



South Asia Development Matters

Leveraging Urbanization in South Asia

Managing Spatial Transformation
for Prosperity and Livability

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*Managing Spatial Transformation for
Prosperity and Livability*

Peter Ellis and Mark Roberts

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Foreword

South Asia's urban population grew by 130 million people between 2001 and 2011, and it is forecast to rise by almost 250 million more in the next 15 years. The region has already started to see the economic growth and poverty-reduction benefits associated with urbanization; if managed properly, further urbanization offers the potential for more prosperous and livable cities. To confirm this prospect, one need look no further than the transformative effect that urbanization has had, within living memory, on many East Asian countries and, looking further back, on the now-advanced economies of Western Europe and North America.

Throughout South Asia, an important policy debate is under way on the role of cities and, more generally, the role of urbanization in promoting economic development. Policy makers are thus concerned with how the region's cities can be transformed to better drive economic growth and poverty reduction, as well as to become better places in which to live. The aim of this report is to contribute to and further stimulate the debate about the role of cities and urbanization in promoting the region's development.

The opportunities are tremendous.

South Asia is currently home to more than 23 percent of the world's population and at

least 14 percent of its urban population. According to statistics for 2011, it is also home to the largest concentration of people in the world living on less than \$1.25 per day (the World Bank's global poverty line).¹ It boasts six of the world's mega-cities—Bangalore, Delhi, Dhaka, Karachi, Kolkata, and Mumbai—with more on the way as populations grow in Ahmedabad, Chennai, Hyderabad, and Lahore. At the same time, new settlements with urban-like characteristics have been proliferating since the beginning of the century, even though many of them continue to be governed as rural entities.

This report assesses South Asia's progress in realizing the immense potential of its cities for promoting prosperity and livability. Using innovative nighttime lights data, as well as a host of other data sets, it examines how the region's cities and subnational areas are performing and provides new evidence on the nature of urbanization in the region. In particular, the report documents a process of

¹ Until the year 2015, extreme poverty was defined using the \$1.25 poverty line, based on the 2005 PPP exchange rates. Since the publication of the *Global Monitoring Report 2015/2016*, the poverty line is defined by a consumption threshold at \$1.90, using the 2011 PPP exchange rates.

“messy” and “hidden” urbanization. Messy urbanization is reflected in the widespread existence of slums and sprawl, and hidden urbanization is seen in the large share of the region’s population that lives in settlements that possess urban characteristics but do not satisfy the criteria required to be officially classified as urban. Striking new evidence is also provided on the emergence of an increasingly interconnected network of cities arising from the growth of continuous belts of urban development. These conurbations straddle subnational administrative boundaries and, in one case, even the border between India and Pakistan.

The report describes the often severe stresses brought about by growing urban populations on infrastructure, basic city services, land use, housing, and the environment. It is the inability to adequately address these stresses that provides the root cause of messy and hidden urbanization. Equally, it is these same congestion forces that are constraining the region’s ability to realize the vision of prosperous and livable cities. Although the existence of congestion forces is a fact of life for any city, the report argues that in the case of South Asia, these forces are exacerbated by failures not only of the market, but also of policy.

Finally, the report discusses how best to ameliorate and manage those stresses. It

identifies urban governance and finance as keys to the successful realization of the potential of South Asia’s cities. Urban local governments throughout the region need to be properly empowered and adequately resourced. In addition, reforms need to be put in place to improve urban local government accountability, both to upper tiers of government and to the local populations they serve. Such reforms are a precondition for meaningful progress, but they will not, by themselves, suffice in the addressing of congestion constraints. In this context, the report identifies three additional areas of critical policy action: improvements in connectivity and spatial planning, the efficiency of land and housing markets, and the resilience of cities to the effects of natural disasters and climate change. These three areas are intimately interrelated, and the ability to progress on each will be facilitated by improvements in urban governance and finance.

As the debate about how best to cultivate the benefits of urbanization continues, the report offers the contours of a road map for the region’s policy makers—a road map toward a future of more prosperous and livable cities.

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Abbreviations

AFG	Afghanistan
AI	agglomeration index
AUDA	Ahmedabad Urban Redevelopment Authority
BGD	Bangladesh
BRTS	Bus Rapid Transit System
BTN	Bhutan
CBD	central business district
CG	central government
DDC	District Development Committee
DMSP-OLS	Defense Meteorological Satellite Program–Operational Linescan System
DN	digital number
DRM	disaster risk management
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EIU	Economist Intelligence Unit
FAR	floor area ratio
FSI	floor space index
GDP	gross domestic product
GQ	Golden Quadrilateral
GRDP	gross regional domestic product
IND	India
LAC	Latin America and the Caribbean
LG	local government
LKA	Sri Lanka
MDV	The Maldives
MENA	Middle East and North Africa
NAC	North America
NPL	Nepal
PAK	Pakistan
PFM	public financial management
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter

PPP	purchasing power parity; public-private partnership
SAR	South Asia; or Special Administrative Region (Hong Kong)
SDC	Santiago Development Corporation
SSA	Sub-Saharan Africa
UNISDR	United Nations International Strategy for Disaster Reduction
VDC	Village Development Committee
WHO	World Health Organization

Note

Until the year 2015, extreme poverty was defined using the \$1.25 poverty line, based on the 2005 PPP exchange rates. Since the publication of the *Global Monitoring Report 2015/2016*, the poverty line is defined by a consumption threshold at \$1.90, using the 2011 PPP exchange rates.

Overview

Introduction

South Asia's urban population is poised to grow by almost 250 million people by 2030. If recent history is any guide, this increase could propel the region toward greater economic growth and prosperity. Between 2000 and 2011 the region's urban population expanded by 130 million—more than the entire population of Japan. The growth benefits associated with urbanization also increased. South Asia made good strides in achieving greater prosperity, with the increase in productivity linked to the growing number of people living in the region's towns and cities. Average GDP per capita in the region grew by almost 56 percent during 2000–2012, from \$2,560 to \$4,000, for average annual growth of more than 3.8 percent.¹ At the same time, absolute poverty declined from one in two people living on less than \$1.25 a day in 1999 to less than one in three in 2010. Urbanization thus presents South Asian countries with an opportunity to transform their economies and join the ranks of richer countries in both prosperity and livability.

South Asia can gain from urbanization by fostering productivity through the agglomeration of both people and enterprises in its towns and cities. One shortcoming, however,

has been the inadequate provision of infrastructure and basic urban services. Two others are insufficient housing and a failure to deal with pollution. A key characteristic of urbanization is that agglomeration economies, which are the unintended benefits that firms and workers experience from one another as they cluster together,² improve productivity and spur job creation, specifically in manufacturing and services. In South Asia, this process is clearly visible in the structural transformation of the region's economy, with manufacturing and services now accounting for more than 80 percent of GDP.

In the long term, successful urbanization is accompanied by the convergence of living standards between urban and rural areas as economic and social benefits spill beyond urban boundaries. But these positive trends can be undermined by the pressures of urban population growth on infrastructure, basic services, land, housing, and the environment. Estimates suggest that at least 130 million of South Asia's urban residents live in slums and are disproportionately deprived of basic infrastructure and access to basic services.

South Asia is not fully realizing the potential of its cities for prosperity and livability. One significant reason is that its urbanization

has been messy and hidden. Messy urbanization is reflected in the widespread existence of slums and sprawl. Sprawl, in turn, helps give rise to hidden urbanization, particularly on the peripheries of major cities, which is not captured by official statistics. Messy and hidden urbanization is symptomatic of the failure to adequately address congestion constraints that arise from the pressure of urban population. For South Asian cities and for the region, these congestion constraints are undermining both livability and the agglomeration economies that can produce greater prosperity.

Policy makers and urban practitioners in South Asia face common challenges for effective urban management. The traditional reservations of South Asia's politicians and policy makers about the benefits of urbanization have been replaced by more optimistic discourse on leveraging the benefits of urbanization for growth and prosperity. The changing attitudes of governments are visible as national and local policy makers ask: What do cities need to do to meet the demands of their growing populations and to manage transformation? How can we create an effective and functioning system of cities? National and local policy makers are starting to recognize the need to address these challenges in a timely and systematic manner if they are to alleviate congestion pressures for better performance of cities and, in so doing, create an environment conducive to the stronger leveraging of agglomeration economies. Improvements in urban governance and finance—in empowerment, in resources, and in accountability systems—hold the keys to both challenges.

Urban prosperity and livability below potential

Despite strong growth since the beginning of the century, South Asia's share of the global economy remains strikingly low relative to its share of the world's urban population. In 2011, the East Asia and the Pacific region generated 29 percent of the world's GDP with a share of the global urban population of

32 percent (a ratio of 0.91); South Asia produced 8 percent of global GDP with a share of the global urban population of 14 percent (a ratio of 0.57). This comparison suggests that South Asia has been much less successful than East Asia in leveraging its urbanization for gains in productivity and prosperity. Indeed, South Asia looks more like Sub-Saharan Africa, where the ratio of the region's share of global GDP (3 percent) to its share of the global urban population (9 percent) was 0.34 in 2011.

Although progress since 2000 has been impressive, the majority of South Asia's cities remain characterized by high levels of poverty, bad housing conditions, and generally poor livability for many of their inhabitants. According to the most recent estimates, extreme urban poverty has been largely eradicated in both Sri Lanka and Bhutan. However, for the five most populous countries in the region—India, Pakistan, Bangladesh, Afghanistan, and Nepal, in that order—the number of urban dwellers below the national poverty line ranges from about one in eight in Pakistan to more than one in four in Afghanistan.³

In absolute numbers, at least 130 million South Asians—equivalent to more than the entire population of Mexico—live in informal settlements characterized by poor construction, insecure tenure, and underserviced housing plots. The lack of decent, affordable housing not only impairs the welfare of millions of South Asians, it also has potentially adverse implications for health outcomes and for female labor force participation. The prevalence of urban slums in South Asian cities reflects a failure to adequately manage the congestion forces—in this case, in land and housing markets—associated with urban population growth. Meanwhile, for the very poorest in Bangladesh, India, Nepal, and Pakistan, under-five mortality is higher in urban than in rural settings. South Asia's cities are also notable for their polluted air. In Delhi, recorded air pollution is almost three times higher than in Beijing, giving it the dubious distinction of being the “world's most polluted city.”⁴

The failure of South Asia's urban areas to adequately cope with the pressure of rising populations is also reflected in the poor performance of its largest cities—those with the most well-developed infrastructure networks, best access to basic urban services, and the highest standards of living in the region—in international rankings of cities for their livability. One of the most respected rankings is the livability index published by the Economist Intelligence Unit (EIU), which assesses cities on their performance across five dimensions of a “livable city”—stability, health care, culture and the environment, education, and infrastructure. According to the EIU's 2015 rankings, the highest ranking of the six South Asian cities in the index is New Delhi, which, out of 140 cities globally, ranks 110, ahead of Mumbai (115), Kathmandu (125), Colombo (127), and Karachi (135). Dhaka, meanwhile, comes in at 139, better only than Damascus, Syria.⁵ More generally, the average ranking of the six South Asian countries in the index falls below the averages for both all non-South Asian developing-country cities in the index and all developing-country cities in the East Asia and Pacific region.

Urbanization—Messy and hidden

Urbanization in the region remains under-leveraged. The share of the region's population officially classified as living in urban settlements increased only marginally, from 27.4 percent in 2000 to 30.9 percent in 2011, for annual growth of 1.1 percent a year. By contrast, when it was at a level of urbanization similar to that of South Asia today, China experienced growth in its urban share of population of 3.1 percent a year, moving from 26.4 percent in 1990 to 35.9 percent in 2000. Likewise, Brazil's urban share grew at 2.5 percent a year between 1950 and 1960, while moving from 36.2 percent to 46.1 percent. Going back even further, for the United States, the urban share rose from 25 percent to 35.9 percent between 1880 and 1900, for growth of 1.8 percent a year.

In a process of messy urbanization, however, a sizable proportion of the region's urban population lives in slums, and cities have been growing outward, spilling over their administrative boundaries, rather than upward through the construction of taller buildings. And with growth occurring beyond city limits, much urbanization has been hidden—a growing number of people in the region live in places that possess strong urban characteristics but that are not officially recognized as urban.

Messy

Messy urbanization is reflected in the estimated 130 million people who live in slums typified by poor quality housing in hazardous areas and a lack of access to basic services. It is also reflected in faster population growth on the peripheries of major cities in areas beyond municipal boundaries. For the 12 largest Indian cities, satellite imagery shows that, for many of these, the proportion of built-up area outside a city's official boundaries exceeds that within its boundaries. For all 12 cities, the proportion of built-up area outside city boundaries exceeds the proportion of population, implying that the spillover is associated with relatively low-density sprawl.

The spillover of cities across their boundaries creates challenges for metropolitan coordination in the delivery of basic services and the provision of infrastructure. And the scale of the challenge has grown, evident in the rapid spread of urban footprints. Analysis based on night-lights data shows that the region's urban areas expanded at slightly more than 5 percent a year between 1999 and 2010. But the region's urban population grew a little less than 2.5 percent a year. So cities grew about twice as fast in area as they grew in population, which suggests declining average city population densities and increasing sprawl. Furthermore, as the footprints of neighboring cities have expanded, the number of multicity agglomerations—continuously lit belts of urbanization that contain two or more cities, each with

a population of at least 100,000—in the region has also grown, from 37 in 1999 to 45 in 2010. These urbanization belts present an opportunity for greater agglomeration economies, but realizing these economies will again require better coordination between different urban local governments.

Hidden

Hidden urbanization stems from official national statistics that understate the share of South Asia's population living in areas with urban characteristics. An alternative measure of urbanization, the agglomeration index—which, unlike official measures, is comparable across countries and regions—shows that official statistics may substantially understate the number of South Asians living in areas that look and feel urban, even if they are not counted as such in national population and housing censuses. This undercounting is in addition to the population in India's census towns, which are towns that the country's census classifies as urban even though they continue to be governed as rural entities. The reclassification of rural settlements into census towns was responsible for 30 percent of India's urban population growth between 2001 and 2011, reflecting a more general process of *in situ* urbanization across much of the region.⁶

For major cities in India, population growth has been fastest on their peripheries in areas beyond their official administrative boundaries. This type of urban spread is reflected in a large growth differential between the districts in which the cities are located and some of the immediately neighboring districts. For example, the district of Delhi experienced population growth of 1.9 percent a year between 2001 and 2011, while population growth in Gautam Budh Nagar, just to the east, was 4.1 percent a year. The picture is similar for major cities in other countries in the region. For example, several divisional secretariat (DS) divisions within the district of Colombo—Colombo, Dehiwala–Mount Lavinia, Moratuwa, Sri Jayewardenepura Kotte, and

Thimbirigasyaya—saw their populations decline, but the immediately surrounding localities had comparatively rapid population growth.

Congestion constraining the benefits of agglomeration

South Asia's urbanization has been messy and hidden in part because its towns and cities have been struggling to deal with the pressures of population on their infrastructure, basic services, land, and housing, not to mention the environment. These congestion pressures undermine the region's exploitation of the full range of agglomeration economies and its ability to compete in international export markets. In doing so, they also constrain the ability of the urbanization process overall and of cities individually to deliver improvements in both prosperity and livability. This struggle to deal with congestion pressures is due not only to failures of the market but also to failures of policy.

The strength of congestion forces can be mitigated, to an important extent, if investments in infrastructure and basic services keep pace with demand as more people and firms congregate in urban areas. Without sufficient investment, urban infrastructure and services become stretched, reducing quality and access. The effects of congestion forces also depend on the ability of land and housing markets to respond to rising demand for urban residential, industrial, and commercial property—and the ability to address the environmental concerns associated with pollution.

Not only does the interplay of agglomeration economies with congestion forces determine the pace and character of urbanization, it also determines the prosperity and livability outcomes delivered. This is true both for the urban system overall and for individual towns and cities.

A key insight is that successful cities inevitably are also congested cities, at least for their transport infrastructure and their land and housing markets. Geneva; Hong Kong

SAR, China; London; New York; Paris; and Singapore are among the most prosperous and livable cities in the world. But they also have property markets that rank among the most expensive globally. Similarly, the speed of traffic in downtown London today is little changed from the speed when horse-drawn carriages rather than cars dominated its streets. What separates world-class cities like New York and London from South Asian cities is not that they have conquered congestion—it is that they have much higher prosperity and livability at comparable or lower levels of congestion.

The focus in this report is more on congestion costs than on agglomeration economies. The forces that generate agglomeration economies—for example, spillovers of ideas between firms and workers—provide relatively difficult targets for policy to address. The forces of congestion, by contrast, are directly influenced by policy decisions regarding the supply of both infrastructure and basic services and the way cities are planned. Congestion forces, moreover, act as a direct constraint on the exploitation of agglomeration economies. Why? Because high congestion costs constrain both urban growth and agglomeration by making cities less attractive places to migrate to and encouraging cities to grow outward rather than upward.

Addressing deficits in urban governance and finance

To address key congestion constraints, policy makers need to address three fundamental urban governance deficits—an empowerment deficit, a resource deficit, and an accountability deficit. Addressing these deficits will require improving intergovernmental fiscal relations to empower urban local governments. It will also require identifying practical ways to increase the resources available to urban local governments to allow them to perform their mandated functions. And it will require strengthening the mechanisms that hold local governments accountable for their actions.

Empowerment

Most urban local governments in South Asia suffer from unclear institutional roles and limited functional and revenue assignments. That leaves local governments with uncertain authority and limited power to make decisions for most service delivery obligations. Despite generally having the authority to prepare their own budgets, local governments have limited capacity and few incentives to do so. They depend greatly on transfers from upper tiers of government, and the reporting requirements for budget approvals are heavy.

Most urban local governments across the region have limited control over hiring, performance appraisal, and firing. In Bhutan, Maldives, and Nepal, senior local government staff appointments tend to be made by the national government. Exceptions include India and Pakistan, where some local governments have control over the hiring and firing of lower cadre staff, but even their powers are subject to concurrence and clearance by the states or provinces.

Empowering urban local governments in South Asia will require a dedicated commitment to clarifying intergovernmental fiscal legal frameworks by amending existing laws, enforcing them, and in some cases, establishing new and simple laws. Amending the legal framework will clarify the institutional roles and the revenue and expenditure obligations of various tiers of government. It will also increase the decision-making authority and fiscal autonomy of local governments.

Significant effort will be required to establish and align incentives for urban management, governance, and finance. Higher tiers of government should provide guidance and oversight to ensure attention to national policy goals. The central government should encourage and, where possible, facilitate greater interjurisdictional cooperation and coordination among tiers of local government and agencies. Improving this enabling environment will allow urban local governments to better deliver on their compacts with the local populations they serve.

Resources

Revenue mobilization and management are difficult for most urban local governments. Revenue mobilization is constrained by established fees and tax rates, as well as by narrow tax bases. In Afghanistan, Maldives, and Nepal, the central government sets all local revenue rates. In Bangladesh and Bhutan, local governments must follow nationally defined guidelines or secure central government approval in setting tax rates. In India and Pakistan, local governments have some formal discretion over setting local tax rates but are generally subject to strong state and provincial revenue regulations and oversight.

Local governments generally do not tap into all of their tax bases as prescribed by law. The reasons include weak administrative capacity, service delivery breakdowns, outdated registers, rigid and ambiguous laws, limited private sector involvement, and complex governance setups and political economies. Very few local governments have robust revenue-enhancement plans and programs, while the ones that do have very weak political and bureaucratic support for implementing them. Urban local governments, regardless of their size and economic significance, must develop and exploit practical options for own-revenue mobilization, for more effective use of transfers, and where appropriate, for borrowing to finance infrastructure.

Most South Asian countries have some type of formula-allocated, unconditional transfers from central to urban local governments, ranging from large allocations in India and Pakistan to much more modest transfers in Bangladesh, Bhutan, Maldives, and Nepal. However, although the transfers are officially unconditional, they often come with higher-level rules and “guidance” on use. In Afghanistan, municipalities do not receive transfers from the central government; instead, block grants are channeled directly to community development committees that deliver local services, bypassing the municipalities in the process. Across the

region, the key challenge is to design, implement, and increase the effectiveness of inter-governmental fiscal transfers.

Accountability

Several accountability mechanisms are in place for many urban local governments. They range from financial and performance audits to citizen report cards and social audits. These mechanisms could be an important source of information to be used by higher-level governments and citizens for monitoring local government performance, particularly governance and service delivery. However, in practice, their effectiveness varies markedly across the region.

Formal administrative accountability systems generally exist in the region, but many are fairly weak or little used. The main causes for their infrequent implementation are the fragmentation and lack of clarity in institutional roles and the lack of interjurisdictional cooperation. Nor are the links strong between development plans, public investment programs, and annual budgets.

All countries in the region have some type of audit mechanism led by a national audit institution, in many cases with a mandate for auditing both local and higher-tier governments. In Bangladesh, private auditors support the center in auditing local governments. However, even though the audits are legally mandated, poorly performing local governments continue to receive transfers without penalty. Poor enforcement mechanisms, weak capacity, and political interference impair the responses to audit findings.

Bridging the accountability deficit will require the development of better systems and practices and building the capacity of both government (at all levels) and citizens. Accomplishing these tasks means nurturing the social contract between citizens and local governments and clarifying fiscal relations between local governments and higher tiers of government. In addition, local elections need to be transparent and sufficiently competitive to give voters meaningful choices.

Nonelectoral mechanisms—input-oriented processes, such as participatory planning and budgeting, and feedback mechanisms, such as complaint bureaus and report cards—can be highly productive if well designed and appropriately implemented. But they require building the capacity of citizens to use them.

Three additional areas for policy action

Three additional, and interrelated, areas for policy action are instrumental to addressing congestion constraints and facilitating the further leveraging of urbanization for improved prosperity and livability—connectivity and planning, land and housing, and resilience to disaster and the effects of climate change.

Connectivity and planning

For South Asian cities to realize their potential and transform themselves into prosperous and livable centers, they must not only manage the frequently rapid expansion on their peripheries; they must also address existing and future challenges at their cores, which often have largely locked-in spatial structures, contributing to heavy traffic congestion and congestion in land and housing markets. At the national level, how cities are connected as a system through flows of goods, labor, and ideas is important. Market forces interact with public policy decisions regarding both the placement of infrastructure and the ways cities are planned to influence both congestion forces and the evolution of cities.

To bolster opportunities for prosperous and livable cities, planners and government decision makers can focus on four strategies. The first is to invest in strengthening transport links that improve connectivity between urban areas—between large and secondary cities, and secondary cities and towns. Strengthening these links can facilitate the efficient deconcentration of land and capital-intensive industries from more to less congested cities and allow different urban areas

to become more specialized in what they produce. Better transport links will lead to the development of more efficient systems of cities. Complementing this, investments in improved intracity connectivity and traffic management can enhance mobility within urban areas and ease problems of traffic congestion.

The second strategy is to adopt forward-looking planning approaches to guide expansion where it is most rapid—on city peripheries. Urban growth projections will have to be continually updated to better respond to longer-term needs and to safeguard space for future development. This strategy will reduce the messiness of urbanization, prevent the locking in of undesirable spatial forms, and facilitate the future provision of infrastructure and basic urban services.

As a complement, the third strategy is to unlock the potential of city cores, rejuvenating those in decline. Revitalizing city cores will require investing in better-quality public urban spaces to enhance pedestrian walkability and livability. It will also require promoting better management of developable land in city cores through effective land-assembly mechanisms, freeing up publicly owned land, and repurposing structures for appropriate uses.

Fourth, to facilitate the formation of more vibrant neighborhoods, granular spatial planning approaches can permit greater variation in land uses and development intensities. Such planning should be dynamic and flexible, allowing land uses to adapt to changes in market demand in a framework that takes a long-term view of a city's development. This effort should be supported by strengthening the capacity of city planners and local governments to plan, implement, and enforce development to deliver integrated, coordinated, and smarter planning policies.

Land and housing

Highly congested land and housing markets are exacerbating South Asia's affordable housing crisis and undermining the livability

of the region's cities. A shortage of affordable housing already contributes to messy urbanization, with at least 130 million people living in slums. Furthermore, it is not just the poor, but also many middle-income households, that lack access to affordable housing. Without fundamental reform, the crisis will only get worse—a further 203 million housing units will be required between 2010 and 2050 to meet the projected growth in urban population.

To turn back the tide of proliferating slums, South Asian cities must embark on land and housing reforms and foster innovative housing finance. City and suburban governments need to go beyond slum upgrading and embrace measures to stimulate the supply of affordable housing and offer more options to both low- and middle-income households. The supply of affordable housing can be increased over time through more permissive land-use and development regulations. Also needed are infrastructure to open up land for residential development, easy-to-use land titling and registration systems, and greater access to construction and mortgage finance. In addition, government regulations need to be revised to foster the provision of more affordable rental housing.

Making land management more effective will require cities to enhance their capacity to guide urban development and provide a framework for planning infrastructure investments that can make them livable and inclusive. One aspect of land management is making land available for development. Across South Asian cities, government agencies own vast tracks of prime land, which are typically mismanaged and inadvertently constrain the urban land supply.

South Asia's cities desperately need efficient land tenure and ownership record systems. The lack of such systems is preventing private residential development in South Asian countries from reaching sufficient scale to accommodate urbanization. Except in Nepal, land titling in South Asia is inefficient and expensive, encouraging many households to avoid formal processes, particularly when the risk of eviction or sanctions is limited.

Faced with this situation, private developers are reluctant to acquire and assemble multiple parcels of land for residential development because they are unsure of the security of title. Financial institutions, likewise, are reluctant to finance land development or to accept land as collateral. South Asia can learn, based on the experience of other regions, how to make land tenure and titling procedures more efficient, accurate, and transparent, and thus easier to navigate.

Improving access to affordable land and housing will require significant investments in sustainable and affordable models of finance to provide sufficient funds for building, operating, and maintaining infrastructure. Housing markets fail when developers (private and public) cannot recover costs because of the lack of financial instruments. Innovative approaches to address infrastructure provision should therefore include the assessment and overhaul of existing policies and tools to enable infrastructure financing through, for example, strategic disposition of publicly held land, betterment levies, developer exactions, impact fees, and public-private partnerships.

Resilience to disasters and the effects of climate change

By concentrating people and property in risk-prone areas, such as deltas, floodplains, coasts, and the Himalayan belt, urban population growth and economic development have increased the exposure of people, property, and structures to natural hazards. Some 80 percent of major South Asian cities are exposed to floods, with about 45 percent of urbanized locales lying in flood-prone areas and 14 percent in extremely flood-prone areas. Cities in Afghanistan, Pakistan, Nepal, and northern India that lie along the Himalayan range are at risk of earthquakes; many cities in Pakistan and northern India are also at risk of heavy inland flooding.

The first step in developing a resilience strategy is to accurately identify and quantify the national, subnational, and city risks. Governments at all levels should conduct risk

assessments to define the potential risks and the characteristics (such as frequency and severity) of potential hazards and to identify the vulnerabilities of communities and the potential exposures to given hazards. A risk-assessment framework can also guide governments in prioritizing measures for risk management, giving due consideration to the probability and impact of potential events, the cost-effectiveness of preventive measures, and the availability of resources. The next step would be to build a national georeferenced hazard exposure database, which would include public and private assets. Such information is critical to facilitating the insurance industry in its offering of affordable property catastrophe insurance products.

With the help of urban planners, engineers, and academics, cities should revisit the design and enforcement of building codes and land-use plans to avoid further building in risk-prone areas and to reinforce structures so they are resilient to various hazards. As South Asia further develops its construction industry, its cities can prevent substandard structures from being built and substandard construction practices from being used. City leaders can use various policy tools and incentives to enforce building codes, which may mean extra costs for the government but will be an investment that can mitigate the costs associated with the aftermath of disasters.

As South Asia addresses its infrastructure deficit, and in so doing relieves congestion pressures, city leaders must be cognizant of future risks and hazards and ensure that new infrastructure is not built in hazard-prone areas and does not expose communities to additional risks. And in building infrastructure, they need to identify and plan for critical infrastructure that is subject to higher-than-usual “margins of safety” (the extra strength that engineers build into designs).

National disaster risk-financing frameworks need to be developed based on risk layering to match risks with appropriate financing instruments. Such frameworks will help urban areas cope with disasters. But to

reduce the financial risk of disasters even more, cities can develop risk-insurance frameworks independently and under a national umbrella. The most extensive current risk financing in the region is in Sri Lanka, which has a contingent credit line that provides immediate liquidity to the country should it declare a state of emergency after a natural disaster strikes.

Moving forward: Leveraging urbanization for greater prosperity and livability

South Asia has so far struggled to make the most of its urbanization. Difficulties in dealing with the congestion forces brought about by the pressure of population on land, housing, infrastructure, basic services, and the environment lie at the heart of the relative lack of its cities’ livability. By fostering messy and hidden urbanization, those forces are also constraining the potential of powerful agglomeration economies to bring about faster improvements in prosperity.

Looking ahead, South Asia’s policy makers face a choice between two paths. The first is to continue with the same policies that have allowed congestion pressures in urban areas to mount faster than might have otherwise been the case, thus undermining the exploitation of agglomeration economies. This path would leave South Asia on its current trajectory of underleveraged urbanization, structural change, and development—locking in the worst of the region’s urban problems and risks.

The second path is to undertake difficult and appropriate policy reforms to alleviate both current and future congestion pressures and to facilitate the exploitation of agglomeration economies, thereby enabling the tremendous untapped potential of its cities to be realized. This path will significantly improve the likelihood that South Asia’s development trajectory will follow that of other countries that have successfully transitioned to upper-middle and high incomes. It will not be easy. But it is essential to making the region’s cities prosperous and livable.

Notes

1. GDP per capita is measured in 2011 constant international dollars using purchasing-power-parity exchange rates.
2. These include benefits arising from, for example, the spillover of ideas and knowledge between firms and workers, the better matching of firms and workers that tends to occur in dense urban labor markets, and the existence of dense networks of local suppliers of intermediate inputs.
3. Data on urban poverty are not available for Maldives.
4. This designation is according to data on annual mean concentrations of particulate matter with a diameter of less than 2.5 microns (that is, PM_{2.5}) from the World Health Organization's "Ambient (outdoor) air pollution in cities database 2014" (http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/).
5. Data reused by permission of The Economist Intelligence Unit. Further permission required for reuse.
6. *In situ* urbanization is urbanization that is driven by natural population growth, by the reclassification of a settlement from rural to urban, or both. Such urbanization differs from that driven by net rural-urban migration.

Introduction

Summary

This report describes the progress of urbanization and structural transformation in South Asia, the market and policy failures that have shaped the region's towns and cities, and the decisive actions needed to better leverage urbanization for South Asian prosperity and livability. Part 1 (chapters 1–2) sets the context by analyzing key urbanization developments and related trends of structural transformation and economic growth. Part 2 (chapters 3–6) discusses and diagnoses the main policy problems, identifies areas for policy reform, and provides examples of best practices from both within and outside the region to help inform the decisions of policy makers and practitioners.

Chapter 1 focuses on recent urbanization-related outcomes and trends at the regional level. It provides a broad comparison of the region's current state with other world regions and with historical trends in developed countries. Chapter 2 then provides a spatially detailed analysis of trends and outcomes within the region and at the subnational level.

The chapters of part 2 identify four fundamental areas for policy action: governance and finance; connectivity and planning; land and housing; and resilience to natural

disaster and the effects of climate change. The four areas are interlinked. Governance and finance (chapter 3) are fundamental to the supply of urban infrastructure and basic services and thus also undergird the three other policy areas. Indeed, improvements in the way South Asia's cities are governed and financed may be a precondition for achieving meaningful progress in these other areas and therefore in prosperity and livability. Of course, the ways in which cities are planned and connected (chapter 4) also influence the supply of affordable housing (chapter 5). Likewise, urban planning policies, and their enforcement, help determine a city's resilience to natural disaster and the effects of climate change (chapter 6).

This report considers how these four policy areas influence both prosperity and livability through their impacts on the congestion forces that afflict cities. Congestion forces emanate not just from the pressure of a city's population on its transportation infrastructure, but also on basic services, land, housing, and the environment. In particular, policies in the four areas interact with the decisions of individual firms and households to determine the strength of these forces, which limit a city's ability to benefit from agglomeration economies—the benefits that firms and workers derive from locating close

to one another. At the same time, excessive congestion directly undermines a city's livability and makes urbanization messier by encouraging both slums and sprawl. At the aggregate level, congestion also tends to act as a brake on the overall pace of urbanization. By relaxing congestion constraints, policies can positively affect the key outcomes of prosperity and livability at the local, national, and regional levels.

The growing recognition of urbanization's importance

Urbanization is a cross-cutting and iterative process involving demographic, economic, and spatial transformations. As urbanization concentrates people geographically, it also concentrates economic activity in those geographical areas. The founding fathers of modern economics—notably Adam Smith and Alfred Marshall—were quick to recognize the benefits of such concentration as they watched industrialization and urbanization unfold in today's developed countries. But only in the last quarter century have economists fully understood the benefits, particularly increased productivity and higher standards of living, accruing from the concentration of people and production in urban areas.¹ Within their formal models, economists have also embraced urbanization as intimately related to a country's structural transformation, in particular to the transition from agriculture to manufacturing and services, without which no country can hope to rise to middle-income status (see, for example, Henderson and Wang 2005; Henderson, Roberts, and Storeygard 2013).

Even more important than this elevated academic appreciation is the growing recognition among South Asia's policy makers of the critical need to address the problems of urbanization to cultivate its benefits. Their traditional hostility toward urbanization, though lingering in places, has been replaced by a more positive attitude that comprehends the tremendous opportunities it offers for prosperity. This new attitude can be seen in the commitment of the Indian government

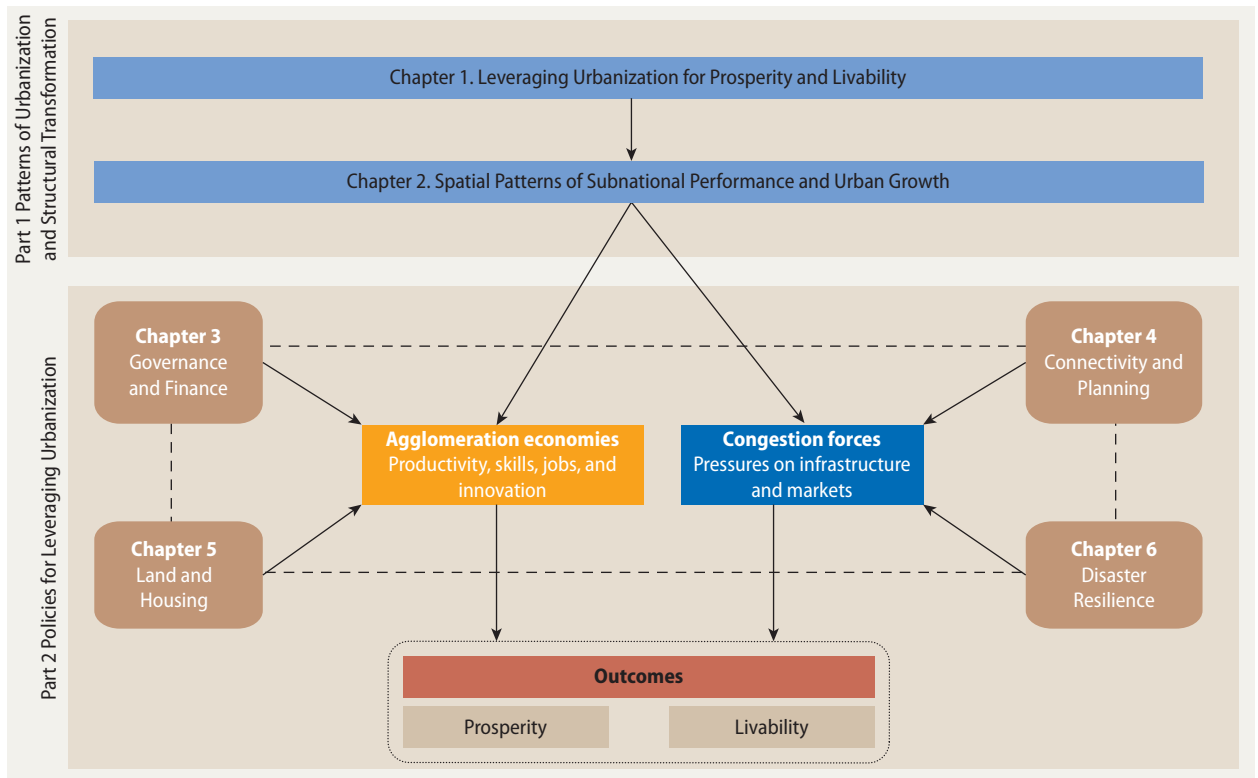
elected in 2014 to view urbanization as an opportunity rather than a threat, able to transform the country's cities so that they “no longer remain a reflection of poverty and bottlenecks” but rather “become symbols of efficiency, speed and scale” (BJP 2014, 18). It is also seen in Pakistan's Vision 2025 program, which places cities at the center of national policy for sustained and inclusive economic growth.² And in Bangladesh the government has recently revived discussions about a national urban policy. Finally, Nepal's 2012 creation of a Ministry of Urban Development (and the associated Kathmandu Valley Development Authority) reveals that government's recognition of the significance of urban policy.

A framework for assessing urbanization and city performance

Edward Glaeser, the eminent Harvard University urban economist, has defined cities as “the [relative] absence of physical space between people and companies” (Glaeser 2011, 6). This close proximity of people and production inevitably leads to various kinds of market failures, which policy should aim to address;³ it is these failures that make urban development—and by extension, urban policy making—such a complicated field. To help make sense of the complexities of urbanization, this report relies on the analytical framework set out in figure 1, which also provides the structure for the report.

As a country urbanizes, its urban settlements grow in size and number. This growth gives rise to two competing sets of forces: agglomeration economies and congestion forces.

By boosting productivity and job creation, agglomeration economies—the benefits that firms and workers derive from locating close to one another—create further impetus for city growth and urbanization.⁴ These economies can take one of two basic forms: localization or urbanization economies. Localization economies are the productivity and cost advantages that firms in the *same*

FIGURE 1 Report structure and framework for assessing urbanization and performance

Sources: Based on Fujita, Krugman, and Venables 1999; Duranton 2014.

industry enjoy from locating close to one another (Marshall 1890). Urbanization economies are the productivity advantages that firms in *different* industries derive from locating in the same urban area (Jacobs 1969; Glaeser and others 1992). Agglomeration economies also arise because urban population growth allows the fixed costs of new infrastructure—including infrastructure for basic urban services and amenities (transportation, utilities, solid waste management, health and education facilities, and others)—to be spread over a larger number of people, lowering the average cost of provision (Armstrong and Taylor 2000).

Working against agglomeration economies are congestion forces, which act as a brake on both city growth and urbanization, hence on the prosperity that agglomeration economies produce. These congestion forces arise from the pressure of increased population on urban

infrastructure, basic urban services, land and housing markets, and the environment.

The interaction of agglomeration economies with congestion forces determines the character of urbanization. As a city's population grows and congestion forces mount, urbanization tends to become messier. Mounting congestion pressures (especially in land and housing markets) encourage both slums (as affordable housing becomes scarce) and sprawl (as a city comes under increasing pressure to grow outward). Similarly, mounting congestion forces make it more likely that population growth will be “displaced” to smaller communities beyond municipal boundaries that are not officially recognized as urban, contributing to hidden urbanization that fails to get captured by official statistics.

A country's pace of urbanization is also influenced by the interaction of agglomeration economies with congestion forces. Pace will

tend to pick up as agglomeration economies increase their strength relative to congestion forces and to stabilize when these forces are more closely aligned.⁵

The strength of agglomeration economies is, in turn, largely determined by the structure of a country's economy—agglomeration economies are mainly confined to the manufacturing and services sectors, which, unlike agriculture, can experience productivity benefits from locating in urban areas. Empirical evidence suggests that agglomeration economies tend to be stronger at earlier stages of a manufacturing industry's life cycle, when innovation is rapid, and in higher-value-added tradable services such as banking and financial services, which rely intensely on human capital (see, for example, World Bank 2008, chapter 4). The pace at which a country urbanizes is thus closely related to the pace at which it transitions from an agrarian-based to a manufacturing- and services-based economy.

By contrast, the strength of congestion forces depends largely on the ability of investment in infrastructure and basic urban services to keep pace with increasing demand as the numbers of people and firms in cities rise. Without sufficient investment to expand capacity, the quality of urban infrastructure and basic services deteriorates. The strength of congestion forces also depends on the ability of land and housing markets to respond to increasing demand for residential, industrial, and commercial property, along with the ability of labor markets to respond to rising demand for workers.

The same logic that applies to a country's overall urbanization also applies to individual urban areas: the population of a town or city tends to grow when the agglomeration economies it enjoys are strong relative to the congestion forces it faces, making it a more attractive destination for migrants. Cities with greater concentrations of industries that benefit from agglomeration economies tend to be larger in the long term.

The interplay of agglomeration economies with congestion forces also determines prosperity and livability—both for the urban

system overall and for individual towns and cities. Successful cities are also congested cities, at least so far as their land and housing markets, transport infrastructure, and labor markets go. Thus Geneva; Hong Kong SAR, China; London; New York; Paris; and Singapore are among the most prosperous and livable cities in the world, but they also have some of the most expensive property globally.⁶ Similarly, the speed of traffic in central London in the first quarter of 2011/12 was a mere 8.8 miles per hour (Transport for London 2012), little changed from the era of horse-drawn carriages.⁷ What separates world-class cities like New York and London from South Asian cities is not that the former have conquered congestion, but that they have achieved much higher prosperity and livability at comparable or lower levels of congestion.

