of natural resources. It describes how these improvements were achieved and the measures needed to ensure the association's continued effectiveness. Both these papers have particular importance, as they discuss the

5. McGranahan, G, P J Marcotullio, X Bai et al. (2005), "Urban systems", in *Ecosystems and Human Well-Being: Current Status and Trends*, Rashid Hassan, Robert Scholes and Neville Ash (editors), Island Press, Washington DC, pages 795–825.

political and institutional means through which progress was made.

There are four papers in this issue on water and sanitation – perhaps not surprising given the scale of the deficit in provision in urban areas and the worries about the ecological implications of conventional waterborne sewers. In each paper, the discussion is rooted in a particular context. The paper by Edi Medilanski, Liang Chuan, Hans-Joachim Mosler, Roland Schertenleib and Tove A Larsen discusses the possibilities for introducing two different kinds of eco-sanitation to the city of Kunming in China, within a broader discussion of how to reduce pollution loads in wastewater flows at source (for instance, within industries and households). This presents the findings of a stakeholder consultation on the feasibility of introducing two different kinds of eco-sanitation: "NoMix" toilets, in which urine is separated for use as a fertilizer, with faeces being disposed of through a conventional flush; and dry toilets, again with urine separation but with faeces being kept in a chamber within the house, with ash added, and the dry wastes collected regularly. Most stakeholders recognized the validity of such toilets (it is worth noting that Kunming is beside a lake that was once clean and used for bathing, but which now is heavily polluted). The dry toilets are significantly cheaper than the NoMix toilets, and imply much less water use, but were considered by most stakeholders to be less appropriate. The paper suggests the need for innovative technical and organizational solutions to make dry toilets acceptable in urban contexts, where space is constrained and good provision has to be made for all toilets to have supplies of ash and provision to remove the toilet wastes. The paper by Adriana Allen, Julio D Dávila and Pascale Hofmann reviews the different ways in which low-income, peri-urban residents in five metropolitan areas access water and sanitation – and finds that improvements depend on governance systems supporting (and helping improve) the informal systems through which they are currently served. The paper by David Nilsson discusses the difficulties in extending a conventional piped water and sewer system in Kampala to meet the rapidly growing population's needs, by reviewing how this system evolved between 1920 and 1950 to serve the affluent groups. The paper by Arif Hasan on the work of the Orangi Pilot Project–Research and Training Institute is in the Feedback section, as it responds to concerns in an earlier issue of the journal. But it is relevant to the issue of ecological urbanization in that it describes how civil society organizations were able to transform planning and investment in sewers and drains in Karachi in ways that have brought major benefits to large sections of the low-income population and provided the basis for more effective treatment of sewage – and in ways that allowed Pakistan to avoid taking on large loans.

These papers also illustrate the need to work with the women, men and children who lack good provision for water and sanitation in coming up with solutions. Externally designed "solutions" often do not work because what is provided is too inconvenient, too costly or too inappropriate to local circumstances. The perfect design for composting toilets has limited value if women cannot use them safely 24 hours a day, or if children are frightened to use them (because they are dark or because they are frightened of falling into the pit). Flush toilets don't work if water supplies to flush them are intermittent. Ecological sanitation will not return nutrients to the soil unless it is easy, convenient and cheap to get "the nutrients" to crop growers who want them. Among those committed to more ecological solutions, there is a tendency to dismiss flush toilets linked to sewers because of their high costs, high water use and pollution of water bodies. But in many urban contexts, these are the safest and most convenient form of sanitation for most homes and also for schools, workplaces and public places. Their public health advantages arise from the extent to which they reduce the risk of human contact with excreta (and protect groundwater from contamination), and the ease with which the toilets can be maintained. They also require very little space within each building, making them particularly appropriate for housing for low-income groups, where space is always constrained. Their cost disadvantages are reduced with higher densities and in locations where there are many multi-storey buildings; indeed they can be cheaper than on-site latrines. Toilets linked to sewers can also be designed in ways that reduce water use and some of their other ecological disadvantages. But equally, they can be completely inappropriate in contexts where water is scarce, water supply is intermittent and where there isn't the technical and financial capacity to extend provision to all city dwellers.

Two papers look in some detail at transport issues. Peter Newman's paper includes a discussion of the key transport-related issues within the broader discussion of advancing a sustainable development agenda for Sydney. Hermann Knoflacher presents a novel idea for reducing private automobile use by reducing provision for parking. His paper describes how increasing car use has not resulted in more trips per day, and increasing capacity for speed has not increased leisure time, because of congestion and increased travel distances. It also shows how transport planning that favours provision for car use and parking has restructured cities so that shops, workplaces and recreational and social contacts within neighbourhoods disappear, city landscapes become remodelled for cars (discouraging walking), and public transport becomes unviable. This paper suggests that these problems can be solved if strong incentives are provided for cars to be parked in garages that are only as accessible as public transport stops – at all origins and destinations.

