4 The Social and Sustainable Use of Space

Humanity has been given a second chance: we now need to build urban areas yet again that are at least equivalent in size to the cities that we have already built, we need to do it better, and we need to do it in a very short time.[1]

Urban Growth and Sustainable Use of Space

The space taken up by urban localities is increasing faster than the urban population itself. Between 2000 and 2030, the world's urban population is expected to increase by 72 per cent, while the built-up areas of cities of 100,000 people or more could increase by 175 per cent.[2]

The land area occupied by cities is not in itself large, considering that it contains half the world's population. Recent estimates, based on satellite imagery, indicate that *all* urban sites (including green as well as built-up areas) cover only 2.8 per cent of the Earth's land area.[3] This means that about 3.3 billion people occupy an area less than half the size of Australia.

However, most urban sites are critical parcels of land. Their increased rate of expansion, and where and how additional land is incorporated into the urban make-up, has significant social and environmental implications for future populations.

From a social standpoint, as shown in Chapter 3, providing for the land and shelter needs of poor men and women promotes human rights. It is critical for poverty alleviation, sustainable livelihoods and the reduction of gender inequalities. Most city growth will be in developing countries, and many of the new urbanites will be poor. The form and direction of future city growth, as well as the way land is apportioned, utilized and organized, are all critical for economic growth and poverty reduction. Planners and policymakers must take proactive stances, based on a broader and longer-term vision, to guarantee the rights to the city for a rapidly growing number of poor people.

The territorial expansion of cities will also affect environmental outcomes. The conventional wisdom has been that the expansion of urban space is detrimental in itself. Since many cities are situated at the heart of rich agricultural areas or other lands rich in biodiversity, the extension of the urban perimeter evidently cuts further into available productive land and encroaches upon important ecosystems.

◀ *A woman looks down on the city from her house on a hillside slum in Caracas, Venezuela.*

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▲ *Men push bikes laden with coal in a mixed and rapidly-growing peri-urban area in Jharkand State, India.*

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At the same time, however, there is increasing realization that urban settlements are actually necessary for sustainability. The size of the land area appropriated for urban use is less important than the way cities expand: Global urban expansion takes up much less land than activities that produce resources for consumption such as food, building materials or mining. It is also less than the yearly loss of natural lands to agricultural activities, forestry and grazing, or to erosion or salinization.[4]

Asked the defining questions—"If the world's population were more dispersed, would it take up more valuable land or less? Would dispersion release prime agricultural land? Would it help avoid the invasion of fragile ecosystems?"—the answer, in most countries, would be "No!" Density is potentially useful. With world population at 6.7 billion people in 2007 and growing at over 75 million a year, demographic concentration gives sustainability a better chance. The protection of rural ecosystems ultimately requires that population be concentrated in non-primary sector activities and densely populated areas.[5]

The conclusion that using land for cities is potentially more efficient only heightens the need for careful and forward-looking policies, in light of the rapid doubling of the urban population in developing countries. This chapter looks at current patterns of urban territorial expansion and their implications. It proposes putting more effort into orienting urban growth, thus allowing cities to contribute to social development and sustainability.

This proposal calls for a vision based on solid analysis, and encompassing a broader notion of "space" than the one imposed by political and administrative city limits. It also demands a longer time horizon than the terms of politicians or administrators.

Density, Urban Sprawl and Use of Land[6]

A recent study commissioned by the World Bank shows that modern patterns of city growth are increasingly land-intensive.[7] Average urban densities (that is, the number of inhabitants per square kilometre of built-up area) have been declining for the past two centuries. As transportation continues to improve, the tendency is for cities to use up more and more land per person.[8]

The built-up area of cities with populations of 100,000 or more presently occupy a total of about 400,000 km^2, half of it in the developing world. Cities in developing countries have many more people but occupy less space per inhabitant. In both developing and industrialized countries, the average density of cities has been declining quickly: at an annual rate of 1.7 per cent over the last decade in developing countries and 2.2 per cent in industrialized countries.[9]

In developing countries, cities of 100,000 or more are expected to *triple* their built-up land area to 600,000 km^2 in the first three decades of this century. Cities in developed countries expand at an even faster rate per resident, despite their smaller population size and lower rate of population growth. They will increase their built-up land area by 2.5 times between 2000 and 2030. At that point, they will occupy some 500,000 km^2.[10]

Modern patterns of city growth are increasingly land-intensive. Average urban densities …have been declining for the past two centuries. As transportation continues to improve, the tendency is for cities to use up more and more land per person.