Sources of agglomeration economies and congestion forces

Agglomeration economies

Agglomeration economies fall into two basic categories as discussed previously—localization economies (which benefit firms in the same industry) and urbanization economies (which benefit firms in different industries). Recognition of localization economies dates back to 19th-century England and the founding father of modern microeconomics, Alfred Marshall (Marshall 1890). He identified three basic types of localization economies—labor-market pooling, intermediate-input sharing, and within-industry knowledge spillovers (box 1). These economies helped drive the localization of Bangladesh's garment industry in Dhaka and Chittagong (Muzzini and Aparicio 2013), India's information and communication technology industry in Bangalore (World Bank 2013b), and Pakistan's finance industry in Karachi (World Bank 2014a).⁸

Urbanization economies are similar to the third type of localization economies, insofar as they derive from knowledge spillovers. These knowledge spillovers, however, are the ideas that a firm acquires from observing

BOX 1 Types of localization economies

- *Labor-market pooling.* Both firms and workers enjoy advantages from the dense labor market their colocation creates. Both benefit from better matching. An information technology (IT) firm looking for a programmer is more likely to find one if it is located in Bangalore rather than in Chittagong. Similarly, a programmer is more likely to find work in IT if she lives in Bangalore than if she lives in Chittagong. Another benefit for a worker is that if she is unfortunate enough to lose one job, she is more likely to find another job if other firms in the same industry are located nearby. The worker benefits from reduced risk and, therefore, a more certain income; this course of events also benefits firms in the industry, because the worker is more likely to be willing to accept a lower average wage in Bangalore given the lower chance of reemployment in Chittagong.
- *Sharing of intermediate inputs.* When a number of firms in the same industry locate close to one another, they create a large local market for intermediate inputs. This large local market then encourages the growth of a diversity of local specialized suppliers, which creates cost and productivity advantages for the downstream industry.
- *Within-industry knowledge spillovers.* Firms in the same industry glean ideas and information regarding best practices from one another as a result of locating in the same city. Knowledge spills over as one firm observes how another firm in the same industry operates, as workers move between different firms in the same industry, and as friends who work for different firms talk shop in the street or at social occasions. These spillovers also benefit workers when they learn the latest developments in their industry, giving them a competitive edge in the labor market that can help them enjoy faster wage growth over time.

practices in a different industry rather than the same industry (Jacobs 1969; Glaeser and others 1992). It follows that urbanization economies tend to be stronger in cities with greater diversity in the goods and services they produce. And as with localization economies derived from within-industry knowledge spillovers, urbanization economies tend to be dynamic—their presence has a positive effect on a city's productivity growth rate, not just its productivity level.

Congestion forces

In theory, unopposed agglomeration economies will increase urbanization and raise prosperity in a circular and cumulative process. The increasing concentration of people and production in urban areas would stimulate improvements in productivity and greater competitiveness, which would, in turn, spur

more urbanization, creating a second round of increasing productivity and competitiveness, which would lead to a third round, and so on—until urbanization is complete and high-income status attained.⁹

Agglomeration economies do not operate unopposed, however. They encounter resistance from congestion forces, which can slow or, if strong enough, even halt the whole process of circular and cumulative causation. Congestion forces make cities less attractive places to live and work and erode the competitiveness of firms, either by pushing up their costs or undermining their productivity.

Congestion can arise from many different potential sources (box 2). Although all of these sources are present to some degree in South Asian cities, this report mainly focuses on congestion in infrastructure, basic urban services, and land and housing

BOX 2 Sources of congestion forces

- *Land and housing markets.* Even in the most efficient of settings, land markets respond only sluggishly to the pressures of urban population growth, not least because the acquisition and provision of services to land that render it fit for development can be costly and time-consuming processes. As a consequence, as cities grow, land prices rise. This pressure increases both the costs of production for firms seeking to acquire or rent land for industrial or commercial purposes *and* the cost of living for households that face higher rents and property prices. In South Asia, high rents and property prices in the formal sector often cause households to choose informal housing. The severity of this problem is evident in the region's large slum population (see chapter 5).
- *Labor markets.* Urban growth will cause wages to be bid up, eating into the profits of firms, unless urban labor markets respond with an increased supply of suitably qualified labor. When the industries fueling growth are low skilled, rural-urban migration can help release the pressure in urban labor markets. Labor mobility in South Asia is, however, relatively low—in India, according to 2001 census results, only 0.4 percent of the population lived in a different state five years earlier compared with 9 percent in the United States (Glaeser, Chauvin, and Tobio 2011; see chapter 2). As urbanization and development proceed to a more advanced stage, the emphasis shifts to more human capital-intensive industries. This shift places ever-increasing pressure on the education sector to deliver suitably qualified workers.
- *Roads.* As cities grow, their roads tend to become clogged with traffic. Workers in New Delhi and Bangalore, for instance, suffer among the worst commutes in the world, according to IBM's Commuter Pain Index.¹⁰ Some secondary cities such as Kandy in Sri Lanka—whose traffic volume grew at 5 percent annually between 1998 and 2011—also suffer from debilitating traffic congestion (World Bank 2014b). According to basic economic principles, building more roads can, in the absence of congestion pricing, ease traffic congestion only in the short term since more roads tend to induce more traffic, and in the long term there are physical constraints on road expansion (Duranton and Turner 2011; Newbury 2000). Traffic congestion imposes costs on both workers, who suffer from longer commutes, and businesses, which need to transport goods and compensate workers for their longer commutes.
- *Other infrastructure and basic urban services.* Urban growth also places pressure on other infrastructure and basic urban services, including solid waste management and such utilities as water and electricity. Unless investment is forthcoming, this pressure can lead to deteriorating levels of quality and service provision, which reduce firms' and workers' incentives to locate in a particular city—or even in urban areas at all. During the next four decades, South Asia's urban areas will require more than \$800 billion (in constant 2004 U.S. dollars) of investment in new and replacement road, water, and sanitation infrastructure to keep pace with urbanization and avoid further deterioration in service quality (see chapter 5).
- *Pollution.* Because of increased traffic congestion, not to mention building activity, bigger cities tend to suffer from poorer air quality. In India, bigger cities have higher concentrations of nitrogen oxide, both an important indicator of air quality and a serious cause of respiratory illness (Lamsal and others 2013). More generally, the relationship between population density and particulate matter concentrations is stronger for South Asian cities than for cities in the rest of the developing world (chapter 1). Linked also to the forces of congestion on infrastructure and basic urban services, urban density can cause both streets and water supplies to become polluted with

(continues next page)

BOX 2 Sources of congestion forces (continued)

garbage and human waste, with serious public health consequences.

- *Disease*. In addition to diseases that can arise from pollution, infectious diseases can spread faster in dense urban settings than in rural ones.
- *Crime*. Glaeser has noted, “If I’m close enough to sell a newspaper, you’re close enough to rob me” (Glaeser 2011). Cities, by virtue of their density, can create the conditions for crime. Larger cities also provide

larger markets for drug dealers, fueling the potential for drug-related crime. Karachi, for example, is well known for the presence of powerful criminal gangs that engage in extortion and land-grabbing in addition to the drug trade (World Bank 2013a, 2014a). Larger cities also provide more attractive targets for terrorist organizations intent on causing destruction and loss of life—a problem sadly too evident in South Asia in recent decades (World Bank 2013a).

markets, as well as on the pressures that congestion imposes on the environment. These are the most generally important in explaining the character of urbanization in South Asia. This is in addition to the report’s focus on the risks from natural disasters and the effects of climate change, risks that can be exacerbated by a failure to adequately deal with the pressure of urban population growth, where this contributes to, for example, poorly maintained infrastructure and the growth of slum populations who live in poorly constructed housing. More generally, natural disasters can threaten the hard-won gains in prosperity and livability associated with the management of congestion forces and cultivation of agglomeration economies.

Notes

1. This increased appreciation and understanding is due, in part, to the emergence of the so-called new economic geography—a body of theoretical literature, most notably associated with economics Nobel laureate Paul Krugman, that aims to better understand the micro-foundations of large-scale processes of agglomeration (see Krugman 1991a, 1991b; Fujita, Krugman, and Venables 1999).
2. “Pakistan 2025: Together for Better Tomorrow” (http://www.pc.gov.pk/?page_id=73).
3. Both the negative *and* positive externalities that are associated with urban size and density are sources of market failure. The negative externalities include, for example, pollution and congestion of infrastructure and land markets, while the positive externalities include the different sources of agglomeration economies. Both negative and positive externalities lead to socially suboptimal results and provide potential justification for public policy intervention. The existence of the need for public goods, such as street lighting, that would be underprovided if the market were left to itself is another source of market failure that afflicts urban areas.
4. Urban bias, which can arise, for example, from the distribution of agricultural surpluses to cities, can provide an additional impetus to the growth of cities and urbanization (Renaud 1981; Henderson 1988; Ades and Glaeser 1995; Davis and Henderson 2003). But there is little evidence of such a bias for South Asia, policy having favored rural areas historically. In recent years, policy has become less biased toward rural areas, as policy makers realize the opportunities for economic development that urbanization provides.
5. More generally, the pace of urbanization within a country depends on the differential between real wages and living conditions in urban versus rural areas. The pace of urbanization therefore tends to accelerate as these differentials increase. It follows that any

- deterioration in rural conditions as a consequence of, for example, crop failure or conflict focused on rural areas can also lead to an accelerated pace of urbanization.
6. See, for example, data from the Global Property Market Guide (<http://www.globalpropertyguide.com/most-expensive-cities>).
 7. “London’s Smart Move” (http://connectedcities.eu/downloads/magazines/nt_2008_april_tdm.pdf).
 8. Localization of industry can also be driven by spatial competition as in the classic Hotelling (1929) model. This spatial competition, rather than localization economies, probably explains the clustering of retailers of similar products observed, for example, in Old Delhi.
 9. This process follows from both early theories of circular and cumulative causation (Myrdal 1957; Kaldor 1970) and more recent new economic geography models (Krugman 1991a, 1991b; Fujita, Krugman, and Venables 1999).
 10. “Frustration Rising” IBM 2011 Commuter Pain Survey, <http://www-03.ibm.com/press/us/en/pressrelease/35359.wss>.
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Patterns of Urbanization and Structural Transformation

As South Asia's urban population grows, the resulting concentration of people and production, and the structural transformation that accompanies this concentration, provide opportunities for enhanced prosperity and livability through the exploitation of agglomeration economies. But constraining the realization of this potential are congestion forces arising from the pressure of urban population on infrastructure, basic services, land, housing, and the environment. The interaction of agglomeration economies with congestion forces determines the character and speed of a country's urbanization process, as well as the outcomes—in terms of both prosperity

and livability—delivered by that process. Part 1 of this report analyzes South Asia's urbanization process and the associated economic and structural transformations the region is undergoing. It also analyzes the outcomes delivered by the process, with a focus on the two key outcomes of prosperity and livability. Chapter 1 compares South Asia's urbanization experience with that of other regions and with the historical experiences of today's developed countries. Chapter 2 carries out a more spatially detailed analysis, largely at the subnational level, of trends and outcomes within the region. This analysis informs the policy discussion in part 2 of the report.

Leveraging Urbanization for Prosperity and Livability

1

Key messages

South Asia's urban population has increased steeply since the turn of the century, and the region has made impressive progress toward greater prosperity. Urbanization now presents South Asian countries with a chance to transform their economies and reach development's upper tiers of prosperity and livability. To take full advantage, however, these countries must undertake difficult policy actions.

- Urbanization in South Asia has been messy and hidden. South Asian cities, with some exceptions, still have poor livability as evidenced by the prevalence of slums and sprawl, not to mention poverty and pollution. And much of this urbanization has not been captured by official statistics. South Asia's urbanization has also been slower than that in

the East Asia and Pacific region, as well as that historically experienced in today's developed countries.

- South Asia's share of global GDP, though rising since the turn of this century, is much lower than its share of the global urban population.
- Urbanization and structural transformation in many South Asian countries, driven in part by global trends, are being led by nontradable services rather than by manufacturing, making it very hard to exploit the full range of agglomeration economies.
- South Asia's congestion pressures are a fundamental problem for its cities, undermining the potential economic leverage that should be derived from urbanization.

Introduction

Between 2000 and 2011, the number of people officially living in South Asia's towns and cities swelled by slightly more than 130 million—equivalent to more than the entire population of the world's 10th most

populous country, Japan—from 382 million to 511 million.¹ The productivity benefits linked to this large urban population have been important in the region's progress toward higher prosperity. Between 2000 and 2012, average real gross domestic product (GDP) per capita increased by almost

56 percent, from \$2,556 to \$3,999, with annual GDP per capita growth rates of more than 4.5 percent a year in all countries except Nepal and Pakistan. And while half of South Asians were living on less than \$1.25 a day in 1999, fewer than a third were by 2010.²

The gains in prosperity associated with South Asia's rising urban population bode well for the region's development, particularly with a forecasted increase of almost 302 million people living in recognized urban settlements between 2011 and 2030—almost equivalent to the entire population of the United States. Urbanization and the associated structural transformation present South Asia with a tremendous opportunity to reach the upper echelons of economic development. As theory teaches and history demonstrates, successful urbanization is accompanied by successful economic development as workers move from low-productivity agricultural activities to high-productivity urban jobs in manufacturing and services (Lewis 1954). The higher productivity of urban jobs, in turn, stems partly from the agglomeration benefits that cities offer (Glaeser 2011). Moreover, the benefits of successful urbanization for South Asia will not be confined to its cities but will spill over to its rural areas. Successful urbanization is thus accompanied by a long-term convergence in living standards between urban and rural areas (World Bank 2008). Empirical evidence already shows strong beneficial spillover effects from urban to rural areas for India and Nepal (Cali and Menon 2013; Fafchamps and Shilpi 2005).

Still, urbanization in the region remains underleveraged and has, since the turn of the century, been messy and hidden. First, urbanization has been messy in that a majority of cities in the region still exhibit poor livability, as seen in the widespread prevalence of slums and sprawl. Second, because of tight official definitions of urban areas, significant hidden urbanization is not captured in official statistics. A nonnegligible share of the region's population is living in areas with traits that would be considered urban in many other regions, even though national statistical

offices in South Asia do not recognize them as such. And third, although the absolute increase in the official urban population has been large—South Asia's population is huge after all—the rate of gain, when compared with that in the East Asia and Pacific region and the historical experiences of today's developed countries, has been relatively slow, and the share of its population living in such settlements was only slightly higher in 2011 than it was at the beginning of the century.

Messy and hidden patterns of urbanization are symptoms of market and policy failure: the region's towns and cities fail to adequately ease the pressures of their growing populations on land, housing, infrastructure, services, and the environment. These congestion pressures undermine the region's ability both to exploit the full range of agglomeration economies and to compete in international export markets, especially for manufactured goods. They are also constraining the capacity of urbanization overall and of cities individually to improve prosperity and livability.

To better leverage urbanization, policy makers will need to push through difficult policy actions. If they do not, the region's path of urbanization, structural change, and development is unlikely to shift to a higher trajectory. Some of the worst urban problems are also likely to become more tightly locked in, making future policy actions even more difficult. The historical experience of today's advanced countries and East Asia's more recent experience show that policies to leverage urbanization offer faster progress toward prosperity and livability. South Asia must follow a similar path.

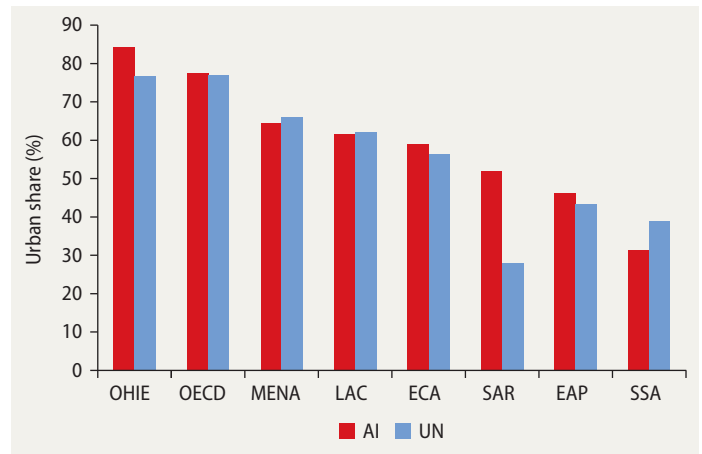
South Asia's recent urbanization in global and historical perspective

If we were to believe official national estimates of the share of people living in urban areas from the United Nations' World Urbanization Prospects database, South Asia would be the least urbanized region in the world, behind even Sub-Saharan Africa (figure 1.1).³ As is well known, however, such comparisons are hampered by definitions of urban areas that

vary widely across countries. The difficulties are symptomatic of wider data problems, limiting descriptive analysis of urbanization and related economic trends (box 1.1).

The agglomeration index (AI)—originally developed for *World Development Report 2009: Reshaping Economic Geography* (World Bank 2008)—provides a more consistent basis for comparing urbanization across countries and regions by adopting a uniform definition of urban areas (box 1.2).⁴ Based on the AI, South Asia is not the world’s least urbanized region: Whereas official estimates for 2010 suggest that slightly more than one in three South Asians live in towns and cities, the AI suggests that a little more than one in two do (figure 1.1).⁵ This AI estimate places South Asia ahead of Sub-Saharan Africa and East Asia and Pacific. It also suggests that the region has significant “hidden” urbanization, not picked up by official statistics. This hidden urbanization is particularly prevalent on the peripheries of the region’s major

FIGURE 1.1 South Asia is among the least urbanized regions



Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: AI indicates urban shares based on the agglomeration index; UN indicates official national estimates of urban shares (which, for South Asia, include the share of the population living in India’s census towns) as taken from *World Urbanization Prospects*. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; OECD = Organisation for Economic Co-operation and Development; OHIE = other high-income economies; SAR = South Asia; SSA = Sub-Saharan Africa.

BOX 1.1 Investment in data for South Asian countries is urgently required

Three basic data shortcomings limit rigorous descriptive analysis of urbanization and related economic trends in South Asia.

- *Administrative-based definitions of urban areas.* Official statistics for cities produced by national statistical offices and other government agencies tend to be based on administrative definitions. The administrative boundaries of a city, however, often fail to accurately delineate a city’s true built-up extent. In South Asia, many cities are “under-bounded” (Colombo) and some are “over-bounded” (Mumbai). Nor do administrative definitions consider commuting patterns. Ideally, for a consistent analysis of urbanization trends, cities should be defined using functional, not administrative, criteria. An example of best practice is the Metropolitan Areas Database of the Organisation for Economic Co-operation and Development (OECD). This

database provides a set of economic, environmental, and demographic indicators for all functional urban areas with populations of more than 500,000 in member countries.^a

- *Lack of comparability across countries and over time.* Beyond the differing definitions of urban that complicate cross-country comparisons (see box 1.2), definitions of “urban” within a country can change over time. Take Sri Lanka: in 1987, it tightened its definition by reclassifying town councils as rural areas (*pradeshiya sabha*). This move contributed to a fall in the country’s official urban share from 21.5 percent in the 1981 census to 14.6 percent in 2001.
- *Lack of data.* Much progress has been made in recent decades in putting developing countries across the globe on a common time cycle for national population and housing censuses and in improving the quality of census operations. Bangladesh, India, Nepal, and Sri Lanka

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BOX 1.1 Investment in data for South Asian countries is urgently required (continued)

each conducted a census in 2011, and the Maldives in 2014. Bhutan has not conducted a census since 2005, and Afghanistan and Pakistan completed their last censuses in 1979 (partial) and 1988, respectively. Sri Lanka's 2001 census was also partial, covering only 18 of the country's 25 districts because of civil war. Comprehensive subnational data on GDP are also absent for the region, although GDP data with limited temporal coverage are available for Indian districts. By contrast, Eurostat—the European Union's (EU's) statistical agency—publishes data on GDP per inhabitant dating back to 2000 and down to the third administrative level for all EU member countries.^b

This report attempts to overcome some of the region's data deficiencies by drawing on unconventional data sources, such as nighttime lights and other forms of remotely sensed earth observation data. It also attempts to tell an internally consistent story of South Asia's urbanization based on the data available. A general conclusion, however, is that South Asian countries require urgent investment in their capacity to generate higher-quality and more comprehensive data. Until that happens, any analysis will have important caveats.

a. For the Metropolitan Areas Database, see <http://www.oecd.org/gov/regional-policy/regionalstatisticsandindicators.htm>.

b. See http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/regional_statistics/data/database.

BOX 1.2 Defining and comparing urban areas—The agglomeration index and night-lights

Urban demographers and economists face a persistent and onerous problem when comparing urbanization trends across countries or regions: no single standard definition of urban areas is used by national census bureaus. This lack of standardization complicates comparisons of urbanization trends across South Asian countries, just as it complicates comparisons of South Asia with other world regions. In particular, comparisons of trends that rely on the UN *World Urbanization Prospects*—the most globally comprehensive source of urbanization data—have to be treated with caution because this data set relies on urban population data published by these bureaus.

As an illustration of the differing definitions of urban settlements across South Asian countries, consider Nepal and Bangladesh. Nepal uses a single basic criterion to define an urban settlement—a population of more than 9,000. Bangladesh also uses a single population

criterion to define urban settlements (more than 5,000) but has a qualifying statement that the settlement's population must live in a “continuous collection of houses where the community sense is well developed.” Furthermore, an urban settlement must have (among other things) a “community [that] maintains public utilities, such as roads, street lighting, water supply, sanitary arrangements, etc.” and be a center “of trade and commerce where the labor force is mostly non-agricultural.”⁶

Seven criteria usually feature in the definitions of “urban” in South Asian countries: local government, population, population density, area of settlement, access to services, structure of the local economy, and literacy rate. Bangladesh uses five of these criteria. Other South Asian countries vary on the combination of the seven and in their definitions of them.

To overcome these problems of comparability, this report uses two methods.

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BOX 1.2 Defining and comparing urban areas—The agglomeration index and night-lights (continued)

First, for comparing urban population shares across countries and regions, it uses the agglomeration index (AI) developed by Chomitz, Buys, and Thomas (2005) and Uchida and Nelson (2008). The AI is based on three parameters: population density (at least 150 people per square kilometer), a threshold population of a “large” urban center (50,000), and a maximum travel time to that center (60 minutes). Using this method, national urban shares that allow consistent comparisons of South Asia with other world regions and of individual South Asian countries with each other were estimated. The AI uses a population density threshold that, although suitable for global comparisons is low relative to average population densities in South Asia; it thus provides upper-bound estimates of urban shares.^a This index also featured in *World Development Report 2009* (with estimates for 2000), updated here to 2010 using the same parameters as in that report.^b

Second, for comparing spatially detailed patterns of urbanization, particularly focusing on urban footprint expansion patterns and patterns of economic growth within South Asia, the report uses night-light earth observation data remotely collected by satellites that are part of the U.S. Defense Meteorological Satellite Program. These innovative data allow the extents of urban areas to be consistently defined across the eight countries based on their average nighttime luminosity, revealing patterns of urbanization that would be hard to obtain with conventional sources (see chapter 2).

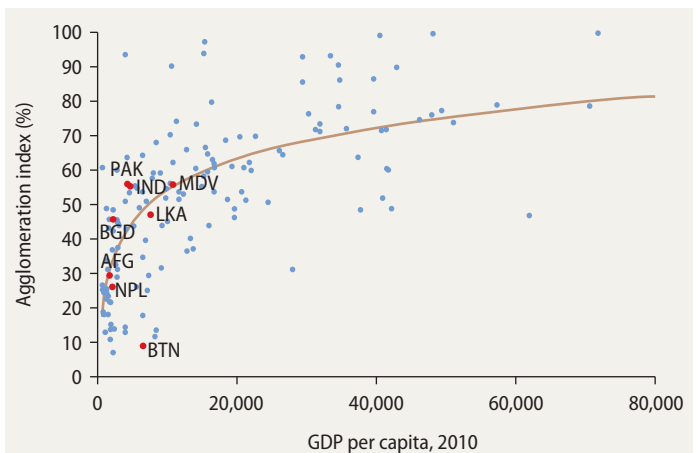
a. In 2010, six of the region’s eight countries (not Afghanistan and Bhutan) had average population densities in excess of the AI threshold, implying that if this were the sole criterion for defining urban, they would each be classified as 100 percent urbanized.

b. These updated estimates were first developed for *Global Monitoring Report 2013: Rural-Urban Dynamics and the Millennium Development Goals* (World Bank and IMF 2013). Unfortunately, issues with the data mean that the new updated estimates cannot be compared with the earlier estimates for 2000 to draw conclusions about trends over time.

cities, where congestion pressures have encouraged sprawl and growth beyond municipal boundaries (see chapter 2). Nevertheless, even given this hidden urbanization and especially compared with Organisation for Economic Co-operation and Development (OECD) and other high-income economies, South Asia remains at a relatively early stage of urbanization, consistent with the relatively low levels of development that characterize the region’s eight countries (figure 1.2).

South Asia’s urban share might lag behind those of high-income and developing regions like Latin America and the Caribbean, but it has been catching up. However, to assess the speed with which it is catching up the analysis must fall back on official national estimates of urban population shares owing to the lack of comparable AI estimates over time. Use of national estimates is far from

FIGURE 1.2 South Asia’s low agglomeration index is consistent with its level of development



Source: Calculations based on World Bank World Development Indicators data.

Note: GDP per capita is expressed in constant 2011 international dollars at purchasing power parity exchange rates. AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; PAK = Pakistan.

ideal, but the results here are robust to reasonable assumptions about potential biases in the official data. The results are also robust when the analysis is confined to countries that use similar definitions of “urban” (see web-based annex 1A and Roberts [2015]).⁷

At 1.1 percent a year, the growth rate of South Asia’s urban population share during 2000–11 was on par with Sub-Saharan Africa’s (figure 1.3). Rapid by some measures, the pace looks slow when set against East Asia and Pacific, whose urban share grew more than twice as fast as South Asia’s.⁸

The impression of slow urbanization continues in a comparison of South Asia with the historical experiences of today’s developed countries when they were at urbanization levels similar to South Asia’s today (figure 1.4). Europe’s urban share grew 1.3 percent a year during 1880–1900, taking it from 23.5 percent to 30.4 percent. In Australia, Canada, New Zealand, and the United States (other developed countries), the urban share climbed from 24.4 percent to 35.6 percent, for annual growth of 1.9 percent. During 1960–70, the Republic of Korea’s urban share

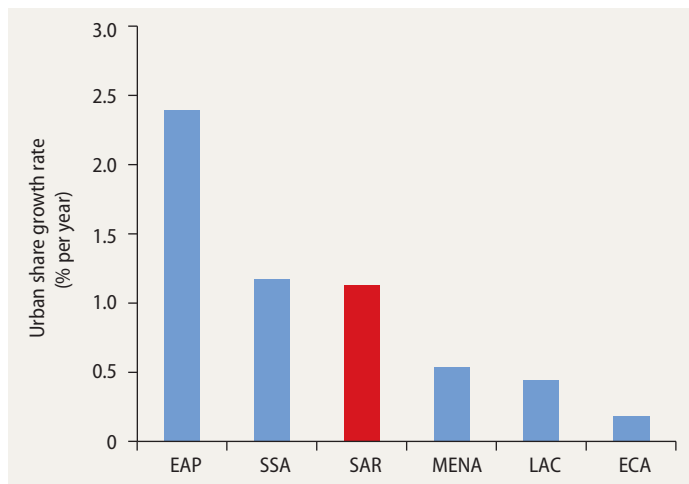
grew by almost 4.0 percent a year, from 27.7 percent to 40.7 percent.

Even if South Asia’s urbanization speed is relatively slow, the absolute increase in its urban population has been huge (figure 1.5). During 2000–11, the number of people officially classified as living in urban areas increased by slightly more than 130 million—more than the entire population of Japan, the world’s 10th most populous country. South Asia’s share of the global urban population increased by 0.6 percentage points in that period, at the expense of more urbanized and developed regions (table 1.1). Its share of global GDP rose by 2.2 percentage points, reflecting South Asia’s strong economic growth relative to other regions since the start of the century, growth that has facilitated some catch-up in prosperity.

Yet it is striking how low South Asia’s share of global GDP remains relative to its share of the global urban population, even compared with other regions containing developing countries (figure 1.6). For North America and Europe and Central Asia, the difference between each region’s share of global GDP and its share of global urban population is positive. The difference is also slightly positive for the Middle East and North Africa. By contrast, for the remaining, more developing regions, the difference is negative, most so for South Asia—consistent with the notion that other regions have more successfully leveraged their urbanization for productivity and prosperity.⁹

As South Asia has increased its share of global urban population and global GDP, it has also expanded its share of global manufacturing value added (table 1.1). This change in manufacturing value added suggests that urbanization and economic growth in the region have been accompanied by structural transformation, consistent with the historical evidence that as countries urbanize, they also become increasingly less dependent on agriculture (figure 1.7). Indeed, structural transformation is thought to provide the key link between urbanization and economic growth (Henderson and Wang 2005; Michaels, Rauch, and Redding 2012). The reason?

FIGURE 1.3 Annual growth rate of South Asia’s urban share compared with other regions, 2000–11



Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa.

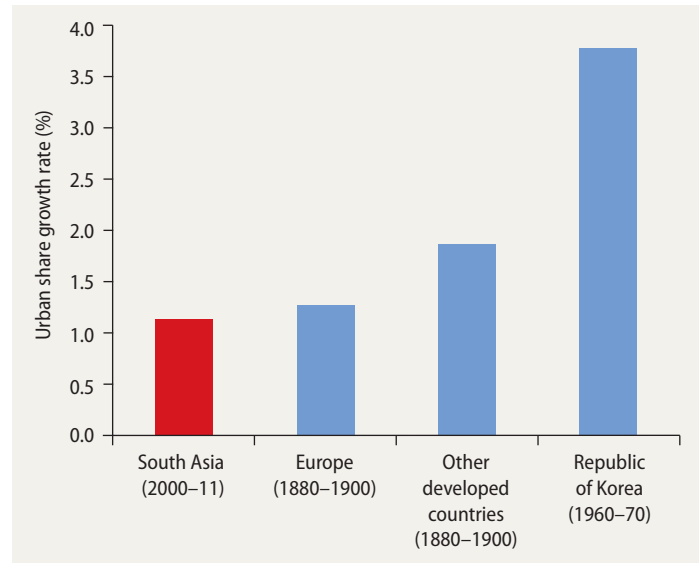
Agriculture is characterized by constant returns to scale, whereby output increases only proportionally with inputs; but nonagricultural activities tend to benefit more from increasing returns and agglomeration economies. This effect is particularly true of manufacturing and higher-value-added tradable services, notably information and communications technology, banking and finance, and other knowledge-based services.

But the increase in South Asia’s share of global manufacturing activity in table 1.1 is deceptive in that it is due more to deindustrialization in North America and Europe and Central Asia than to rapid manufacturing growth in South Asia. In Afghanistan, Nepal, Maldives, and Pakistan, the shift out of agriculture has been accompanied by a large decline in the proportion of GDP from manufacturing (figure 1.8). India, although avoiding a decline, has managed only to keep its manufacturing contribution to GDP level. This finding implies that—apart from Bangladesh and Sri Lanka, with their export success primarily in garments and textiles—urbanization since the turn of the century has been associated more with the growth of services.¹⁰

Services-led urbanization, accompanied by either stagnation or decline in the relative importance of manufacturing, is something of a departure from expected trends based on the historical experiences of today’s developed countries (also see Rodrik 2015). It is also in stark contrast to China, where both urbanization and development have been driven by manufacturing, export-led growth (box 1.3).

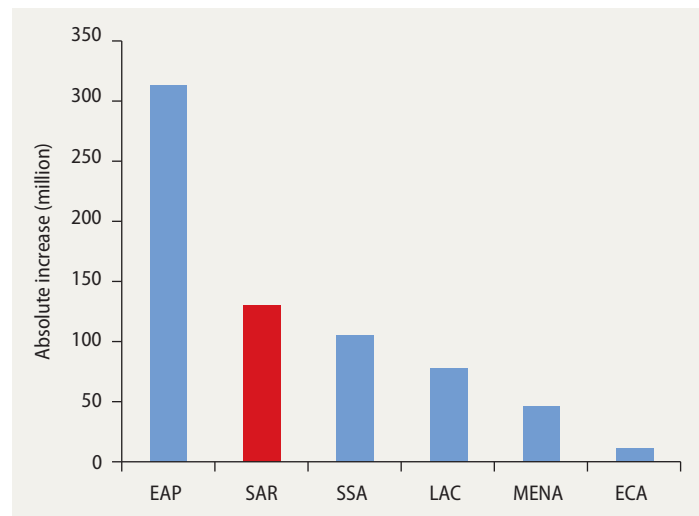
South Asia’s atypical pattern of urbanization and structural transformation need not be a cause for concern if the services industries that workers are moving into have higher productivity and are more dynamic than agriculture and manufacturing. The burgeoning of India’s information technology sector seems particularly promising, having grown extremely fast in recent decades and generating about 6–7 percent of GDP and about 18 percent of exports (D’Costa 2011). The industry has benefited from powerful

FIGURE 1.4 Annual growth rate of South Asia’s urban population share compared with annual growth rates historically experienced by today’s developed countries



Sources: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data and historical urban share data from Bairoch and Goertz (1986, 288).
 Note: Europe comprises Austria, Hungary, Belgium, Bulgaria, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Romania, the Russian Federation, Serbia, Spain, Sweden, Switzerland, and the United Kingdom. Other developed countries comprise Australia, Canada, New Zealand, and the United States.

FIGURE 1.5 Absolute increase in South Asia’s urban population compared with other regions, 2000–11



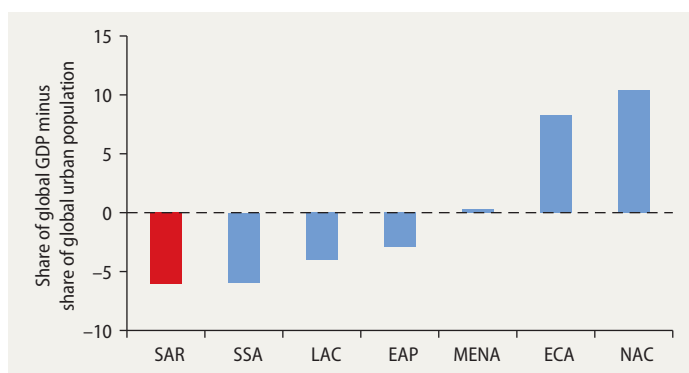
Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa.

TABLE 1.1 Global shares of urban population, GDP, and manufacturing value added

	Urban population			GDP			Manufacturing value added		
	2000	2011	Change	2000	2011	Change	2000	2011	Change
SAR	13.3	14.0	0.6	5.7	7.9	2.2	1.7	3.1	1.4
EAP	29.4	32.0	2.6	23.0	29.1	6.0	30.3	33.9	3.7
SSA	7.5	8.9	1.5	2.5	3.0	0.6	0.9	1.1	0.1
MENA	6.4	6.8	0.3	6.4	7.1	0.6	1.7	2.6	0.9
LAC	14.0	13.2	-0.8	9.6	9.2	-0.4	6.5	6.7	0.2
NAC	8.7	7.9	-0.9	22.9	18.3	-4.6	24.6	22.0	-2.5
ECA	20.7	17.3	-3.4	29.9	25.6	-4.4	33.9	31.5	-2.4

Sources: Calculations based on UN *World Urbanization Prospects: 2011 Revision* and World Bank World Development Indicators data.

Note: GDP is measured at 2011 constant (purchasing power parity) international dollars. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; NAC = North America; SAR = South Asia; SSA = Sub-Saharan Africa.

FIGURE 1.6 Global GDP share minus global urban population share for major world regions, 2011

Sources: Calculations based on UN *World Urbanization Prospects: 2011 Revision* and World Bank World Development Indicators data.

Note: GDP is measured at 2011 constant (purchasing power parity) international dollars. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; NAC = North America; SAR = South Asia; SSA = Sub-Saharan Africa.

agglomeration economies associated with the geographic concentration in Bangalore. Other countries in the region have also experienced rapid growth of their information technology sectors, albeit from an extremely low base (Muzzini and Aparicio 2013a, 2013b).

Much of the region's expansion in services jobs has not, however, been in high-value-added, dynamic—not to mention tradable—services sectors like information technology, but in small-scale, nontradable services less likely to benefit from dynamic agglomeration economies (Muzzini and Aparicio 2013a, 2013b).

In this services-led urbanization, South Asia bears some resemblance to

Sub-Saharan Africa. Between 1990 and 2010, agriculture's share in the aggregate employment of 11 African countries fell from 61.6 percent to 49.8 percent and manufacturing's from 8.9 percent to 8.3 percent, as services' share expanded from 24.1 percent to 36.8 percent. The expansion was, however, led by services such as retail trade and distribution, which saw declining average labor productivity relative to the economy as these sectors absorbed more workers. Africa's pattern of structural change has yielded increases in productivity levels (that is, static productivity gains), while the overall contribution of structural change to productivity growth has been limited (de Vries, Timmer, and de Vries 2013).

The challenge for South Asia is to avoid following a path similar to Africa's—it needs to create urban environments that revitalize manufacturing and encourage the emergence and growth of higher-value-added tradable services. As export-led theories of economic growth show, nontradable services are important employment generators, but they lack the dynamism to drive long-term development. Given that the demand for such services depends on local incomes, the overall health of the nontradable services sector ultimately depends on that of tradables (McCombie and Thirlwall 1994). The same is as true for sub-national urban economies as it is for national economies (North 1955; Rowthorn 2000).

The declining importance of manufacturing in many South Asian countries has a host of causes. Emerging research suggests that

developing countries outside of East Asia more generally are suffering from a process that Rodrik has dubbed “premature deindustrialization” due to globalization and labor-saving technological progress in manufacturing (Rodrik 2015) (box 1.4). But beyond that, the failure of policy to adequately respond to the pressure exerted by rising urban populations on land, housing, infrastructure, and basic services may be an important contributor. These congestion forces are therefore likely acting both as a brake on the exploitation of agglomeration economies and as a drag on the region’s ability to compete in world manufacturing markets, thereby contributing to slower progress in prosperity gains than otherwise would occur.

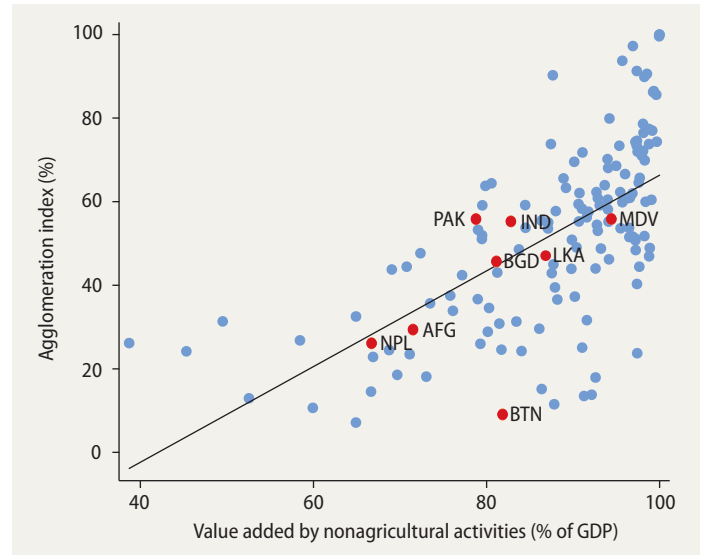
Livability of South Asia’s cities

Despite the strong prosperity gains that the region has enjoyed since the turn of the century, the majority of South Asia’s cities endure high poverty, extremely poor housing conditions, and poor livability for many of their inhabitants. For the five most populous countries, the number of urban dwellers below the national poverty line ranges from about one in eight in Pakistan to more than one in four in Afghanistan (figure 1.9).

In Sri Lanka and Bhutan, extreme urban poverty has been largely eradicated. Sri Lanka cut urban poverty particularly quickly, from 7.9 percent in 2002 to about 2 percent in 2013. It also fares well on the relatively small share of its urban population living in slums. So, by regional standards, on these two indicators at least, Sri Lanka has cities that are relatively prosperous and livable.

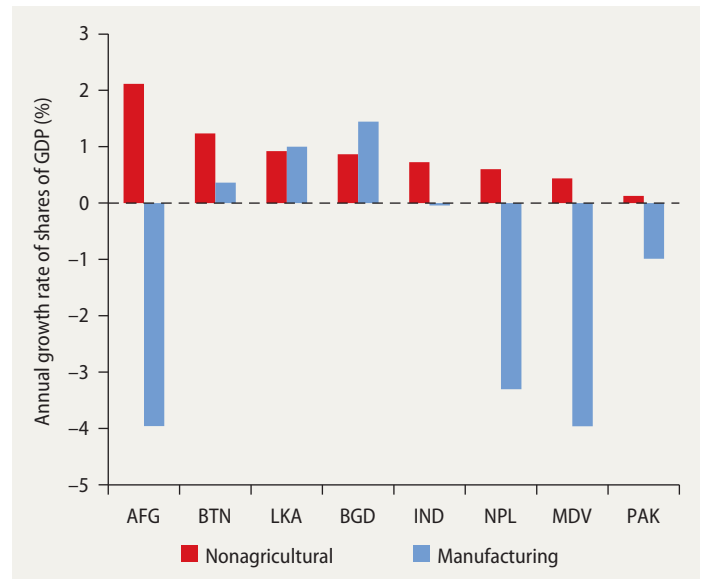
More generally, however, the share of the urban population living in slums across the five other South Asian countries for which data are available is high, ranging from 17.1 percent in India to 88.6 percent in Afghanistan.^{11,12} The estimate for Afghanistan is rather old, dating to 2005. Even so, analysis of very high resolution satellite imagery for Kabul—where 54 percent of the country’s urban population lives—suggests that the vast

FIGURE 1.7 Structural change and urbanization: Relation between agglomeration index and value added by nonagricultural activities, 2010



Source: Calculations based on World Bank World Development Indicators data.
 Note: AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; PAK = Pakistan.

FIGURE 1.8 Annual growth rates of shares of GDP generated by nonagricultural and manufacturing activities, 2000–10



Source: Calculations based on World Bank World Development Indicators data.
 Note: AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; PAK = Pakistan.

