

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

SUMMARY: Most of the growth in the world's population over the next 20 years will be in urban centres in Africa, Asia and Latin America. These urban centres will also house most of the growth in industrial production and much of the growth in greenhouse gas emissions. How this urban growth is planned for, managed and governed has enormous implications for whether developmental goals are met and whether the potentially catastrophic implications of climate change can be avoided. Yet most international agencies ignore urban development. Most of the plans of city politicians and civil servants in Africa and Asia address neither the developmental concerns of their lower-income groups nor local or global environmental concerns. Meanwhile, most discussions of how to "green" cities fail to engage with the political and institutional mechanisms needed to implement them and with the developmental needs of poorer groups.

There is an urgent need to combine developmental concerns with local and global environmental concerns in urban areas in Africa, Asia and Latin America, especially around:

- much improved provision for water, sanitation and drainage;
- transport and land use management that keep down the costs of land for housing and ensure settlement patterns that are less dependent on private car use; and
- residential developments that rely far less on carbon-based fuel for heating or cooling.

Urban growth also needs to be made more climate resilient, to cope with expected increases in storms and floods, as well as help reduce, rather than increase, greenhouse gas emissions.

I. INTRODUCTION

URBAN CENTRES IN Africa, Asia and Latin America contain three-quarters of the world's urban population. They also house most of the growth in the world's population, industrial production and pollution, and much of the growth in greenhouse gas emissions. They have a large and growing proportion of the population most at risk from climate change-related storms and floods.⁽¹⁾ China's urban population is now as large as Europe's; India and Africa both have larger urban populations than Northern America. How the growth in urban production and urban populations in Africa, Asia and Latin America is planned for, managed and governed has enormous implications for development goals (especially the achievement of the Millennium Development Goals),⁽²⁾ for local and regional environmental impacts in and around each urban centre, and for the cumulative impact of all human activities on planetary systems.

Achieving 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 environmental legislation and regulations to ensure urban governments address ecological concerns that are beyond their jurisdictions – 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 will generally result in low-income groups being evicted from watersheds or newly created parks or reserves, or controls on development that restrict their access to land 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 diseases continues to threaten people's health and well-being.

Less ecologically damaging patterns of urban development require what can be termed a "real-world" understanding of how cities and smaller urban centres can move towards less resource-

1. The April 2007 issue of *Environment & Urbanization* (Vol 19, No 1) is on reducing risks to cities from disasters and climate change.

2. See the special issue of *Environment & Urbanization* on meeting the MDGs in urban areas (Vol 17, No 1, April 2005).

This Brief of the October 2006 issue of the journal *Environment&Urbanization* on the theme of "Ecological urbanization" is based on the 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.

3. See Rees, William E (1992), "Ecological footprints and appropriated carrying capacity", *Environment & Urbanization* Vol 4, No 2, October, pages 121–130; also Wackernagel, Mathis, Justin Kitzes, Dan Moran, Steven Goldfinger and Mary Thomas (2006), "The ecological footprint of cities and regions: comparing resource availability with resource demand", *Environment & Urbanization* Vol 18, No 1, April, pages 103–112.

4. 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 free of charge at <http://eand.u.sagepub.com/>. See also 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 free of charge at <http://www.wdm.org.uk/resources/briefings/aid/pipedreamsmidiabriefing.doc>.

5. 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. See also *Environment & Urbanization* Brief 8, available at <http://www.iied.org/pubs/pdf/full/10516IIED.pdf>.

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

intensive, less wasteful and less polluting patterns of production and consumption. This has to recognize the many powerful vested interests that have little interest in ecological issues or that strongly oppose measures to reduce ecological costs. As cities expand (and often sprawl), they generally 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 powerful groups can generally ignore the controls that do exist. Wealthy Indian families, driving to their "farmhouses" outside city boundaries at the weekends (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,⁽³⁾ especially its greenhouse gas emissions.