Thus, should recent trends persist over the next 30 years, the *built-up land area* (i.e., excluding green areas) of cities of 100,000 or more would grow from a territory the size of Sweden to one like Ethiopia. But these projections might actually understate the possibilities. Recent trends to lower densities may accelerate as globalization has its effect on lifestyles and production processes. Whatever the case, the data show that developing countries now share the trend to urban sprawl.

Urban sprawl results from the combination of different types of pressures on territorial expansion. For purposes of simplicity, these can be classified into two groups: residential suburbanization and peri-urbanization.

The Discreet Charm of Suburbia

The modern trend to urban sprawl began in North America after World War II, where suburban growth came to symbolize the "American way of life".[11] The ethos of a return to rural living and of being closer to nature was an important part of this search for a better quality of life, though it actually placed greater stress on "natural" environmental amenities. Subsequent regulatory regimes and economic factors strengthened the cultural impulse to low density and single-use development.[12]

In North America, the intensive use of the automobile for daily commuting was both a cause and a consequence of urban sprawl.[13] This pattern of settlement spawned new locations for trade and services and this, in turn, further promoted automobile use and outward city growth.

The original suburban model of urban sprawl was closely associated with lifestyle preferences and the widespread availability of the automobile in a particular cultural setting. Housing, road-building and zoning policies, also inspired by suburban ideals, combined to promote low-density housing.

Today, the suburbs of cities in North America have become more diversified. Catering to the needs of the suburban population stimulated decentralization of economic activities and the diversification of outlying areas. Nevertheless, the stereotypical suburb with its dispersion and individual housing still prevails as a sort of ideal model.

The lifestyles and values associated with American consumption patterns have apparently promoted preferences in other regions for living farther from the city centre. These value changes, and the greater availability of personal transport, especially the automobile, are spreading cities outward. In this way, the American dream is being reproduced in the most diverse social and economic contexts.[14]

Even in Europe, where cities have traditionally been compact, there are signs that sprawl and suburbanization are increasing.[15] Between 1969 and 1999, for instance, the urbanized areas in France increased by five times, while the population of these areas grew only by 50 per cent.[16] The

trend is even more recent in Mediterranean Europe, but there, too, the model of dense and compact cities is being replaced by a model similar to that of the American suburbs.[17] In Barcelona, observers have noted a significant increase in the settlement of areas beyond the consolidated centre.[18]

Suburbanization appears to be more complex in developing countries. Given their pervasive poverty and inequality, the culture of the automobile and its far-reaching impact on urban civilization arrived later and continue to be restricted to a minority. At the same time, the relative precariousness of public transportation and infrastructure has prevented wealthier people from moving to the suburbs in large numbers and commuting easily from there—a pattern established in innumerable North American cities.

In Latin America, for instance, which was marked by rapid and precocious urbanization, the cities actually grew upwards rather than outwards during their period of most rapid urban growth. That is, at the height of the urbanization process in the 1970s, the upper and middle classes pre-empted space in the urban centres and expelled much of the poorer population to the periphery or other inaccessible locations.[19] Since poor urban people occupy small houses and little land, overall density remained high.

Some extension of the American pattern of settlement to outlying areas of cities has been observed recently in most low- and middle-income countries.[20] More affluent suburbs are increasingly found in most cities. In short, the globalization of markets and consumption patterns is leading to the reproduction of urban settlement patterns in the mould of the American dream.

Nevertheless, suburbanization of the affluent is insufficient to explain the growing trend to urban sprawl, especially in developing countries. We must look for additional explanations.

Sprawl and Peri-urbanization[21]

The growth of cities in the developing world is dynamic, diverse and disordered—and increasingly space-intensive. This process of urban growth, largely in non-contiguous transitional zones between countryside and city, is increasingly being referred to as "peri-urbanization".[22] Peri-urban areas often lack clear regulations and administrative authority over land use.[23] They suffer some of the worst consequences of urban growth, including pollution, rapid social change, poverty, land use changes and degradation of natural resources.[24] But, as opposed to suburbia, they are home to a variety of economic activities.