BOX 1.3 Different trajectories—Urbanization, economic growth, and manufacturing exports in China and South Asia^a

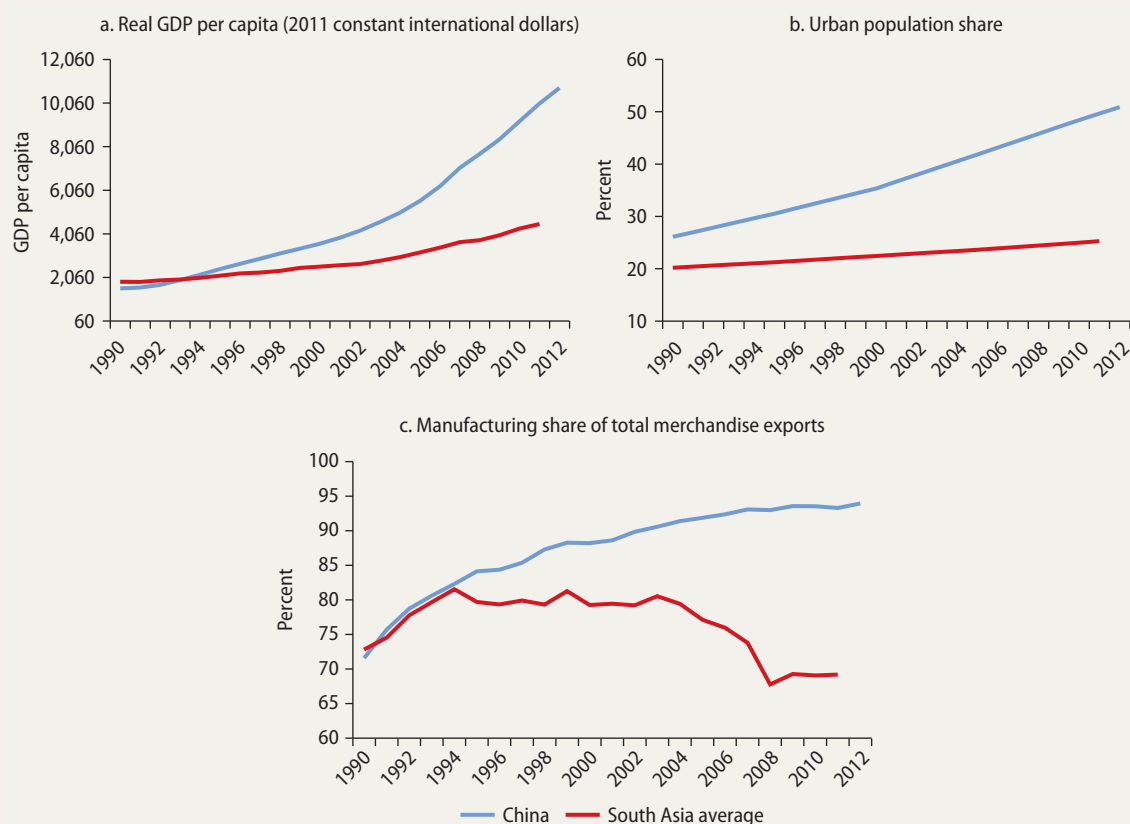
In 1990, average GDP per capita in five South Asian countries—Bangladesh, India, Nepal, Pakistan, and Sri Lanka—was slightly higher than China’s, while their average urban share (per UN *World Urbanization Prospects* data) lagged by 6 percentage points (panels a and b of figure B1.3.1). Since then, China’s urbanization and economic growth have both accelerated beyond those of these five economies. By 2011, China’s GDP per capita reached \$10,041 (in 2011 constant international prices)—2.2 times the average

of the five, while the gap in urban shares widened to 25 percentage points.

The key to China’s dynamic urbanization and growth during 1990–2011 was the strengthening of its position as the “workshop of the world,” in a process promoted by economic reform and by the central government deliberately allowing economic activity to concentrate in urban areas along the eastern seaboard.

China’s success is reflected in the dramatic increase in its manufacturing exports (as a share

FIGURE B1.3.1 Economic growth, urbanization, and manufacturing exports in South Asia versus China



Sources: Calculations based on UN *World Urbanization Prospects: 2011 Revision* and World Bank World Development Indicators data.

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BOX 1.3 Different trajectories—Urbanization, economic growth, and manufacturing exports in China and South Asia^a (continued)

of its total merchandise exports) from 72 percent in 1990 to 94 percent in 2011 (figure B1.3.1, panel c). By contrast, the average share of manufacturing exports for the five, although closely following China's path for the first few years of the 1990s, stagnated and then rapidly declined.

The share stabilized in 2008, but it was 69 percent in 2011, below its starting point in 1990.

Sources: Calculations based on *UN World Urbanization Prospects: 2011 Revision* and World Bank World Development Indicators data.

a. Afghanistan, Bhutan, and Maldives lack sufficient historical data on GDP and manufacturing exports to figure in the comparison with China undertaken in this box.

BOX 1.4 Is early deindustrialization inevitable? Not if the advantages of cities can be brought into play

In 1966, the Cambridge economist Nicholas Kaldor delivered a lecture on the causes of the slow rate of economic growth in the United Kingdom (Kaldor 1966). He sought to explain why the United Kingdom's post-World War II growth had been lagging behind that of its main rivals.

He identified the proximate cause as the economy's relatively slow rate of manufacturing growth. Rapid manufacturing growth, he argued, was pivotal to rapid economic growth at the macro level, with manufacturing growth particularly contributing to economywide productivity growth both through static gains associated with the reallocation of labor from lower-productivity agriculture and dynamic gains associated with faster productivity growth. Kaldor diagnosed the country as suffering from "premature maturity" in which, because all surplus labor from agriculture had long been absorbed, manufacturing was losing strength against other economies at similar incomes, stating that the country had "exhausted its growth potential before attaining particularly high levels ... of average per capita income" (Kaldor 1966, 102).

Fifty years later, related concerns are expressed about manufacturing in today's developing

economies. In recent research, Dani Rodrik diagnosed developing economies as being afflicted by "premature deindustrialization" (Rodrik 2015). Whereas the employment share of manufacturing in the United Kingdom peaked in 1961 at somewhat more than 30 percent, with income per capita of about \$14,000 (in 1990 dollars), today's developing countries are seeing manufacturing peak at much lower shares of employment and levels of income.

Rodrik suggests that premature deindustrialization is largely a post-1990 phenomenon attributable to the twin processes of globalization and labor-saving technological progress. Increased automation of manufacturing in developed countries has led to the sector's shrinkage in employment (but crucially not in real output) in these countries, while driving down the relative price of manufacturing goods globally. Developing countries would previously have been isolated from this relative price trend, but globalization and lower barriers to international trade have removed this protection. Manufacturing in developing countries has thus become less profitable, leading to deindustrialization being "imported" by developing countries from the United States and other advanced economies.

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BOX 1.4 Is early deindustrialization inevitable? Not if the advantages of cities can be brought into play (continued)

Rodrik's concerns about the repercussions of premature deindustrialization for today's developing countries are similar to those that Kaldor voiced for the United Kingdom in the mid-1960s and for the same reasons—that anemic manufacturing growth will translate into slow overall macroeconomic growth. But his concerns are all the more serious given that the United Kingdom's deindustrialization, in hindsight, was anything but premature. A far greater anxiety from a developing-country perspective is that the traditional route to rapid economic development through industrialization may have been permanently closed.

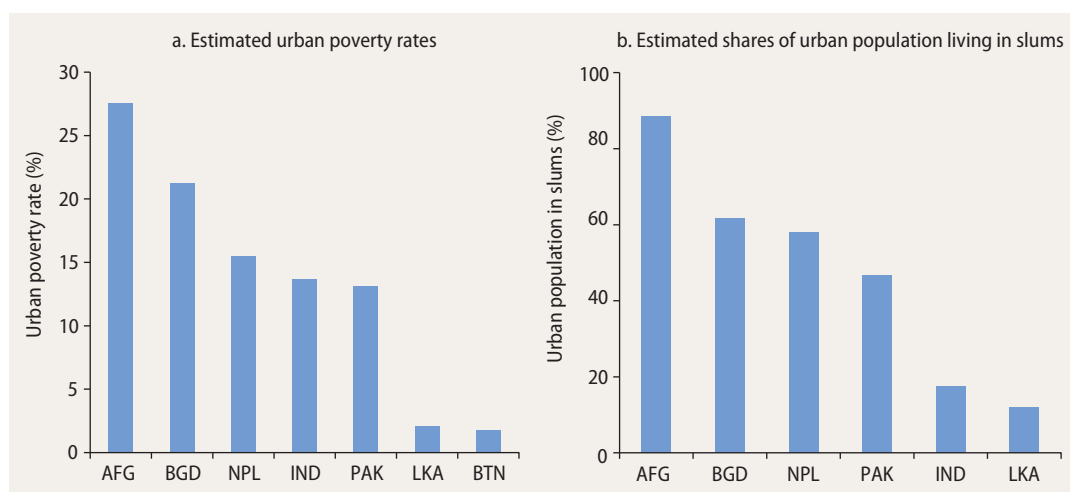
Does this mean that South Asia's economies are inevitably confined to a future of slow growth and economic development? Not necessarily. As Rodrik shows, East Asian economies have largely escaped premature deindustrialization. Likewise, in South Asia, manufacturing value added as a

share of GDP during 2000–10 grew in Bangladesh and in Sri Lanka, and in Sri Lanka's case, despite the country's relatively high GDP per capita.

Yet avoiding the peril of premature deindustrialization is no easy feat, and requires even faster productivity growth in manufacturing relative to services than in a world without globalization. This condition suggests that the need to address the congestion forces restraining urban agglomeration economies (which can enhance manufacturing productivity) is even more pressing. Higher-value-added tradable services also offer a potential route to faster economic growth, although their growth depends on high levels of human capital. Urban areas tend to provide greater returns and incentives to human capital accumulation, which again suggests a potentially crucial role for cities.

Sources: Kaldor 1966; Rodrik 2015.

FIGURE 1.9 Prevalence of urban slums and poverty across South Asian countries



Sources: For urban poverty, calculations based on World Bank World Development Indicators data for the following years: Pakistan (2006); Bangladesh and Nepal (2010); Afghanistan (2011); Bhutan and India (2012); and Sri Lanka (2013). Data on Maldives' urban poverty rate are missing. For the share in slums, calculations based on data for the following years: Afghanistan and Sri Lanka (2005); Bangladesh, Nepal, and Pakistan (2009); and India (2011). Data are from the following sources: Afghanistan and Sri Lanka (UNESCAP 2012, 126); Bangladesh, Nepal, and Pakistan (UN-HABITAT 2013, 126–28); and India (Census of India Office of the Registrar General and Census Commissioner 2013).

Note: AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; NPL = Nepal; PAK = Pakistan.

majority of residential areas in the city continue to exhibit slum-like characteristics (Zhou 2014).

The lack of decent, affordable housing for large numbers of South Asia's urban dwellers directly curtails their welfare and has potentially adverse implications for health outcomes and for female labor force participation.¹³ And the prevalence of slums in South Asian cities reflects a failure, once again, to manage congestion forces—in land and housing markets especially—associated

with urban population growth (see chapter 5).

The failure of South Asia's urban areas to cope with the pressure of population is also evident in the severe air pollution that afflicts the region's cities (box 1.5) and, more generally, in the poor performance of the region's largest cities—those where access to basic urban services tends to be best and standards of living highest—in international rankings of cities' livability. One of the most respected rankings is the livability index of the

BOX 1.5 More than dust in Delhi

Of all the sources of congestion forces associated with the growth of cities, one of the most serious for health and human welfare is ambient air pollution from vehicle emissions and the burning of fossil fuels by industry. Particularly harmful are high concentrations of fine particulate matter, especially that of 2.5 microns or less in diameter (PM_{2.5}), which can penetrate deep into the lungs, increasing the likelihood of asthma, lung cancer, severe respiratory illness, and heart disease. Data released by the World Health Organization (WHO) in May 2014 shows Delhi to have the most polluted air of any city in the world, with an annual mean concentration of PM_{2.5} of 152.6 µg/m³, or more than 15 times greater than the WHO's guideline value and high enough to make Beijing's air—known for its bad quality—look comparatively clean.^a

Although Delhi provides the most extreme example of foul air, detailed analysis of WHO data for ambient (outdoor) air pollution in cities reveals that Delhi is far from unique in South Asia in having dangerously high concentrations of PM_{2.5}. Among a global sample of 381 developing-country cities, 19 of the 20 with the highest annual mean concentrations are in South Asia.^b And the issue is not just in India—Karachi, Dhaka, and Kabul all feature in the top 20.

Air pollution in cities is influenced by many factors beyond the control of policy makers, including climate (such as levels and variability of rainfall and temperature) and geography (such as distance to the coast). Controlling for these factors, analysis of the data shows that, for developing-country cities globally, annual mean concentrations of PM_{2.5} are positively and significantly correlated with city size and population density, where population density is measured within a 20 kilometer radius of the city center.^c Although these relationships are expected, they appear to be stronger in South Asian cities for population density than in other developing-country cities (figure B1.5.1). In developing-country cities outside South Asia, a doubling of population density is associated with a 24.2 percent increase in PM_{2.5}, but in South Asian cities, the increase is 34.8 percent.

What accounts for this uniquely strong impact in South Asian cities? It seems plausible that the answer lies somewhere in the relationship between city population density, the number and spatial configuration of potential pollution sources within a city, and the volume of pollution emitted by each source (although more research is needed). For example, given the lack of availability of and access to clean public transport in India, one can speculate that,

(continues next page)

BOX 1.5 More than dust in Delhi (continued)

for any given increase in demand for mobility associated with a given increase in population density, more air pollution will occur there than elsewhere. Similarly, given failures in planning, one can speculate that a given increase in population density is associated with a greater probability of traffic gridlock in South Asian versus non-South Asian cities, again contributing to a higher relative increase in air pollution.

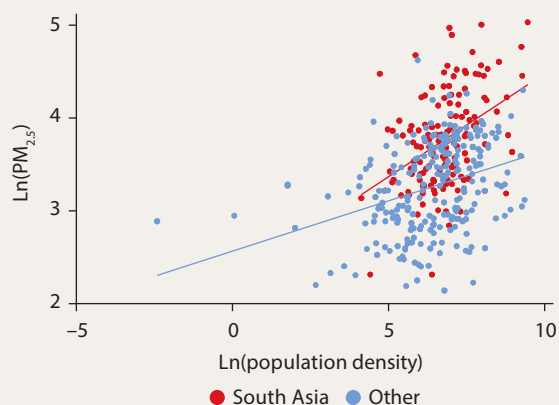
Tackling excessive air pollution in South Asia's cities requires policy responses—quickly. In India, about 660 million people (more than half the national population) live in areas where annual mean concentrations of $PM_{2.5}$ exceed national guidelines—with important adverse consequences for health.^d

Indian cities have been known to battle air pollution quite successfully in some places and

at particular times. Even Delhi implemented a wide range of pollution control measures in the early 2000s to reverse, if for a short time, increasing air pollution. Under the direction of the Indian Supreme Court, which was responding to a public interest lawsuit, Delhi converted its entire fleet of public buses from diesel to compressed natural gas. Public taxis and three-wheeler rickshaws were also converted from petrol to compressed natural gas. Delhi also moved polluting industries out of its city limits, improved fuel quality and vehicle technology, banned highly polluting vehicles, and improved its vehicle inspection and maintenance program (Bell and others 2004). Other cities followed and implemented measures to curb pollution. While benefiting from nationally implemented improvements in fuel quality and vehicle technology, some cities brought in bus rapid transit systems as a cleaner mode of public transport, and others introduced liquid petroleum gas vehicles to replace more-polluting ones.

Despite these measures, most cities are losing the war. A new wave of pollution control initiatives is needed to stem the current crippling levels of air pollution. These measures will have to range from further improvements in fuel quality and vehicle technology to greater access to public transport (curbing the dramatic increase in private passenger vehicles) and changes in patterns of urban development that reduce the need for transport. Indian cities will also need to improve air quality monitoring to get a better handle on the extent of the problem and to invest in source apportionment studies to better understand pollution sources.

FIGURE B1.5.1 Relationship between annual mean concentration of $PM_{2.5}$ and city population density for 381 developing-country cities



Sources: Calculations based on analysis of World Health Organization ambient (outdoor) air pollution in cities 2014 data (http://www.who.int/phe/health_topics/outdoorair/databases/cities/en) and other sources of data on city population levels, densities, and climate; and geographical-related determinants of air pollution levels. Full regression results available on request. Note: City population density is measured as population density within a 20 kilometer radius of a city's center. Sample covers 381 developing-country (that is, non-OECD and non-other high income) cities, with 139 of the cities in South Asia (121 are Indian cities). (Similar relationships hold when restricting attention to a population density range that is the same for both South Asian and non-South Asian developing-country cities.)

a. Beijing's annual mean $PM_{2.5}$ rate in the WHO's 2014 database is $55.6 \mu\text{g}/\text{m}^3$.

b. The only non-South Asian city in the top 20 is Khoramabad in the Islamic Republic of Iran, with $PM_{2.5}$ of $101.9 \mu\text{g}/\text{m}^3$.

c. Measures of population density were constructed using LandScan-gridded population data.

d. <http://www.economist.com/news/asia/21642224-air-indians-breathe-dangerously-toxic-breathe-uneasy>.

Economist Intelligence Unit (EIU), which uses a range of indicators to assess cities' performance along five dimensions: stability, health care, culture and environment, education, and infrastructure. According to the EIU's 2015 rankings, the highest placed of the six South Asian cities in the index is New Delhi, India, which ranks 110 (out of 140 cities in all). This means that New Delhi ranks not only behind the developed-country cities of Australia, North America, and Western Europe that inevitably dominate the rankings, but also behind such cities as Baku (Azerbaijan), Manila (the Philippines), and Tunis (Tunisia). Mumbai (India; 115), Kathmandu (Nepal; 125), Colombo (Sri Lanka; 127), and Karachi (Pakistan; 135) follow New Delhi in the rankings, while Dhaka's (Bangladesh) livability is ranked 139, surpassing only that of Damascus (Syrian Arab Republic). The average ranking of the six South Asian countries in the index is 125, compared with an average ranking of 103 for all non-South Asian developing-country cities in the index and 93 for all cities in the developing countries of East Asia and the Pacific (table 1.2).

Further evidence of the poor livability of South Asia's cities comes from assessing them against appropriate comparators from other regions (figure 1.10). Each comparator city was selected to match its South Asian counterpart as closely as possible across population, city area, and population density. The livability index is constructed from indicators

in four areas—education, health, safety, and the environment. In each pairwise comparison, the South Asian city ranks as less livable on the index and on each of the four index components (except safety, based on reported homicide rates).

Looking ahead—Leveraging urbanization for prosperity and livability

South Asia has generally struggled to make the most of its urbanization, particularly with the forces of congestion, and it is precisely these forces that undermine the livability of the region's cities and make its urbanization messy and hidden. These same forces seem to be holding back the region's urbanization pace and its potential exploitation of powerful agglomeration economies for faster prosperity gains as they whittle away the region's international manufacturing competitiveness, contributing to more services-led urbanization. If South Asia had dealt better with these congestion forces, economic theory suggests that its urbanization speed would have been closer to East Asia's experience or that of now-advanced countries more than a century ago. Such congestion forces put a brake on the concentration of people and of economic activity.

The UN's *World Urbanization Prospects* project that South Asia will continue its recent pace of urbanization for the foreseeable future.¹⁴ South Asia will be the second-fastest urbanizing region during 2011–30, but due more to projected slowing in East Asia, a natural consequence of that region's transition to higher incomes. In absolute terms, South Asia's urbanization pace will add almost 302 million people to its towns and cities, inexorably raising already severe congestion pressures (figure 1.11).

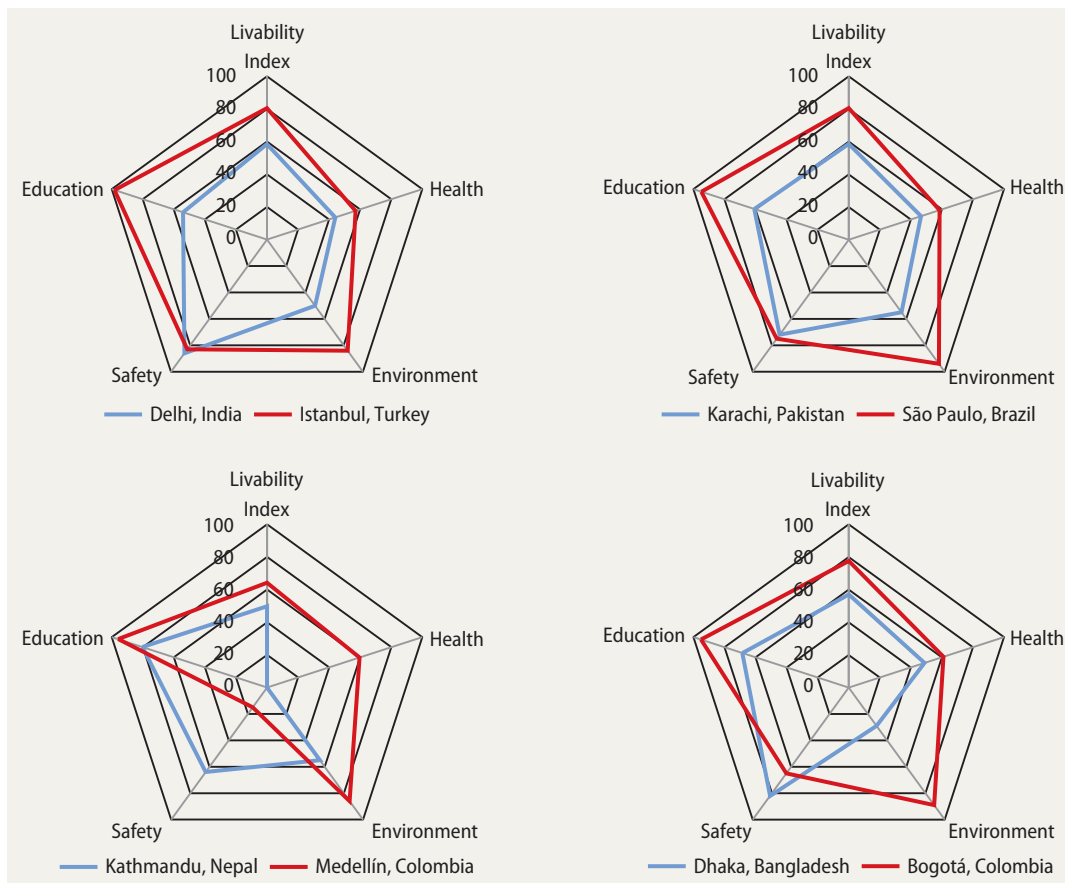
South Asia's policy makers face a choice between two paths. The first is to continue with the same policies that have allowed congestion pressures in urban areas to mount rapidly, thereby undermining proper exploitation of agglomeration economies and leaving the region on the current trajectory of

TABLE 1.2 Ranking of South Asian cities in the Economist Intelligence Unit's livability index

City	Ranking
New Delhi	110
Mumbai	115
Kathmandu	125
Colombo	127
Karachi	135
Dhaka	139
Developing-country averages	
South Asia	125
All developing countries excluding South Asia	103
East Asia and Pacific	93

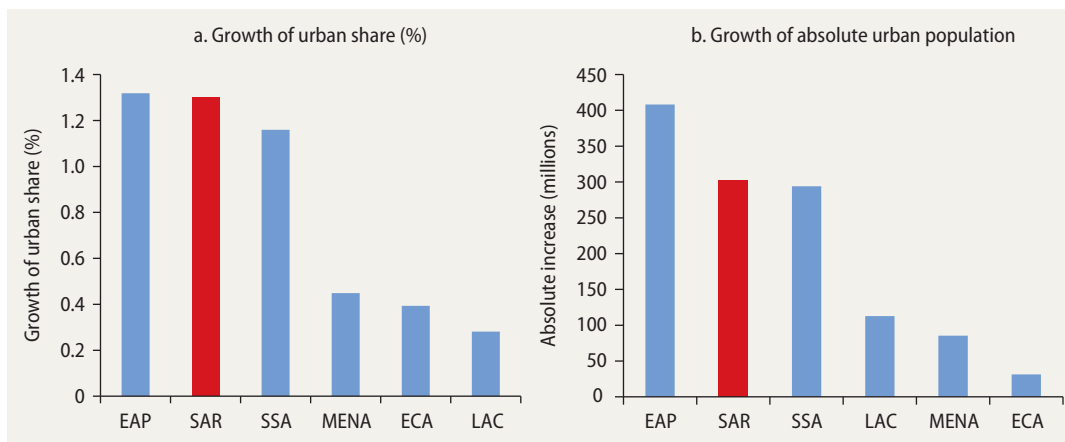
Source: EIU 2015. Data reused by permission of The Economist Intelligence Unit. Permission required for further reuse.

FIGURE 1.10 Livability in four major South Asian cities and comparator cities



Sources: See web-based annex 1B and Amirtahmasebi and Kim (2014) for full details.

FIGURE 1.11 Projected growth of urban population, 2011–30



Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa.

underleveraged urbanization, structural change, and development. This path also risks locking in the worst of the region's urban problems.

The second is to undertake difficult policy reforms that help alleviate current and future congestion pressures and that allow countries to better exploit agglomeration economies. This second path—based on enhanced leveraging of urbanization—offers the potential to improve South Asia's development trajectory so that its countries can follow, better and faster, other countries that have transitioned to upper-middle and high incomes.

Notes

1. This number includes people living in India's census towns, which are settlements that the Indian census recognizes as urban even though they are governed as rural areas. To qualify as a census town, an administratively rural settlement must meet the following three criteria: population in excess of 5,000 persons, population density greater than 400 people per square kilometer, and at least 75 percent of male main workers involved in nonagricultural pursuits. (See chapter 2—particularly box 2.3—for more discussion of the rapid proliferation of census towns in India since 2001.)
2. The statistics relating to GDP per capita and poverty in this paragraph are based on World Bank World Development Indicators data. GDP per capita figures are expressed in 2011 constant international dollars using purchasing power parity (PPP) exchange rates. The \$1.25 a day poverty line is based on 2005 international prices. Figures on the absolute increase in urban population are from the United Nations' *World Urbanization Prospects Database: 2011 Revision* (<http://esa.un.org/unpd/wup/>).
3. This is, again, despite the inclusion of census towns in India's official estimates of the share of its population living in urban areas (see also note 1 and chapter 2, box 2.3).
4. Alternative initiatives aimed at providing a consistent definition of urban areas across countries include the e-Geopolis project (<http://www.e-geopolis.eu/spip.php?rubrique67>) and the OECD's metropolitan areas database (see OECD [2012] for a description of methods underlying this database). Both of these initiatives are based, in part, on the identification of built-up urban area from satellite imagery; however, they lack the comprehensive global coverage of the AI.
5. The exact estimate of the urban share provided by the AI depends on the source of global gridded population data used in its construction. The use of Global Rural-Urban Mapping Project (GRUMP) data tends to provide lower estimates than the use of LandScan data. Therefore, the AI estimates obtained from these two different data sources are averaged.
6. Definitions are from United Nations, Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects*, the 2014 revision, Excel spreadsheet titled "Data sources and statistical concepts for estimating the urban population" (<http://esa.un.org/unpd/wup/DataSources/>).
7. In general, estimates of growth rates of urban shares and populations based on official national statistics will be less biased than estimates of levels of urban shares and populations, provided the bias associated with estimating levels has remained reasonably constant over time (World Bank 2008).
8. As chapter 2 discusses, there are, of course, important variations in the pace of urbanization across countries in the region. Thus, the pace of urbanization in both Bangladesh and Nepal has been more on par with today's developed countries in the late 19th century, although they still fall short of the pace in the East Asia and Pacific region since 2000. Only Bhutan and Maldives have matched this region's pace.
9. South Asia's performance based on table 1.1 and figure 1.6 may be overstated if one considers that the shares of global urban population on which these are based are derived from official national estimates of urban population, which tend to understate urban shares in South Asian countries relative to non-South Asian countries.
10. One caveat to this conclusion is that the official data on which figure 1.8 are based are unlikely to fully capture either the informal sector or illegal activities. Although national statistical offices in the region do use methods to help estimate the contribution of the informal sector to GDP, these methods suffer from

a number of shortcomings. In India, the services sector is most prone to underestimation of its contribution as a result of informality (Credit Suisse 2013). This suggests that, for India at least, the conclusion of services-led urbanization is unlikely to be an artifact of the data.

11. The most recently available slum population data available for Bhutan are for 2000, and no data are available for Maldives. Both countries are therefore excluded from figure 1.9.
12. As discussed in chapter 5, there are concerns that India's slum population is seriously underestimated by the Census of India. UN-HABITAT (2013) estimates India's slum population in 2009 was 29.4 percent of the urban population.
13. For quasi-experimental evidence of these adverse effects, see Field (2007).
14. Swerts, Pumain, and Denis (2014) provide a similar projection for India based on the extrapolation of growth trends of urban areas observed over 1961–2011 in e-Geopolis data.

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Spatial Patterns of Subnational Performance and Urban Growth | 2

Key messages

South Asia's cities exhibit a wide range of outcomes, and patterns of urban growth vary greatly across countries and subnational areas. To inform policy for better outcomes, this chapter introduces a new metric of subnational performance—the prosperity index—and provides a more in-depth analysis of national and subnational patterns of urbanization, urban expansion, and local economic growth.

- Driven mainly by superior productivity, the most populous cities exhibit the strongest performance in generating prosperity. But size by itself accounts for only a fraction of the variation in performance, especially for poverty and economic growth.
- Urban population growth has been driven largely by natural increase and the reclassification of rural settlements, not by rural-urban migration. At the same time, many settlements with urban characteristics are governed as rural areas.
- Many cities have been rapidly expanding beyond their administrative boundaries as the pace of urban expansion has outstripped urban population growth. Related to this, multicity agglomerations have become increasingly important.
- Manufacturing, particularly in the formal sector, has been moving away from the cores of the region's major agglomerations to their peripheries. Many city cores have stagnated, but some have retained their vibrancy by engaging in higher-value-added tradable services.

Introduction

South Asia is not realizing urbanization's full potential to improve prosperity and livability (see chapter 1). This overall picture, however, masks tremendous variation in productivity, poverty, and economic growth. Urbanization

has been relatively slow in Afghanistan, India, Pakistan, and, for somewhat different reasons, Sri Lanka; it has progressed much faster elsewhere, especially in the smaller countries of Bhutan and Maldives.

Policy makers and others need a deeper understanding of these variations to develop

differentiated policies for areas of varying patterns and outcomes. By providing important clues to the constraints on South Asia's cities, and the region's urbanization more generally, accurate analysis can help diagnose the dimensions of the problem and devise appropriate responses.

This chapter builds on the broad regional and historical comparisons of chapter 1 to construct a more detailed analysis, introducing a new metric of subnational performance—the prosperity index. As its name implies, this index captures dimensions of an area's success in generating prosperity for its inhabitants. It allows identification and quantification of differences in performance among subnational urban areas across countries. The chapter also analyzes variations in patterns of urbanization and urban population growth across the eight South Asian countries, as well as variations in population growth across both cities and subnational areas. To overcome data limitations (see chapter 1, box 1.1), innovative “nighttime lights” data were used to help construct the prosperity index, as well as to document subnational patterns of both urban expansion (Zhang and Seto 2011) and economic growth (Henderson, Storeygard, and Weil 2011, 2012).

Measuring differences in subnational performance

Consistently measuring differences in subnational performance across South Asian urban

areas is inherently difficult given the data challenges that plague the region (see chapter 1, box 1.1). In particular, up-to-date subnational gross domestic product (GDP) data that would allow the construction of measures of both levels of productivity and rates of economic growth (which provide an indication of subnational dynamism) at a refined spatial scale are absent for much of the region.¹ Furthermore, measures of productivity and economic growth do not, by themselves, provide a full picture of an area's success in generating prosperity for its inhabitants. Prosperity also depends, for example, on success in reducing poverty.

The prosperity index is a new measure of subnational performance that addresses the above issues. It captures three dimensions of South Asian urban areas' widely varying success in generating prosperity: poverty, productivity, and dynamism (table 2.1). To overcome the limited availability of subnational GDP data, it makes use of data on the intensity of nighttime lights to construct proxy measures of both productivity and dynamism (box 2.1). These data have the advantage of being both consistently measured and available at a refined spatial scale for the entire region. The data also provide a good proxy measure of subnational GDP. Meanwhile, by combining measures of productivity and dynamism with a measure of poverty, the prosperity index also provides a more robust and multidimensional measure of performance than does a single indicator.

TABLE 2.1 The prosperity index captures three dimensions of performance

Dimension	Rationale	Indicator
Poverty	Inversely measures an area's ability to generate widespread prosperity and avoid extreme income deprivation.	Percentage of population living on less than \$1.25 a day, 2010 ^a (the World Bank's global poverty line).
Productivity	A key determinant of prosperity. In accepted economic growth models, productivity determines an area's standard of living in the long term (Solow 1956; Romer 1990). It also determines its long-term market competitiveness and thus its ability to achieve export-led growth through trade (McCombie and Thirlwall 1994).	Intensity of nighttime light per square kilometer of land, 2010, as a measure of the density of economic activity. Empirical research shows that measures of economic density correlate strongly with productivity (Ciccone and Hall 1996; Ciccone 2002; Roberts and Goh 2011).
Dynamism	More rapid economic growth achieves greater progress in increasing prosperity over time.	Real GDP growth, 1999–2010, as estimated from nighttime lights data during that period.

a. The poverty line is measured in 2005 constant international prices using purchasing power parity exchange rates. Poverty rates enter negatively into the construction of the prosperity index, so that larger values are associated with better poverty outcomes.

Given data limitations that prevent the building of the prosperity index at the city level, it is, with the exception of Sri Lanka, instead constructed for subnational areas at the second administrative (Admin-2) level. (In Bangladesh, India, and Pakistan, these units correspond to districts, while in Bhutan and Nepal they correspond to *gewogs* and administrative zones, respectively.) For Sri Lanka,

data for areas at the third administrative (Admin-3) level—the divisional secretariat (DS-division) level—were available. For brevity, these administrative units are referred to as “districts” regardless of local terminology.

One advantage of using such district data is that they allow the index to capture the wider influence of urban areas on the districts in which they are located. This influence

BOX 2.1 Using nighttime lights data to infer patterns of economic activity and urban expansion

The nighttime lights data that underpin the productivity and dynamism indicators are derived from “raw” lights data collected every night, typically between 8:30 pm and 10 pm, local time, by satellites orbiting the poles. The satellites belong to a program that dates back to the mid-1960s and were designed to collect meteorological data, particularly data on clouds illuminated by the moon, for making short-term cloud-cover forecasts (Doll 2008).

It was realized in the late 1970s that the satellite sensors could also detect artificial sources of light emanating from the earth’s surface, including city lights (Croft 1978). Since this discovery, a wealth of research has looked into using the lights data to track patterns of human activity. Most notably, in the 21st century, economists Vernon Henderson, Adam Storeygard, and David Weil published work in the *American Economic Review* showing that growth in intensity of a country’s nighttime lights correlates strongly with its GDP growth (Henderson, Storeygard, and Weil 2011, 2012). This relationship occurs because consumption of nearly all goods in the evening requires light, and as incomes increase, so does light usage per person, in both consumption and investment activities.^a Given this finding, the economists argue that lights data can be a proxy for GDP growth where GDP data are either poor or missing. Their work is inspiring a quickly expanding use of lights data to serve as a proxy for economic activity (levels and growth

rates) at the subnational level (see, for example, Alder 2015; Baum-Snow and Turner 2012; Pinkovskiy 2013).

The lights data are also used later in this chapter to provide an overview of built-up urban areas’ expansion patterns across South Asia, extending a long line of previous research. This research has demonstrated that the lights data can provide a suitable basis for monitoring how urban footprints expand at national or regional scales (see, for example, Zhang and Seto 2011). One concern about such use of lights data in South Asia is the increasing susceptibility of many of the region’s cities to power outages. But analysis suggests that the results are robust to this concern.^b Furthermore, the urban expansion picked up in the lights data is also seen in other higher-resolution satellite imagery for cities in the region (see “Rapid relative expansion of urban footprints and the rise of the multicity agglomeration” later in this chapter).

The nighttime lights data used in this chapter are the Global Radiance Calibrated Nighttime Lights product.^c This differs from the product forming the basis of Henderson, Storeygard, and Weil’s and most others’ research in that it does not suffer from “sensor saturation.” Whereas the standard product measures the average annual intensity of nighttime light over all cloud-free nights on a digital number (DN) scale of 0–63, with higher values indicating greater intensity, the product underlying this chapter’s analysis measures light on a DN

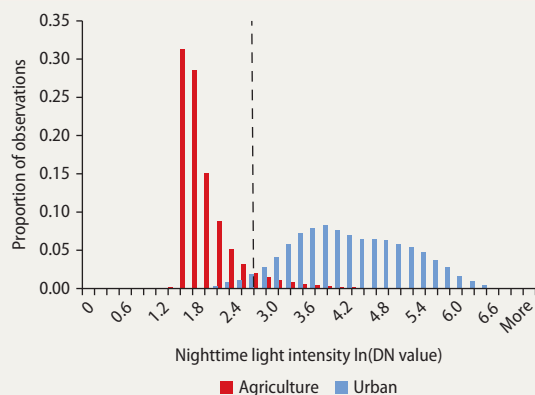
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BOX 2.1 Using nighttime lights data to infer patterns of economic activity and urban expansion (continued)

range of 0–1,500. This wider range allows variations in the luminosity of bright urban cores of major cities such as Karachi, which are missed by the standard product, to be detected.

To identify an urban area’s footprint, a DN threshold of 13 is used, selected by calibrating the lights data against higher-resolution land-use cover maps, in particular, the European Space Agency’s GlobCover 2009 map and the MODIS Collection 5 Land Cover Type map^d for the region. A comparison of the lights data with these maps reveals that nighttime light of less than DN 13 tends to be only rarely seen in the urban areas of South Asia but is typical for agricultural areas (figure B2.1.1). The use of a calibrated threshold to demarcate urban areas

FIGURE B2.1.1 Distribution of nighttime light intensity between agricultural and urban areas in South Asia, 2009

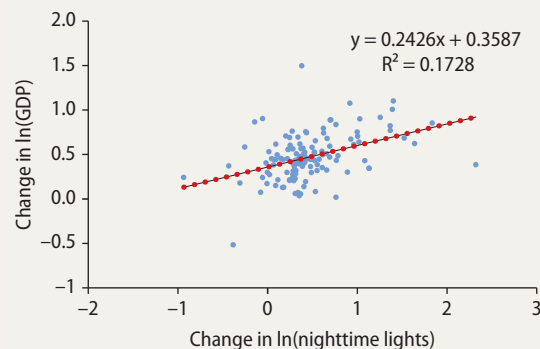


Sources: Calculations based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data and European Space Agency GlobCover 2009 map land-use class data.
Note: The figure shows frequency of different average annual digital number (DN) values (on a natural logarithmic scale) in areas that may be considered to be urban and agricultural based on the European Space Agency’s GlobCover 2009 map. Urban areas are taken to correspond to land-use class 190 (“Artificial surfaces and associated areas [urban areas > 50%]”) and agricultural areas to land use classes 11 (“Post-flooding or irrigated croplands [or aquatic]”), 14 (“Rainfed croplands”), 20 (“Mosaic cropland [50–70%]/vegetation [grassland/shrubland/forest; 20–50%]”), and 30 (“Mosaic vegetation [grassland/shrubland/forest; 50–70%]/cropland [20–50%]”) in the GlobCover map. The dotted line indicates DN = 13.

also helps mitigate the well-known “over-glow” or “blooming” problem, which would otherwise cause urban footprints derived from the lights data to be significantly overstated (Doll 2008).

Figure B2.1.2 shows the strong correlation between the growth in the intensity of lights and GDP for low- and middle-income countries in 1999–2010. This relationship underlies the derivation of the subnational GDP growth estimates for South Asia used in the dynamism dimension of the prosperity index.^e

FIGURE B2.1.2 Relationship between GDP growth and growth of nighttime light intensity across low- and middle-income countries, 1999–2010



Sources: Calculations based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data and GDP data from the World Bank World Development Indicators.

Note: GDP growth is measured in local currency units following Henderson, Storeygard, and Weil (2011, 2012).

a. Measured nighttime light intensity reflects outdoor and some indoor uses (Henderson, Storeygard, and Weil 2012, 999).

b. In particular, in work undertaken in collaboration with the National Geophysical Data Center of the National Oceanic and Atmospheric Association, results were found to be robust to the “trimming out” of abnormally dimly lit nights, which could be driven by power outages, from the nighttime lights data. See web-based annex 2A for further details of this robustness test.

c. The latest version of this product is available for download from http://ngdc.noaa.gov/eog/dmsp/download_radcal.html. The results reported in this chapter are based on an earlier (pre-general release) version of this product that was supplied by the National Oceanic and Atmospheric Association’s National Centers for Environmental Information Earth Observation Group.

d. <http://due.esrin.esa.int/globcover/> and https://lpdaac.usgs.gov/products/modis_products_table/mcd12q1. For more details on calibrating the lights data, see Roberts (2014).

e. Based on a limited sample and excluding outliers, an even stronger correlation comes through between growth in the intensity of nighttime lights and GDP for Indian districts during 1999–2010. Web-based annex 2B provides a more formal analysis of the empirical relationship between nighttime light intensity and GDP.

depends, in part, on the strength of their links with rural areas, particularly in less urbanized districts. In total, the index covers 699 districts across six of South Asia's eight countries (Afghanistan and Maldives are excluded because of a lack of poverty data). Districts that lacked any evidence of urbanization (that is, no light intensity measured above a threshold DN value of 13) were also excluded from the index.

To achieve the maximum score of 100 on the index, an area needs to perform the best in South Asia on all three dimensions. Because

performance may differ systematically across countries—due, for example, to differing macroeconomic conditions beyond the influence of local policy makers—the index is designed so that a score greater (or less) than 50 indicates that an area's performance exceeds (or falls below) the country average. Therefore, the index provides a relative, not an absolute, measure of performance. Box 2.2 lists the steps in constructing the prosperity index.