In addition, ecological issues hardly seem to figure in the plans 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 of environmental concerns. Their dream seems to be to turn their cities into New York or 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) that are designed and implemented to encourage new businesses to locate there, often with little concern for the city population that lacks basic services. They often see the low-income inhabitants of their cities, whose labour and services form such a critical part of the city economy, as "the problem". So, new infrastructure and developments for high-income groups often forcibly displace large numbers of people, generally those living in informal settlements. If provision is made for resettling those who are displaced, it usually involves pushing them into poorly developed settlements in peripheral locations far from income-earning sources, schools and other services – and far from all their social contacts.

In terms of local environmental improvements, 15 years of international support for water privatization has not produced the hoped-for expansion in private investment in water and sanitation systems, nor in expanded provision or even in improved management.⁽⁴⁾ It is difficult to obtain 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.⁽⁵⁾

II. DRIVERS OF CITY GROWTH

PERHAPS THE LEADING question is why has so much city growth 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. It is far more a question of city growth overwhelming any (local) capacity to create appropriate governance frameworks.

Cities grow because private investments choose to concentrate there – as producers try to locate close to suppliers and their customers, and vice-versa, creating a self-reinforcing set of forward and backward linkages.⁽⁶⁾ The competition by those making such investments for good locations is a key influence on how, where and in what form a city grows physically. As private investment concentrates in cities, so the workforce seeks homes within reach of work opportunities (thus also competing for locations). The concentration of consumers attracts retailers and service providers, who also seek the best locations for their businesses. Cities also concentrate government institutions and public services and their workforces – both for city government and often for higher levels of government (provincial/national).

A city's expansion is the end result of all these decisions – which are also influenced by the availability of infrastructure (transport, water and sanitation, electricity, etc.) and by political or physical controls – and sometimes incentives. Urban expansion is often driven both by wealthier groups and low-income groups: the wealthy groups move to well-served suburbs or settlements on the city periphery, and the low-income groups move to wherever land is cheap and available for developing their own homes (even if this is on land that is illegally occupied or sub-divided).

More ecological patterns of urban development, which reduce local, regional and global ecological costs require effective policies to manage urban expansion. Any growing city has 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, a lack of "natural" hazards and 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. Often, this demand extends to locations far beyond the city's built-up area (for instance, to settlements populated by commuters). Households, along with some enterprises, prefer less polluted areas, creating a general preference for upstream and upwind locations. Differentials in the capacity to pay for more favoured locations segregates the housing of different income groups. It can also create significant areas of the city where poorer groups are not allowed – as in the gated communities or “country-clubs” to which increasing numbers of middle- and upper-income groups retreat.

Any city's expansion is obviously shaped by landowning patterns, as well as by existing or planned infrastructure (especially roads and utility networks) and by bureaucratic or political regulatory frameworks that influence what “development” is permitted. And of course, landowning 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.⁽⁷⁾ 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.

III. GREENING CITY GROWTH

GREENING CITY GROWTH is often discussed with a focus on “solutions” such as solar and wind technologies, rainwater harvesting, urban agriculture, hydrogen-powered buses and eco-sanitation. But such discussions rarely engage with the realities outlined above. However important these 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 and not run counter to improved conditions for low-income groups.

It is easy to say what urban development needs to achieve in terms of more efficient resource use and reduced waste. But it is more difficult to know how to achieve this with urbanization processes driven largely by profit-seeking enterprises that oppose any policy that increases their costs or prevents their operation in locations they desire. Urban ecological thinking needs to help bring politics to the fore and 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.⁽⁸⁾ This cannot be done without considering pressing local development concerns. One example of this is the development plans for Sydney, where a sustainability assessment addressed local issues of liveability and economic opportunity as well as ecological issues.⁽⁹⁾ Another example is the collaborative association formed by 10 municipalities within one river basin in Mexico to reduce river pollution and work together to improve living conditions and promote more sustainable management of natural resources.⁽¹⁰⁾ These kinds of examples give us an understanding of the political and institutional means through which progress can be made.