Peri-urbanization is fuelled, in part, by land speculation, nurtured by the prospect of rapid urban growth. Speculators hold on to land in and around the city, expecting land values to increase. They do not bother renting, especially if they fear that users might gain some rights to continued use or controlled rents. People who need land for residential or productive purposes must therefore find land further from the centre.

Changes in the structure and location of economic activity contribute greatly to peri-urban growth. Better communications and transportation networks make outlying areas increasingly accessible. Globalization

18 CASE STUDY: PERI-URBANIZATION IN QUANZHOU MUNICIPALITY, FUJIAN PROVINCE, CHINA[1]

Peri-urbanization transforms rural settlements into urban ones without displacing most of the residents. An important characteristic of China's urbanization since the 1980s, it has brought tremendous structural and physical change to vast rural areas. It has also blurred the lines between urban and rural settlements, especially in the densely populated coastal areas. Peri-urbanization has benefited large rural populations who might otherwise have gone to the slums of large cities. On the other hand, it lacks the economic advantages of agglomeration in large cities and has serious negative effects on the environment.

In a study of Quanzhou Municipality of Fujian Province, researchers used recent census data and geographic information systems technology to address the environmental and planning implications of peri-urbanization. They found that peri-urbanization has helped to transform the region into an economic powerhouse, led by small and medium-sized enterprises. However, the latter are under-capitalized and widely dispersed. Environmental problems also abound. With new resources for environmental protection and management becoming available, the challenge will be to encourage greater concentration, minimizing its negative effects while maintaining the benefits.

encourages economies of scale in production and distribution, which, in turn, encourage large facilities occupying large tracts of land.

This deconcentration and decentralization of production is often found on the outskirts of the more dynamic cities, where growing workplaces and workforces can no longer find space in city centres, making spill-over growth inevitable. In turn, the periphery offers cheaper infrastructure, land and labour, which encourage further peri-urbanization.[25]

In Asia, peri-urbanization tends to incorporate small towns along urban corridors spreading out from metropolitan regions, for instance, in China's coastal regions, Bangkok's metropolitan region, the Lahore-Islamabad highway, and in Viet Nam's craft and industry villages in the Red River Delta. By contrast, in most of sub-Saharan Africa, cities expand around a single core.[26]

Peri-urbanization draws a migrant workforce and abruptly changes many rural residents' economic activity from agriculture to manufacturing and services. Such changes have been particularly pronounced in East Asia, where agrarian villages have become leading edges of urban change.[27]

In East Asia, the combination of ill-defined property rights, export-driven policies and imperfect land markets has contributed to particularly rapid peri-urban growth.[28] In China, foreign investments have transformed rural economies and communities, often triggering major changes in social structure and human-environment relations (see Box 18). Peri-urbanization and its effects are not limited to coastal regions such as Shanghai and the Pearl River Delta, but have penetrated into the interior regions of the country, including Chongqing and Chengdu.[29]

Peri-urban areas often provide more accessible housing for poor residents and migrants in informal and scattered settlements.[30] Poor settlements in such areas tend to be more insecure and subject to removal, while their residents generally lack services and infrastructure. They compete with agriculture for space, and both can be displaced by other economic uses. Land conversion, market opportunities, and rapid flows of labour, goods, capital and wastes force land prices up.[31] Peri-urbanization also increases the cost of living for the original rural population.[32]

19 URBAN AND PERI-URBAN AGRICULTURE

Agriculture is booming in urban and peri-urban areas. Farming in and around cities is a vital livelihood strategy for the urban poor; it provides nutritional health, income for other household expenses and mitigates some of the ecological problems of growing urban areas. The downside is that it continues to be illegal in parts of the developing world, and many local authorities are slow to recognize its important role. As primary producers of food crops in many developing-country cities, women stand to gain or lose the most as the future of this activity is determined.[1] Some promising efforts by NGOs—such as the Municipal Development Partnership for Eastern and Southern Africa (MDPESA), and its funding partner Resource Centre on Urban Agriculture and Forestry—are under way to bridge the gap between perception and reality. Through evidence-based advocacy and multi-stakeholder dialogues, it has encouraged local officials in Zimbabwe to recognize urban and peri-urban agriculture and join in endorsing the Harare Declaration, a commitment by several African countries to support urban agricultural practices.[2]