Figure 2.1 illustrates the variation in performance across districts. Weak performers were districts whose overall prosperity index

BOX 2.2 Constructing the prosperity index

The prosperity index is designed to make the best use of limited subnational data to provide a robust performance metric comparable across South Asia. Its construction involves four steps:

- *Step 1—measure “raw” performance on each of the three index components.* These components are the share of the population living on less than \$1.25 per day (poverty); intensity of nighttime light per square kilometer of land in 2010 (productivity);^a and estimated real GDP growth rate during 1999–2010 (dynamism).
- *Step 2—transform the raw performance measures into comparable units across the three components by converting them into standardized z-scores.* For each indicator, this step is achieved by subtracting the average performance across districts and dividing through by the standard deviation. Because performance is likely to differ systematically across countries in ways beyond the control of local policy makers in each country, the average performance and the standard deviation are allowed to vary across countries. Hence, for each indicator, the transformed score takes on a value greater than (less than) zero if a district outperforms (underperforms) the average district performance in the country. A score greater than +2 (less than –2) on an indicator shows that a district has performance more than (less than) two

standard deviations above (below) the average. These scores represent extreme out- or underperformance.

- *Step 3—combine the transformed scores across the three components.* A simple average of the z-scores across the three associated indicators is calculated. The resulting score shows a district's overall performance across the three components relative to the average for all districts in the country.
- *Step 4—rescale the combined scores to arrive at the final prosperity index.* To make the index more intuitive, it is rescaled such that a district will score 50 if it performs exactly at the country average on each of the three components; to achieve a score of 100 a district must be the best performer on all three components (which in reality no district is). Scores above (below) 50 imply performance above (below) the country average.

All districts lacking evidence of urbanization—in particular, lacking nighttime light intensity above a DN of 13 (see box 2.1)—were excluded from the index.

a. Performance on this indicator is measured in natural logs because the distribution of the intensity of nighttime light per square kilometer of land is heavily right-skewed, meaning that there are a small number of districts with extremely large values. Taking natural logs gives a more normal distribution, thereby facilitating comparability with the poverty and dynamism indicators and preventing results at the top end of the overall index from being unduly driven by the productivity indicator.

scores were less than or equal to 38, a performance that falls short of the average for the country by one standard deviation or more. Average performers have a score greater than 38 but less than 62. These districts have scores that fall within one standard deviation of their country averages.

Strong performers have a score equal to or greater than 62, and outperform their country averages by one standard deviation or more. Given the overall shape of the performance

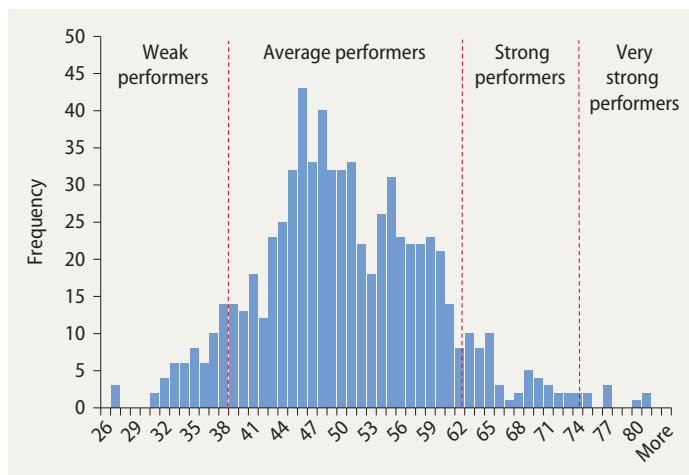
distribution, within this group a further subgroup of very strong performers can be identified.² These districts have prosperity index scores exceeding their country averages by two standard deviations or more, a score equal to or greater than 74. They represent extreme cases of positive relative performance.

Table 2.2 provides examples of districts in each category.³ The very strong performers are the districts that are home to the region's largest cities, except for Gautam Budh Nagar, which is, nevertheless, part of India's National Capital Region. Districts containing large cities are also evident in the strong category. By contrast, less urbanized districts containing smaller cities or towns appear more often in the average and weak categories.

The tendency of districts containing more populous cities to perform better on the prosperity index is also seen in figure 2.2, which shows a positive relationship between district population (relative to the country average) and performance.

As can be seen from figure 2.3 (panel a), this positive relationship is driven mainly by the productivity component. There is, therefore, a strong and significant positive relationship between district population and productivity. A similar, but much less strong, relationship exists between population and dynamism (figure 2.3, panel b). By contrast, there is no relationship between a district's

FIGURE 2.1 Performance distribution on the prosperity index across all districts

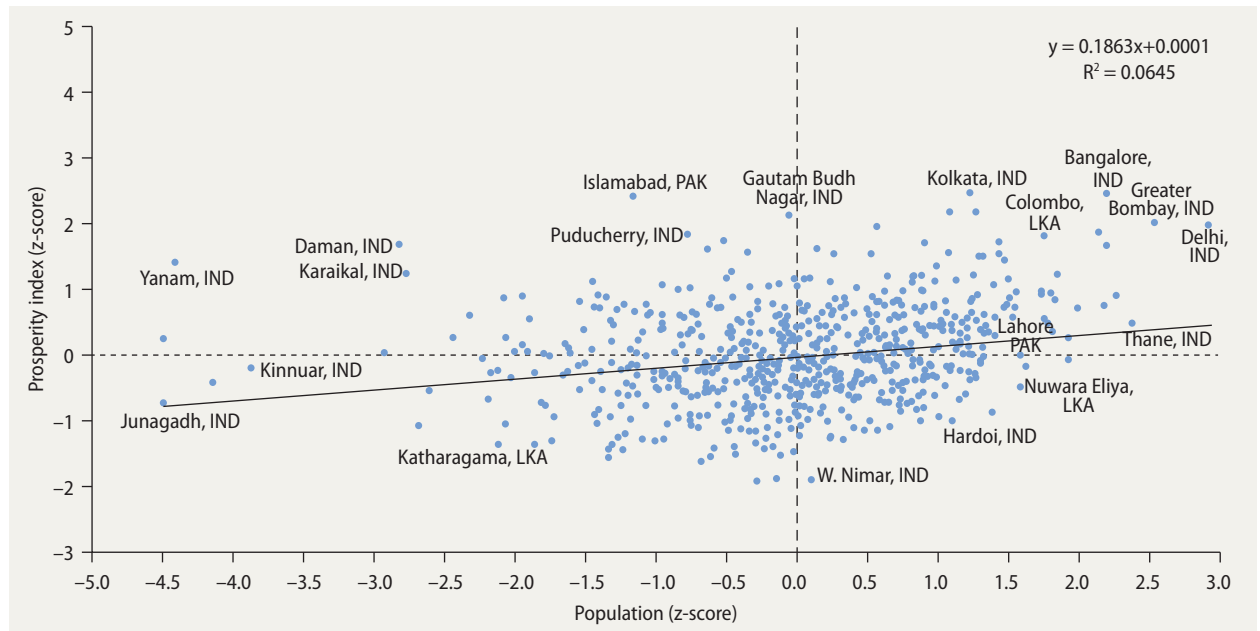


Note: All 699 districts are included.

TABLE 2.2 District performance on the prosperity index, by performance category

Category	Performance index range	Number of districts	Example districts
Very strong	≥ 74	9	Bangalore Urban (Karnataka, IND), Chennai (Tamil Nadu, IND), Delhi (Delhi, IND), Gautam Budh Nagar (UP, IND), Greater Bombay (Maharashtra, IND), Hyderabad (Telangana), Islamabad (ICT, PAK), Kolkata (W Bengal, IND), Sri Jayewardenepura Kotte (Colombo, LKA)
Strong	≥ 62	47	Dhaka (Dhaka, BGD), Puducherry (Puducherry, IND), Thimbirigasyaya (Colombo, LKA), Bagmati (Central, NPL), Karachi (Sindh, PAK)
Average	> 38 and < 62	587	Karandeniya (Galle, LKA), Kushtia (Khulna, BGD), Kullu (Himachal Pradesh, IND), Quetta (Balochistan, PAK), Bheri (Mid-Western, NPL), Phuentsholing (Chhukha, BTN)
Weak	≤ 38	56	Barwani (Madhya Pradesh, IND), Koralai Pattu North (Batticaloa, LKA), Bannu (KP, PAK), Sagarmatha (East, NPL)

Note: The Admin-1 (or, for Sri Lanka, Admin-2) unit to which a district belongs is shown in parentheses, along with country code. The Admin-1 (Admin-2 for Sri Lanka) level units are as follows: Bangladesh—divisions; Bhutan—*dzongkhags*; India—states; Nepal—development regions; Pakistan—provinces; and Sri Lanka—districts. BGD = Bangladesh; BTN = Bhutan; ICT = Islamabad Capital Territory; IND = India; KP = Khyber Pakhtunkhwa; LKA = Sri Lanka; NPL = Nepal; PAK = Pakistan; UP = Uttar Pradesh. Greater Bombay includes both Mumbai City and Mumbai Suburban districts of India, per the census of India's 2011 administrative divisions.

FIGURE 2.2 Prosperity tends to be higher in more populous districts, but with significant variation in performance

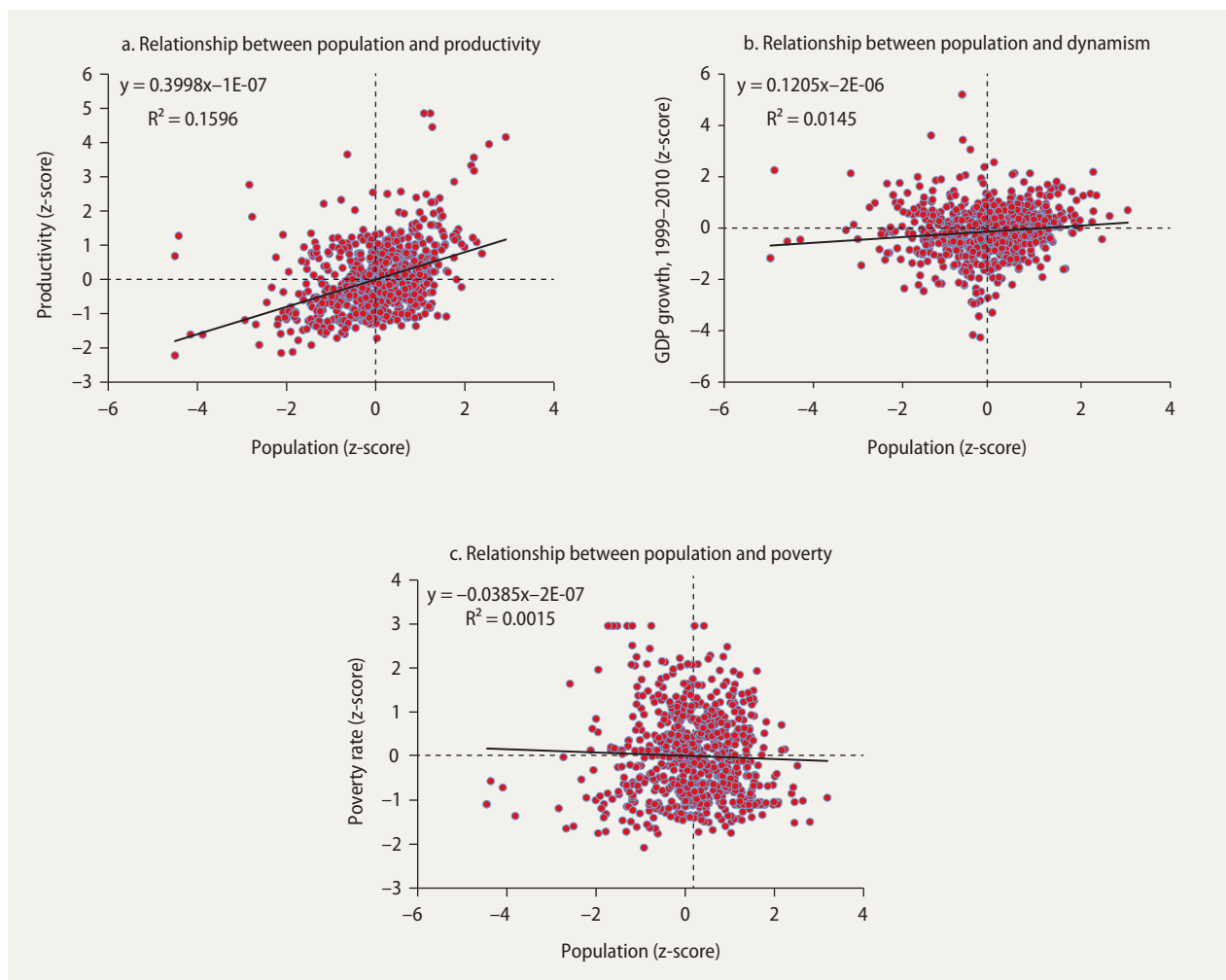
Note: Both the prosperity index and population are expressed as z-scores, where a value greater than (less than) zero indicates that a district has a prosperity index score (population) greater than (less than) the average for all districts in the same country. IND = India; LKA = Sri Lanka; PAK = Pakistan.

population and its poverty rate (figure 2.3, panel c).

The positive relationship between the productivity component and district population is consistent with the theory that South Asian cities are characterized by potentially powerful agglomeration economies arising from localization and urbanization economies (see “A framework for assessing urbanization and city performance” in the Introduction). For developed countries, evidence of such economies is to be found in that a doubling of city size, for a wide range of city sizes, is associated with an increase in productivity of 3–8 percent (Rosenthal and Strange 2004). The empirical evidence for South Asia suggests that agglomeration economies are stronger there than in developed countries (Chauvin, Glaeser, and Tobio 2013). The fact that more populous districts exhibit higher levels of productivity is in keeping with the existence of static agglomeration economies stemming from, for example, pooled labor markets and the availability of a wider variety of locally produced intermediate inputs. Similarly,

a positive, albeit less strong, relationship between district size and dynamism suggests the presence of dynamic agglomeration economies arising from knowledge spillover effects, which allow more heavily populated places to grow faster.

However, although performance on the prosperity index may be positively correlated with population, wide variation can be seen around the fitted line (figure 2.2). Places like Bangalore Urban and Puducherry (India), Islamabad (Pakistan), and Colombo (Sri Lanka) strongly outperform expectations based on population size alone, while districts like Nuwara Eliya (Sri Lanka) and West Nimar (India) show heavy underperformance. These variations stem, in part, from the apparent lack of relationship between a district’s population and its performance on the poverty component. District poverty rates appear to be more or less independent of district size. In short, while population seems to matter for productivity and growth, it has no bearing on district poverty outcomes.⁴

FIGURE 2.3 Relationship between district population and components of the prosperity index

Note: Poverty, productivity, GDP growth, and population are all expressed as z-scores, where a value greater than (less than) zero indicates that a district has an indicator value greater than (less than) the average for all districts in the same country.

Delving deeper into the relationships between district performance on each of the three components reveals that they tend to be positively related. Districts that perform well on the productivity indicator also tend to perform well on the poverty and dynamism indicators.⁵ This tendency breaks down, however, when one looks only at the group of very strong performers, where the correlation between productivity and dynamism becomes strongly negative (figure 2.4). For example, Hyderabad, India, lacks dynamism relative to

Gautam Budh Nagar despite its comparatively much higher level of productivity. This finding accords with the notion that, as a group, the region's major agglomerations are encountering diminishing returns due to, most notably, congestion of infrastructure, basic services, and land and housing markets, which are overwhelming these cities' agglomeration economies.

Figure 2.5 similarly shows a tendency for the districts containing some of the region's most populous cities to perform worse than

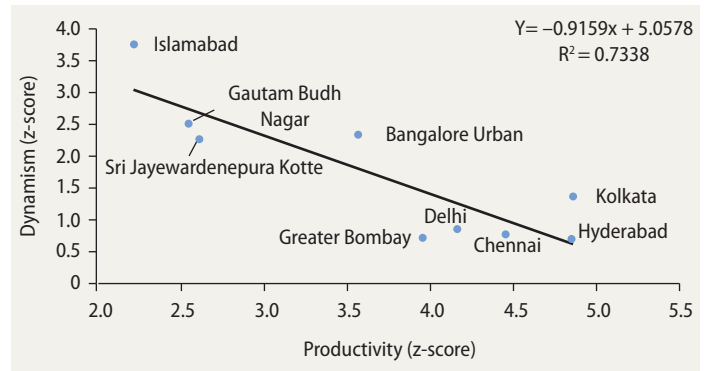
expected on dynamism given their overall prosperity index scores, notably Chennai, Delhi, Greater Bombay, Hyderabad, and Kolkata (all below the fitted line). But both Colombo and Bangalore Urban perform as expected on dynamism given their overall scores. Gautam Budh Nagar, on the periphery of Delhi, also exhibits more dynamism than predicted by its overall score.⁶ As will be seen later in this chapter (see “Spatial deconcentration of manufacturing”), these differences in dynamism reflect differences in the ability to retain vibrancy in core city areas in the face of a process of manufacturing suburbanization.

The remainder of this chapter analyzes patterns of urbanization, urban expansion (including the expansion of urban footprints), and local economic growth within South Asia, starting with cross-country differences in the level and pace of urbanization. These patterns provide the backdrop to the differences in performance on the prosperity index described in this section.

Variations in the level and pace of urbanization across South Asian countries

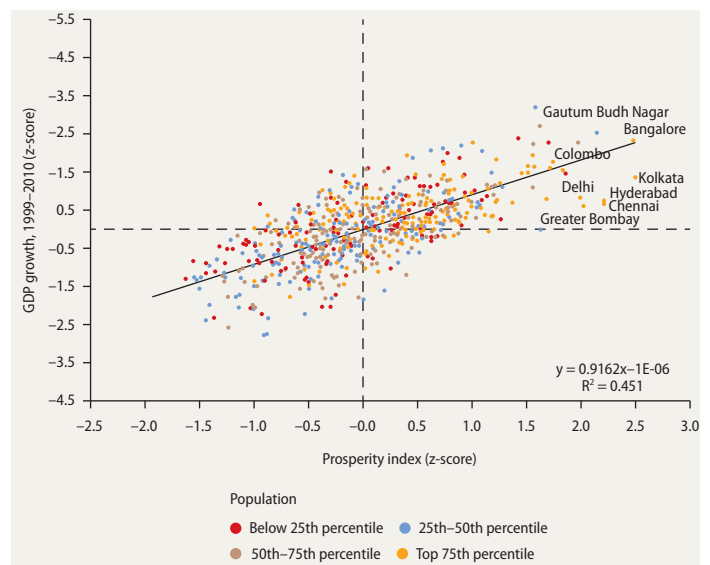
South Asia remains at an incipient stage of urbanization, and its pace of urbanization during 2000–11 was slow relative to both the East Asia and Pacific region and the historical experiences of today’s developed countries. Even though official statistics tend to understate the region’s level of urbanization—indicating the existence of significant “hidden” urbanization—the share of its population living in settlements with urban-like characteristics remains low compared with more developed regions of the world. Thus, according to the agglomeration index (AI), the share of South Asia’s population living in urban areas in 2010 was 52.5 percent (see chapter 1). Because India accounts for 75 percent of the region’s population, this figure closely reflects conditions in that country. India’s urban population share, as estimated using the AI, is 55.3 percent, which is also very similar to the AI-estimated urban

FIGURE 2.4 Very strong performing districts: A strong negative relationship between productivity and dynamism



Note: Both dynamism (as measured by the rate of real GDP growth, 1999–2010) and productivity (as measured by the intensity of nighttime lights per square kilometer of land) are expressed as z-scores, where a positive value indicates that a district’s performance exceeds the average for all districts in the same country.

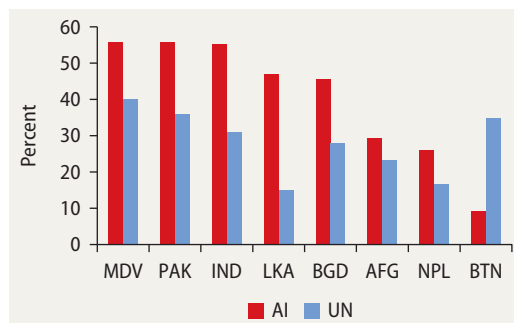
FIGURE 2.5 Prosperity score and dynamism by population quartile



Note: Both the prosperity index and rate of real GDP growth, 1999–2010, are expressed as z-scores, where a value greater than (less than) zero indicates that a district has a prosperity index score (real GDP growth rate) greater than (less than) the average for all districts in the same country.

shares of Maldives and Pakistan (figure 2.6). The other five countries all have urban shares (according to the AI) of less than 50 percent, with the urban shares of Afghanistan, Nepal, and especially Bhutan particularly low.

FIGURE 2.6 Share of the population classified as urban: Official definitions and the agglomeration index, 2010



Note: AI indicates urban shares based on the agglomeration index methodology; UN indicates estimates based on official national definitions of urban areas as taken from UN *World Urbanization Prospects: 2011 Revision*. For India, the official definition of “urban areas” includes census towns. AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; PAK = Pakistan.

Discrepancies between the official and AI figures for urban population shares

All eight countries also show large urban-share discrepancies between the AI and that based on a country’s official definition that comes from the United Nations’ *World Urbanization Prospects: 2011 Revision* database. Other than for Bhutan, AI urban shares exceed the official figures, pointing to hidden urbanization, given South Asia’s relatively strict official definitions compared with other global regions.⁷

In Bangladesh, India, Maldives, Pakistan, and Sri Lanka, the implied official underestimations are particularly wide, suggesting similarly large hidden urbanization—in other words, sizable portions of their populations are living in settlements that, although they may exhibit urban characteristics, are governed as rural areas. In the most extreme case of Sri Lanka, the difference between the AI-estimated urban share and the estimate based on the country’s official definition of urban areas suggests that as much as one-third of its entire population may be living in unrecognized urban settlements.⁸ These unrecognized urban settlements are likely to include former town councils that, before Sri Lanka’s 1987 tightening of its definition,

were officially classified as urban alongside the country’s municipal and urban councils (World Bank 2012). The downgrading of these town councils to rural areas (*pradeshiya sabha*) contributed to a fall in the country’s official urban share from 21.5 percent in the 1981 census to 14.6 percent in the 2001 census (see chapter 1, box 1.1).

In India, the extra population implied to be living in unofficial urban settlements is in addition to the growing share of the country’s urban population living in “census towns.” These towns are settlements that the Census of India already recognizes as urban and that are included in the official urban share estimates, even though they are administratively rural. Some of these census towns are large. According to the 2011 census, 20 census towns have populations greater than 100,000, the largest of which, Noida, has a population of 642,381,⁹ or larger than Sheffield, the fifth-largest “primary” urban area in the United Kingdom. One of the most striking results of India’s 2011 census was the dramatic growth in the number of census towns since the previous census (box 2.3).

Bhutan is the exception with regard to the underestimation of its urban share by official figures, being the only South Asian country with an AI urban share less than its official urban share. This outcome largely reflects the country’s very low population density, which in 2010 was just 18.7 people per square kilometer. (The average population density across South Asia that year was 432 people per square kilometer, more than 23 times as high.)¹⁰

The relatively slow pace of South Asian urbanization

The relatively slow regional pace of urbanization (see chapter 1) is reflected in country data for Afghanistan, India, Pakistan, and Sri Lanka (figure 2.7).¹¹ For Sri Lanka, official estimates indicate that the share of the population living in towns and cities actually fell slightly between 2000 and 2010. Bangladesh and Nepal experienced faster urbanization, with rates more on par with

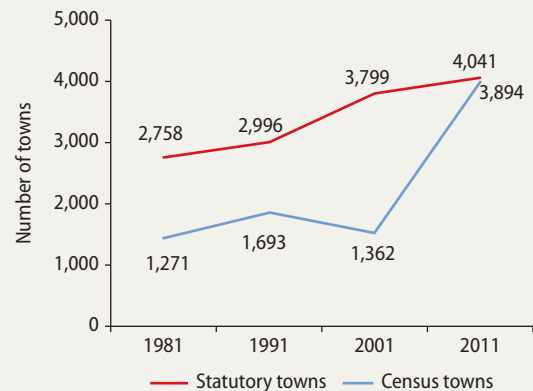
BOX 2.3 India's rapidly proliferating census towns

Census towns are those that the Registrar General and Census Commissioner of India, which is responsible for the country's census operations, classifies as urban even though they lack statutory status and are therefore formally governed as rural areas. One of India's 2011 census findings that has attracted particular attention is the rapid growth in the number of census towns since the 2001 census. India in 2011 had almost as many census towns as statutory ones (each either side of 4,000; figure B2.3.1), and their overall share of the official urban population increased from 7.4 percent in 2001 to about 14 percent in 2011. The locations of the new census towns are quite dispersed, with only 13.1 percent of their population within 25 kilometers of India's million-plus population cities; only about one-third of all new census towns are close to a Class I town (a town with a population in excess of 100,000).

The three criteria that the Registrar General uses to identify census towns are rather stringent: the town must have a population of at least 5,000, a population density of at least 400 people per square kilometer, and at least 75 percent of its male workforce engaged in the nonfarm

sector. These criteria are more demanding than those used by the agglomeration index to define areas as "functionally" urban; therefore, the aggregate population of the census towns (about 53 million) is only a lower-bound estimate of the number of Indians living in urban-like areas that are governed as though they were rural.

FIGURE B2.3.1 Number of Indian statutory and census towns, 1981–2011



Source: Pradhan 2013.

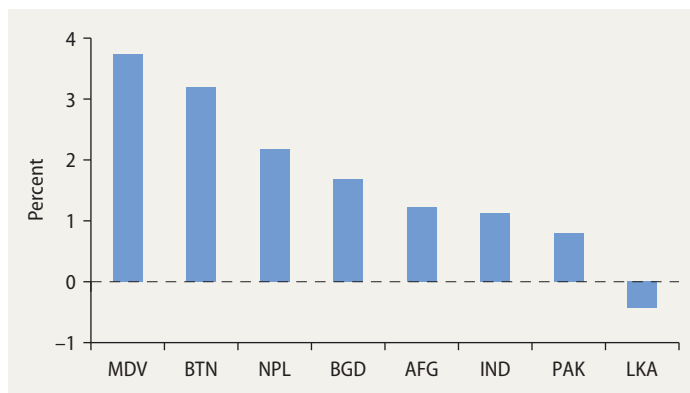
today's developed countries in the late 19th century (see chapter 1, figure 1.3). Yet they still fall short of the pace in the East Asia and Pacific region since 2000. Only Bhutan and Maldives have matched the pace of this region.

Urban population growth and its drivers

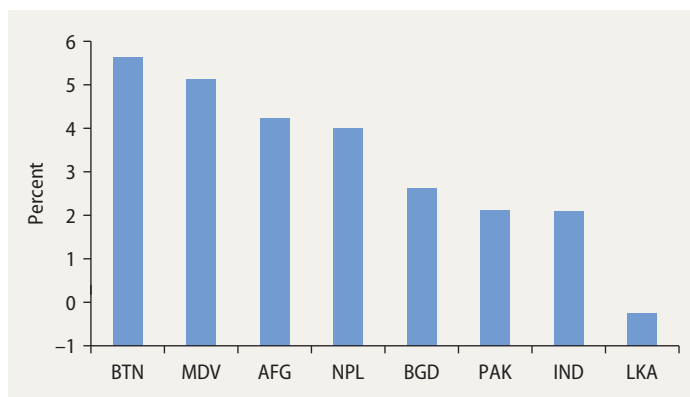
Whereas the pace of urbanization just discussed (measured by the growth rate of the urban population share) indicates the speed at which a country is transitioning from a rural to an urban society, the growth rate of its urban population measures the speed at which the absolute number of people residing in towns and cities is growing. Although the

two are related, the distinction is important, because a country could have fast urban population growth without becoming more urbanized if urban and rural areas were growing at largely similar rates. In this case, towns and cities will still have to provide services to an expanding number of people, even though nationally society is not becoming more urbanized.

In all South Asian countries, growth rates of urban population exceed the corresponding growth rates of urban shares (figure 2.8 versus figure 2.7), meaning that population growth continues in rural areas. Sri Lanka aside, all countries' urban populations grew faster than 2 percent a year, showing departures from their growth rates of urban share. For instance, Maldives has been the

FIGURE 2.7 Annual growth rate of urban share of population, by country, 2000–10

Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka;
 MDV = Maldives; NPL = Nepal; PAK = Pakistan.

FIGURE 2.8 Annual growth rate of urban population, by country, 2000–10

Source: Calculations based on UN *World Urbanization Prospects: 2011 Revision* data.
 Note: AFG = Afghanistan; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka;
 MDV = Maldives; NPL = Nepal; PAK = Pakistan.

most quickly urbanizing country since the beginning of the century, but the rate of urban population growth has been slightly higher in Bhutan. Likewise, Pakistan's urban population growth rate has been marginally faster than that of India even though India has been the more rapidly urbanizing. These differences reflect differences in underlying rates of national population growth.¹²

Urban population growth stems mainly from natural increase or reclassification

In addition to natural increase, urban population growth can occur through the reclassification of settlements from rural to urban and through net rural-urban migration. Though the tendency often is to think of urban population growth as being driven by rural-urban migration, the majority of such growth in South Asia has actually been due to either natural increase or reclassification. For example, 44 percent of the urban population growth that India experienced between 2001 and 2011 was due to natural increase and 29.5 percent to the reclassification of rural settlements into census towns (see box 2.3; Pradhan 2013). Similarly, in Nepal migration contributed just less than one-third of total urban population growth during the 1990s (though this rises to as much as 40 percent when considering only Kathmandu; Muzzini and Aparicio 2013a). For Pakistan, although recent data are lacking, the contribution of rural-urban migration to total urban population growth during 1981–98 was just 26 percent (Karim and Nasar 2003).^{13, 14}

China stands in stark contrast: 56 percent of its urban population growth between 2000 and 2010 was attributable to net rural-urban migration (World Bank and DRC 2014), despite its *hukou* (household registration system), which sets powerful disincentives for rural residents to move to urban areas by denying them rights of access to public education and health benefits (Chan and Buckingham 2008; Bosker, Deichmann, and Roberts 2015).

This small migration contribution to urban population growth in South Asia suggests that the region's towns and cities are relatively unattractive to would-be migrants from rural areas. Evidence on the determinants of rural-urban migration, including in South Asian countries like Nepal (Shilpi, Sangraula, and Li 2014) and Sri Lanka (World Bank 2011), has established that a city's attractiveness for rural migrants depends not only on income-earning opportunities but also on whether it can offer better amenities, including basic infrastructure and services. But although *average* health

outcomes tend to be higher in South Asia's urban areas than in its rural areas, for the *poorest* in each of these areas the opposite generally holds (box 2.4).

The picture for Sri Lanka is somewhat different. As elsewhere in South Asia, cities appear to be unattractive to migrants, but in Sri Lanka not so much because of poor urban living conditions as because of the country's

impressive progress in achieving spatial equity between rural and urban areas in the provision of basic public services and living standards (World Bank 2011). For example, in 2012, the literacy rate among the population ages 15–24 years was 98.6 percent in Sri Lanka's rural sector, compared with 98.9 percent in its urban sector.¹⁵ The country's Household Income and Expenditure Surveys

BOX 2.4 Urbanization and health in South Asia—A missed opportunity?

The experience of the Industrial Revolution in the 18th and 19th centuries has shaped modern perceptions of urbanization and health because the populations of rapidly growing cities suffered worse health conditions than those in rural areas owing to poor and overcrowded housing and sanitation conditions. But by the early 20th century, as a result of better sanitation, advances in medical technology, and overall reduced urban poverty, urban-rural health disparities reversed. Household survey data for urban Bangladesh, India, Nepal, and Pakistan reflect both these negative and positive scenarios, in a mixed health picture for the region.

Household surveys indicate that the negative urban health scenario applies to the poorest in urban areas. Compared with rural populations, under-five mortality was higher among urban households in India (2005–06) and Nepal (2011) in the bottom socioeconomic quintile, in Pakistan (2006–07) in the bottom two quintiles, and in Bangladesh (2011) in all but the highest quintile.^a

Overall averages for health and nutrition are, however, generally better for urban than for rural populations (in India, Nepal, and Pakistan; in Bangladesh urban averages are similar to rural, though still slightly better). These better outcomes occur because the majority of urban populations are in higher socioeconomic quintiles, whereas the reverse is true for rural populations (figure B2.4.1).

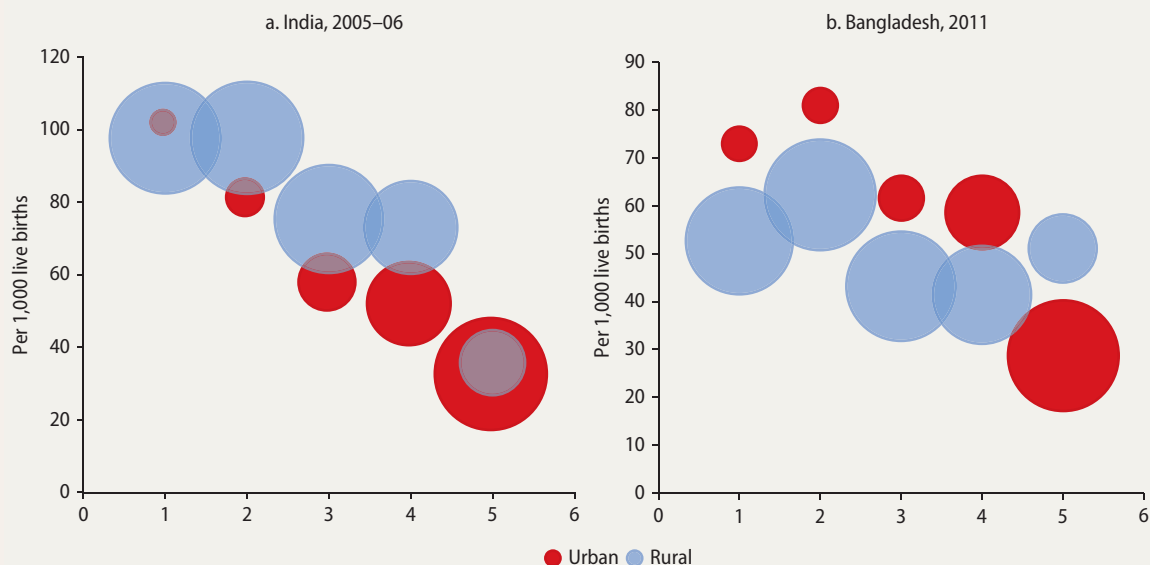
Better socioeconomic status in urban areas translates into better nutrition and improved access to safe water and adequate sanitation. It also results in better access to health care, and (by contrast with health outcomes) surveys measure higher services utilization across socioeconomic groups. For example, in all quintiles across the four countries, mothers resident in urban areas are more likely to give birth in a health facility. For Pakistan, a large part of this difference is driven by higher utilization of private health facilities, particularly by better-off quintiles (figure B2.4.2, panel a). And in all four countries and at all socioeconomic levels, utilization of public services for delivery care in urban areas exceeds, or is at a similar level to, that in rural areas (figure B2.4.2, panel b).

What conclusions can be drawn? That better average health outcomes in urban areas reflect greater prosperity among urban populations seems to reflect an overall beneficial impact of urbanization. A more specific agglomeration benefit may be a concentration of private sector health services that helps translate better economic conditions into better health outcomes. Policy implications for government include addressing the economic burden of out-of-pocket health spending by households—including reducing the risk of impoverishment due to health care costs—and improving the functioning and quality of private services.

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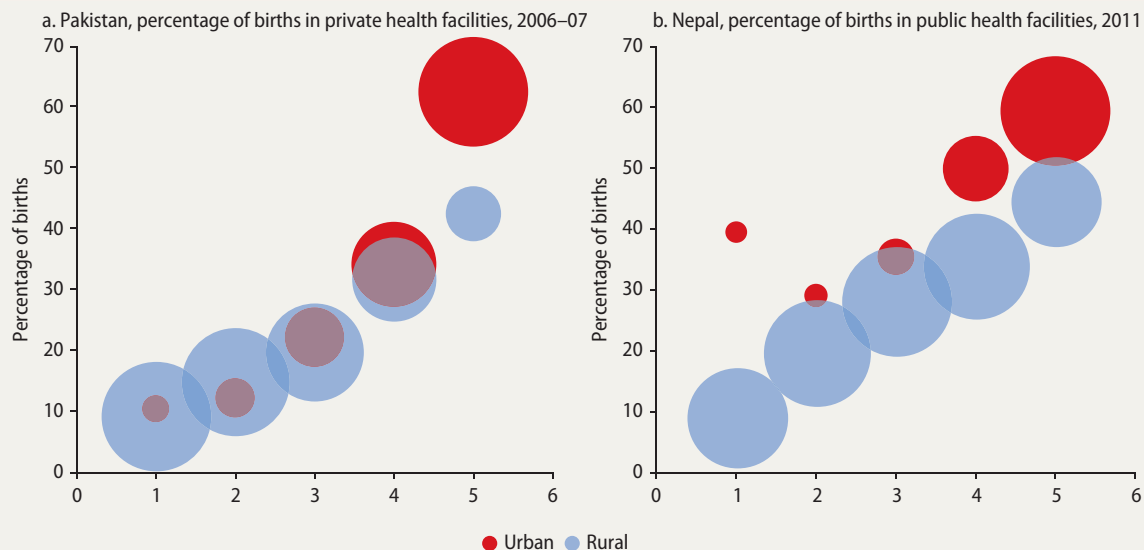
BOX 2.4 Urbanization and health in South Asia—A missed opportunity? (continued)

FIGURE B2.4.1 Under-five mortality rates across socioeconomic index quintiles



Note: Quintiles are defined using an index that reflects the relative socioeconomic status of households (based on asset ownership and other data), and are calculated using the entire sample (that is, both urban and rural households together). Data points are circles proportionate to the population in each quintile.

FIGURE B2.4.2 Percentage of births in health facilities across socioeconomic index quintiles



Note: Quintiles are defined using an index that reflects the relative socioeconomic status of households (based on asset ownership and other data), and are calculated using the entire sample (that is, both urban and rural households together). Data points are circles proportionate to the population in each quintile.

BOX 2.4 Urbanization and health in South Asia—A missed opportunity? (continued)

The data also hint at a large, missed opportunity. Child mortality and malnutrition indicators in particular show that South Asia's urban poor have health outcomes as bad as or worse than the rural poor. More extensive and better targeted government action would help address such inequalities, while contributing to a social safety net that would provide poor households with better access to the benefits of agglomeration. Such action would take the form of ensuring adequate provision

of basic health services (such as immunization and preventive care for chronic conditions) and of other basic public services with health impacts, notably improved water supply and sanitation.

Sources: For Bangladesh, Nepal, and Pakistan, analysis was based on data from Demographic and Health Surveys for the following years: Bangladesh, 2011; Nepal, 2011; and Pakistan, 2006–07. For India, analysis was based on 2005–06 National Family Health Survey data.

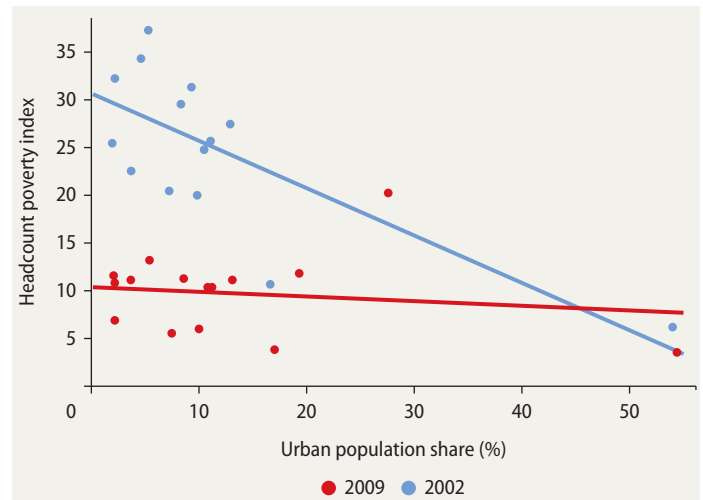
a. This pattern is even more evident for chronic malnutrition among under-five children in Bangladesh and India, the prevalence of which in both countries was higher in urban areas for all but the highest socioeconomic quintile.

likewise reveal a dramatic convergence of poverty rates across its districts during 2002–09 (figure 2.9). Thus, in 2002 a district's urbanization was significantly negatively related to its headcount poverty rate; by 2009 this relationship had disappeared. This finding suggests that the impetus for “push” migration—rural residents moving to a city more out of distress than for, say, higher wages—is generally weak in Sri Lanka, which may help explain the stability of the country's urban population share.

Many towns and cities in South Asia (Sri Lanka aside) are unattractive destinations for rural migrants because of the disappointing conditions they offer. This view is consistent with the more general picture of cities struggling with congestion forces emanating from the pressure of population on infrastructure, basic services, land, housing, and the environment. Yet urban areas' populations have still been growing, in part reflecting relatively high urban fertility (natural increase). Emerging academic research suggests that a self-reinforcing loop between such fertility and excessive congestion costs may mean that the region's megacities are stuck in a Malthusian trap from which they will find it hard to escape without decisive policy actions (box 2.5).

High costs of migration may be another potential factor in the relatively small

FIGURE 2.9 Convergence of poverty rates across Sri Lankan districts, 2002–09



Source: Based on analysis of data from the 2002 and 2009 Household Income and Expenditure Surveys for Sri Lanka.