IV. WATER AND SANITATION

IMPROVING PROVISION FOR water, sanitation and wastewater management in urban areas is a critical developmental need. But there are also pressing ecological concerns too, especially the growing number of areas experiencing water stress and water pollution as a result of wastewater from urban areas. Increasing numbers of cities are drawing fresh water from evermore distant watersheds, as local demands exceed local supplies, or as local supplies are depleted or polluted.⁽¹¹⁾ But discussions of how to address these issues need to be rooted in local contexts.

One example of the kinds of discussions needed comes from a study on the possibilities for introducing eco-sanitation to Kunming in China, a rapidly growing city with a population of over 2 million inhabitants. Eco-sanitation possibilities are considered within a broader discussion of how to reduce pollution loads in wastewater flows at source (for instance, within industries and households).⁽¹²⁾ This included a stakeholder consultation on the feasibility of introducing two different kinds of eco-sanitation: “NoMix” toilets, where urine is separated for use as a fertilizer and faeces is disposed of through a conventional flush; and dry toilets, again with urine separation but with faeces being kept in a chamber within the house, to which ash is added and the dry wastes collected regularly (Figure 1). Most stakeholders recognized the validity of such toilets. 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

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

8. See Haughton, Graham and Gordon McGranahan (2006), “Editorial: urban ecologies”, *Environment & Urbanization* Vol 18, No 1, April, pages 3–8; also *Environment & Urbanization* Brief 13 available from <http://www.iied.org/pubs/pdf/full/10540IIED.pdf>.

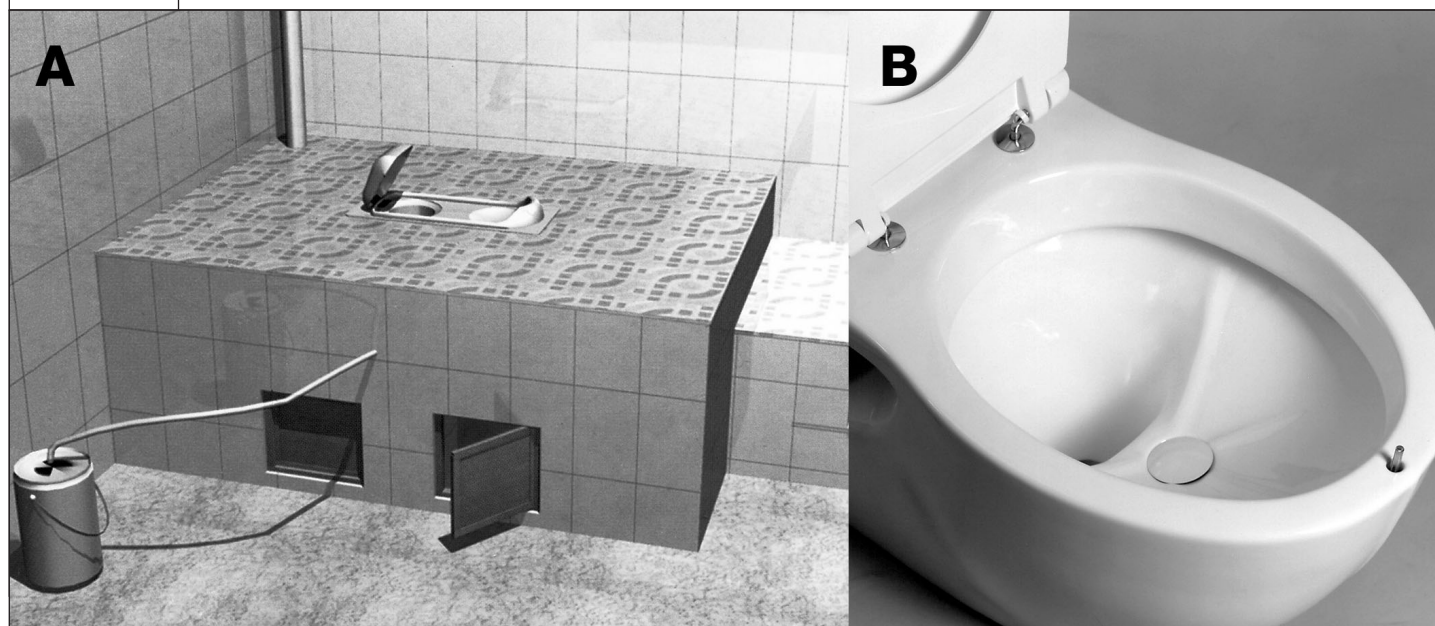
9. See the paper by Peter Newman listed on the back page.