The issues around making residential developments more ecologically sustainable are discussed by Mark Swilling and Eve Annecke. They describe an initiative in which they were involved in South Africa to build an ecologically sustainable neighbourhood, with innovations in sanitation, solid waste management and reduced energy demand – and which also sought to provide housing for a range of income groups. (Readers with a particular interest in this issue should also review the achievements of the Beddington Zero Energy Development (BedZED) in London, which is a mixed-use, mixed-tenure development that incorporates innovative approaches to energy conservation and environmental sustainability.)[6]

One other paper in the Feedback section contributes to a "real-world" discussion of how to make cities work better for low-income groups. The paper by Nattawut Usavagovitwong and Prayong Posriprasert discusses an initiative that combined environmental improvements and pollution reduction in Bangkok's canals with improvements in conditions for urban poor communities living along the canals. These communities had central roles in the design and implementation. The April 2006 issue also contained many papers discussing how to combine a shift to less ecologically damaging patterns of urban development with improved conditions for lower-income groups – for instance in Panjim (Goa) and Cape Town. The Editorial from the April issue also highlighted a theme that is particularly relevant to this issue – the need for new modes of engagement between low-income groups and their governments to get basic environmental services. It noted that a key principle in this regard is developing a "debate and decide" rather than a "predict and provide" approach, a shift away from technocratic, expert planning solutions in favour of more participative approaches. 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 always be a constraint on the effectiveness of these more participative processes.

## III. FEEDBACK

Feedback has seven papers that respond to the themes of previous issues, two of which have been mentioned above because of their relevance to the theme of this issue.

Richard Mabala's paper on "From HIV prevention to HIV protection" highlights how little attention is paid to protecting the groups most vulnerable to HIV infection in urban areas – young women and adolescent girls. It discusses why they are least able to avoid risks and protect themselves, and most likely to have HIV passed to them. More than half the deaths of young women in sub-Saharan Africa are attributed to HIV. The paper notes how little support goes to the most effective measures to protect them – including involving them in identifying the most effective measures, reducing their isolation and exploitation, helping them to stay at school (and making schools and their surrounds safer) and supporting the clubs, safe spaces, participation in local institutions and peer learning which enable them to become the communicators rather than the "recipients" of others communications.

The paper by Julie Crespin highlights the difficulties that donor agencies face in supporting effective, pro-poor local development – and how these difficulties are currently exacerbated by changes in development assistance. The paper

6. For more details, see www.peabody.org.uk/bedZED and www.zedfactory.com/bedzed/bedzed.html.

examines the institutional and political constraints that inhibit multilateral and bilateral donor agencies from supporting poverty reduction initiatives on the ground. It also considers how current trends in development assistance towards greater donor harmonization and the associated processes within Poverty Reduction Strategy Papers, the shift from project support to budget support, and the drive for greater "efficiency" may further limit donors' capacity to support pro-poor local initiatives. It discusses how these trends in development assistance are marginalizing support for those aspects of development that require relatively little external funding but also require that this funding be used carefully and strategically, engaging directly with poor groups and their organizations, and enlarging their scope for influence and action.

The paper by Alberto Minujin, Enrique Delamonica, Alejandra Davidziuk and Edward D Gonzalez discusses the specificities of child poverty that are ignored in most discussions on how to define and measure poverty – with the result that poverty reduction policies often fail to address the needs of children and their families. The paper by Anirban Pal reviews the limits on bottom-up planning in one of India's largest cities, Kolkata (formerly Calcutta), and highlights the need for policy makers to focus on the design of institutional mechanisms that allow for a more bottom-up approach to metropolitan planning through which to address common problems and define shared objectives. Feedback also includes a paper by the South African Minister of Housing, Lindiwe Sisulu, where she discusses her government's partnership with the South African Federation of the Urban Poor. And finally, the Comment by Louise Chawla, Sheridan Bartlett, David Driskell, Roger Hart and Gabriella Olofsson discusses the lack of attention given to children at the June 2006 World Urban Forum in Vancouver. This failure is not unique to this Forum, but reflects a broader failure to integrate attention to the priorities and involvement of children within development practice.

## References

Budds, Jessica and Gordon McGranahan (2003), "Are the debates on water privatization missing the point? Experiences from Africa, Asia and Latin America", *Environment & Urbanization* Vol 15, No 2, October, pages 87–114.

Fujita, Masahisa, Paul R Krugman and Anthony Venables (1999), *The Spatial Economy: Cities, Regions and International Trade*, MIT Press, Cambridge, Mass, 367 pages.

Hall, David and Emanuele Lobina (2006), *Pipe Dreams: The Failure of the Private Sector to Invest in Water Services in Developing Countries*, Public Services International Research Unit, London.

Loftus, Alexander J and David A McDonald (2001), "Of liquid dreams: a political ecology of water privatization in Buenos Aires", *Environment & Urbanization* Vol 13, No 2, October, pages 179–199.

McGranahan, G, P J Marcotullio, X Bai et al. (2005), "Urban systems", in *Ecosystems and Human Well-Being: Current Status and Trends*, Rashid Hassan, Robert Scholes and Neville Ash (editors), Island Press, Washington DC, pages 795–825.

UN–Habitat (2003), *Water and Sanitation in the World's Cities; Local Action for Global Goals*, Earthscan Publications, London, 274 pages.

UN–Habitat (2006), *Meeting Development Goals in Small Urban Centres; Water and Sanitation in the World's Cities 2006*, Earthscan Publications, London, 288 pages.

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