Note: Urban shares of the population for each district are calculated by aggregating the populations of municipal and urban councils. The poverty data for 2002 are matched with urban share data for 2001, while the poverty data for 2009 are matched with urban share data for 2012. Analysis is restricted to the 15 (out of 25) districts for which data were available.

contribution of rural-urban migration to urban population growth in South Asia. Such costs include not only the monetary costs of moving but also nonmonetary costs from, for example, differences in culture between origin and destination and leaving the family behind. Although countries in the region do not

BOX 2.5 The rise of the South Asian megacity and the Malthusian trap

South Asia is home to 6 of the world's 29 megacities (that is, those with populations of at least 10 million): Bangalore, Delhi, Dhaka, Karachi, Kolkata, and Mumbai. Only six megacities—London, Los Angeles, New York, Osaka, Paris, and Tokyo—are now in developed countries. But even as recently as 1950 New York claimed the title of the world's largest city, with Tokyo, London, and Paris all immediately behind. The rise of the South Asian and developing-country megacity is a largely post-World War II phenomenon. What accounts for this rise? And what differentiates it from the rise of earlier megacities of the developed world?

In newly emerging research, academic economists Remi Jedwab and Dietrich Vollrath (2015) argue that—in keeping with the general finding of this chapter that urban population growth has been largely a matter of natural increase—the rapid growth of developing-country megacities during the last 60–70 years has also been mainly driven by natural population increase. A post-World War II acceleration in the natural rate of population growth in developing countries was attributable to a sharp drop in crude death rates, caused by the drive to make vaccines and new treatments (such as antibiotics) available globally after the 1940s. The sharp drop in death rates allowed developing-country megacities to grow in absolute size at rates that had not previously been possible.

Much of the growth of the developed-world megacities took place over centuries rather than decades, and with a large portion of their growth before the early 20th century (and before the arrival of vaccines and modern medicines). Their growth occurred against a backdrop of high crude death rates and relatively slow rates of natural population growth. In stark contrast with the average developing-country megacity, their growth was driven primarily by rural-urban migration and accompanying urbanization.

Jedwab and Vollrath (2015) hypothesize that developing-country megacities are stuck in a self-reinforcing Malthusian trap that reinforces their relative lack of prosperity and livability. Although such megacities benefit from

agglomeration economies, absolute increases in population since World War II have been so great that these agglomeration economies have been overwhelmed by urban congestion forces, stifling growth of productivity and real wages through a variety of mechanisms (for example, lost productive time of workers due to excessive commute times, poor human capital outcomes owing to crowding of educational services, and the Malthusian force of excessive labor supply growth) and contributing to continued high rates of natural population increase by slowing the demographic transition. Developed-world megacities, by contrast, because they increased their populations over a longer period, avoided being overwhelmed by congestion costs, allowing for positive real wage growth, which helped create lower crude birth rates. By the time vaccines and new medicines became available, the megacities of today's developed countries had already made the demographic transition (from high birth and death rates to low birth and death rates) and avoided the Malthusian trap.

What are the policy implications of this hypothesis? One is that South Asian megacities could escape the trap if policies produce a large enough drop in congestion costs to allow an upward jump in wages and incomes, thereby slowing birth rates. This outcome could potentially be achieved through, for example, large-scale new town development on greenfield sites aimed at slowing, or even reversing, population growth in the megacities. But the historical experience with new town development has been mixed, with many new towns failing to reach planned population targets (World Bank 2008). Alternatively, investments in congestion-reducing technologies like improved inter- and intracity transport systems and improved basic services, with reforms to alleviate congestion in land, housing, and labor markets, could, on a sufficient scale, succeed. Achieving these outcomes will require fundamental reforms aimed at improving governance and financing of South Asian megacities (see chapter 3).

Source: Based on Jedwab and Vollrath 2015.

impose the sort of formal restrictions on migration that exist in China, geographic labor mobility appears to be generally lacking; for example, whereas 9 percent of people in the United States lived in a different state five years ago and 40 percent were born in a different state, the equivalent figures for India, according to 2001 census data, were just 0.4 percent and 3.6 percent (Glaeser, Chauvin, and Tobio 2011).

A lack of labor mobility such as this can prevent the relaxation of congestion pressures in urban labor markets in which demand is bidding up wages. It also hinders the widespread spillover of urban agglomeration benefits to rural areas—by increasing labor supply in urban areas and reducing it in rural areas, rural-urban migration can stimulate rural-urban wage convergence. Empirical evidence suggests that this was a historically important force in promoting rural-urban integration during the urbanization of today's developed countries (World Bank 2008).

Population growth across urban hierarchies and geographic space

Drilling down to data on individual urban settlements allows the analysis to consider patterns of population growth across towns

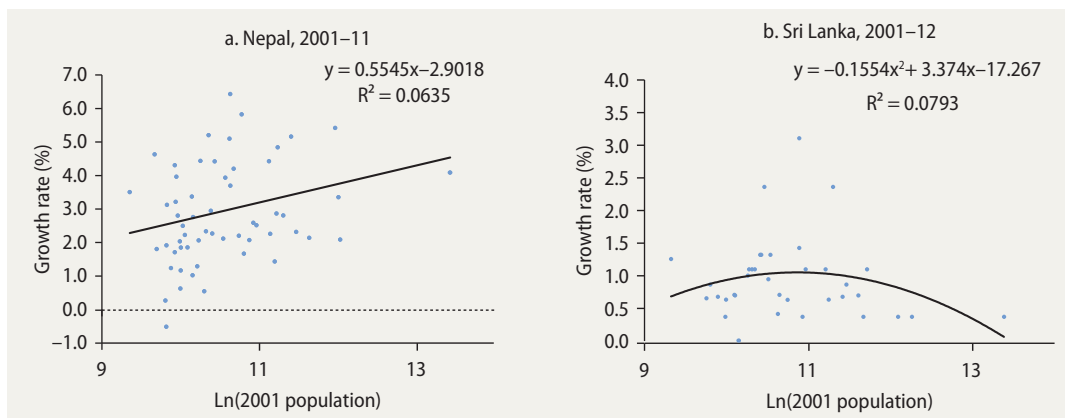
and cities of different sizes for four of South Asia's eight countries—Bangladesh, India, Nepal, and Sri Lanka—in 2001–11.¹⁶

Relationship between an urban settlement's initial population and its subsequent growth rate

The main finding that emerges from this analysis is that, for both Bangladesh and India, no relationship can be discerned between an urban settlement's initial population and its subsequent growth rate. Nepal and Sri Lanka display more evidence of a relationship. In Nepal larger cities tend to grow faster than smaller ones, while for Sri Lanka, medium-sized cities, led by Vavuniya, Batticaloa, and Kattankudy, show some tendency to grow faster (figure 2.10).

The relationships observed for Nepal and Sri Lanka might be explained by their levels of economic development. Whereas Nepal remains a low-income country, with GDP per capita of \$2,173 in 2013, Sri Lanka qualifies as a lower-middle-income country, with GDP per capita more than four times as high.¹⁷ As the World Bank's *World Development Report 2009* notes, at low levels of GDP per capita, population tends to spatially concentrate, but as countries move to middle-income status population growth increasingly spreads to

FIGURE 2.10 City population growth rate and initial population



Source: Based on data extracted from City Population (<http://www.citypopulation.de>).

Note: For Sri Lanka, 2012 population levels were derived by extrapolating the latest available estimates (generally from 2007) using district population growth rates in 2001–12; district population growth rates were calculated using census data. These district population growth rates were adjusted to account for a change in the method of enumerating the population between the 2001 and 2012 censuses—from the de facto method used in 2001 to the de jure method used in 2012 (see Sri Lanka, Department of Census and Statistics [2012] for further details).

secondary urban centers (World Bank 2008). However, even for Nepal and Sri Lanka, differences in city size account for only a small proportion of the overall observed differences in population growth rates across cities (figure 2.10).¹⁸

From a population perspective, towns and cities in South Asia show a strong tendency to grow in parallel, so that urban hierarchies exhibit great stability. For example, the ranking of cities according to size within Nepal's urban hierarchy in 2011 was largely identical to that in 2001.¹⁹ India's urban hierarchy has been stable for more than a century (Swerts, Pumain, and Denis 2014). South Asia is by no means unique in this respect, and the tendency of a city's population growth to be independent of its size is, in fact, a common feature of urbanization processes—so much so that the tendency has acquired the status of

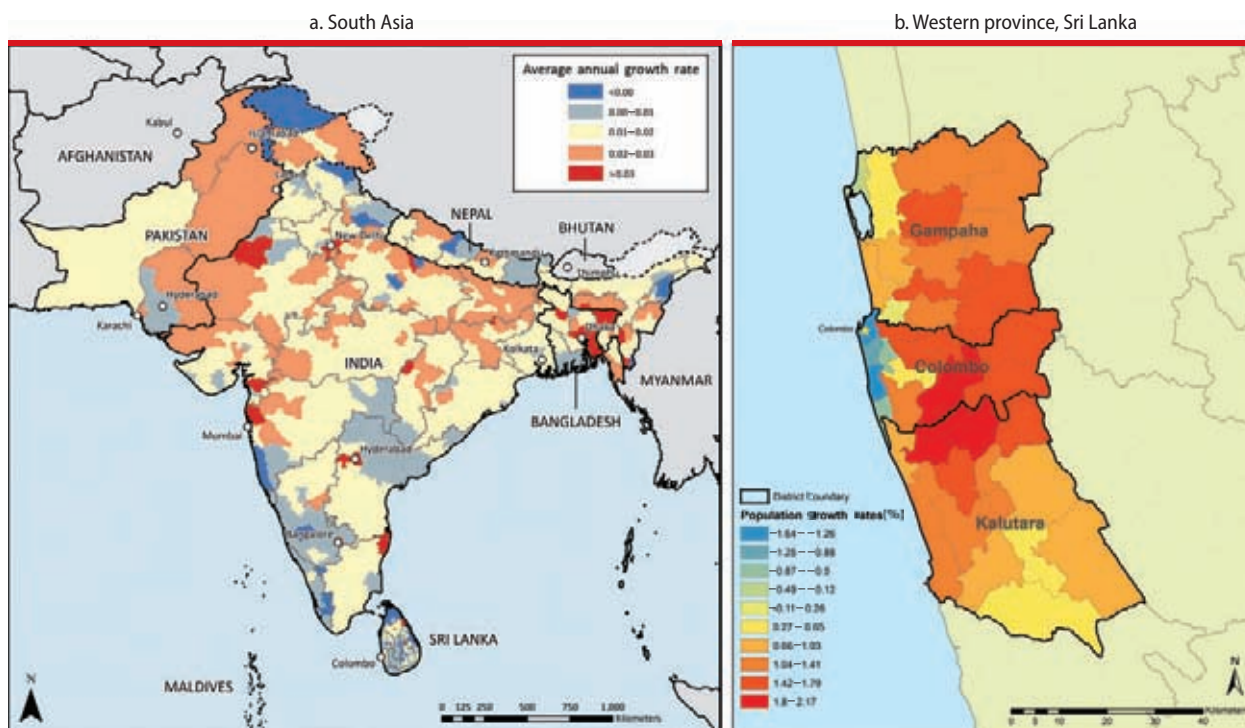
a “law,” namely, Gibrat's law (Gabaix and Ioannides 2004).

The emerging policy lesson is that South Asian countries need to learn to live with their existing urban hierarchies. The megacities of today will remain the megacities of tomorrow, and the same is likely to be true of large, medium, and small urban settlements. All these cities will grow in population as their relative sizes remain, more or less, the same. Policy makers need to accept this reality and focus on addressing the congestion constraints that inhibit prosperity and livability in cities of different sizes.

Variation in population growth rates across districts—Two features

Adopting a more spatial perspective, figure 2.11 (panel a) shows the variation in population growth rates across subnational

FIGURE 2.11 Patterns of population growth across districts, years including 2001–10



Source: Based on data for subnational administrative units from national housing and population censuses extracted from City Population (<http://www.citypopulation.de>).

Note: For Bangladesh, India, and Nepal, annual population growth rates are for 2001–11; for Sri Lanka, 2001–12; for Pakistan, 1998–2010. The population figures for Pakistan 2010 are also estimates given the absence of a census since 1998. Afghanistan, Bhutan, and Maldives are not included because of the absence of data.

administrative units (“districts”) in South Asia.²⁰ Two features stand out.

First, major cities such as Delhi, Hyderabad, Kolkata, and Mumbai in India and Colombo in Sri Lanka show a large growth differential between the districts in which the cities are located and some of the immediately neighboring districts. Population growth has been faster in these neighboring districts than in the districts containing these cities. The district of Delhi experienced population growth of 1.9 percent a year, but Gurgaon, just to the south, grew at 4.5 percent a year. Similarly, whereas Greater Bombay and Hyderabad had population growth rates of 0.4 percent and 0.5 percent, respectively, Thane (which borders Greater Bombay to the north) and Rangareddy (which neighbors Hyderabad to the west) grew at 3.1 percent and 3.9 percent a year, respectively. Kolkata’s population declined 0.19 percent a year, whereas populations in the remainder of the districts of West Bengal grew at 1–2 percent a year. Finally, outside India, Colombo’s experience was similar to Kolkata’s: while populations contracted in several DS-divisions in the district of Colombo—Colombo, Dehiwala–Mount Lavinia, Moratuwa, Sri Jayewardenepura Kotte, and Thimbirigasyaya—the immediately surrounding localities grew relatively quickly (figure 2.11, panel b).^{21,22}

Dhaka provides an exception to this trend of relatively slow population growth compared with neighboring areas. Its growth rate was 3.4 percent a year, making it the fourth-fastest growing district in Bangladesh. From the figure, Kathmandu also appears to be an exception, but care in interpretation is required, because the figure hides significant spatial variation within Bagmati, Kathmandu’s district. In fact, although population growth in Kathmandu Metropolitan City has been rapid, it was even faster in the peripheral municipalities of Kirtipur and Madhyapur Thimi and in peri-urban areas officially classified as rural (Muzzini and Aparicio 2013a).

The second important feature of figure 2.11 is that, outside major cities,

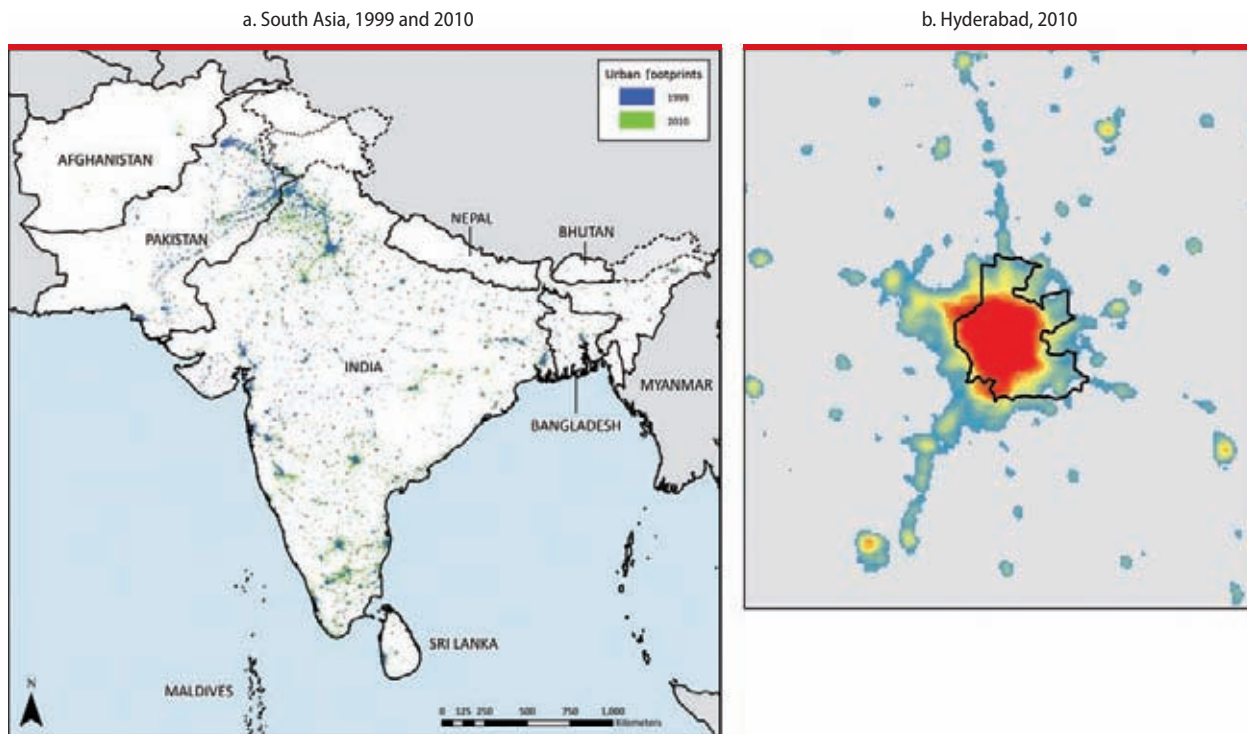
annual population growth rates were fairly uniform spatially: for 65 percent of districts, the rate was 1–3 percent. This relative uniformity aligns with the notion that the majority of urban population growth within South Asia has taken place through natural increase and the reclassification of rural settlements rather than through heavy rural-urban migration.

Rapid relative expansion of urban footprints and the rise of the multicity agglomeration

Because some of the fastest population growth rates have occurred in districts that abut districts containing major cities, these cities may have quickly expanding urban footprints, spilling over formal administrative boundaries. Using nighttime lights data (see box 2.1), figure 2.12 (panel a) shows for 1999 and 2010 the urban footprints of all South Asian cities with a population circa 2010 of more than 100,000.²³ As figure 2.12 (panel b) illustrates for Hyderabad, urban footprints have a strong tendency, especially for the largest cities, to spill over administrative boundaries.

This trend is not only evident in the nighttime lights data but also from other (higher-resolution) sources of satellite imagery. The finding is mirrored in results from the Indian Institute for Human Settlements (IIHS 2011) for Kolkata (figure 2.13, panel a). Figure 2.13, panel b presents estimates from IIHS of the proportion of built-up area and population located outside official boundaries for India’s 12 largest cities in 2010. The proportion of built-up area outside a city’s official boundary often exceeds that within its boundary, especially in Chennai and Kolkata. In all cases, the proportion of built-up area outside a city’s boundary exceeds the corresponding population.

IIHS reports that expansion of built-up urban areas outside official boundaries has been faster than that for population for 8 out of 12 of India’s largest cities. The main exceptions are Hyderabad and Agra,

FIGURE 2.12 Urban nighttime light footprints

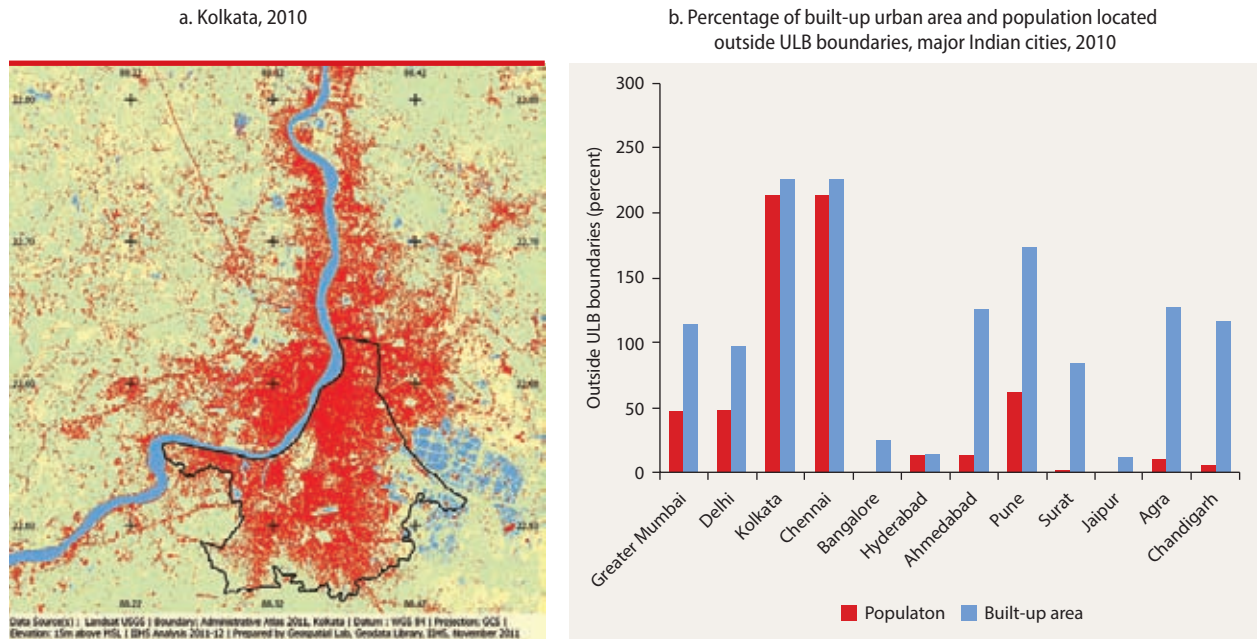
Source: Based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

Note: In panel b, Hyderabad's administrative boundary is shown in black. The city's urban nighttime light footprint is defined using a DN = 13 threshold (see box 2.1) with warmer colors corresponding to higher levels of nighttime light intensity.

which appear to have experienced significant densification in peripheral areas outside official boundaries.

The spillover of cities across their boundaries creates challenges for metropolitan coordination in delivering basic services and providing infrastructure. The scale of this expansion has grown over time, as is evident from the rapid growth of urban footprints. For example, the region's urban night-lit area expanded at slightly more than 5 percent a year during 1999–2010, against urban population growth for the region of a little less than 2.5 percent a year.²⁴ Cities, therefore, grew in area about twice as fast as they grew in population. This finding is similar to most international experience (Angel and others 2011) and suggests an overall tendency toward declining average city population densities and increasing urban sprawl.

The foregoing overall regional picture of rapid relative expansion of urban footprints again largely reflects trends in India, whose share of total urban night-lit area in South Asia in 2010 was 57.8 percent. However, the fastest rates of expansion in urban area occurred in Afghanistan and Bhutan, which recorded annual growth rates higher than 13 percent and which showed faster rates of expansion relative to urban population than did the region overall. Sri Lanka had the fastest expansion of urban area relative to urban population, with a ratio of more than seven—whereas the country's total urban area grew at a rate close to that for the region overall, its urban population growth rate was much slower than for the region overall. The rapid expansion of urban area relative to urban population reflects the sprawl and ribbon development that are characteristic of Sri Lanka's urban development (World Bank 2012).

FIGURE 2.13 Built-up urban area located outside official boundaries

TABLE 2.3 Growth of multicity agglomerations, South Asia

Country	Number of agglomerations		Number of cities in agglomeration				Area (square kilometers)		
	1999	2010	1999		2010		1999	2010	Annual growth (percent)
			Mean	Maximum	Mean	Maximum			
India	23	30	4.09	17	4.73	38	22,240	75,499	11.75
Pakistan	12	10	4.00	10	6.50	29	1,536	2,558	4.75
Bangladesh	–	2	–	–	2.00	2	–	1,340	–
Sri Lanka	1	2	5.00	5	3.50	5	182	205	1.08
Nepal	1	1	2.00	2	2.00	2	12,969	12,495	–0.30
South Asia	37	45	3.92	17	4.89	38	36,927	92,097	8.66

Source: Based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

Note: Afghanistan, Bhutan, and Maldives are not included in the table because they had no agglomerations in either 1999 or 2010.

By contrast, Bangladesh, Nepal, and Pakistan all experienced slower rates of growth of urban area, in absolute terms and relative to the growth of their urban populations.

South Asia is home to a growing number of multicity agglomerations, where a multicity agglomeration is defined as a continuously lit belt of urbanization containing two or more cities, each of which had a population of at

least 100,000 living within its administrative boundaries in 2010. In 1999, there were 37 such agglomerations; in 2010, 45 (table 2.3). India added seven agglomerations during the period, while Sri Lanka witnessed the emergence of the Galle-Matara agglomeration to add to its Colombo agglomeration. Bangladesh saw the emergence of its first two agglomerations—the Dhaka agglomeration

(Dhaka and Rugganj) and the Brahmanbaria agglomeration (Brahmanbaria and Bhairab).

Pakistan experienced a net decline in agglomerations from 12 to 10 as new agglomerations were outpaced by the merging of existing agglomerations. The Lahore agglomeration expanded to absorb those of Chiniot, Gujranwala, Gujrat, Lalamusa, and Sialkot, which explains the large increase in the average number of cities per agglomeration in Pakistan from 4 in 1999 to 6.5 in 2010, making Pakistani agglomerations the largest in the region on this criterion. Across the region the average number of cities per agglomeration climbed from 3.9 in 1999 to 4.9 in 2010.²⁵

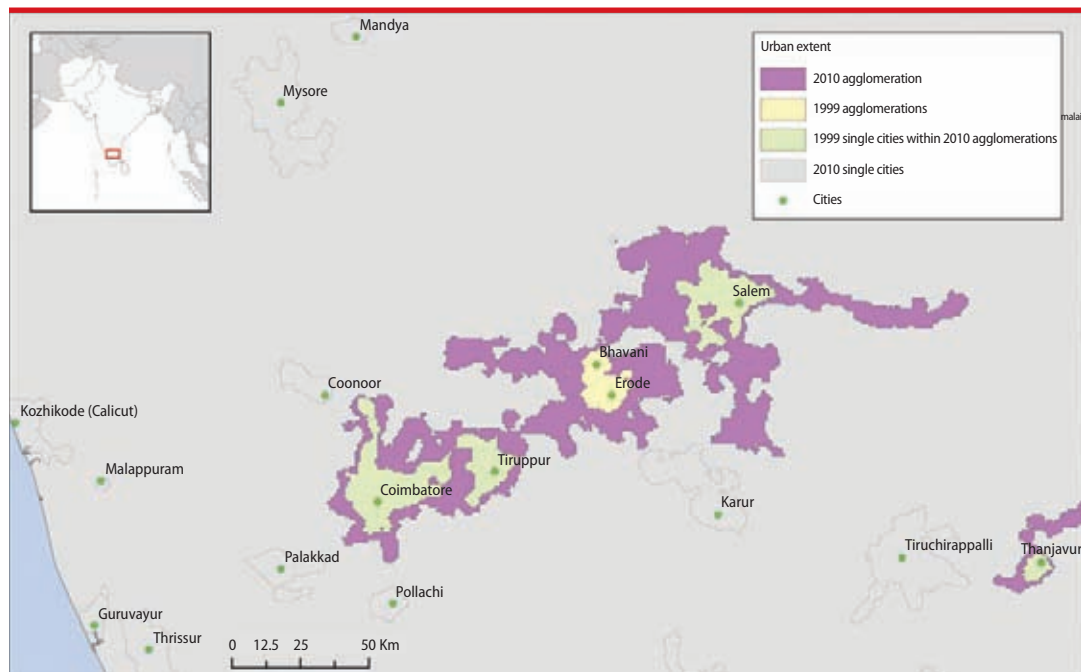
Coimbatore provides a good example of the birth of a new agglomeration (figure 2.14). In 1999, Coimbatore existed as a “single city”—that is, a city with its own separately identifiable urban night-lit footprint. By 2010, Coimbatore’s footprint had become indistinguishable from those of the nearby cities of Bhavani, Erode, Salem, and Tiruppur, making

for one large multicity agglomeration of five cities with a combined population of 8.8 million.²⁶

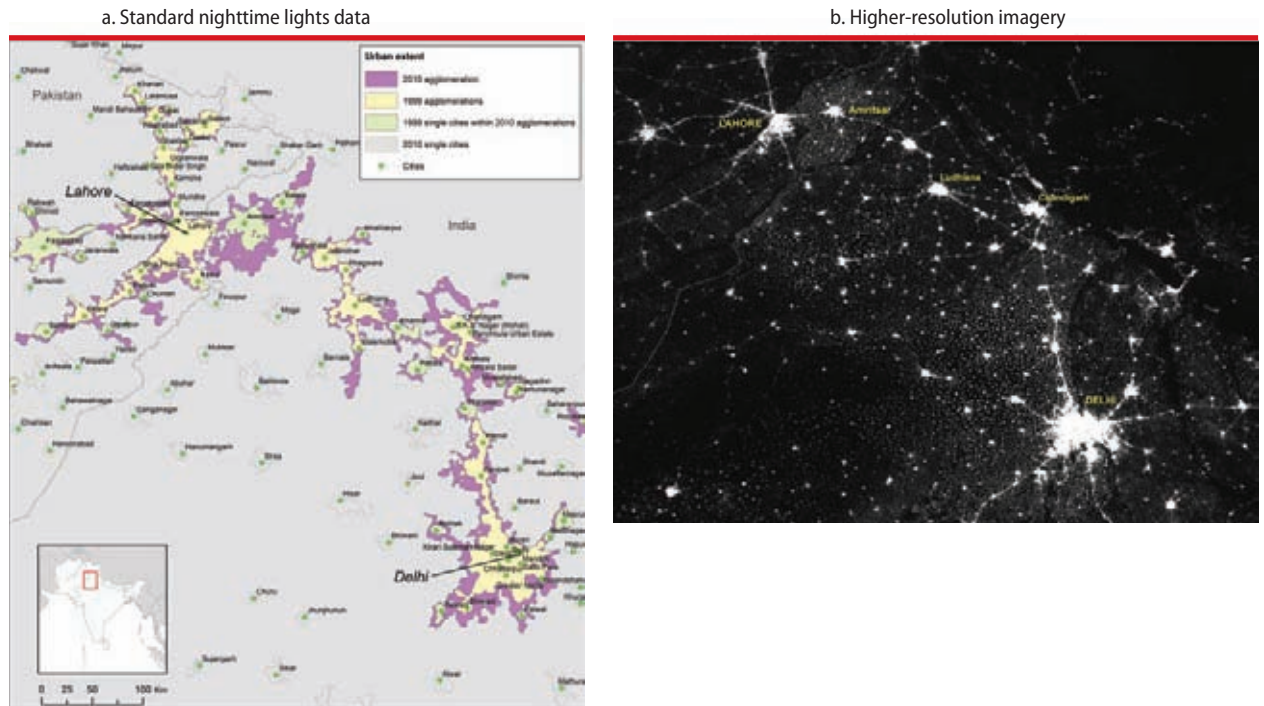
The most striking example of two or more agglomerations merging is that of the Delhi and Lahore agglomerations, which now form one enormous continuously lit belt with an estimated population of 73.4 million, or just less than Turkey’s population (figure 2.15, panel a). This mega-agglomeration stretches from Palwal, south of Delhi, all the way to Kharian in the Pakistani province of Punjab. Figure 2.15, panel b shows this mega-agglomeration in high-resolution nighttime lights satellite imagery as a brightly lit corridor of interlinked cities between Delhi and Lahore.²⁷

Off the corridor, smaller, less brightly lit urban and rural centers are also evident with a general decay in brightness as distance from the corridor increases, indicating an urban-rural continuum or gradient. The formation of the Delhi-Lahore agglomeration

FIGURE 2.14 The birth of the Coimbatore agglomeration, India



Source: Background paper prepared by the Center for International Earth Science Information Network 2013 for this report based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

FIGURE 2.15 The Delhi-Lahore agglomeration

Source: Background paper prepared by the Center for International Earth Science Information Network 2013 for this report based on analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

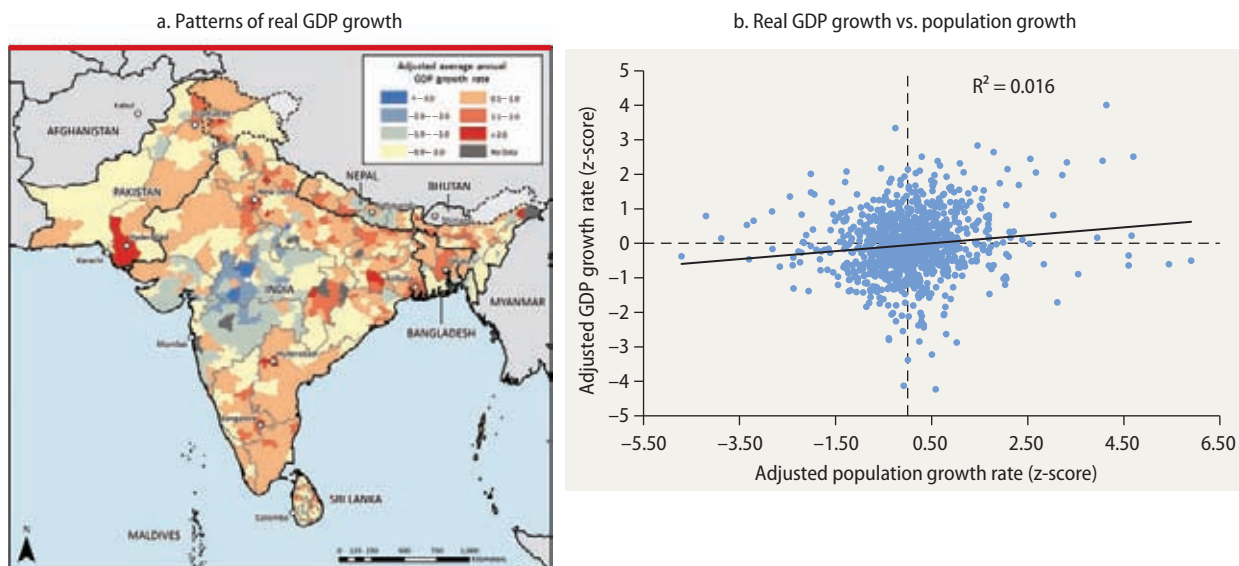
Source: Based on data extracted from Tile 3 (75N/060E) of the Visible Infrared Imaging Radiometer Suite Day/Night Band Cloud Free Monthly Composite Version 1 data set for December 2014, National Oceanic and Atmospheric Administration (<http://ngdc.noaa.gov/eog/viirs.html>).

resembles the emergence of cross-border mega-agglomerations of economic activity in more developed regions of the world—for example, the formation of Europe’s “Hot Banana” (referring to the rough shape of the fruit), which stretches from London to Milan. However, the Hot Banana is in the most highly integrated region in the world, whereas the Delhi-Lahore mega-agglomeration has formed across one of the world’s least permeable borders.

The birth of new agglomerations such as Coimbatore and the fusing of existing agglomerations points to an increasingly connected network of cities across South Asia. If the challenges that they present for urban governance can be overcome, these agglomerations carry great potential for the exploitation of agglomeration economies and the building of economic prosperity.

Spatial patterns of economic growth

Panel a of figure 2.16 illustrates patterns of real GDP growth across South Asian districts in 1999–2010; rates of real GDP growth were derived from nighttime lights data.²⁸ Some of the fastest GDP growth rates have been in areas surrounding the region’s major cities—Bangalore, Hyderabad, Kolkata, and New Delhi in India; Karachi and Hyderabad in Pakistan; and Dhaka in Bangladesh.²⁹ Spatial patterns of economic growth appear to have mirrored those of population growth (see “Population growth across urban hierarchies and geographic space”). However, looking at districts more widely, no evidence emerges of a clear relationship between spatial patterns of economic and population growth

FIGURE 2.16 GDP growth and population growth across South Asian districts, 1999–2010

Source: Estimates of real GDP growth derived from Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

Note: Both district rates of real GDP and population growth are calculated as z-scores to adjust for national differences in average growth rates with positive (negative) values reflecting growth rates above (below) the district average for a country.

(figure 2.16, panel b). In other words, away from the major cities and their surrounding areas, economic growth has been occurring in different places from population growth. Once again, this result concurs with the earlier finding that the majority of urban population growth has been driven more by natural increase and the reclassification of rural settlements rather than by large-scale rural-urban migration. It is also consistent with the geographically dispersed pattern of India's new census towns (see box 2.3).

The failure of economic growth to occur in the same places as population growth suggests that the benefits of urbanization, which arise from the exploitation of agglomeration economies and which the prosperity index suggests are accruing to larger districts (see, in particular, figure 2.3, panel a), are not being widely shared across the region.

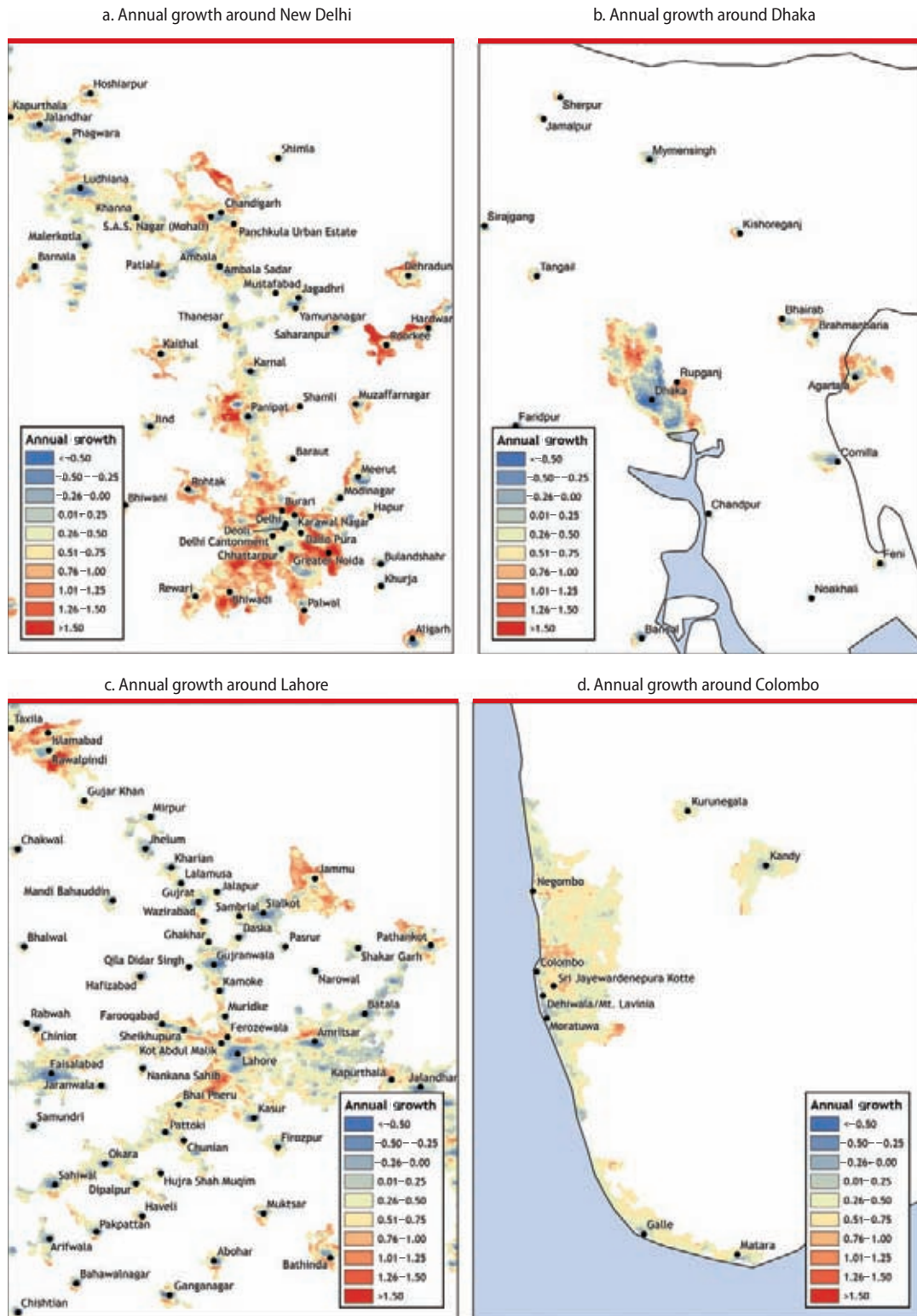
Growth of major agglomerations

The relatively fast growth of South Asia's major cities between 1999 and 2010 is

attributable to fast growth on their peripheries, including areas governed as rural. Consider, for example, the better-than-predicted performance of the district of Gautam Budh Nagar on the periphery of Delhi (and home to Noida, India's largest census town) and its impact on the dynamism component of the prosperity index (see figure 2.5). By contrast, the cores of these cities tended to stagnate or even decline, as seen, for example, in New Delhi, Dhaka, and Lahore (figure 2.17, panels a, b, and c).

For all three of these cities, warmer colors depicting fast growth of lights are apparent in immediately surrounding areas, but the cores of the cities themselves are bluish-gray, indicating either minimal growth or even a dimming of lights. Colombo (figure 2.17, panel d) is different in that the growth of lights at its core appears not too dissimilar from that in its peripheral areas. (Though not shown, Bangalore is also different in that, while the growth of lights has again been fastest in areas on the periphery of the city, growth has also remained rapid at the center.)

FIGURE 2.17 Patterns of annual nighttime lights growth around selected major cities, 1999–2010



Source: Based on analysis of Defense Meteorological Satellite Program–Operational Linescan System nighttime lights data.