Peri-urban areas encompass a wide range of activities, including farming, husbandry and cottage industries, together with industrial expansion, land speculation, residential suburbanization and waste disposal.[33] They fulfil other key functions for urban areas, from the supply of food (see Box 19), energy, water, building materials and other essentials, to the provision of ecological services such as wildlife corridors, microclimates and buffer areas against flooding. This involves a complex readjustment of social and ecological systems as they become absorbed into the urban economy.

Since peri-urban areas are generally beyond or between legal and administrative boundaries of central cities, the capacity of government authorities to regulate occupation is particularly weak.[34] As a result, the process of urbanization can be, to a great extent, unplanned, informal and illegal, with frequent struggles over land use.

Environmental degradation is also an issue in peri-urban areas. Specific health hazards arise when agricultural and industrial activities are mingled with residential use. Some peri-urban areas become sinks for

urban liquid, solid and sometimes airborne wastes.[35] The type, impact and gravity of such problems vary considerably.[36] The lack of regulation of these lands and their use can endanger the health of poor people who settle or reside there, because they may be exposed to hazardous substances in the air, the water they drink and the food they grow. Risks may be greater for low-income women and children, who are more likely to spend most or all of their time in their homes and immediate environs.[37]

The varied processes of peri-urbanization described here defy simple definition or quantification, but suggest that there must be opportunities for more social and sustainable uses of peri-urban space.

20 IMPROVING BASIC SERVICES IN PERI-URBAN AREAS OF OUAGADOUGOU[1]

Burkina Faso's capital city of Ouagadougou is a fast-growing home to more than a million inhabitants. A third of them now live in peri-urban "shantytowns" spread out over a large area. Sprawl hikes up the costs of providing the poor population with water and sanitation and increases their desolation.

The French Agency for Development is supporting the Government of Burkina Faso in establishing roadway systems to improve transportation (45 km of primary infrastructure, including 18 km in the densely populated shantytowns of Bogodogo), as well as in devising innovative ways of attending to water and sanitation needs (including the sale of water in bulk quantities to an independent operator, in exchange for guaranteed distribution).

In addition, public spaces are being improved—pedestrian pathways and sidewalks, street lighting and playgrounds—and shared water delivery points installed. The local population is actively participating in the validation and financing of the proposed equipment. The capacity of the local Government to monitor and maintain the current road and sewer system infrastructure is also being strengthened. Providing basic services to such resource-poor residents of peri-urban areas directly addresses Targets 10 and 11 of the MDGs. Burkina Faso's innovative technical and institutional responses in this regard are heartening. The main challenge will be to prepare for continued rapid expansion of the demand in housing and services.

To Sprawl or Not to Sprawl

There is much debate among experts over the advantages of compact versus decentralized cities, but no consensus. Disagreement arises over the varied sources of sprawl, methodological issues and conflicts in values.

Residential suburbanization has its roots in cultural aspirations and has been promoted by official policies, but both the aspirations and the policies have come into question. By contrast, urban growth by peri-urbanization is largely unplanned and without direction. These different contributions to urban sprawl need to be reviewed with regard to their wider implications.

Environmentalists generally deprecate the decline in urban density associated with suburbanization. They see compact cities as more sustainable, because they minimize commuting, thereby using less energy and reducing air pollution. Sprawl additionally increases water consumption and eats up green space.

Few urban planners defend sprawl, but some question whether intensifying use can deliver a more sustainable urban future. They also question whether dense occupation is acceptable to the general public.[38] A large house on a large lot, with good automobile access to facilities, is what most people seem to want.[39]

Much of the discussion, whether it accepts or bemoans urban sprawl, assumes that the dispersed city is how people want to live—but this may simply reflect the bias of the discussants, who are mostly from developed countries. Dispersed suburban settlement seems simply unrealistic for urban masses in developing countries. The debate also reflects differences in values, ethics and aesthetics, adding heat to the discussion about the equity and sustainability of compactness.