10. See the paper by Sergio Graf Montero, Eduardo Santana Castellón, Luis Manuel Martínez Rivera, Salvador García Ruvalcaba and Juan José Llamas listed on the back page.

11. See reference 5.

12. See the paper by Edi Medilanski, Liang Chuan, Hans-Joachim Mosler, Roland Schertenleib and Tove A Larsen listed on the back page.

FIGURE 1: Two urine-separating sanitation alternatives



A: The urine-separating dry toilet, which functions without water.

B: The urine-separating flushing toilet (NoMix toilet)

SOURCES: This is taken from the paper by Edi Medilanski, Liang Chuan, Hans-Joachim Mosler, Roland Schertenleib and Tove A Larsen listed on the back page. Photo A is courtesy of Lin Jiang, Associate Professor and member of the Guangxi Committee of the Jiu San Society, Department of Science and Technology, Nanning City. Photo B is from Roediger Vakuum- und Haustechnik GmbH, Hanau, Germany. Training document courtesy of Lin Jiang.

appropriate. This study 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 effective removal of toilet wastes.

There is also much to be learnt from local initiatives that have succeeded in expanding provision for water or sanitation (or both) at scale. The Pakistan NGO Orangi Pilot Project (OPP) in Karachi has long been well known for such innovations in Orangi, one of Karachi's largest informal settlements. Here, external funding for good quality, covered sewers was not needed because, with advice from this NGO, community management so reduced unit costs that households could afford to pay. But the OPP Research and Training Institute has gone far beyond work in Orangi, to encourage similar initiatives in many other settlements in Karachi and in other urban centres in Pakistan. Its approach of component-sharing in sanitation – with communities being responsible for “internal” infrastructure (for instance, sanitary toilets, underground sewers in each street or lane, local collector sewers), and the “external” infrastructure (trunk sewers and treatment plants) being provided by local government – has also been applied to other areas, such as water supply.

Its methods have also been widely adopted by city governments. Thus, civil society organizations have been 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 have provided the basis for more effective treatment of sewage – and in ways that allowed Pakistan to avoid taking on large loans.⁽¹³⁾ One of the key underpinnings of this was an OPP programme to map and survey informal settlements, as investments in improving provision need accurate maps that show plot boundaries and the infrastructure that has already been constructed. This was done by youth teams, supported by a youth training programme. This is one of a number of examples of grassroots organizations and local NGOs taking on a task that would normally be considered a government role. But as low-income communities and local NGOs provide governments with maps and detailed household information on informal settlements, this provides the information needed to support upgrading and supports more equal partnerships between government agencies and resident organizations.⁽¹⁴⁾

One of the keys to the success of the OPP approach was to recognize the investments that were being made in sanitation by households, community organizations and local politicians or government agencies so that any new investments (by communities or government agencies) built on and complemented these. This is a point that has much wider relevance. For instance, a study of the extent of provision for water and sanitation in peri-urban areas in Chennai, Dar es Salaam, Cairo, Mexico and Caracas showed the reliance of low-income peri-urban dwellers on informal providers. Their needs were served neither by formal public nor private provision. Since their needs and practices are so often invisible to the public