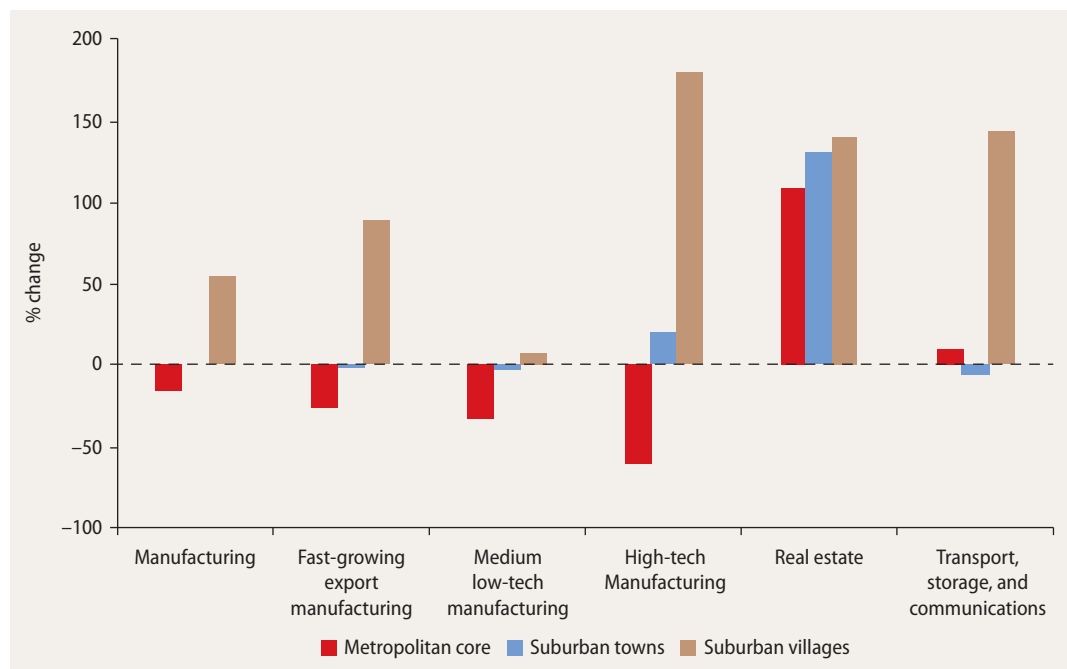
Spatial deconcentration of manufacturing

The pattern of relative stagnation at the cores of many of South Asia's major cities and rapid growth on their peripheries can be partly explained by the process of manufacturing deconcentration from the centers and toward the outskirts of these cities without the emergence of suitable replacement industries. Take India's seven largest metropolitan areas: Mumbai, Delhi, Bangalore, Kolkata, Chennai, Hyderabad, and Ahmedabad (World Bank 2013). They dominate the country's economic landscape, but between 1998 and 2005 manufacturing employment within 10 kilometers of their city centers declined by 16 percent (figure 2.18). By contrast, manufacturing employment in their immediate peripheries (that is, in suburban towns and villages located 10–50 kilometers

from their centers) increased by almost 12 percent. The relocation of manufacturing employment from the cores of India's seven largest metropolitan areas to their peripheries was particularly pronounced in high-tech and fast-growing export manufacturing industries. In high-tech manufacturing, for example, the cores experienced a 60 percent decline in employment, while suburban towns and suburban villages located 10–50 kilometers from these centers experienced growth of 17 and 180 percent, respectively.

Stagnation has been particularly pronounced for Delhi and Mumbai. Metropolitan Delhi, defined as the area within a 50 kilometer radius of the city's center and which includes both the metropolitan core and suburban towns and villages, suffered a 0.5 percent decline in its share of national employment between 1998 and 2005. For metropolitan Mumbai, the equivalent decline

FIGURE 2.18 Employment growth in Indian metropolitan cores and their peripheries, by sector, 1998–2005



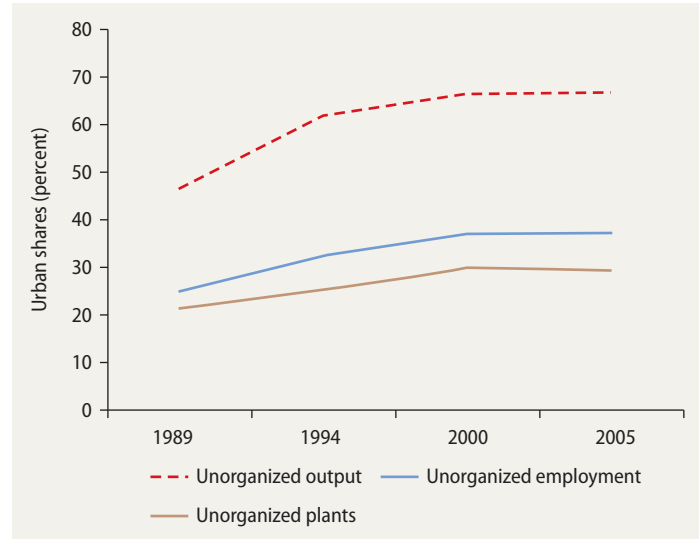
Source: World Bank 2013 based on Economic Census data covering manufacturing establishments of all sizes (organized and unorganized).
 Note: Metropolitan core includes an area with a radius of 10 kilometers centered on the main metropolis. Suburban towns comprise urban areas 10–50 kilometers from the metropolitan core, and suburban villages comprise rural areas in the same vicinity. These figures are averages for the seven largest metropolitan areas (in descending order of population): Mumbai, Delhi, Bangalore, Kolkata, Chennai, Hyderabad, and Ahmedabad.

was even steeper, at 1.3 percent. By contrast, the Chennai-Hyderabad-Bangalore metropolitan areas taken together saw an increased share in national employment of 1.1 percent during the period. Bangalore, matching its pattern of nighttime lights growth, attracted many medium- and high-tech manufacturing jobs (World Bank 2013).

In India as a whole, an important difference in trends can be observed between the organized and unorganized manufacturing sectors, where organized manufacturing consists of all manufacturing establishments that employ 10 or more workers or, if the establishments do not use electricity, that employ 20 or more workers.³⁰ Thus, while organized manufacturing became significantly less urbanized between 1994 and 2005, unorganized manufacturing became significantly more urbanized (figure 2.19). The share of organized manufacturing employment located in urban areas fell from 62.0 percent to 51.4 percent, whereas the share of unorganized manufacturing employment located in these same areas increased from 30.2 to 34.7 percent (Ghani, Goswami, and Kerr 2012). In line with the patterns in the lights data for Delhi, organized manufacturing has been deconcentrating from India's major urban centers, only to be partly replaced by lower-productivity, unorganized manufacturing. Although evidence also shows a growing concentration of services in the highest-density locations—that is, in the largest cities—in India (Desmet and others 2015), the dimming of lights at the cores of cities such as Delhi suggests that services have not been sufficient to plug the gap left by the exodus of organized manufacturing firms. Again, Bangalore is a major exception in its ability to retain economic vibrancy at its core.

A story similar to that of Delhi and Mumbai can be seen in Dhaka, Bangladesh (Muzzini and Aparicio 2013b). Although Dhaka still dominates Bangladesh's economy, the country's most important industry—its garment industry—has been shifting out of the city's core and into its peri-urban areas. In 2001, more than one-half of all formal jobs in the industry were located in Dhaka City

FIGURE 2.19 Increased urbanization of unorganized manufacturing in India, 1989–2005



Source: Ghani, Goswami, and Kerr 2012 based on National Sample Survey Organization data.

Corporation, but by 2009 the city's share of formal garment industry employment had fallen to 30 percent. By contrast, the share located in Dhaka's peri-urban areas increased from 20 percent to 38 percent during the same period. In addition to the emergence of a garment cluster approximately 15 kilometers from Dhaka's center (figure 2.20, panel a), garment employment has sprawled outward to the municipalities of Sreepur and, to a lesser extent, Kaliakair, both of which lie just outside the boundaries of metropolitan Dhaka (figure 2.20, panel b). Just as with many of India's major cities, only limited evidence can be found of the emergence of industries capable of replacing the lost manufacturing within Dhaka. Thus, although the information and communications technology sector is an emerging cluster within the city, it remains small and has not yet filled the void left by the garment industry.

In Colombo, the share of the city's metropolitan region in national manufacturing employment, which is also dominated by the garment industry, declined from 52 percent in 2001 to 43 percent in 2009. However, like Bangalore, Colombo has successfully retained its vitality, having avoided a

pronounced dimming of lights in core areas. This outcome occurred because the Colombo metropolitan region has been able to attract replacement industries of sufficient size and dynamism to supplant the lost manufacturing. Thus, the region's transport, communications, and knowledge services industries are relatively large and rapidly growing (World Bank 2012).

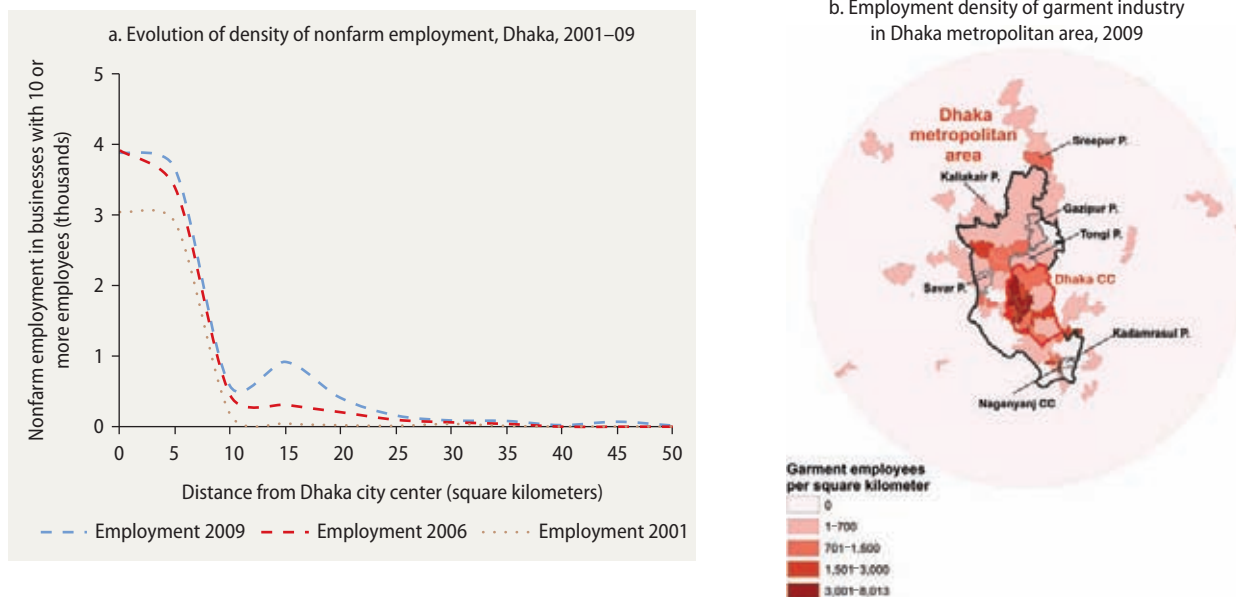
The deconcentration of manufacturing—particularly formal and organized manufacturing—and associated stagnation of urban cores is by no means a process that is historically unique to South Asia. Indeed, major North American and European cities underwent similar processes within the last 50–75 years. New York and London, for example, experienced absolute declines at their cores and significant losses in manufacturing employment in the 1960s and 1970s. Manufacturing employment in London fell from 1.4 million in 1961 to 680,000 in 1981, which was a relatively larger loss than for the United Kingdom overall. At the same time, overall employment in the city declined by 900,000 from 4.3 million in 1961 to reach a

post–World War II low of 3.4 million in 1983, after which it began to recover (Sassen 2001).

The difference between New York and London on the one hand and South Asia's major cities on the other is that the former went through this process at a much more advanced stage of development. In 1961, the United States and the United Kingdom had GDP per capita levels of \$11,402 and \$8,857, respectively. By contrast, in 2010, the average GDP per capita level across the four South Asian countries of Bangladesh, India, Pakistan, and Sri Lanka was \$3,126.³¹ In this sense, the process of manufacturing deconcentration and stagnation of urban cores is occurring early within South Asia; this may also be linked to the phenomenon of services-led urbanization that is being witnessed across much of the region (see chapter 1).

In particular, the deconcentration of formal and organized manufacturing that is occurring at such an early stage of development without, with some exceptions, the emergence of replacement industries that push cities up the ladder to high-value-added activities suggests that excessive congestion

FIGURE 2.20 Employment in Dhaka



Source: Muzzini and Aparicio 2013b.

Note: CC = city corporation; P = pourashava (municipality). The boundaries of Dhaka CC and Dhaka metropolitan area are marked in red and black, respectively.

forces associated, in part, with failures in policy may be driving the process. As discussed in the Introduction (“A framework for assessing urbanization and city performance”), such congestion forces extend beyond excessive traffic congestion associated with a lack of internal city connectivity and can originate from a variety of different sources, including the pressure of urban population on basic urban services, on land and housing markets, and on the environment.

The exact mix of congestion forces pushing out formal and organized manufacturing differs from case to case. For Dhaka, traffic congestion is a relatively stronger culprit (Muzzini and Aparicio 2013b), whereas for Indian cities, congestion in land markets exacerbated by overly stringent regulations on urban development densities are more of a force (World Bank 2013). Colombo’s manufacturing deconcentration process is, in contrast, relatively more “natural” in the sense that Sri Lanka, with a GDP per capita of \$9,426, is at a more advanced stage of development than either Bangladesh or India, whose respective levels of GDP per capita are \$2,476 and \$5,238,³² and also given the evidence of emerging replacement industries in Colombo. The differences observed between most of India’s major cities and Dhaka on the one hand and Bangalore and Colombo on the other hand are also reflected in the prosperity index. Hence, while the districts of Chennai, Delhi, Dhaka, Greater Bombay, and Kolkata all show strong overall performance on the index, they perform worse than expected on the index’s dynamism component. By contrast, both Bangalore and Colombo perform as expected on this component (see figure 2.5).

Also, while sub- and peri-urban areas may have been benefiting from the deconcentration process in countries such as Bangladesh and India, the overall process is nevertheless suboptimal. The sprawl resulting from policy-induced congestion constraints inhibits the exploitation of agglomeration economies and elevates market connection costs for firms. Sprawl also imposes welfare costs on households. In Bangalore, for instance, sprawl

induced by regulations on urban development densities imposes welfare losses equivalent to 2–4 percent of household income due to higher commuting costs (Bertaud and Brueckner 2004).

Summary

Performance across subnational districts varies tremendously within South Asian countries. This outcome is clear from the prosperity index. And although these variations are related to population size, that alone is a far-from-perfect predictor of overall performance. Furthermore, the relatively strong performance of the districts containing South Asia’s largest cities is driven by their comparatively high levels of productivity, but they tend to exhibit (with exceptions like Bangalore and Colombo) lower-than-expected dynamism.

These differences in performance between the largest cities reflect differences in success in retaining vibrancy in the face of manufacturing deconcentration, a process that has caused rapid economic growth on the peripheries of the region’s major agglomerations. With the possible exception of Sri Lanka, this process is taking place at an earlier stage of economic development than might be expected based on the historical experiences of today’s developed countries, and may also be linked to the region’s historically atypical pattern of services-led urbanization.

No clear relationship between spatial patterns of economic and population growth can be discerned within South Asian countries. Rather, urban population growth has been relatively spatially dispersed with the populations of towns and cities growing more or less in parallel, indicating that countries in the region need to accept the policy reality that their existing urban hierarchies are here to stay. Consistent with the region’s relatively slow pace of urbanization (see chapter 1), urban population growth has been driven primarily by natural increase and the reclassification of rural settlements rather than by large-scale rural-urban migration. And reflecting the existence of widespread hidden

urbanization, a large proportion of South Asia's population lives in settlements that, even though they exhibit important urban characteristics, are governed as rural entities.

South Asian cities are also witnessing rapid growth of their urban extents relative to their populations, resulting in sprawl and contributing to messy as well as hidden urbanization. Linked to this trend is the emergence of a growing number of multicity agglomerations, which present huge opportunities for the exploitation of agglomeration economies—provided the associated challenges for governance in providing basic services are overcome.

The overall urbanization and spatial economic dynamics described in this chapter and the differences in performance across areas can be explained by the differing interactions of agglomeration economies with congestion forces, where the latter arise from the pressure of growing city populations on basic urban infrastructure and services, land and housing markets, and the environment. Part 2 (chapters 3–6) explores the interrelationships between policy and outcomes in more detail.

Notes

1. As noted in chapter 1 (box 1.1), GDP data are available for Indian districts, but with only limited temporal coverage. The Central Bank of Sri Lanka publishes subnational GDP data, but only for the country's provinces, which is an insufficiently refined spatial scale to allow detailed analysis of variations in subnational performance.
2. As figure 2.1 shows, the distribution of scores on the prosperity index exhibits a slight positive skew. As a consequence, there are several districts whose performance exceeds their country averages by two standard deviations or more, but there are no districts whose score falls two standard deviations or more below average.
3. Table 2.1 presents categories of performance rather than precise rankings and exact prosperity index scores to avoid giving a spurious sense of precision.
4. A significant positive relationship also exists between a district's population density (relative to the average for the country in which it is located) and its prosperity index performance. In particular, regressing a district's prosperity index score on its population density (with both calculated as z-scores) gives an R^2 of 0.24: in other words, variation in population density is able to "explain" 24 percent of the observed variation in prosperity index performance across districts. Furthermore, although no statistically significant relationship exists between a district's population size and its poverty rate, a statistically significant negative relationship does exist between a district's population density and its poverty rate.
5. The coefficient of correlation between the productivity and poverty indicators is +0.44, while that for the correlation between the productivity and dynamism indicators is +0.39. The correlation between the poverty and dynamism indicators, although positive, is much weaker (+0.09).
6. From figure 2.5, Valikamam in the district of Jaffna in Sri Lanka appears to be particularly dynamic. This dynamism is likely attributable to rapid growth following the end of Sri Lanka's civil conflict, which particularly affected the northern and eastern regions of the country, in 2009.
7. See also box 1.2 in chapter 1 for a more detailed discussion of official definitions of urban areas in South Asia.
8. The difference between a country's AI-estimated urban share and its estimated urban share based on official definitions of urban areas provides a very rough and extreme upper-bound estimate of the share of its population living in unrecognized urban settlements. In particular, the difference provides an estimate of the share of the population living in areas that, although they are officially classified as rural, satisfy the criteria that the AI uses to characterize them as urban: namely, they have a population density of at least 150 people per square kilometer and are within 60 minutes' travel time of an urban settlement with a population of at least 50,000.
9. <http://www.censusindia.gov.in/default.aspx>.
10. Figures on population density are based on World Bank World Development Indicators data.
11. As in chapter 1, in assessing the pace of urbanization, we are forced to fall back on

- estimates of urban shares and population based on official national definitions of urban areas. However, this study's findings on the pace of urbanization appear reasonably robust. In particular, for India, large biases in both levels and growth rates of the urban share would be required to overturn the conclusion of relatively slow urbanization. Furthermore, for limited samples allowed by data, urbanization continues to appear to be relatively slow in India when the country is compared with other countries based on similar definitions of urban. See web-based annex 1A and Roberts (2015) for more details.
12. During 2000–10 the annual rate of population growth was 2.4 percent in Bhutan, 1.9 percent in Pakistan, 1.8 percent in Maldives, and 1.5 percent in India.
 13. Although its contribution relative to other sources remains small, there is evidence, at least for some South Asian countries, that rural-urban migration is increasing, albeit marginally, in importance as a source of urban population growth. In particular, in India the share of urban population growth attributable to net inward migration from rural areas increased from 21.2 percent to 24.1 percent between the periods 1991–2001 and 2001–11 (IIHS 2011).
 14. The figures on migration that have been cited in this paragraph do not include seasonal or temporary rural-urban migration, which, in general, is not well captured by either national population censuses or standard survey instruments within the region. Estimates of the magnitude of seasonal migration vary dramatically. For India, Keshri and Bhagat (2013) report, based on National Sample Survey data, that 13.6 million people in 2007–08 were seasonal migrants. This is equivalent to 3.8 percent of India's official urban population in 2008. By contrast, Deshingkar and others (2009) cite results from village surveys indicating that 50–60 percent of households in villages are involved in seasonal migration.
 15. The literacy rates among 15–24-year-olds in Sri Lanka's estate sector in 2012 was only slightly lower, at 95.6 percent. The estate sector consists of tea and rubber plantations and is separately reported on in official Sri Lanka, Department of Census and Statistics publications.
 16. The analysis for Sri Lanka covers 2001–12.
 17. GDP per capita figures are expressed in 2011 constant international dollars at purchasing power parity exchange rates and were taken from World Bank World Development Indicators. Sri Lanka's GDP per capita in 2013 was \$9,426.
 18. This is evident from the relatively poor fits of the regression lines in figure 2.10, as indicated by the low R^2 statistics.
 19. The stability of a country's urban hierarchy can be assessed using Spearman's rank correlation coefficient. A rank correlation coefficient of zero indicates no correlation between city rankings in different years, whereas a coefficient of +1 represents a perfect correlation with no changes in rank between years. For Bangladesh, India, Nepal, and Sri Lanka, the values of Spearman's rank correlation coefficient for 2001–11 (2001–12 for Sri Lanka) are 0.9564, 0.9603, 0.9702, and 0.9954, respectively.
 20. In general, these subnational units are at the Admin-2 level. The exceptions are Pakistan, where they are at the Admin-1 (that is, provincial) level, and Sri Lanka, where they are at the Admin-3 (that is, DS-division) level. Regardless of country, and similar to the analysis of the prosperity index (see the section "Measuring differences in subnational performance"), the subnational units in figure 2.11 are referred to as "districts" for brevity.
 21. Some care is required in interpreting the results for Sri Lanka because of the change in the method of enumerating the population between the 2001 and 2012 censuses. In particular, while enumeration for the 2012 census took place on a de jure basis (persons were enumerated based on their usual place of residence), that for the 2001 census took place on a de facto basis (persons were enumerated based on where they were on the night of the census).
 22. Besides Kolkata and Colombo, an additional 41 districts (out of a total of 935) experienced population decline during the study period. For 24 of these districts the decline was near negligible, but it was higher for the remainder.
 23. A small number of additional cities with circa 2010 population less than 100,000 were also included in the analysis on the grounds of their importance to a particular country's urbanization process. Thus, for example,

a number of secondary cities in Nepal and Sri Lanka were included despite not meeting the 100,000 population threshold. A full list of the cities included in the sample is available on request.

24. One caveat when considering this result is that the growth rate for urban population is calculated using *World Urbanization Prospects, 2011 Revision* data, which are based on official national definitions of urban areas. To the extent that these definitions tend to underestimate the sizes of urban areas, they will also tend to underestimate urban population. This underestimation will lead to biased estimates of urban population growth rates if the degree of underestimation has changed over time.
25. Note, however, that in both 1999 and 2010, a large number of agglomerations consisted of just two 100,000+ population cities. Thus, 17 out of 37 agglomerations in 1999 consisted of just two cities. In 2010, 22 out of 45 consisted of two cities.
26. This population estimate was arrived at by using geographic information system techniques to layer Coimbatore's urban footprint with gridded population data for 2011 taken from LandScan (<http://web.ornl.gov/sci/landscan>). The same techniques were also used to estimate population for the Delhi-Lahore mega-agglomeration.
27. This imagery was obtained from the Visible Infrared Imaging Radiometer Suite (VIIRS). The instrument was launched aboard the Suomi National Polar-Orbiting Partnership satellite in October 2011, and the imagery has a resolution of 0.75 kilometer. This compares to a native spatial resolution of approximately 2.7 kilometers for the Defense Meteorological Satellite Program—Operational Linescan System instrument.
28. Figure 2.16 is based on the same set of sub-national administrative units as figure 2.11. As with figure 2.11, these units are referred to as “districts” for brevity.
29. After correcting for differences stemming from national factors.
30. (Un)organized manufacturing is usually associated with (in)formal manufacturing, although, strictly speaking, the concepts are not identical.
31. The figures for GDP per capita in this paragraph are expressed in 1990 constant international dollars at purchasing power

parity exchange rates and are taken from the Maddison Project database (<http://www.ggdc.net/maddison/maddison-project/home.htm>).

32. GDP per capita figures are expressed in 2011 constant international dollars at purchasing power parity exchange rates and were taken from the World Bank World Development Indicators.

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Policies for Improved Leveraging

South Asia's cities are not fulfilling their development potential as characterized by either prosperity or livability because of the congestion pressures that growing populations are exerting on infrastructure, basic services, land, housing, and the environment. How can policy makers address the main congestion constraints on the region's cities and better leverage the urbanization process for improvements in prosperity and livability? Part 2 of the report provides answers. Improvements in urban governance and finance hold the keys. Chapter 3 discusses three fundamental deficits in this

area—in empowerment, in resources, and in accountability—that the regions' policy makers need to address to bring about these improvements. But while addressing these deficits is a necessary condition for meaningful progress, it will not, by itself, be sufficient. Chapters 4–6 therefore discuss three additional, interrelated areas for policy action that are instrumental to the further leveraging of urbanization for improved prosperity and livability—connectivity and planning (chapter 4), land and housing (chapter 5), and resilience to disaster and the effects of climate change (chapter 6).

Revitalizing Urban Governance and Finance

3

Key messages

If urban governments are to play their potentially vital role as agents of local and national growth, countries must reduce the deficits in empowerment, resources, and accountability that hinder urban performance. National, intermediate, and local governments need to take steps to do the following:

- **Expand and enhance urban empowerment, capacity, and incentives to plan and deliver services essential for economic and social development.** These include services that urban governments can deliver on their own and those best shared with higher and peer levels of government and private and community partners.
- **Reformulate flawed, anemic intergovernmental revenue systems.** Transfers can support urban

discretion and national priorities while promoting responsible fiscal behavior. Urban governments should creatively strive to raise local revenues, including through borrowing, to enhance their credibility and effectiveness.

- **Strengthen urban governments' accountability systems** through better and more transparent financial management, workable coordination arrangements with key partners, enhanced citizen feedback channels, and stronger urban autonomy. Citizens and firms need information to back up their efforts to pressure urban governments to deliver.
- **Strategically and pragmatically implement tailored reforms** to ensure that new systems and processes will be feasible, productive, and sustainable.

Introduction

Previous and subsequent chapters document the importance of urbanization in South Asia, assess how it is proceeding, and outline critical issues as well as policy options that could be pursued to improve the management and

planning of urbanization for improved connectivity, land use, and urban resilience. This chapter focuses on characterizing, comparing, and assessing essential governance and fiscal mechanisms in South Asian countries' intergovernmental systems. These mechanisms substantially shape the ability of urban

governments to meet the considerable and growing range of demands and challenges they face.

The nature and characteristics of urban areas in the countries of South Asia vary greatly. Similarly, the demands faced by governments for local public services, as well as the viable options to meet them, also vary substantially. Policies appropriate for relatively small urban areas in Bhutan and Maldives, for example, may not be workable in more than a general sense for the large urban areas of Bangladesh, India, and Pakistan. In some countries, urban areas are more self-contained (that is, they are under the primary management of a single subnational entity); in others, inter-jurisdictional encroachment and interdependency are extensive, complicating public service delivery, revenue collection, and territorial governance. Many other differences—including economic base, settlement density, development patterns, and socioeconomic characteristics of the population—are also evident and are relevant for the effective management of urban areas.

Despite these consequential differences, the region's countries generally share certain common challenges and limitations in their systems of local governance and finance. Most urban, municipal, and local governments face severe systemic constraints that limit their autonomy, fiscal role, and accountability.

This chapter documents a core triad of consequential deficits in South Asian urban governance and finance: in empowerment, resources, and accountability (figure 3.1).

Although urban governance and decentralization efforts face challenges globally, South Asia appears to be among the weaker regions in the pace of its reform adoption and implementation progress. Central (and in some cases intermediate or state) governments are typically very powerful or even dominant, perhaps even to an extent comparable only to the Middle East. Definitive assessments of local government roles are difficult to make because data are limited

and not readily comparable, but a few impressions can be drawn with the caveat that some of the information may not be fully current.¹

For a start, local governments in most South Asian countries account for small shares of total public spending, mostly in the range of 3–10 percent. Selective data from around the world show that local expenditure shares in developing countries are commonly less than 10 percent and usually much less on the revenue side (United Cities and Local Governments 2010). In other regions, however, local governments in multiple countries have substantially larger roles—including in Ethiopia, Kenya, Nigeria, South Africa, and Uganda in Africa; China, Indonesia, the Philippines, and Vietnam in East Asia; and Argentina, Brazil, Chile, Colombia, and Peru in Latin America. In South Asia, only India has a high local share of public spending, but the autonomy of Indian local bodies is significantly constrained. Local governments in some of the countries with higher local expenditure shares in other regions also face constraints on spending autonomy, but they tend to have more discretion than do their counterparts in India and other South Asian countries with lower local expenditure shares.²

As South Asian urban areas become larger, more diverse, and more economically important, there is a pressing need for strong action. Urban governments can often take independent steps to improve performance, but they also need support from higher levels in the form of robust and innovative policies that promote empowered, adequately resourced, and well-governed local governments. Such measures hold considerable potential to allow local governments to meet the needs of urban populations more effectively and sustainably, as well as to play a more explicit and vigorous role in contributing to the successful overall development of South Asian countries.

This chapter has six sections. The first compares basic subnational and intergovernmental

FIGURE 3.1 Three key urban governance deficits in South Asia

Empowerment deficit	Limited, overlapping, and fragmented functional assignments with inappropriate and excessive central, state, and provincial control
Resource deficit	Extremely weak financial bases: Limited revenue powers and inappropriately conceived and targeted intergovernmental transfers
Accountability deficit	Weak and underutilized accountability mechanisms despite elections and rights to information

structures of South Asian countries, including the key parameters and foundations of their respective policies regarding decentralization.³ The next three sections consider the three deficits mentioned,⁴ followed by a discussion illustrating how these deficits interact and collectively affect urban service delivery. The final section pulls together the various topics, draws some conclusions about the state of urban governance and finance in South Asia, and makes a number of tentative broad recommendations, with the understanding that additional work is required to develop a set of more specific policy options for each country.

Given the wide range of issues, the diversity of South Asian countries, and major constraints on securing relevant and comparable data and information, the chapter is not meant to be exhaustive or definitive; instead, it is intended to highlight basic information to facilitate a critical assessment of the governance and finance preparedness of subnational governments to meet urbanization challenges. Selected system features are the subject of deeper analysis in certain countries or groups of countries. The focus is on urban areas, and the primary concern is with appropriate empowerment for more effective local governments. At the same time, the need for an overarching national framework that includes all

levels of government as well as a range of non-governmental actors, each of which has some role to play in urban development, independently and in support of urban government performance, is recognized.

Basic government and intergovernmental structures and decentralization policy

Intergovernmental systems vary widely in South Asia. Countries have differing levels of subnational government and types of local governments. These levels and types may be differentially empowered with regard to the nature of decentralization (deconcentration of higher-level functions versus devolution of autonomous powers) and its importance (the scope and scale of local empowerment). Relationships among subnational actors (more hierarchical versus more independent) also vary among the countries, as do the nature and extent of the mechanisms set up to facilitate interjurisdictional coordination (including within large metropolitan areas) in meeting public functions. Many observed characteristics of intergovernmental systems in South Asia have deep historical and political foundations that affect the prospects and avenues for reform.

Levels of government and administration

The diversity of the intergovernmental landscape in which South Asian cities operate is evident from table 3.1. The number of levels of subnational (intermediate and local) government or administration range from two in Maldives to several in other countries, although whether some of the official jurisdictional distinctions designate distinct levels of government or categories of government at essentially the same level that play different roles in public functions is subject to some debate. For present purposes, the main point is that the nature and size of subnational entities vary considerably across countries.

These basic designations also fail to do justice to the multiplicity of types of local bodies in most South Asian countries and may not recognize that they might not only be differentially empowered but also have varying relationships with each other (for example, hierarchical versus independent). Most countries have some type of specific

designation for cities, municipalities, and more urbanized local bodies, although these designations can be formal to varying degrees and are more consequential in practice in some countries than in others.

Decentralization and subnational government policy and frameworks

Six of the eight countries operate as unitary states (India and Pakistan, which are federal, are the exceptions). Devolution is relatively modest. The two federal countries have powerful and fairly independent intermediate tiers, which have substantial control over further decentralization to lower tiers and heavily influence local government behavior. India enacted the 73rd and 74th Constitutional Amendments in 1992, which aim to strengthen rural and urban local governments by assigning them specific civic functions subject to state level legislation and regulation. However, devolution has been limited and uneven across and within states/provinces.

TABLE 3.1 Levels or categories of subnational government and administration

Afghanistan ^a	Provinces (34) Urban LGs: Municipalities (153), including Kabul with special legal status Rural LGs (not formal LGs): Districts (399), Villages (community development councils; 40,020)
Bangladesh	<i>Zila parishads</i> (districts; 64) Urban LGs: City corporations (11) and <i>pourashavas</i> (municipalities; 315) Rural LGs: <i>Upazila parishads</i> (subdistricts; 510), <i>Union parishads</i> (5,000)
Bhutan	<i>Dzongkhags</i> (districts; 20) <i>Thromdes</i> (municipalities; 4) (note: 16 small municipalities are under district administration) <i>Gewogs</i> (blocks; 205)
India	States (28) and Union Territories (7) including Federal District Urban LGs: Municipal corporations (138), Municipalities (1,595), Town councils (2,108) Rural LGs: (<i>Panchayati Raj</i>): <i>Zilla</i> (593), <i>Samities</i> (6,087), <i>Gram</i> (villages; 239,432)
Maldives ^b	Cities (2) and Atolls (19) Islands (189)
Nepal	District: District development committee (75) Urban LGs: Municipalities (191, including recently amalgamated villages) Rural LGs: Village development committees (3,276)
Pakistan	Provinces (4) and Territories (4) LGs: <i>Zillas</i> (districts; 96); <i>Tehsils</i> (337); Unions (6,022)
Sri Lanka	Provinces (9) Districts (25) Urban LGs: Municipal councils (23), Urban councils (41) Rural LGs: <i>Pradeshiya Sabhas</i> (257)

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

a. There is some disagreement about the exact numbers of local governments.

b. Atolls and islands are administrative designations; atoll councils supervise (in all but one case) multiple island councils.

In most of the nonfederal countries, some form of deconcentration prevails overall or at certain levels. Provinces, for example, are powerful in Afghanistan. *Zilas* in Bangladesh are administrative rather than political entities. In Sri Lanka, local governments are formally recognized by constitutional amendment as under the jurisdiction of provinces rather than independent entities. Complex hybrid arrangements at the same level can also create challenges: for example, the president appoints provincial governors but the winning party or coalition in provincial council elections appoints the chief minister.

To varying degrees some countries are beginning to strengthen the roles and autonomy of subnational bodies. In Nepal ongoing deliberations about a new constitution have focused on introducing a federal system with local governments, and other countries, including Bhutan and Maldives, are making efforts to empower specific types of local bodies. Most of these

efforts, however, are too undefined, too new to evaluate, or not fully operational.

In most cases, cities, municipalities, or urban local bodies have somewhat more responsibility than other local levels, either formally through legal provisions or in practice. At the same time, most of these urban governments are greatly affected by higher-level decisions and oversight.

A prominent feature of South Asia is that subnational governments throughout the region have both a constitutional and a legal basis (table 3.2, second column). The situation is similar elsewhere (as in Brazil, Mexico, and South Africa), but decentralization policies in many developing and middle-income countries have their primary basis in law. This is a less robust and durable foundation than constitutional provisions because laws can be more easily changed. Although many countries constitutionally or legally empower subnational levels, these provisions are not particularly strong in that they

TABLE 3.2 Decentralization policies and frameworks

	Decentralization policy (nature and extent of state decentralization)	Underlying framework (constitutional and legal provisions)
Afghanistan	Centralized unitary state with little local autonomy, except municipalities. Recent reforms have devolved minor administrative and fiscal authority; however, the national government retains most authority, and only provincial elections have been held.	2004 Constitution established a centralized state and elected provincial, district, and municipal bodies; delegation to LGs partly realized by Subnational Governance Policy (2010). Municipalities Law (2000) provides some urban LG autonomy; other laws apply, but overall legal framework is inconsistent.
Bangladesh	Unitary democratic republic with largely deconcentrated local entities. Urban LGs' autonomy is limited, but councils are elected, as are local governments at lower rural and subdistrict levels.	Articles 59 and 60 of the 1972 Constitution provide for elected LGs and require Parliament to determine specific LG functions. Subsequent amendments and laws have experimented with various levels of LG autonomy, roles, and responsibilities.
Bhutan	Unitary constitutional parliamentary monarchy with gradually increasing decentralization (1981–2010). Large urban areas are more independent, but at present LGs essentially remain deconcentrated tiers.	2008 Constitution established “decentralized and devolved” governments with broad revenue and service-delivery functions. Roles have been clarified, expanded, and empowered by the Local Governments Act (2009) and national policies.
India	Federal system with strong states. Rural and urban local bodies are recognized under state oversight. Larger urban areas tend to have more independence. National debate on encouraging states to further empower local tiers has reemerged.	The federal system is outlined in the 1949 Constitution; the 73rd and 74th amendments (1992) aim to strengthen substate governments but subject to state legislation and regulation; each state issues a municipal act that outlines the specific functions of local bodies in that state (many variations).

(continues next page)

TABLE 3.2 Decentralization policies and frameworks (continued)

	Decentralization policy (nature and extent of state decentralization)	Underlying framework (constitutional and legal provisions)
Maldives	Unitary system with authority recently decentralized to two levels. Large cities are independent from atolls (first tier of subnational government), while atolls oversee most island governments (second tier).	The Decentralization Act of 2010 outlines the decentralization framework and establishes subnational governments. Amendments are being considered by the president and the Majlis (national legislature) to merge some levels of government.
Nepal	Unitary system with strong center (constitutional arrangements under discussion call for federalism); lower levels of government have some autonomy but are currently run by centrally appointed civil servants pending a new constitution.	Federal system under the Interim Constitution (2007); Local Self-Governance Act (1999) and Local Self-Governance Regulations (2000) establish LG functions regulated by the CG, while proposed state and provincial jurisdictions are to be determined in drafting the new constitution.
Pakistan	Federal system with strong center and provinces; Constitution requires elected LGs; elections had not been held since 2009, but have begun again in 2015; district is the most important LG tier; union councils, the lowest tier, are directly elected.	The 18th amendment to the Constitution devolved several shared functions fully to the provinces; recent provincial LG acts reduce 2001 devolution; LGs are administered by provincially appointed civil servants.
Sri Lanka	Unitary system with strong center and provinces; the provinces oversee LGs; many powers assigned to the provinces and LGs are not devolved in practice.	LGs received constitutional recognition in the 13th amendment (1987) but are under provincial control; separate laws establish service responsibilities for urban councils (1939) and municipal councils (1947).

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

are general and provide limited specificity on local government powers and functions. The details of these general provisions in several countries (discussed below) have not been further developed or have not been substantially implemented as defined, obviously limiting the ability of urban governments to play their intended and potential roles.

Decentralization has been subject to cyclical (often politically driven) variations in some countries. Nepal, for example, used to have local government elections (prior to 2002) before a period of political turmoil, and both Bangladesh and Pakistan have at times had stronger provisions for local governments. Thus, reformers need to be aware of historical influences and carefully consider when and where national political space might be available to create a stronger role for urban governments.

The empowerment deficit

Although progress has been made in recent years, urban governments in South Asia are

seriously hampered by relatively modest empowerment. This challenge has three common dimensions: limited formal functional and revenue assignment, lack of clarity in institutional roles, and inadequate autonomy to make independent decisions on matters generally considered important to realizing the benefits of decentralization. The nature and extent of these issues vary across countries, but they are present throughout the region.

Limited subnational assignment of functions and resources

Many types of public services are provided at the local level in South Asia, but the functions executed directly and independently by subnational governments vary in scope and significance across countries. There is also often a wide difference between functions assigned de jure to local governments and the de facto performance of local functions by decentralized entities, which can vary within countries (table 3.3). Revenues are discussed more fully in the next section.

Local governments are generally assigned expenditure functions considered theoretically appropriate for local provision. This simple statement, however, does not adequately capture considerable variations in the actual provision of these functions within countries, some lack of clarity/too much overlap in the provision of specific functions by different levels and types of local government, and the sometimes highly consequential effects of controls imposed and ad hoc interference by higher levels of government in local fiscal matters.

Own-source revenues are one of the greatest weaknesses of local government systems in many developing and middle-income countries, particularly in South Asia. Although at

least one type of local government in each country in the region has a constitutional or legal right to use a range of revenue sources, there are constraints on this authority, and it is rarely used adequately.

The significance of local government spending in total public spending also varies a great deal. Indian local governments have the greatest share, at about a third of public spending, and this fraction is dominated by urban areas. At the low end are Sri Lanka (0.5 percent), Afghanistan (2 percent), and Bangladesh (3 percent). Pakistan is at 5 percent and Bhutan 16 percent. These figures, however, mask considerable differences in local autonomy because many types of local functions are largely deconcentrated or centrally controlled

TABLE 3.3 Local government functions, revenues, and expenditure shares

	Local functions	Local revenues ^a	Local spending share
Afghanistan	Despite some formal clarity on LG functions, CG agencies and their subnational departments manage many key services.	Municipalities are allowed to raise funds through a variety of tax and nontax revenues.	24% of public spending is subnational but only 8% subprovincial and 2% municipal (2007).
Bangladesh	Most LGs have no strong direct role in providing services and largely function as deconcentrated central government agents.	LGs have some formal revenue options in the form of taxes, fees, rates, and rentals.	3% of expenditure by LGs (2011/12); other local-level spending is centrally controlled.
Bhutan	LGs have defined roles; <i>thromdes</i> have 27 functions, including water, sanitation, and solid waste, as per 2011 Thromde Rules.	<i>Thromdes</i> and <i>gewogs</i> are allowed to levy and collect certain tax and nontax revenues.	22% of public spending (2008) is local; larger share for <i>dzongkhags</i> than <i>gewogs</i> .
India	Municipalities have 18 functions (Constitution, 12th Schedule), but each state determines specifics (much variation), focus is on core (urban) functions (water, streetlights, sanitation, roads).	Municipal bodies may levy and collect taxes and other revenues from a constitutional list (7th Schedule) if allowed by state governments.	About 66% of public spending is subnational (2004), nearly evenly divided between states and lower tiers; high share in urban areas.
Maldives	Atolls have 20 functions (oversight, consultation, revenue raising); islands and cities have 25 functions.	Atolls, islands, and cities can only charge fees for services delivered.	About 5% of public expenditures are made by LGs (2011).
Nepal	System evolving; some functions assigned to development committees (village or municipal and district levels).	LGs have access to diverse bases, more so in municipalities.	About 10% of public expenditures are made by LGs (2013).
Pakistan	Functions vary by province and LG: districts (mostly rural infrastructure, some basic social services); <i>tehsils</i> (urban services); unions help villages; neighborhoods propose projects.	Sources vary by LG type (districts, <i>tehsils</i> , unions); LG resources limited with most funding transferred.	LG expenditures constitute about 5% of public spending (2011). Total provincial and local spending is about 33%.
Sri Lanka	LGs are responsible for municipal solid waste, utilities, and markets, but share responsibility with the center for other sectors.	Municipal councils are allowed to levy taxes and user fees within limits set by the central government.	Municipalities account independently for less than 0.5% of public spending (2006).