Conceptual and methodological issues tend to undermine the discussion, because of the great diversity of definitions of "an urban place". Depending on the criteria used to define an urban agglomeration, conclusions about density and other criteria of sprawl will evidently vary.

Whatever the conceptual difficulties, "the green dimension" should have full consideration in this debate. The concept of sustainable development implies solidarity with future generations. Many environmental benefits are difficult to achieve over the short term. Preserving natural

▲ *Night view of urban highways and overpasses in Shanghai, China.*

© Brigitte Hiss/sinopictures/Still Pictures

areas, reducing energy consumption, encouraging biodiversity, protecting river basins and reversing climate change are all valuable in their own right, but they are also essential for the quality of life of future generations.

The discussion often neglects to notice that sprawl is increasingly attributable to peri-urbanization and to the mobility of economic activity, especially in developing countries. In view of the prospect of inevitable and massive urban growth, peri-urbanization and its leapfrog style of growth have important social and environmental implications.

Neither governments nor international development organizations have effectively responded to this challenge. But these issues will not resolve themselves without intervention. There is no invisible hand to order urban growth in accordance with societal needs, intergenerational responsibilities or gender-specific concerns.[40]

In developing countries, where peri-urbanization is an important driver of urban sprawl, some sort of planning and regulation is needed to minimize the bad and maximize the good aspects of urban expansion. Urban and regional planning, which many countries placed on the back burner in response to structural adjustment policies and the demands of breakneck globalization, will have to be resuscitated to meet this challenge. Sprawl, at least in its current forms, is not conducive to sustainable development. Compact settlement may not be the only, the best or, in some cases, even a feasible solution. The spatial form of urban expansion does, however, need to be negotiated more efficiently, more equitably and more environmentally.

Realistic Policies for Urban Expansion

> *The [Third Urban] Forum placed great emphasis on planning as a tool for urban development and environmental management, and as a means of preventing future slum growth.*[41]

What will it take to put some sort of order into large-scale urban expansion? Policies may be directed at: a) rural-urban migration; b) the distribution of urban populations among cities; and c) the process of urban development in individual cities.[42]

Preventing rural-urban migration is not only very difficult but counter-productive (see Chapter 3). Few of the policies directed at altering the distribution of population among cities have had much success. The remaining approach is to take a proactive stance to shaping the future growth of individual cities:

21 PREPARING FOR THE FUTURE IN THE BIG APPLE[1]

The Bloomberg Administration in New York City is unveiling plans to deal with medium- and long-term needs of a growing metropolis. Amongst many other projects, it is developing a "strategic land use plan" to deal with a city with a projected population of 9 million people. Among the priorities is the reclamation of 1,700 acres of polluted land and their transformation into environmentally sound sites for schools, apartments and parks. Plans also involve the improvement of commuting, water supply, sanitation and air pollution.

The city used its failed bid for the 2012 Olympic Games as a springboard for the sort of longer-range planning that local governments rarely have the resources or vision to develop. The fact that New York City is not empowered to annex neighbouring cities has encouraged it to make zoning changes and recycle land in order to promote greater density. The initiative is being led by the administration's recently created Office of Long-term Planning and Sustainability, composed of members of 15 city agencies, plus scientists, academics, neighbourhood activists and labour leaders.

These long-range plans will evidently have to give explicit consideration to the possible effects of global warming on the city, where 8 million people—and several million more in the greater conurbation—now live at or close to sea level.

"The key issue facing public-sector decision makers—at the local, national and international levels—is not whether or not urban expansion will take place, but rather what is likely to be the scale of urban expansion and what needs to be done now to adequately prepare for it. . . . The message is quite clear—developing country cities should be making serious plans for urban expansion, including planning for where this expansion would be most easily accommodated, how infrastructure to accommodate and serve the projected expansion is to be provided and paid for, and how this can be done with minimum environmental impact."[43]

Given the economic, social and environmental implications of the inevitable explosive growth of urban populations in developing countries, the absence of a coordinated proactive approach is astounding. This lack of attention is the product of several factors, including politicians' short planning horizons; governments' unwillingness to accept urbanization as a positive trend and to prepare for orderly urban expansion; planners' preference for ambitious and utopian master-plans (that, ultimately, have little prospect of being implemented); and the failure of international organizations to push this agenda.[44]