13. See the paper by Arif Hasan listed on the back page.

14. For other examples of community-managed surveys/enumerations, see Patel, Sheela, Celine d’Cruz and Sundar Burra (2002), “Beyond evictions in a global city; people-managed resettlement in Mumbai”, *Environment & Urbanization* Vol 14, No 1, April, pages 159–172; also Glockner, Heike, Meki Mkanga and Timothy Ndezi (2004), “Local empowerment through community mapping for water and sanitation in Dar es Salaam”, *Environment & Urbanization* Vol 16, No 1, April, pages 47–62; and Patel, Sheela (2004), “Tools and methods for empowerment developed by slum and pavement dwellers’ federations in India”, *PLA Notes* 50, IIED, London.

15. See the paper by Adriana Allen, Julio D Dávila and Pascale Hofmann listed on the back page.

16. Bartlett, Sheridan (2003), "Water, sanitation and urban children: the need to go beyond 'improved' provision", *Environment & Urbanization* Vol 15, No 2, October, pages 57–70.

17. See the paper by David Nilsson listed on the back page, which 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.

18. See the paper by Peter Newman listed on the back page.

19. See the paper by Hermann Knoflacher, listed on the back page, for a discussion of the means to do this.

20. See the paper by Mark Swilling and Eve Annecke listed on the back page.

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

22. See the paper by Nattawut Usavogitwong and Prayong Posriprasert listed on the back page.

23. See the paper by Lindiwe Sisulu listed on the back page.

24. See reference 8, Haughton and McGranahan (2006).

sector, policy changes aimed at improving provision from official service providers frequently do little for them. Yet there are often ways of building on local forms of provision to improve services and lower costs – but these usually depend on official water and sanitation agencies learning to work collaboratively with community organizations.⁽¹⁵⁾

These discussions on how to improve provision for water and sanitation rooted in local contexts also illustrate the need to work with the women, men and children who lack good provision for water and sanitation. 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).⁽¹⁶⁾ Flush toilets don't work if water supplies to flush them are intermittent; they also pose serious health problems if there are no sewers or septic tanks to manage their wastes.⁽¹⁷⁾ 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.

V. TRANSPORT AND LAND USE PLANNING

THE PLANNING AND management of transport is also at the core of any discussion of "eco-cities". As with water and sanitation, this has to be rooted in local contexts – and in the needs and priorities of lower-income groups. Fortunately, there are synergies between addressing these needs and less carbon-intensive transport systems. For instance, in Sydney, a sustainability assessment that included widespread consultation identified improvements that were prioritized by citizens but that also brought local environmental improvements and a reduced ecological footprint for the city.⁽¹⁸⁾ But here, as in other cities, a shift to less reliance on private automobiles, and more walking, bicycling and use of public transport has to be supported by both transport and land use policies. Transport planning that favours provision for car use and for parking at home and work 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.⁽¹⁹⁾ Well-planned public transport systems can also increase the supply and reduce the cost of land for housing.

VI. HOMES AND NEIGHBOURHOODS

ECO-CITIES ALSO need to make residential developments more ecologically sustainable. There are some innovative examples that show what is possible and that take on board the need for this to be realizable for households with low incomes. In South Africa, the Lynedoch EcoVillage initiative is building an ecologically sustainable neighbourhood with innovations in sanitation, solid waste management and reduced energy demand, and that provides housing for a range of income groups.⁽²⁰⁾ Another example is the Beddington Zero Energy Development (BedZED) in London, a mixed-use, mixed-tenure development that incorporates innovative approaches to energy conservation and environmental sustainability.⁽²¹⁾

One worry about "environmental improvements" in residential areas is how easily these can displace lower-income groups. Fortunately, there are examples to show how this can be avoided – for instance, in a project to upgrade nine "canal settlements" in Bangkok that combines environmental improvements and pollution reduction in canals with improvements in conditions for urban poor communities living along their banks.⁽²²⁾ Again, one returns to the need for new modes of engagement between low-income groups and their governments to get basic environmental services.⁽²³⁾ This requires a shift in government approach from the conventional "predict and provide" to "debate and decide", a shift away from technocratic, expert planning solutions in favour of more participative approaches.⁽²⁴⁾ 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.