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

a. See table 3.6 for more detailed information on local own-source revenues.

through transfer policy or overt interference, so they are not truly local.

In some cases, services are provided by alternative means. In Afghanistan, for example, local service delivery entities fill gaps in delivery of services assigned to weak formal local governments. These entities include community development councils and school management committees. Use of such mechanisms may be needed at certain stages of system development, but they can also hinder the ability of formal local governments to take up their legal functions.

Lack of clarity in institutional roles and in interjurisdictional coordination

Insufficient clarity in the powers and responsibilities of urban governments—resulting from the legal framework or the practices of government actors—is not uncommon. This murkiness can lead to gaps and redundancies in service delivery, complicate resource generation and allocation, and create confusion

about what higher levels of government and citizens should hold urban governments accountable for.

Equally important, particularly for urban areas, is that jurisdictional cooperation and coordination mechanisms are largely underdeveloped or ineffectively used in South Asia (table 3.4). Such mechanisms can be vertical (among levels), horizontal (across the same level, including in metropolitan areas), general purpose (for example, a broad-based metropolitan development authority), or specific in purpose (for a particular service sector, such as roads or water, for instance). In some cases, of course, local governments are fairly self-contained and have few responsibilities, limiting the need for coordination across jurisdictions. In the federal countries, decisions and behaviors of the state and provincial governments strongly affect avenues for cooperation.

In more decentralized environments and where jurisdictional proximity is important, intergovernmental action requires careful

TABLE 3.4 Interjurisdictional cooperation and coordination mechanisms

Afghanistan	There are no formal mechanisms for jurisdictional cooperation. International Provincial Reconstruction Teams work across provinces but somewhat outside formal government.
Bangladesh	Given the highly centralized nature of Bangladesh's system, cooperation is largely managed by the Local Government Division of the central government.
Bhutan	Members of <i>thromde</i> governments attend <i>dzongkhag</i> sessions to coordinate decisions, and any issues are referred to the Ministry of Works and Human Settlement for adjudication.
India	Each state determines its institutional framework for execution of functions and coordination within its jurisdiction, including among LGs and various types of state-level parastatal organizations. In general, however, coordination is often considered inadequate.
Maldives	The country's dispersed islands preclude robust cooperation in most areas; CG provides certain services, for example, education in regional hubs.
Nepal	Extensive planning processes and local coordination bodies provide for coordination among jurisdictions and deconcentrated agencies, although practice is mixed. CG agencies coordinate delivery of most public services across jurisdictions.
Pakistan	Provinces set mandatory LG policy; LG commissions and appointed civil servants may settle interjurisdictional disputes; jurisdictions responsible for municipal services in rural and urban areas can enter into service agreements with other LGs, higher or lower, to achieve economies of scale.
Sri Lanka	Ministry of Local Government and Provincial Councils holds monthly meetings to coordinate with provincial commissioners and external organizations working with local governments. Municipal services are largely coordinated by the CG Urban Development Authority.

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

coordination. Because central and regional governments are strong, some coordination may be handled by mandate from above, but this setup does not preclude the need for other mechanisms, particularly for more independent urban governments and as local governments in general more fully assume their intended roles.

Inadequate subnational autonomy and discretion

Decentralization theory holds that effective local governments need a degree of autonomy to respond to the demands of constituents, meet their functional obligations, and support the development of their territories. Autonomy is never absolute, however, and frameworks, capacity, and accountability must be developed to avoid abuse. Local autonomy is modest at best in South Asia, making it hard for local governments to act decisively and independently and impeding the development of governance and accountability links between local governments and citizens.

Table 3.5 assesses the degree of autonomy and discretion that local governments are allowed along four dimensions. The first is an overall assessment of the general independence of local governments and how much control they are subject to. The strongest autonomy is at the intermediate level in the two federal systems, particularly Indian states. Indian states have considerable power over their own affairs as well as over devolution to lower tiers, and they can constrain the powers and choices even of important cities despite the constitutional amendments in the 1990s that were intended to create the basis for empowering local bodies.

Where the unitary countries use intermediate tiers, these tiers tend to have powers (including formal powers over lower tiers, as in Sri Lanka), but they are substantially accountable to the central government. The various types of local governments have some discretion over certain functions and resources in most countries, but they are often heavily influenced by higher tiers and particular ministries. The greatest autonomy

may exist at the lowest tiers in some countries (communities, wards, village committees), but only over very minor functions and resources. Recent reforms in some countries appear to signal a willingness to increase local autonomy, but much is still to be done across the board.

Local governments have authority to prepare their own budgets in most countries, but this power is frequently offset by heavy dependence on transfers, requirements for budget approval by higher tiers, lack of capacity or incentives to prepare proper budgets, and so on. Local governments are even more constrained in controlling local staff and human resource management. In some cases, some or all senior local government staff appointments are made by the national government (Bhutan, Maldives, and Nepal) or require central approval (Bangladesh). Intermediate officials appointed by the center can also get involved in or even manage local hiring decisions (Afghanistan, Sri Lanka). Local governments have somewhat more staff control in India and Pakistan, subject to state and provincial regulations that vary across each country.

Perhaps the most heavily constrained aspect of local government autonomy is revenue generation. In some cases, all local revenue rates are prescribed by the central government (Afghanistan, Maldives, and Nepal). In others (Bangladesh and Bhutan) local governments have a bit more discretion but must follow nationally defined guidelines or secure central government approval. In India and Pakistan, local governments may have some formal discretion over setting local tax rates but are generally subject to strong state or provincial revenue regulations and oversight.

The resource deficit

A stark urban resource deficit reinforces the above urban empowerment deficit in two ways: an overall lack of funds for local public services and a fiscal gap between the cost of assigned functions and the proceeds of allowable local revenues. Both problems are hard to quantify given the lack of precise functional

TABLE 3.5 Intermediate tier and local government autonomy and discretion

	General	Budgeting	Hiring and human resource management	Revenue
Afghanistan	Centralized system; community development councils (not formal LGs) have some discretion.	CG develops budget; provinces influence district allocations; municipalities have some autonomy, but CG appoints mayors.	President appoints LG executives; ministries largely choose staff, but appointed provincial governors have some influence.	Municipalities have no autonomy to set official tax rates and charge levels, which are determined by the CG.
Bangladesh	Very limited LG autonomy in most respects.	CG ministry funding dominates budgets; LGs rely on opaque and erratic transfers.	Hiring approved by Local Government Division; all LG staff report to CG ministries.	Municipalities set rates and charges based on CG guidelines, but CG can override.
Bhutan	Increasing autonomy, and greatest at the lowest level.	Lower tiers develop budgets for approval and aggregation at higher tiers.	Chief administrative officers are appointed by CG, which largely controls staffing.	<i>Thromdes</i> set rates and charges, may devise new taxes; but all require CG approval.
India	States have strong autonomy and control substate roles; LG autonomy is relatively limited.	LGs prepare their budgets subject to state regulation; if not indebted they are fairly independent.	State Public Service Commissions regulate LG hires, but specific practices can vary across states.	LGs have limited revenue autonomy and are constrained by other factors, for example, rent controls.
Maldives	Roles defined, but some LG discretion in fulfilling them.	All subnational governments develop their own budgets.	Local administrators are appointed by Civil Service Commission (consults councils).	LGs only collect fees for services (defined by CG law).
Nepal	Functions are established, but under review for the new constitution.	Budget is under CG medium-term plans; formal autonomy for LG budgets.	Local officials are hired by CG.	All main LG revenues are subject to rates prescribed by CG.
Pakistan	Much spending is devolved to the provinces, but provinces have been slow to empower districts.	Districts form own budgets per district government budgeting rules.	District and <i>tehsil</i> governments can hire personnel as per provincial policy guidelines.	Limited; city districts and <i>tehsils</i> set property tax (a provincial tax) rates subject to guidelines.
Sri Lanka	Low LG autonomy; CG retains planning function, giving wide scope for intervention in local affairs.	Local bodies have some control over budget process but frequently lack technical capacity.	Provinces hire LG staff; provincial chief secretary named by national cabinet; governors influence appointments and human resource management.	LGs have very little revenue autonomy.

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

assignments and severe data constraints, but a sense of its severity is evident. This section provides additional information on the range of revenue sources available to local governments—own-source, intergovernmental transfers, and borrowing.

Own-source revenues

Own-source revenues raised directly by local governments or shared by higher levels by law or local government discretion are critical

in decentralized fiscal systems (table 3.6). A number of points can be drawn from available information.

First, at least one type of local government in each country has constitutional or legal rights to use a range of revenue sources. But individual taxes are selectively shared by higher levels of government only in India, Nepal, and Pakistan. (Practices for sharing pooled [from multiple revenues] higher-level resources with local governments are summarized in table 3.7.)

TABLE 3.6 Own-source revenues, shared taxes, and local revenue significance

	Own-source revenues	Shared revenues	Own-source revenue importance
Afghanistan	LGs use property and business taxes, octroi (an entry tax on certain consumables), and service fees, among others; some extralegal fees.	No major individually shared taxes. ^a	LG revenues vary greatly; some (urban) raise half to most of their income, others little.
Bangladesh	LGs have access to various taxes, fees, and rentals, but limited use except in city corporations.	No major individually shared taxes. ^a	Varies: cities raise about 20%, union <i>parishads</i> about 14%.
Bhutan	<i>Thromdes</i> and <i>gewogs</i> can levy limited local taxes.	No major individually shared taxes. ^a	LGs raise only about 1% of their revenues.
India	Urban LGs tax property, nonmotorized vehicles, professions, and advertising; octroi formerly widely used, now abolished in all states but one; rural LGs use minor fees and charges.	CG and states mainly use pooled transfers (table 3.7), but state practices vary; shared CG tax on goods and services has been proposed.	LGs raise < 3% of public revenues (about 33% of spending) and 10% of their income; 90% of LG revenue from urban LGs; variation high across and within states.
Maldives	Atolls, islands, and cities can charge fees for services delivered.	No major individually shared taxes. ^a	LGs raise very small amounts of revenue.
Nepal	Municipalities have access to property, entertainment, vehicle, advertising, commercial video, and business enterprise taxes; user charges; building permit fees.	CG shares with DDCs (for example, land and housing registration), VDCs (natural resources), and municipalities (vehicle); a few municipal-DDC shares	LG own-source revenue was 2% of total public revenues (about 10% of public spending) and about 13% of total LG revenues (2012).
Pakistan	Vary: districts (education and health taxes, licenses, charges); <i>tehsil</i> (property tax, entertainment fees, permits, cattle markets, user charges); union (fees and charges).	2.5% of general sales tax shared to offset loss of octroi.	Provincial revenues account for only about 7% of total public revenues (compared with 35% of expenditures); LG revenues are even smaller.
Sri Lanka	Municipalities use taxes on property, vehicles, and animals; user charges; and license fees.	No major individually shared taxes. ^a	Subnational taxes account for less than 7% of total public revenues.

Sources: Based on the literature (see references).

Note: CG = central government; DDC = district development committee; LG = local government; VDC = village development committee.

a. See table 3.7 on intergovernmental transfers financed by pooled revenues from multiple taxes and sources.

Second, virtually all allowable taxes and nontax revenues—property taxes, license fees, permits, user charges, and so on—would be considered appropriate local revenues. Most of them, however, are subject to a degree of higher-level control in all countries. Many also suffer from inappropriate policy provisions, and collection is typically weak. In short, even normatively desirable and allowable local taxes are not well used, although promising reform efforts are under way in

selected cities of some countries, such as Bangalore in India (Rao 2013).

Third, the local fiscal (revenue-expenditure) gap appears to be substantial, demonstrably so in countries for which data are available. Local bodies in India, for example, account for about 33 percent of public spending but raise only 3 percent of total public revenues and 10 percent of total local revenues. In Pakistan, local governments account for 35 percent of spending but raise only 7 percent

of revenues. Local governments in Nepal and Pakistan, respectively, raise 2 percent and 7 percent of total public sector revenue.

Fourth, in most countries in the region, urban governments have more revenue authority or raise a considerably greater share of their total revenues than do other types of local governments. In India, for example, there is general concern about inadequate exploitation of allowable local revenue sources, but 90 percent of total local government revenue is raised in urban areas.

Intergovernmental transfers

Local governments globally suffer from natural fiscal imbalances and almost invariably

require intergovernmental transfers, even in the most advanced economies. Table 3.7 summarizes fiscal transfers from general revenue or pools of multiple individual revenue sources, making a distinction between unconditional and conditional transfers. Unconditional transfers are important in decentralized systems to augment the fiscal power of autonomous local governments, while conditional transfers provide a means for higher levels to encourage spending on basic services that advance national priorities. Conditional transfers target a particular sector (for instance, health or education) or a specific type of expenditure (for instance, salaries or development expenditure).

TABLE 3.7 Intergovernmental transfers

	Unconditional	Conditional
Afghanistan	No major unconditional transfers; minor funding flows to Community Development Committees (not official local governments).	Transfers to provinces are essentially disbursements from line ministries to provincial departments; no formal municipal transfers.
Bangladesh	Annual Development Program Block Grant is allocated by formula; accounts for about 5–20% of revenue, often depending on LG type.	The vast majority of LG transfers are earmarked grants for salaries, ministry projects, and specific development projects (including aid projects).
Bhutan	<i>Thromdes</i> receive unconditional grants equal to the current or capital deficit (subject to capital expenditure justification). Other levels receive transfers based on a clearly defined formula.	Various CG agencies provide earmarked grants for particular purposes to LGs.
India	Indian transfers are complicated; a large pool-based, formula-allocated federal transfer goes to states; State Finance Commissions share revenues (from a pool and in some cases specific taxes) with lower tiers; federal government transfers to lower tiers pass through states.	Growing conditional transfers (most from line ministries), some allocated by criteria, others less transparent; a key urban infrastructure program (linked to reforms) is the Jawaharlal Nehru National Urban Renewal Mission; increasing use of performance-based grants for specific purposes.
Maldives	CG provides grants to LGs that rarely exceed expenditures on salaries of councilors and staff; revenue from national facilities is transferred to subdivision of facility location.	No conditional transfers to LGs.
Nepal	Two unconditional block grants: minimum and a formula-based municipal grant; though officially unconditional, CG provides directives to target beneficiaries of spending.	Formal conditional grants to LGs are devoted primarily to education, roads, and other specific local infrastructure.
Pakistan	Provinces rely heavily on CG unconditional transfers.	Ad hoc federal and provincial grants to LGs earmarked for recurrent (salaries, O&M) and capital spending (for example, federal Khushhal Pakistan Program).
Sri Lanka	Finance Commission can make ad hoc grants to local bodies passed through provinces.	Earmarked central transfers go to provinces and LGs, largely for salaries.

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government; O&M = operations and maintenance.

Assessing the overall situation with transfers is complicated by the complexity of inter-governmental systems, a murkiness in the degree of autonomy of some levels and types of local governments, and the lack of clarity on their specific functions. But a few points can be made. First, in some countries, one or more subnational government levels are embedded in the budgets of the central or intermediate government (essentially deconcentrated), for example, Afghan provinces and Sri Lankan local governments. Other types of differentiation are also observed; for example, only the four largest *thromdes* in Bhutan are self-governing, with the others under the oversight of the *dzongkhags*.

Second, a majority of South Asian countries have some type of formula-allocated unconditional transfer. These transfers range from large allocations from the federal government to intermediate tiers in India and Pakistan to much more modest or minor transfers to local governments in Bangladesh, Bhutan, Maldives, and Nepal. Even if transfers are officially unconditional, there are often higher-level rules and “guidance” placed on use. In some cases, minor block grants flow to levels or bodies below official local governments, such as Community Development Committees in Afghanistan, but the municipalities in this case receive no transfers at all. Potential concerns arise in all countries about the effects of unconditional transfers, for example, whether they undermine incentives for local revenue generation, whether they in fact fairly treat the neediest areas, and so on. Limited evidence reinforces these potential concerns, but better information and analysis are needed.

Third, in cases where the national (federal) government focuses on transfers to intermediate tiers (India and Pakistan), these tiers often have discretion over what to share and how to share it with lower tiers. Sharing is often done using clear criteria or a formula. Empowering intermediate tiers with this role can result in considerable differential treatment of local governments among states and provinces (or even within them), which may be justifiable but can also cause problems.

Fourth, most countries operate some type of conditional transfer program for local governments. Local governments in Bangladesh and Sri Lanka, for example, receive earmarked transfers for salaries; Bhutan and Nepal use a wider range of conditional transfers for specific purposes. In India and Pakistan, local governments receive various conditional transfers (often through programs of individual line ministries) from both federal and state or provincial governments.

Fifth, some efforts have been made in recent years to promote reform through compliance- or performance-based grants in the region. Some of these grants are simply special cases of regular conditional transfers, while others are or were broader programs of various scales (for example, Bangladesh and Nepal; in Nepal, they were absorbed into the unconditional transfer system). The Jawaharlal Nehru National Urban Renewal Mission in India is an example of a very large program intended to support critical urban government expenditures while creating incentives for the adoption of much-needed reforms. Critics maintain that these performance-based grants, although potentially desirable in theory and intent, are often in practice treated too separately from regular operations and suffer from weaknesses in design and implementation.

Subnational borrowing

Local governments, especially in urban areas, have great needs for infrastructure finance. As local government systems mature and decentralization advances, subnational borrowing can become an important source of funds for urban infrastructure development. International experience indicates a well-defined borrowing framework is needed to ensure fiscal responsibility. Subnational borrowing is generally underexploited and not very advanced in the region (table 3.8), but a few basic observations can be made.

First, except for Afghanistan, some type of local government borrowing is legally allowed throughout the region. The nature of

TABLE 3.8 Subnational borrowing frameworks

Afghanistan	Municipal borrowing (domestic or foreign) through Ministry of Finance sources is allowed by the Subnational Governance Policy and the Municipalities Law (2000), but exact requirements are not defined. The Public Finance and Expenditure Management Law states that cities can only borrow from the CG; in practice, cities have been borrowing but from unknown sources.
Bangladesh	LG borrowing from external sources is allowed with CG approval but rare. Urban LGs can and do borrow from the Bangladesh Municipal Development Fund.
Bhutan	<i>Thromdes</i> may borrow funds through the Ministry of Finance or with its approval.
India	LG borrowing is governed by the Local Authorities Loans Act (1914) and increasingly accessed from multiple sources, including bonds. Urban LGs can borrow from the market without federal or state guarantee if they meet specific criteria. A Pool Finance Development Fund is intended for smaller LGs, and some states have their own mechanisms. Urban LGs dominate local borrowing. The Income Tax Act was amended to allow urban LGs to issue tax-free bonds.
Maldives	All levels of subnational government are technically empowered to borrow—from other LGs, banks, and international financial institutions—and to issue financial instruments, such as bonds and securities. To date there has been no borrowing.
Nepal	Municipalities can, in principle, borrow using collateral or CG guarantees. Borrowing from foreign governments or entities requires CG approval. To date there has been no borrowing.
Pakistan	Provinces are allowed to borrow with informal CG monitoring. Outstanding provincial debt is about 5% of GDP. Metropolitan corporations can borrow with CG approval.
Sri Lanka	Municipal councils may secure bank loans and issue bonds with approval from the Minister of Local Governments and the relevant provincial council, subject to certain criteria. The CG runs the Local Loan and Development Fund, which offers loans for local infrastructure investment at below market rates.

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government.

borrowing, however, varies. In a number of cases, the scope is very limited (for example, in Bhutan it occurs only through, or with approval of, the Ministry of Finance, and central government approvals or guarantees are required in Bangladesh, Nepal, Pakistan, and Sri Lanka). In some of these countries, only certain types of local governments may borrow: *thromdes* in Bhutan, municipalities in Nepal and Sri Lanka, and metropolitan corporations in Pakistan. In practice little evidence can be found of significant borrowing in most countries, although it is increasing in India in a few of the larger urban bodies. The lack of borrowing for critical infrastructure investment is a missed opportunity for South Asian urban governments to play their increasingly needed developmental role.

Second, some type of framework must be in place and certain conditions must be followed before local governments can borrow

in most countries. These requirements relate to general financial practices as well as to specific indicators of overall local government debt levels and debt-service burdens. Most of the borrowing frameworks need further development and require better mechanisms for monitoring and enforcement.

Third, several South Asian countries have special mechanisms for lending to local governments unable to directly access financial markets; for example, a Municipal Development Fund in Bangladesh and a Local Loan and Development Fund in Sri Lanka. Some states in India, including Tamil Nadu, have established dedicated local government lending mechanisms. Problems often arise in managing such funds, and they can be heavily influenced by politics, yet they can play a key role in countries where local governments need to develop creditworthiness before accessing capital markets. Other mechanisms,

such as the Pooled Finance Development Fund in India, can also open the borrowing door to smaller or fiscally weaker local governments that could not otherwise borrow on their own. Also in India, the Income Tax Act has been amended to allow urban governments to issue tax-free bonds.

The accountability deficit

Beyond basic structures and decentralized fiscal functions, a range of governance and accountability weaknesses require attention if urban governments are to function well and sustainably. Of critical concern are local government administrative, managerial, and oversight mechanisms that provide consistency and transparency and allow for appropriate levels of the upward reporting and accountability that are essential even in decentralized systems. Equally important are provisions for downward accountability mechanisms—electoral and nonelectoral—that create space for citizens to place demands on elected local governments.

Administrative and managerial mechanisms

Table 3.9 provides basic information on accountability mechanisms in local government administrative and management systems, including the state of formal public financial management (PFM) systems, the extent to which planning and budgeting mechanisms are adequately linked, whether audit mechanisms are in place, and whether a framework for public-private partnerships (PPPs) has been developed. Given the relatively weak or nascent state of decentralization in South Asia, the extent to which these mechanisms exist and are used can vary extensively, and there is considerable room for improvement in virtually all cases.

Formal administrative accountability and local government managerial systems are generally present in the region, but many are relatively weak or not well used, especially in countries new to decentralization and in areas with particularly limited capacity. PFM

systems are rarely strong, but various attempts are under way to improve them. In many cases local government PFM systems have received little dedicated attention, but some newer reforms (Bhutan) or cases in which donors helped build certain elements of local systems (for example, Bangladesh, Nepal) may have left PFM in a somewhat better position. Still, such mechanisms may not be fully implemented or institutionalized or are hindered by weak capacity. In India, state municipal acts define procedures for local government PFM.

Links between development plans, public investment programs, and annual budgets have long been a weakness of public sector management in the region, and there are no exemplary cases of surmounting this consequential challenge. Reform attempts occur, but are seldom well implemented or are somewhat separated from formal government processes. And in many cases plans remain more like wish lists or are heavily influenced by higher-level agents. Institutional fragmentation (including in metropolitan areas) and the lack of interjurisdictional cooperation exacerbate the problem. In some countries, features of the institutional framework reinforce the lack of integration and create a mindset that permeates government operations—for example, the long-time separation between the National Planning Commission and the National Finance Commission in India before the former was abolished in 2014.

Each country has some type of audit mechanism led by a national audit institution, often with a mandate for audit of both local and higher-level governments. In some countries, such as Bangladesh, audits must be completed by private auditing companies for local governments to qualify for intergovernmental transfers. Even legally mandated audits, however, are not always conducted as prescribed or with an adequate quality level or frequency. In particular, private audits are not reviewed by the supreme audit institution. Thus, the results of audits likely do not have any obvious consequences for poor performers. However, because audits are a potentially important source of information to be used

TABLE 3.9 Administrative accountability and managerial mechanisms

	Formal PFM systems	Plan-budget linkages	Audit mechanisms	PPP framework
Afghanistan	No clear LG PFM system and limited formal reporting requirements.	Provincial plans and budgets not well linked; municipal plans lacking.	No formal LG audit mechanisms.	PPPs legal but limited; some mayors independently exploring options.
Bangladesh	Central PFM weak but improving; local PFM capacity is very low.	Budgets (especially cities) target accessible CG funds; weak formal plans.	Annual external audits of municipal budgets mandated but uneven.	Recent PPP policies but only at national level; PPPs limited in practice.
Bhutan	LGs use a multiyear finance framework; well monitored; capacity limited.	Planning and budgeting linked, but LGs take liberties in execution.	CG is supposed to audit LGs every two years.	MoEA issued initial framework for private participation in infrastructure.
India	State municipal acts define procedures for LG PFM; some urban movement from cash to accrual accounting.	Formal linkages between LG plans and budgets have been challenging to develop.	Supreme Audit Institution inspects public (including LG) accounts; also lower-level audit.	Evolving national framework, but only a few states have well-developed PPP laws and frameworks.
Maldives	LGs fall under CG PFM legal framework, including Public Finance Act.	Limited planning capacity; budgets rarely cover more than salaries.	Supreme Audit Institution and CG LG Authority have the right to audit any LG accounts.	PPPs implemented on an ad hoc basis.
Nepal	MoLG manages three-year implementation of formal LG public expenditure and financial accountability enhancement plans.	Periodic five-year plans and annual plans, which provide the basis for expenditure budgets.	The Supreme Audit Institution conducts audits of block grants to the district level; below the district, audits are conducted by registered or private auditors.	National Planning Commission issued a White Paper on Public Private Partnership (2011); CG has PPP policy committee; LG law mandates LG PPP committees.
Pakistan	Financial reporting and audit reform under way; also provincial PFM regulation.	Annual budget plans; execution and links to other levels weak.	Auditor General has audit authority over provincial and local accounts.	No overall LG framework, but some provinces (for example, Punjab) have laws on PPP.
Sri Lanka	Ministry of Finance and Planning regulates PFM, management of assets, and procurement.	Medium-Term Expenditure Framework links plans and budget; center drives, feedback mechanisms weak.	Auditor General authorized to audit subnational government accounts.	No PPP framework; procurement rules are part of overall financial regulations.

Sources: Based on the literature (see references).

Note: CG = central government; LG = local government; MoEA = Ministry of Economic Affairs; MoLG = Ministry of Local Government; PFM = public financial management; PPP = public-private partnership.

by higher-level governments and citizens to monitor local government performance, extending their use and improving their quality would be valuable.

PPPs are receiving increasing attention and appear to be legal in all countries. However, not many dedicated policies for local PPPs are evident. A few countries, such as Nepal, have specific mandates to promote them, and in India and Pakistan a number of states and provinces have developed PPP frameworks for lower tiers. PPPs remain relatively limited in practice, but there are instances of

productive initiatives in some countries, and they remain a potentially desirable means for urban government service provision.

Subnational elections

Local government elections are a cornerstone of devolution. In South Asia, many countries are in varying stages of transition to at least partially devolved systems, so there are multiple types of subnational elections at different levels (table 3.10), although not at deconcentrated tiers with purely administrative roles.

TABLE 3.10 Subnational elections and assemblies

	Level	Extent of political competition	Direct election of mayor or head
Afghanistan	Only provincial, but law allows municipal and district; community development councils (not LGs) elected.	Many competing parties, but system favors independent candidates from specific districts.	Municipal mayors are appointed.
Bangladesh	<i>Upazila</i> and union <i>parishads</i> , <i>pourashavas</i> , city corporations.	Two main parties, but additional smaller ones exist.	All local government chairpersons and mayors are directly elected.
Bhutan	All levels since 2011, but some issues (for example, low turnout of women).	Candidates are not allowed to be members of political parties; few candidates in first local elections.	Mayors are directly elected.
India	State (some bicameral) level and various substate levels, including in municipal bodies and in three-tier <i>panchayati raj</i> (rural local bodies) in each state with population > 2 million.	High (many parties), but the situation varies across areas; a few members are nominated to local councils.	The election of mayors is direct in some states, indirect in others.
Maldives	All atolls, cities, and islands elect local councilors.	Multiparty system; three main parties; competitive elections.	The elected councilors elect the mayor or president.
Nepal	LG elections not held since 2002.	National electoral competition is high with 122 registered parties.	Mayors are selected by local committees.
Pakistan	Provincial and local; three-tier LG system; union council directly elected; (reserved number of seats for women and minorities).	Strong political competition often along clan or tribal lines.	Councils select chief executive officer, mayors, and deputies in <i>tehsils</i> and districts; some provinces can, after due process, dismiss LG officials.
Sri Lanka	Council elections at provincial, municipal, and rural levels.	National parties and alliances control nomination; mobilization and voting often high.	President appoints provincial governors; majority party nominates urban LG chairs.

Sources: Based on the literature (see references).

Note: LG = local government.

All countries with state or provincial tiers have elections at those levels, but the use of local elections is more mixed. In some countries, such as Bhutan and Maldives, elections are held at all levels. In other countries, such as Bangladesh, Pakistan, and Sri Lanka, elections are held only at selected (including urban) subnational levels. In a few countries, there are no local elections. In Afghanistan, for example, municipal and district elections are provided for in legislation, but they have yet to be held. Political turmoil has prevented local elections in Nepal since 2002, but they are expected to be called when there is political settlement around a new constitution.

The extent of political competition in the region also varies, with a few countries, such as Bangladesh and Maldives, dominated by a few political parties. Other countries, such as Afghanistan, India, Nepal, and Pakistan, have many political parties, some with ethnic or religious associations with influence that varies by area. A number of specific rules or conditions are reported; for example, candidates in Bhutan may not be members of political parties, and local nominations in Sri Lanka are controlled by national political parties.

Another commonly accepted indicator of local democracy is whether local government mayors are directly elected. In Bangladesh and Bhutan mayors are elected, but it is more

common for South Asian mayors to be selected by elected councilors, as in Maldives, Pakistan, and Sri Lanka. In India, the practice varies across states, and all municipal mayors are appointed in Afghanistan.

In short, the state of local electoral democracy in South Asia is uneven, but many countries are increasing efforts to promote it. Local elections, of course, can be captured by local elites or offset by other factors, so even a seemingly good electoral system is no guarantee of the downward accountability needed

for citizens to discipline local government performance.

Transparency and nonelectoral accountability mechanisms

Although local elections are a core governance priority in devolved systems, they are considered a blunt instrument of accountability that should be complemented by other means of promoting transparency and downward accountability. Table 3.11 illustrates

TABLE 3.11 Transparency and nonelectoral accountability mechanisms

	Right to or freedom of information law	Input mechanisms	Feedback mechanisms
Afghanistan	None.	No formal LG civic input process; community development councils use participatory planning and budgeting (role unclear).	No formal feedback means; Subnational Governance Policy has participatory provisions but does not require implementation.
Bangladesh	LG Act 2009 and RTI Act 2009 require publishing of plans, budgets, and the like, and protect citizen access to public documents.	2009 law created <i>shava</i> (ward) and local committees; <i>shava</i> decisions require LG review; committees have one LG representative and four to six others.	<i>Shava</i> meetings allow LG feedback but may be vulnerable to elite capture, and CG has final authority over use.
Bhutan	RTI law in process; LGs must publish agendas, development and work plans, and budgets.	No direct participation, but LG sessions are public; plans and budgets are bottom up; lower tiers submit to higher tiers (unclear effect).	No information available.
India	Powerful 2005 national RTI Act and RTI Acts in most states; several states have adopted disclosure acts for urban LGs.	Some push for participatory processes (for example, 11th Five-Year Plan) and some LG efforts; but uneven, underdeveloped, or underused in many areas.	Some feedback mechanisms exist, but they vary widely in form and whether driven by LG or civil society.
Maldives	2014 RTI Act; Commissioner of Information to be appointed to enforce act.	LG Act (2010) mandates atoll councils to promote citizen involvement in planning and development programs.	Ward meetings are held, and council meetings are open to the public.
Nepal	2007 RTI Act requires access to information and documents of public importance.	Various mechanisms at ward level and to link levels, but participation not yet strong, and subject to some political interference.	Good Governance Unit reviews corruption charges; large number of social accountability initiatives.
Pakistan	Strong FOI and RTI laws in Punjab and Khyber Pakhtunkhwa apply to LGs; law in Sindh is weak; general implementation challenges.	Citizen consultation is required before budget letter is issued, but limited interaction in practice.	Punjab has instituted large-scale proactive feedback mechanisms; smaller pilots by some donors and NGOs.
Sri Lanka	RTI Act drafted and expected to pass in 2015.	Citizens can submit project requests in budget planning.	CG issued a Citizens' Charter to support local grievance mechanisms.

Sources: Based on the literature (see references).

Note: CG = central government; FOI = freedom of information; LG = local government; NGO = nongovernmental organization; RTI = right to information.

selected mechanisms that provide information to citizens and empower citizens to influence and evaluate local governments.

Most South Asian countries have passed right to information or freedom of information acts, including Bangladesh, Maldives, India (some Indian states also have local government disclosure acts), Nepal, and Pakistan. Bhutan and Sri Lanka have draft laws (with unclear traction in Sri Lanka). Only Afghanistan has apparently not made efforts on this front. Some laws are, of course, stronger than others: Pakistan, for example, has many exemptions to public access. More generally there is a long way to go before these, mostly relatively recent, laws are broadly implemented, understood, and have the desired effects.

Other potential enablers of local accountability include mechanisms that offer citizens a way to engage in local government decision making (for example, participatory planning and budgeting). Attempts have been made to develop or encourage means for citizen input in all South Asian countries, but they vary greatly by level (many are at the community or village level); degree of formality (for example, organized deliberations as in Bangladesh versus general access to committee and council meetings as in Bhutan); stage (for example, proposing development projects as in Sri Lanka versus commenting on plans and budgets prepared by local governments as in Nepal); and demonstrable impact on local government decisions.

The lack of systematic assessments allows no firm overall conclusions to be made, but many relevant mechanisms in the region appear to be relatively weak and pro forma. There is anecdotal evidence of positive experiences—some mechanisms have been reported to be at least somewhat effective in some localities—as well as weak, ineffective, or token practices. Mechanisms that allow citizens to lodge petitions and provide feedback on the performance of their local governments (for example, tax-liability appeal mechanisms, complaint bureaus, citizen report cards) appear to be less prevalent than participatory mechanisms in much of South

Asia, but several countries have some experience with them. Citizen report cards, in particular, have been a focus of considerable experimentation by both governments and civil society groups, particularly in parts of India, and have also been piloted in Nepal, Pakistan, and Sri Lanka.

Right to services laws have emerged in Indian states in the past few years as a potentially important mechanism for holding local governments accountable. This type of legislation sets out service standards and provides legal recourse to citizens who have not been receiving the legally mandated quality of service. Such legislation has helped prompt the development of citizen service centers with higher levels of responsiveness and accountability for performance.

Where empowerment, resources, and accountability meet: Implications for urban service delivery

The general intergovernmental institutional structures, fiscal arrangements, and governance mechanisms reviewed above—and the three deficits—collectively determine how well urban governments can meet their core services provision role, take charge of their territorial development, and develop productive relationships with other governmental and nongovernmental actors. This section tentatively explores how these factors may (or do) affect urban governments, with a focus on selected services.

Although some cities perform relatively well, South Asian urban governments overall do not adequately provide key public services needed for economic and social development. The region ranks ahead of only Sub-Saharan Africa on the share of the urban population with access to improved water sources, and it ranks last on access to improved sanitation. Moreover, service provision typically becomes more challenging as cities face increases in size, population, and the range of demands resulting from higher population diversity. In much of South Asia the rapid influx of urban residents is overwhelming the ability of cities

to provide basic services. For instance, access to improved sanitation for South Asian urban residents has declined from 61 percent to only 10 percent during the past two decades. Improvements in urban road networks also lag behind the pace of population growth.⁵

No “best practice” approach to structuring urban governance for effective services delivery exists. Suitable structures vary greatly, and comparisons are hindered by idiosyncrasies across and within countries. The identification of institutional arrangements that work well is further hindered by the fact that such arrangements cumulatively and reactively evolve. Problems with the road network in Dhaka, for example, result from years of underinvestment and inadequate planning at least as much as from current institutional and fiscal arrangements.

Within the diversity of how services delivery is organized, the institutional framework is critical: resources flow through and governance mechanisms are embedded in this framework, shaping the larger process of turning resource inputs into urban public services that respond to citizens’ needs. The framework provides incentives for services providers to perform, particularly through defined lines of accountability to government oversight bodies and to users of services.

The institutional framework for public services delivery in the South Asian urban landscape is largely one of functional fragmentation, that is, there are commonly dedicated single-purpose agencies for public services with substantial operational autonomy. Such autonomy allows for greater technical specialization and capacity as well as a degree of insulation from unwarranted political interference, but the fragmentation impedes urban autonomy and broader coordination.

Table 3.12 illustrates how functional fragmentation dominates the way five South Asian countries provide four basic urban services. These services are usually considered legitimate local functions given their limited externalities. In addition, benefits from these services accrue primarily to city residents, which is why urban governments would be expected to play a major role in their

provision. But the table shows that South Asian urban governments play a relatively modest role (note the few gray shaded cells where urban governments have strong authority). Evidence suggests they compare poorly with major cities in other regions (table 3.13).⁶

Most urban governments in South Asia have primary responsibility only for solid waste (but they lack full administrative control even of that). India’s cities have financing and administrative authority for local roads, but the situation is mixed elsewhere in the region. Financing is included in local budgets in most countries, but mainly as earmarked transfers.

Private operators generally deliver local public transport, with higher-level governments setting routes and licensing operators. Given the local nature of the service and the modest technical expertise required, urban governments could learn to perform these functions. Of the four services, water and sewerage is technically the most complex. In large cities in Bangladesh, India, Nepal, and Sri Lanka, centrally created and managed water and sewerage boards run services with limited involvement from urban governments.

The centralized control over staffing touched on above is a major issue for urban services delivery. In Bangladesh, Nepal, and Sri Lanka, the central government hires and fires key staff members who oversee delivery of these four services, and states and provinces play a significant role in India and Pakistan. In cases in which services are delivered by a special-purpose entity, such as water and sewerage authorities in big city corporations in Bangladesh, administrative control is exercised entirely by the central government.

Functional fragmentation is not necessarily undesirable. A dedicated entity controlled by the central government may allow pooling of technical and human resources across jurisdictions and provide a measure of insulation from potentially problematic local politics. But an institutional framework in which services delivery is fragmented among agencies with limited local government authority can have negative consequences as well. The

TABLE 3.12 Organization of services delivery in Bangladesh, India, Nepal, Pakistan, and Sri Lanka

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Municipal units	11 city corporations, 315 <i>pourashavas</i>	138 municipal corporations, 1,595 municipalities, 2,108 town councils	58 municipalities	5 city district governments (CDGs), 6 municipal or metropolitan councils (MECs)	23 municipal councils (MC)
Solid waste management					
Function	M Municipalities de jure and de facto responsible; delivery mix of public and private operators	M Municipalities de jure and de facto responsible; delivery mix of public and private operators	M Municipalities de jure and de facto responsible; delivery mix of public and private operators	M Municipalities de jure and de facto responsible; delivery mix of public and private operators	M Municipalities de jure and de facto responsible; delivery mix of public and private operators
Financing	M Municipalities cover capital and operating costs with own funds; transfers, contracts; set fees	M Municipalities cover capital and operating costs with own funds; authorize fees	M Municipalities cover capital and operating costs with own funds, authorize fees	M Municipalities cover capital and operating costs with own funds; PG authorizes taxes and fees	CG, M Municipalities cover capital and operating costs with own funds, but CG pays staff
Administrative control	CG, M CG appoints chief executive officer and chief inspector, who hire other staff; municipalities review plans and performance, but lack power to sanction	SG, M SG appoints head of department; municipalities other staff; municipalities oversee planning and performance, with SG input; limited CG oversight	CG CG appoints all heads of local administration and handles performance monitoring and evaluation	PG PG appoints senior staff and oversees operators	CG, M CG appoints staff, but MC decides on exact posting; MC handles planning and performance framework
Water and sewerage					
Function	CG, M Dhaka and Chittagong have autonomous water and sewerage authorities (WASAs) overseen by CG; smaller municipalities have own departments for piped water; provision often nonpipd, PS	SG, M Municipalities de jure responsible but significant variety de facto; delivery mix of municipalities and M and SG utilities	CG CG Kathmandu Upatyaka Khanepani Limited (KUKL) delivers services in Kathmandu Valley CG Nepal Water Supply Corporation (NWSC) performs functions elsewhere	PG, M Depending on PG, either municipalities or PG de jure and de facto responsible	CG, M MC is de jure responsible, but National Water Supply and Drainage Board is de facto responsible
Financing	CG, M CG finances WASAs' capital and operating costs, sets fees; municipalities finance capital and operating costs (often from CG transfers) and set fees	SG, M Municipalities and municipal utilities set and collect fees and cover capital and operating costs with own revenues and transfers	CG KUKL and NWSC set and collect water and sewerage fees for O&M costs; capital costs paid by municipalities and community contributions	PG PG covers capital and operating costs with own funds; authorizes fees	CG CG covers capital and operating costs with own funds; sets fees

(continues next page)

TABLE 3.12 Organization of services delivery in Bangladesh, India, Nepal, Pakistan, and Sri Lanka (continued)

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Administrative control	<p>CG, M CG appoints WASA staff and head officers of municipal departments; low-level staff are appointed by municipalities</p> <p>CG, municipalities control WASAs, own departments</p>	<p>SG, M SG appoints all senior staff; low-level staff hired by organization; SG utility oversight is shared by SG and municipality; municipal utility can be fully autonomous</p>	<p>CG CG appoints staff of both KUKL and NWSC; Municipalities on board of KUKL and influence planning; otherwise CG oversees; CG fully oversees NWSC</p>	<p>PG, M PGs fully oversee CDGs and appoint all senior staff for all municipalities; MECs that deliver services will have more low-level staffing, planning, and monitoring control</p>	<p>CG, M CG appoints staff and decides performance framework; planning is handled by CG in consultation with MCs on a project basis</p>
Local roads					
Function	<p>M Municipalities de jure and de facto responsible</p>	<p>M Municipalities de jure responsible; delivery mix of municipal and independent agencies</p>	<p>M Municipalities de jure and de facto responsible</p>	<p>PG, M PG and municipalities share de jure and de facto responsibility; PG delivers main and outer roads, municipalities inner and small roads</p>	<p>M Municipalities de jure and de facto responsible</p>
Financing	<p>CG, M Municipalities cover capital and operating costs with own funds, authorize fees; CG approves budget</p>	<p>M Municipalities cover capital and operating costs with own funds, authorize fees</p>	<p>M Municipalities cover capital and operating costs with own funds, Nepal Roads Board Town Development Fund, and cash contributions from residents</p>	<p>PG PG covers capital and operating costs with own funds</p>	<p>CG, M Municipalities cover capital and operating costs with own funds, but CG pays staff</p>
Administrative control	<p>CG, M CG appoints head of department and undertakes most human resource functions; municipalities handle planning and performance monitoring</p>	<p>M Municipality handles staffing, planning, and performance monitoring when providing service</p>	<p>CG, M CG appoints head of municipal departments; municipal departments handle planning and performance monitoring</p>	<p>PG PG appoints all staff</p>	<p>PG, M PG appoints staff; municipalities handle planning and performance framework</p>

TABLE 3.12 Organization of services delivery in Bangladesh, India, Nepal, Pakistan, and Sri Lanka (continued)

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Local public transport					
Function	CG is de jure responsible; PS delivers service	CG, SG, M Varied arrangements and fragmentation across public and PS	CG, M Delivery by PS with oversight from CG and municipalities	PG PG de jure responsible; PG and PS deliver services	CG, PG CG and PG are de jure responsible; both public and PS deliver services
Financing	CG CG sets fee levels, but in practice, PS charges at whim; CG has access to international loans for capital investment	CG, SG, M Municipalities cover capital and operating costs with own revenues and transfers; SG and CG set fees, collected by operator	CG, M, Financing comes from PS and fees collected by operators; municipalities cover costs (for example, depots) with own revenues	PG PG covers capital and operating costs with own funds; PS provides for own funding when contracted	CG Operators cover capital and operating costs with own funds; fees negotiated with and collected by PS, which provides own financing
Administrative control	CG CG handles route permits and licenses, regulations and performance, and staffing; private companies hire staff; municipalities on CG boards but little direct influence	CG, SG SG handles route permits, licenses, and staffing; SG and CG handle strategic planning, regulation, and monitoring; municipalities have input into planning and performance monitoring	CG, M CG is responsible for permits, licenses, overall planning, and traffic police; municipalities plan and manage parking and bus facilities and nonmotorized transport; private operators hire own staff	PG PG appoints all staff, issues route permits and licenses, and undertakes planning and monitoring functions; PS hires own staff	CG, PG PG issues licenses and route permits; operators hire and appoint their own staff; CG and PG handle planning and performance monitoring

Sources: Based on the literature (see references).