Instead of making realistic minimal preparations for urban growth, many authorities simply hope against hope that their overcrowded cities will stop growing, or they undertake master plans that take many years to complete and are usually shelved soon after.[45]

The inevitable growth of developing-country cities and their peri-urban surroundings, demands a coordinated and proactive approach (see Box 21). Within the overall framework, there must be a new set of realistic, equitable and enforceable regulatory regimes. In this process, care should be taken not to disturb sensitive lands and watersheds. Provisions for land, infrastructure and services for the poor should be a key concern. The local population should be involved in any discussion of future growth in order to guarantee people's rights while increasing the success rate of planning efforts. The discussions in Chapter 3 concerning the land needs of the poor assume particular relevance in this context.

Sorting out the land issues in future urban growth is but one aspect of the question, though an important

22 PUTTING DEMOGRAPHIC TOOLS TO WORK

The population field is integral to understanding the needs and providing solutions for city regions. Even in the absence of an appropriate administrative entity covering an entire region, policymakers can use satellite images and geographic information systems (GIS), together with demographic data, to provide accurate information on population size and density, as well as areas of urban expansion, slum growth and needs for environmental protection.

In Ecuador and Honduras, UNFPA has supported post-census technical training so that local agencies learn how best to analyse census data at the disaggregated level for planning purposes. This includes utilizing tract-level census data in combination with simple population projections to better estimate the future demand for various kinds of services. Small- to medium-sized municipalities and decentralized areas of growth are most likely to need technical support in order to apply such tools.

These data can be used in conjunction with information on elevation, slope, soils, land cover, critical ecosystems and hazard risks to identify areas in which future settlement should be promoted or avoided. In order to be useful within a GIS, census data should be processed and made available at the most spatially disaggregated level possible, so that they can be used at a variety of scales from regional to local.

one. A broader political and spatial approach, within a longer time frame, is also required to deal with other sustainability and organizational issues. Sprawl and peri-urbanization tend to fragment urban space in unpredictable ways, producing nuclei of different sizes and densities, with a variety of common or unique problems. The solution lies not so much in prescribing the relative density of urban areas as in good local governance that can guide urban development, and yield appropriate densities.

In the current situation, fragmentation of the urban territory brings both administrative inefficiency and environmental setbacks. The boundaries of the city's administration rarely coincide with its actual area of influence. In the case of larger cities, this area usually extends over neighbouring subregions, which may include smaller cities, as well as peri-urban and rural areas.

Without some sort of regional entity, the administration of key services, such as water and transport, that cut across different boundaries is very difficult. By the same token, fragmentation breaks up the contiguity that natural processes require. Fragmentation also makes it difficult to protect ecologically fragile areas or regulate for environmental integrity.[46] From a technical standpoint, dealing effectively with the social and environmental realities of city regions requires constantly updated information and analysis, which most urban areas do not have (see Box 22).

Cities have a huge impact on their surrounding region but, in most cases, do not or cannot take responsibility for managing it.[47] Common issues among the scattered nuclei of a fragmented urban system demand a wider outlook. Environmental degradation and poverty are part of the broader sweep of economic, social and demographic changes associated with peri-urbanization. They have to be addressed in coordinated and proactive efforts.

The key question, therefore, is who will take the initiative in an urban world marked by these growth processes? The suggestion made here is to approach the organization and regulation of spatial processes that affect social and environmental well-being from a regional, rather than a strictly urban perspective.[48] The concept of "city-regions" is useful in this new social, economic and political order. It provides an easily understandable starting point in advocating for a more coordinated and effective approach to dealing with the growing problems of sprawling urban and peri-urban areas,[49] and on behalf of the urban poor as an essential and dynamic element in urban development.

It is important that the city-region be seen, not as another supra-local entity, which would make it even less accessible to poor people, but as a form of cooperation and negotiation between adjacent local governments with different needs and priorities. This is obviously necessary to address the basic needs of the population, to manage natural resources and wastes, and to deal with all the other complications resulting from unregulated and rapid urban expansion.