VII. INTERNATIONAL SUPPORT FOR LOCAL DEVELOPMENT

WHAT ROLE DO the official aid agencies and development banks have in the innovations noted above? Perhaps surprisingly, not much. Most of the innovations mentioned above received no support from such agencies or banks. If much of the innovation in developing less ecologically damaging patterns of urban development while also addressing unmet needs of low-income groups is from local initiatives, there is the obvious issue of how international agencies might better support these. But most official donor agencies face difficulties in supporting effective, pro-poor local development. They were not set up to do so; they were set up to channel funding through national governments. They face institutional and political constraints in supporting poverty reduction initiatives on the ground – especially the incapacity of large, centralized agencies intent on keeping down staff costs to fund a large and diverse range of initiatives, most of which require modest external funding. Current trends in development assistance towards greater donor harmonization, 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. This is also 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.⁽²⁵⁾

25. See the paper by Julie Crespin listed on this page below.

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). 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 has the full text of all issues of *Environment&Urbanization* from 1989 to the present and all but the four most recent issues are available at no charge. This site also contains details of how to subscribe to the journal and how to gain access to any of the papers listed below (which may be purchased electronically for US\$ 15). It 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 2, October 2006

Editorial: Towards a real-world understanding of less ecologically damaging patterns of urban development – *David Satterthwaite*

The environmental impact of cities – *Peter Newman*

Collaborative governance for sustainable water resources management: the experience of the Inter-municipal Initiative for the Integrated Management of the Ayuquila River Basin, Mexico – *Sergio Graf Montero, Eduardo Santana Castellón, Luis Manuel Martínez Rivera, Salvador García Ruvalcaba and Juan José Llamas*

Building sustainable neighbourhoods in South Africa: learning from the Lynedoch case – *Mark Swilling and Eve Anneck*

The peri-urban water poor: citizens or consumers? – *Adriana Allen, Julio Dávila and Pascale Hofmann*

Wastewater management in Kunming, China: a stakeholder perspective on measures at the source – *Edi Medilanski, Liang Chuan, Hans-Joachim Mosler, Roland Schertenleib and Tove A Larsen*

A heritage of unsustainability? Reviewing the origin of the large-scale water and sanitation system in Kampala, Uganda – *David Nilsson*

A new way to organize parking: the key to a successful sustainable transport system for the future – *Hermann Knoflacher*

Feedback

Partnerships between government and slum/shack dwellers’ federations – *Lindiwe Sisulu*

From HIV prevention to HIV protection: addressing the vulnerability of girls and young women in urban areas – *Richard Mabala*

Aiding local action: the constraints faced by donor agencies in supporting effective, pro-poor initiatives on the ground – *Julie Crespin*

Orangi Pilot Project: the expansion of work beyond Orangi and the mapping of informal settlements and infrastructure – *Arif Hasan*

The definition of child poverty: a discussion of concepts and measurements – *Alberto Minujin, Enrique Delamonica, Alejandra Davidziuk and Edward D Gonzalez*

Scope for bottom-up planning in Kolkata: rhetoric vs reality – *Anirban Pal*

Urban poor housing development on Bangkok’s waterfront: securing tenure, supporting community processes – *Nattawut Usavagovitwong and Prayong Posriprasert*

The missing population at the 2006 World Urban Forum – *Louise Chavla, Sheridan Bartlett, David Driskell, Roger Hart and Gabriella Olofsson*

Human Settlements Programme

International Institute for Environment and Development (IIED)

3 Endsleigh Street, London WC1H 0DD, UK

E-mail: humans@iied.org Website: <http://www.iied.org/human>