Note: Gray shaded cells indicate that urban governments have strong authority. CDG (Pakistan) = city district government; CG = central government; KUKL = Kathmandu Upatyaka Khanepani Limited; M = municipality; MC (Sri Lanka) = municipal council; MEC (Pakistan) = municipal/metro council; NWSC = Nepal Water Supply Corporation; O&M = operations and maintenance; PG = provincial government; PS = private sector; SG = state government; WASA = water and sewerage authorities.

TABLE 3.13 Functional responsibilities in selected global metropolitan areas

Function	Mumbai	Istanbul	Jakarta	Manila	São Paulo	Buenos Aires	Bogotá	Addis Ababa	Dar es Salaam	Kampala	Johannesburg
Roads and streets	C	C	M	C	M, C	M, C	M, C	R, Z, C	M, C	M	C
Public transport	N, P, C	M	N, M	PS	M, C	M	M	M	M	M	C
Water and sewerage	C, R, P	M	M	PS	M, C	M, C	M, C	M	M	M	C
Solid waste	P, C	M, C	M	M, C	M, C	M, C	M, C	M	N, M	M	C

Source: Sud and Yilmaz 2013.

Note: C = city government; M = metropolitan government; N = national government; P = provincial or state government; PS = private sector; R = regional government; Z = zonal government.

region's experience with services delivery and the inability of most South Asian cities to keep up with their growth suggest several concerns.

First, the diffusion of functional responsibility, financing power, and administrative control among levels of government complicates effective urban management. General rules and standards for revenue generation and personnel management, for example, are certainly appropriate, but they need to allow a workable measure of local discretion to deal with unique and evolving local conditions.

Second, overall urban development is hindered by the lack of strong coordinating entities at the city level that consider service provision holistically. There are some centrally managed urban development authorities, but these entities tend to focus on capital investments rather than the planning and delivery of core services. Although South Asian countries have planning systems and mechanisms that provide some notional means for coordination, these systems are often tied to individual service areas and specific funding mechanisms, weakening overall systematic coordination of services that must work synergistically.

Third, a striking feature of South Asian cities is the common absence of powerful persons or entities at the local level to help drive development. Mayors and councils are usually not very prominent (and are not always elected); even plans of relatively well-off or well-developed cities tend to be based on a superficial amalgamation of plans by various

service entities rather than a unified, locally driven vision. Local initiative and ingenuity are fairly limited and ad hoc because there are few avenues for their emergence. Higher-level governments may enthusiastically promote development in cities, as in Sri Lanka, but top-down initiative is not likely to foster sufficient local dynamism to address urban problems effectively or in accordance with local preferences.

Fourth, lines of accountability to citizens of urban areas are generally weak, limiting incentives for local government performance. Service provision depends on relationships between the citizens who are users of services, the service providers themselves, and the government entities that mediate between the two (responding to citizens and delegating authority and financing to service providers). This process is inherently challenging, but if the overseeing government is not in the locality, citizens will be hard-pressed to exercise their voice effectively and trigger robust accountability.

Bridging gaps in urban empowerment, resources, and accountability

A number of South Asian countries and individual cities have taken positive steps in recent years to improve urban governance and finance. On balance, however, South Asian urban governments face considerable constraints that limit their ability to assume the leading role they could play in promoting local

and national development. A conspicuous triad of consequential deficits in urban governance and finance—in empowerment, resources, and accountability—requires urgent attention.

The empowerment deficit

Every country in the region has adopted some type of decentralization and intergovernmental framework that appears to empower local governments, typically with at least some specific provisions for urban areas. These provisions, however, are often weak or only partly implemented, and local shares of public spending are relatively low or shaped by higher levels in all countries. In many cases, service delivery is fragmented among multiple actors, and higher-level agencies get involved in services that are or should be primarily urban government responsibilities. Coordination mechanisms across actors, if they even exist, are generally weak or not sufficiently well used.

In all South Asian countries, urban government autonomy, an essential foundation for effective decentralized governance, is constrained by central governments (and in federal and some unitary countries by state and provincial governments). These restrictions take many forms, from explicit control over urban plans and budgets, urban revenue generation, urban hiring decisions, and personnel management to more subtle and even informal interference by higher-level actors in the operations of urban governments. Such restrictions may be well intended, but empowerment and autonomy are increasingly recognized to be critical for local accountability, the foundation for realizing the potential benefits of decentralization.

The weak state of empowerment of urban governments is pervasive and consequential, but there are steps that can be taken to help improve matters:

- *Promote greater clarity in functional assignments among levels and types of government and other providers.* Some variations will always be necessary for dealing with special conditions and

capacity concerns, but greater clarity is generally needed to improve the targeting of public resources and to enhance local accountability.

- *Reduce unwarranted higher-level interference in legal and legitimate local functions.* Some guidance and oversight are always valid in decentralized systems, but they are primarily supposed to ensure sufficient attention to national needs and provide a supportive climate in which urban governments can make their own decisions more effectively. They are not intended to facilitate central dominance of local decisions, which tends to weaken incentives for pursuing an integrated urban development vision and to undermine the development of genuine local accountability.
- *Develop more robust mechanisms and opportunities for interjurisdictional cooperation in planning, financing, and delivering urban services.* Such coordination can be an integral part of effective service delivery and can also help enhance opportunities for and the efficiency of urban financing.

These three steps are by necessity primarily in the realm of central (and in some cases intermediate) governments: empowerment of local governments inherently involves action on the part of higher levels, whose authority will be reduced and whose role will remain critical but will be modified under decentralization reforms. Yet in some cases, urban governments may be able to take independent actions to improve performance.

The resource deficit

Although hard formal evidence is limited, powerful indications suggest that urban governments in South Asia do not have enough resources to meet their obligations and behave like genuine local governments. Local own-source revenues are limited in most countries, although urban governments typically do better than other types of local governments. Many potentially important revenue sources for urban governments, such as property taxes and user charges, are allowed, but they

are poorly administered, and collections are weak (with limited instances of better performance). Rarely do South Asian urban governments have much control over local revenue bases or rates.

Some South Asian countries receive generous intergovernmental transfers, but often they are insufficient to supplement their weak revenue bases. In a few cases urban governments are embedded in national budgets, making transfers more like sectoral budget allocations. There are issues in many South Asian countries with the structure of transfers, including the balance between conditional and unconditional, the criteria and formulas used to allocate the transfer pool, and disincentives for local revenue generation or borrowing created by transfers.

With few exceptions, opportunities for urban government borrowing are restricted. Access to private market sources is particularly restricted by a combination of national regulations and weak creditworthiness. Low levels of borrowing cause significant problems in light of the considerable backlog of (and growing need for) urban infrastructure investments.

The role of own-source revenues in a decentralized system cannot be overstated. Taxes and fees paid to urban governments are the foundation of the social contract between these governments and their constituents. If businesses and residents are willing to contribute to the costs of local public services, urban governments are doing their job.

To improve the financial status quo, South Asian countries could take the following steps:

- *Enhance opportunities for urban governments to raise their own revenues.* Necessary actions would include allowing additional autonomy over sources that they are already allowed to collect and facilitating better management of them, as well as assessing the need for and developing additional sources as required.
- *Rethink and reform intergovernmental fiscal transfers.* The aim is to reduce fragmentation, achieve an appropriate balance

between unconditional and conditional funding, and reduce any disincentives for urban government own-source revenue generation and borrowing. Transfers can also be used to create incentives for adopting needed reforms and improving service delivery, a potentially productive approach that some South Asian countries have experimented with in the form of performance-based grants.

- *Develop a framework for local borrowing.* Well executed, such a framework would encourage fiscal responsibility and provide for an appropriate range of options—public, private, and mixed—that meet the diverse and growing needs of South Asian urban governments for development finance.

Again, many of the fundamental reforms on the resource front require action by higher levels of government. At the same time, revenue generation is often an area in which motivated urban governments can work within existing frameworks to improve collection and yields. Actions to improve yields will be most effective, however, if revenue increases are associated with service delivery improvements and other measures supported by local businesses and residents.

The accountability deficit

Most countries in South Asia have developed frameworks for urban management functions and local and urban elections, adopted transparency legislation and other provisions for open government, and created a variety of mechanisms for citizen input and feedback. Even so, substantial gaps in accountability remain across the region. Even where good systems are in place or under development, adequate knowledge, incentives, and capacity to use them well may not be in place at any level.

A key concern is the autonomy gap. If urban governments have little genuine control over the raising and spending of resources, they are unlikely to feel pressured to, or be able to, improve performance, which they

may perceive or frame as largely beyond their control. If citizens believe urban governments are weak and ineffective, they will not respect or trust them, and they may not participate in local elections, take advantage of other accountability mechanisms to influence urban government behavior, or be willing to pay local government taxes.

There are three critical dimensions to alleviating the accountability deficit—developing better systems and practices, building sufficient capacity on the part of all parties concerned to use them, and nurturing trust and productive working relationships all around: between urban governments and higher-level governments, between urban government elected officials and staff, and between urban governments and their citizens.

A number of steps could help bridge the accountability gap, some of which must necessarily be undertaken by central governments, but local measures are often within the power of urban governments.

- *Reformulate, as needed, key elements of the overall formal framework and systems for urban governance.* These revisions include enhancing public mechanisms and procedures for financial management, planning, budgeting, reporting, and auditing, as well as developing more robust frameworks for PPPs.
- *Extend or improve local electoral and non-electoral accountability mechanisms.* Elections need to be transparent and sufficiently competitive to give citizen voters meaningful choice. Nonelectoral mechanisms—input-oriented processes, such as participatory planning and budgeting, and feedback mechanisms, such as complaint boards, report cards, and right to services regimes—can be highly productive if well designed and appropriately implemented, including by supporting the capacity of citizens to use them.
- *Strengthen the link between urban revenue generation and urban service delivery.* Making this link tighter and more evident should improve citizens' trust in local governments and enhance their willingness to

contribute to the costs of service provision and more generally to engage with elected representatives and urban officials.

Summary of challenges and moving forward

Narrowing the empowerment, resource, and accountability deficits is a challenging but critical requirement for substantially improving urban government performance. Overcoming these deficits is challenging because of the long history of strong centralization in South Asia, and many public sector systems and procedures have not been well developed, broadly accepted, or effectively used. It is critical because urbanization is proceeding so rapidly and altering or increasing the variety and level of demands on urban governments. In their present state, many of these governments cannot meet these accelerating pressures and challenges, thus hindering urban, national, and regional development.

The agenda outlined above is general: Urban governments across and within countries are widely diverse. Different weaknesses dominate or are more urgent in some countries, and situations are evolving, so that specific reforms must be adapted to both country and subnational conditions. Some essentially universal needs stand out, such as the requirement for greater urban government autonomy, but additional work in each country is needed to prioritize critical needs and identify specific remedial options.

An overarching concern for conducting further empirical analysis is that limited, inconsistent, and unreliable fiscal data across South Asia preclude robust identification and analysis of national and regional fiscal trends and limit accessibility to the information and transparency that are essential for good governance. The development of regular collection, accessibility, and analysis of urban data is a pressing need throughout the region.

In addition, most countries require many urban governance and finance reforms, which cannot all be realized quickly. It will be necessary to prioritize reforms and develop a pragmatic, strategic approach to implementing

them. Such strategies are also specific to each country, as well as to individual states or provinces and localities. Yet it is reasonable to state that strategic approaches will involve, among other possible elements, some combination of periodic situational assessments and the development of criteria-based, asymmetric starting points; mechanisms to enhance fiscal and political powers and build appropriate and usable capacity; and the mapping of progressive trajectories that build toward stronger systems and results over time. In all cases, carefully targeted incentives would help encourage better urban government performance. In many cases, motivated urban governments can independently take strategic steps to improve their performance even before broader national system reforms are adopted.

The longstanding and nontrivial political obstacles to strong urban government empowerment in South Asia are likely to persist to varying degrees. But as pressure grows for improved urban government performance, political openings for reform will surely emerge. And as these openings arise and are acted on, forward-thinking urban governments will seize the space and opportunities to be more prominent and effective players on the local and national development stages. Initial instances of successful change should help create a demonstration effect for others and, it is hoped, stimulate greater demand from citizens and businesses for more active, influential, and efficacious urban governments across South Asia.

Notes

1. Every effort was made to update the information as of early 2015, but the situation in a number of the countries in the region is evolving and the most recent developments may not be reflected here.
2. This is an “informed impression” based on careful consideration of extensive literature, including several recent publications that attempt to provide comparative assessments of local government strength around the world, including *United Cities and Local Governments* (2010); Bahl, Linn, and Wetzel (2013); and *Local Development International* (2013).
3. The data provided in the tables in this chapter come from many different sources and have been cross-checked where possible. There are too many sources to cite them all in individual tables, but all of the data have been drawn from one or more (usually country-specific) sources cited in the chapter references. Given the range of sources and incomplete explanations of how some data were derived, there are undoubtedly comparability issues, so the data should be seen as illustrative rather than definitive.
4. Because these three deficits are interrelated, some decisions were made about where to provide the primary treatment of issues that are relevant for multiple deficits; in such cases the interdependencies are recognized in the appropriate sections.
5. The service delivery information reported here is based on *World Development Indicators 2011* (World Bank; <http://data.worldbank.org/data-catalog/world-development-indicators/wdi-2011>).
6. A comparison of delivery of basic municipal services (roads and streets, public transport, water and sewerage, solid waste) in large cities around the world is provided in the table. Although there is much “devil in the detail,” the comparison confirms that South Asian cities have relatively limited involvement in providing major services; in most other large cities, either the city government or the central metropolitan authorities play a major role in the provision of services, except for roads. Cities in other regions also commonly use metropolitan governance structures that take responsibility for functions without extensive sharing of authority with other governmental entities. There is comparatively more diffusion of functional responsibility among levels of government in South Asian cities, including Mumbai.

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Planning and Managing Spatial Structure and Connectivity

4

Key messages

To enhance livability and improve opportunities for prosperity, planners, government policy makers, and stakeholders need to better manage the spatial structure and intra- and interurban connectivity of South Asian cities at several levels:

- **National.** Invest in the strengthening of transport links that improve connectivity between cities—between large and secondary cities, and between secondary cities and towns—to create more efficient systems of cities. Also invest in improved intracity connectivity and traffic management to enhance mobility within urban areas and ease traffic congestion.
- **City peripheries.** Adopt forward-looking approaches to planning and guiding expansion where it is most rapid—on city peripheries. This approach will reduce the messiness of urbanization, prevent undesirable spatial forms from being locked in, and facilitate future provision of infrastructure and basic urban services.
- **City cores.** Unlock the potential of city cores and carry out rejuvenation where cores have declined by investing in improvements such as better public urban spaces to enhance pedestrian walkability and livability. Promote better management of developable land in city cores through effective land-assembly mechanisms; freeing up or making better use of publicly owned land; and reusing existing structures in an adaptive, appropriate, and innovative manner.
- **Institutional.** Facilitate the formation of more vibrant neighborhoods through granular and contextual spatial planning approaches that permit greater variation in land uses and intensity of development. Such planning should be dynamic and flexible, allowing land uses to adapt to changes in market demand within a framework that takes a long-term view of a city's development. Strengthen city planners' and local governments' capacity to plan, coordinate, implement, and enforce development to deliver integrated, coordinated, inclusive, and smarter planning policies.

Introduction

As discussed in chapter 2, many South Asian cities are faced with difficult challenges arising from the rapid expansion of their built-up areas and the low-density sprawl that, all too often, has gone hand-in-hand with expansion. Managing these challenges is made even tougher by the expansion of built-up areas beyond cities' administrative boundaries. Addressing the ability of South Asian countries to manage their cities' spatial development is critical for two key reasons:

First, good connectivity and efficient spatial structure are essential to alleviating congestion pressures that both undermine a city's livability and hamper the agglomeration economies that hold the key to prosperity. The positive relationship between a country's level of urbanization and its level of gross domestic product (GDP) per capita is well established (see chapter 1)—a doubling of city size is, in general, associated with a 3–5 percent increase in productivity (Rosenthal and Strange 2004). However, although cities continue to be at the forefront of South Asia's economic growth, shaping cities to accommodate population growth with jobs, housing, livable environments, and services in an equitable, inclusive, and sustainable matter will become more challenging and complex as cities grow.

Second, managing connectivity and spatial structure will be critical in preventing South Asian cities from being further “locked in” to a pattern of urban sprawl that is prohibitively costly to reverse. Underutilized land, planning constraints, and the resulting rise in land and rental costs also make it difficult for cities to support affordable housing or commercial and industrial space (see also chapter 5 for discussion of this point in specific relation to the supply of affordable housing). Many cities in South Asia also lack adequate transportation systems, with insufficient road networks, poor pedestrian amenities, and poor or non-existent public transit, all of which drive up private commuting costs and decrease mobility and job access. When the growth of a city's

footprint exceeds the rate at which it can expand infrastructure and regulate development, spatial planning and services provision typically suffer.

In Kabul, the city's population grew by a staggering 4.5 percent a year between 2010 (3.72 million population) and 2015 (4.64 million population). Urbanization was largely informal, with an estimated 73 percent of the population living in unplanned areas. These unplanned areas not only make services provision hard, but have also started to encroach on valuable agricultural land on the peripheries. Dhaka—with a population of slightly more than 14.5 million,¹ one of South Asia's megacities—faces similar challenges. Issues related to quickly expanding urban areas are seen in many smaller cities as well, such as Thimphu (box 4.1).

For South Asian cities to transform themselves into productive and livable centers, they must not only manage rapid expansion at their peripheries but also address existing and future challenges at their city cores. These areas often have largely locked-in spatial structures that lead to congestion forces that result in clogged streets, polluted air, unaffordable land, and the prevalence of slums. At the national level, how cities are connected as a system, and how they can become spatially differentiated, become important. All these issues are made more daunting by the need for appropriate and effective policies and regulations, given the current governance and finance deficit in most South Asian countries. Although market forces underlie agglomeration economies and congestion forces, they do not address the key issues arising from externalities and public infrastructure, which only government intervention can address. But policy failures can further hinder, rather than facilitate, development. Therefore, critical enablers such as sound urban governance, capable institutions, and good leadership must underpin the capacity for good policy making and effective spatial planning are (see also chapter 3).

South Asian cities can transform spatially through more granular, contextual, and integrated approaches to spatial planning to shape

BOX 4.1 Urbanization pressures in Kabul, Dhaka, and Thimphu

Managing connectivity in Kabul. Rapid population growth caused motorization between 2006 and 2007 to increase by 26 percent; the transportation network has been unable to keep pace with traffic or trip generation. A major bottleneck is the absence of a proper regional highway network, such as a circular road connecting radial roads from the city center. Furthermore, localities within Kabul are poorly connected; this isolation urgently needs to be remedied along with better overall accessibility.

A lack of adequate transportation planning and investment programming impedes connectivity within Kabul and makes shaping an efficient spatial structure difficult. Kabul's public transport setup is currently unable to satisfy demand and suffers strong competition from all sizes of vehicles on major routes. Higher-capacity public transport along major roads, rationalized bus routes, and an adequate supply of buses are required. In addition, bus terminals and intermodal integration would further improve public transport.

Institutional coordination in Dhaka. Urban structure and transportation planning have not kept pace with population growth or urban development in Dhaka, where the lack of horizontal and vertical coordination within municipal

government impedes spatial planning and infrastructure programming. Consecutive urban master plans have underestimated population growth and urban development and failed to allocate enough land for urban expansion. Transportation planning has not only failed to anticipate growth, but has also failed to mobilize sufficient investment for roads and transit networks, leaving Dhaka poorly connected and highly congested.

Spatial planning in Thimphu. As the political and economic center of Bhutan and the highest recipient of migrants from other parts of the country, Thimphu accounts for 15 percent of the country's population and 17.9 percent of its area. Agricultural land (including orchard area) and forestland, respectively, constitute 23.4 percent and 18.7 percent of the total urban area. However, sprawling urbanization is rapidly reducing the supply of agricultural land.

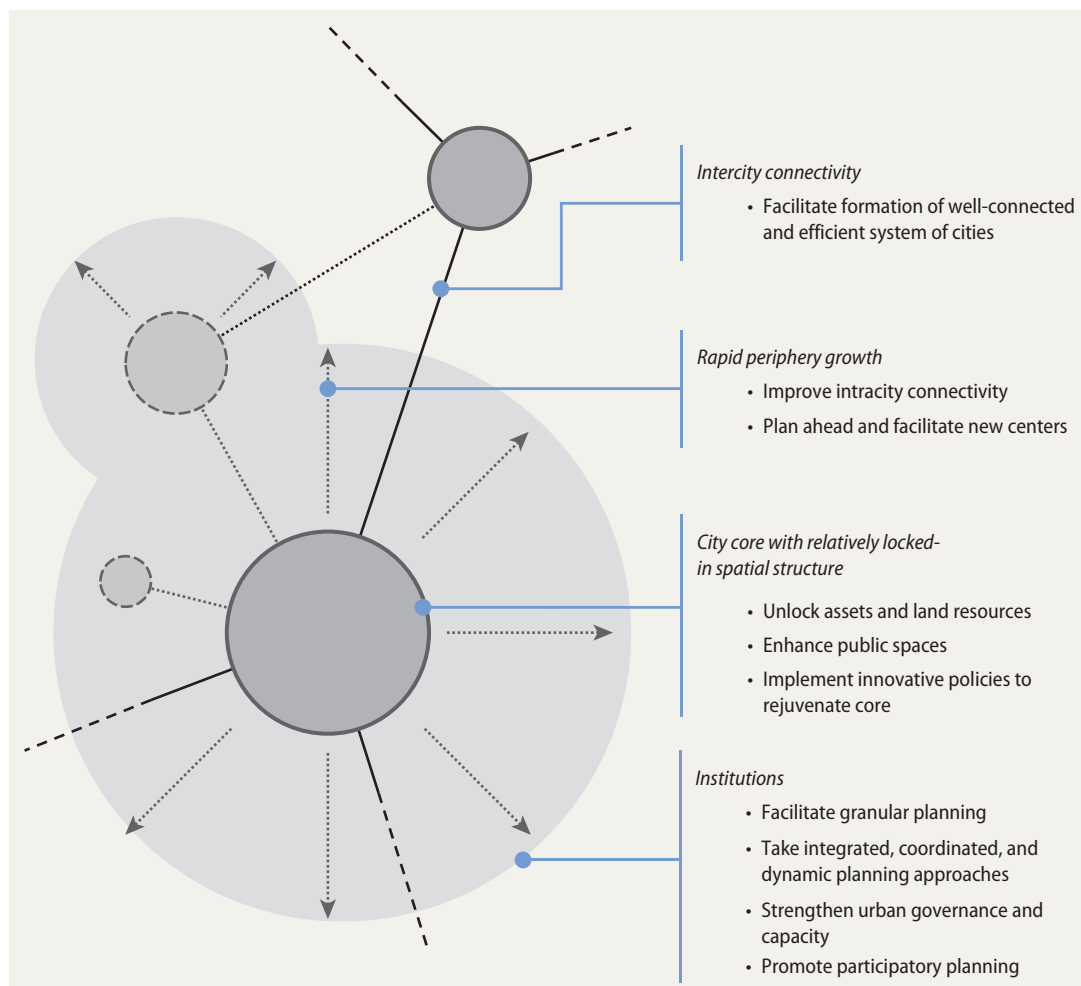
Thimphu experienced unprecedented population growth of 10 percent in 2010, and Bhutan's urban population is expected to increase by a factor of 1.7, from 253,000 to 434,000, between 2010 and 2030. This growth presents huge challenges for spatial planning and managing urbanization.

Source: World Bank 2013b.

urban forms that are characterized by a variety of land-use patterns, articulated intensities of development, and vibrant neighborhoods. Such approaches must include attention to details such as local area development plans, streetscape improvements, public space provision, urban design, good connectivity, and place making. These details need to be implemented in a way that will allow greater dynamism and flexibility and that can better respond to short-term needs while taking a long-term view of spatial development. Figure 4.1 suggests some key priority areas for South Asian cities.

The following sections discuss the dynamics of intercity and intracity connectivity, the key challenges of spatial and transportation planning at the city level, and the supporting institutional and implementation requirements for managing spatial planning. The discussion frames the key challenges, offers broad policy guidance, and showcases examples of what other cities inside and outside the region have done.

Experience in managing urbanization in South Asian cities of various sizes is mixed. Some smaller cities, despite limited financial and human resources, have done a better job.

FIGURE 4.1 National, city, and institutional priority areas

Larger cities (with exceptions such as Ahmedabad and Colombo) have, in general, been unable to keep pace with growth because of larger absolute population numbers, inadequate resources, and institutional fragmentation. Much of this chapter's focus, therefore, is on the region's megacities, such as Mumbai and Delhi in India and Karachi in Pakistan, with some analysis of medium-sized cities such as Amritsar and Kanpur in India and Kandy in Sri Lanka. These cities offer a glimpse into the early symptoms of the bigger challenges to come if urban growth is not properly managed.

Developing a system of well-connected and productive cities

Intercity connectivity—how regions, cities, and ports are linked—is critical in fostering economic prosperity, reducing poverty, and promoting livability.

Promoting intercity connectivity

At the national and subnational regional scales, intercity connectivity facilitates labor mobility and access to both markets and suppliers, which, in turn, stimulate domestic

trade in goods and services. Better connectivity of cities to airports and ports, which provide the gateways to international markets, also fosters trade with cities both regionally and globally. Expanded trade opportunities then allow firms to better exploit scale economies and generate urban-rural spillovers. Connectivity also fosters better specialization across cities, which helps to alleviate system-wide congestion costs. Hence, countries with good intercity connectivity often promote agglomeration economies in their cities and along transport corridors, whereas countries with poor or underdeveloped national transportation infrastructure tend to be less competitive in domestic and international trade.

The Republic of Korea launched an aggressive road-building program to connect provinces and cities, and the result is a notable example of good connectivity. Between 1995 and 2010, levels of gross regional domestic product (GRDP) increased dramatically as the country built its highway system. The greatest GRDP increases occurred in areas with better connectivity, especially those at major intersections (figure 4.2).

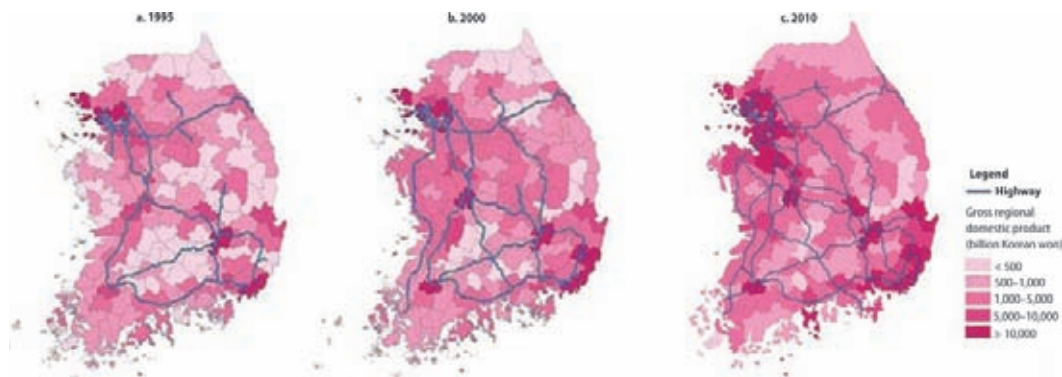
The density of South Asia’s road network—as measured by its length per 1,000 people—lags behind the densities of the networks in North America and Europe and Central Asia, and is much more on par with the densities of networks in the rest of the world (figure 4.3,

panel a). Some South Asian countries, such as India and Sri Lanka, have better connectivity (figure 4.3, panel b), but most suffer from serious shortcomings such as lack of intraregional connectivity for national road networks, unrealized potential for rail and inland water freight transport, and inadequate road and rail connectivity of ports with their hinterlands.

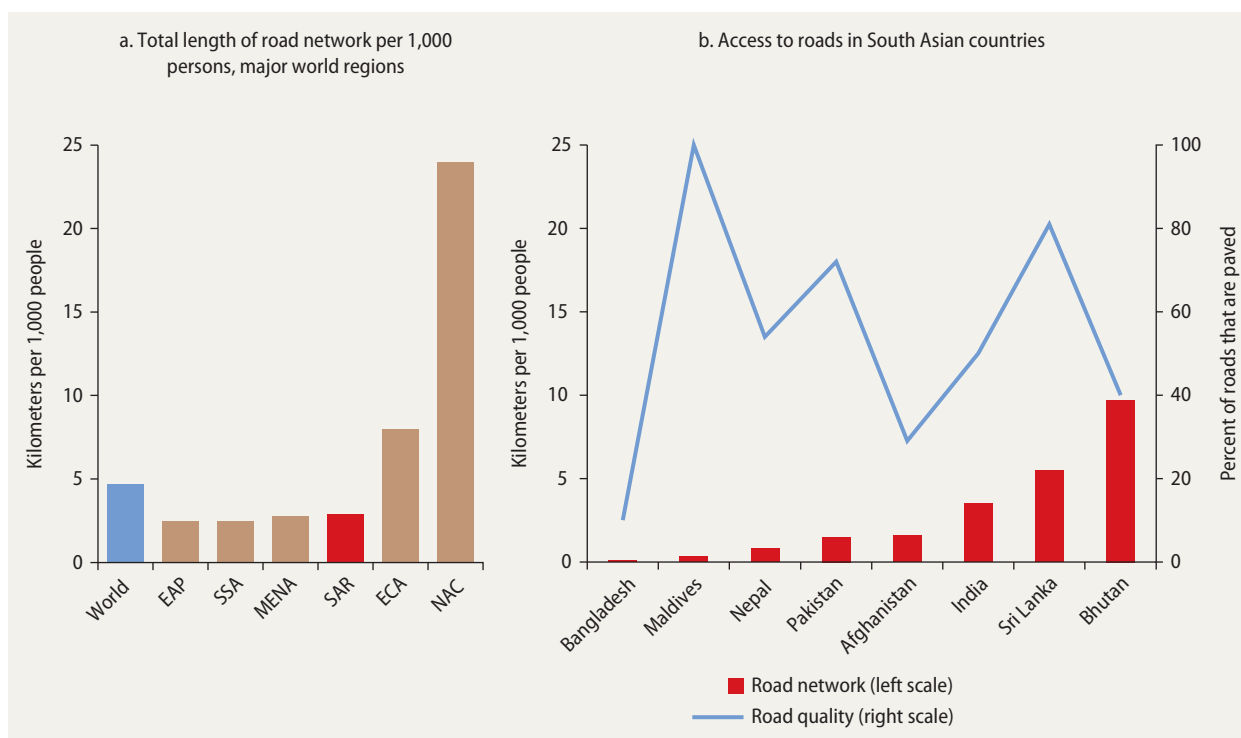
An investment climate survey carried out by the World Economic Forum ranked prominent cities on competitiveness factors, including multisectoral infrastructure. Six out of the 148 countries surveyed are in South Asia (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka), but they rank relatively low on competitiveness (Global Competitiveness Index) and their infrastructure rankings are even lower (table 4.1). Apart from Sri Lanka, infrastructure is singled out as one of the top five problems in doing business with every country in South Asia. Only India and Sri Lanka are in the top 100 countries for competitiveness, and they do not rank well on infrastructure.

An analysis of connectivity patterns across South Asia finds that the strongest infrastructure linkages in the region are between the largest metropolitan cities, and connectivity and communities are strongly influenced by national borders. Derudder and others (2014) analyze connectivity patterns based on airline flights, Internet Protocol links, roads, and rail

FIGURE 4.2 The Republic of Korea’s highway network and GRDP



Source: Maps prepared by Korea Research Institute for Human Settlements for this report.
 Note: Darker shades indicate higher gross regional domestic product (GRDP).

FIGURE 4.3 Road network characteristics

Source: Andrés, Biller, and Dappe 2013.

Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; MENA = Middle East and North Africa; NAC = North America; SAR = South Asia; SSA = Sub-Saharan Africa.

TABLE 4.1 World Economic Forum Global Competitiveness Index and infrastructure rankings

Country	GCI rank	Infrastructure rank	Country	GCI rank	Infrastructure rank	Country	GCI rank	Infrastructure rank
Cyprus	58	44	Libya	108	103	Liberia	128	131
Philippines	59	96	Bhutan	109	87	Uganda	129	133
India	60	85	Bangladesh	110	132	Benin	130	129
Peru	61	91	Honduras	111	115	Zimbabwe	131	126
Slovenia	62	36	Gabon	112	114	Madagascar	132	136
Hungary	63	51	Senegal	113	117	Pakistan	133	121
Russian Federation	64	45	Ghana	114	109	Venezuela, RB	134	125
Sri Lanka	65	73	Cameroon	115	128	Mali	135	108
Rwanda	66	104	Gambia, The	116	95	Malawi	136	137
Montenegro	67	70	Nepal	117	144	Mozambique	137	130
Jordan	68	54	Egypt, Arab Rep.	118	98	Timor-Leste	138	138

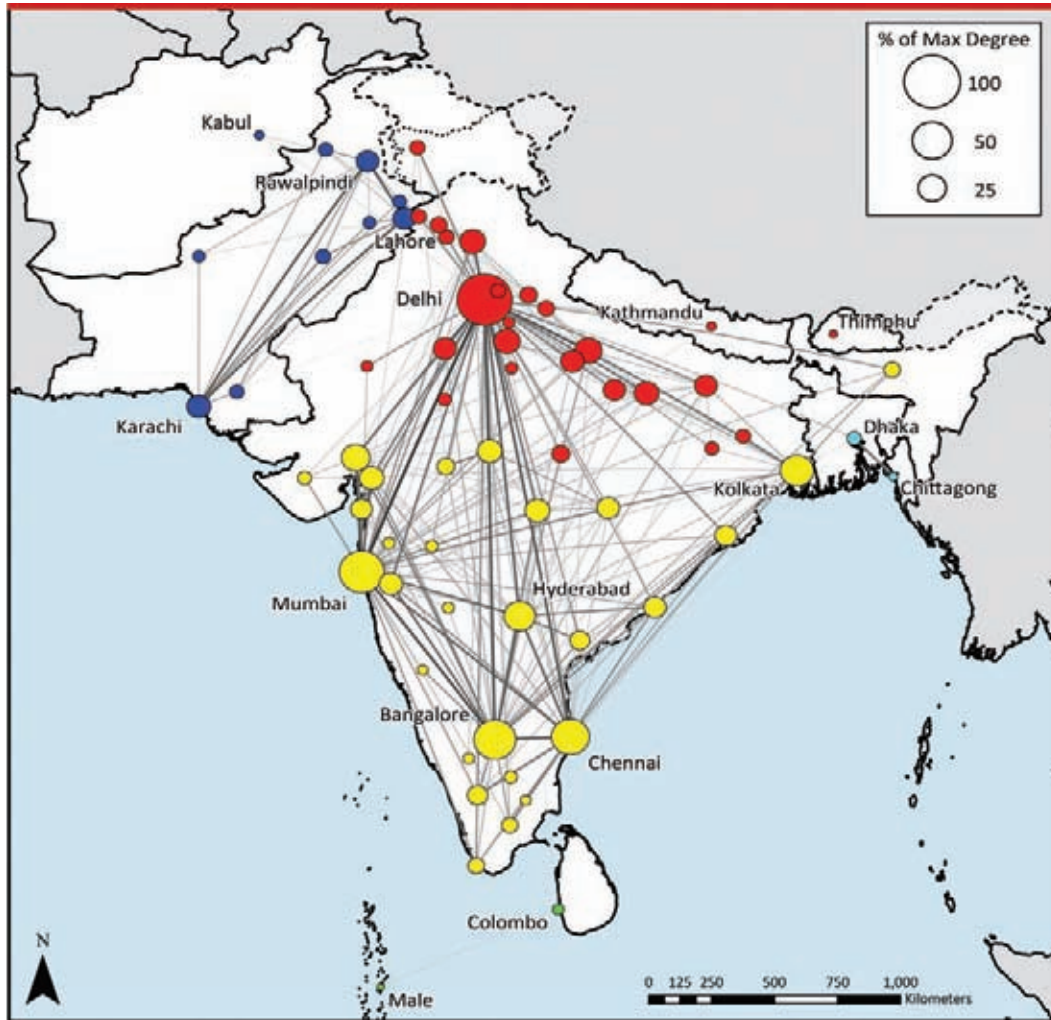
Source: Schwab 2013.

Note: GCI = Global Competitiveness Index. A rank of 1 is best out of 148 countries for both categories.

for 67 key cities in the region, or all cities in the region with a 2010 population of more than 750,000, as well as the capital cities of Colombo, Thimphu, and Malé (to ensure that all countries in the region are represented).

Five connective clusters are apparent in South Asia's infrastructure networks: a cluster bringing together Pakistan's cities plus Kabul; a northern Indian cluster centered on Delhi that also extends to Kathmandu and Thimphu;

FIGURE 4.4 Connectivity of South Asian cities in infrastructure networks: Airlines, information technology, roads, and rail



Source: Derudder and others 2014.

Note: The colors represent clusters. The thickness of the line connecting any pair of cities is proportional to the strength of connectivity in four networks:

Airlines: Based on the number of direct weekly flights offered during the last week of May 2013.

Internet protocol links: Based on data from DIMES, a distributed scientific research project studying the structure and topology of the Internet (<http://www.netdimes.org/new>).

Roads: Based on a network efficiency measure, computed by dividing anticipated travel time between cities by the Euclidean distance separating them.

Rail: Based on the number of direct weekly trains offered during the last week of May 2013.

a southern Indian cluster including Mumbai, Kolkata, Hyderabad, Chennai, and Bangalore; and two smaller clusters comprising Dhaka and Chittagong in Bangladesh in one cluster and Malé and Colombo in the other (figure 4.4).

Connectivity appears to be stronger—that is, better at fostering trade and economic interaction—within than between clusters. A lack of regional integration impedes

connectivity between Delhi and Lahore, which are shown belonging to separate clusters despite being in the same extended urban region. (Nighttime lights data in chapter 2 reveal the growing physical connection between Delhi and Lahore, among other cities.) This current lack of connectivity suggests that huge productivity gains could be realized if frictions created by borders were

reduced (World Bank 2013c). Pakistani cities are more integrated on transport infrastructure networks than are cities in northern India. These findings support the efforts by the government of India to invest in regional transportation networks, such as the Western and Eastern Dedicated Freight Corridors in the Golden Quadrilateral (the large network connecting Chennai, Delhi, Kolkata, and Mumbai).

Improved connectivity often leads to development of secondary and tertiary cities and, therefore, the creation of a system of cities. Systems of cities can help alleviate congestion forces in large cities by providing opportunities for the spatial deconcentration of land- and capital-intensive operations such as mature manufacturing industries. Therefore, transport network planning should consider the impact of transport on urban systems,

particularly secondary and tertiary cities. Correspondingly, the implications of planned regional transport networks (such as India's dedicated freight corridors) should be explored and exploited to maximize economic benefits.

Some South Asian countries have begun to prioritize investment in interurban connectivity and infrastructure. In India, intercity connectivity is generating growth in secondary cities through the roads and rail connectivity of the Golden Quadrilateral. The dedicated freight corridors, when fully completed, will connect many of the major urban centers in India, such as Delhi, Mumbai, Kolkata, and Chennai. These corridors were supported by institutional reform in the logistics and rail industries. Sri Lanka has also embarked on the development of a well-functioning and well-connected system of cities through investments in intercity highways and rail networks (box 4.2).

BOX 4.2 Interconnecting cities in India and Sri Lanka

India's Golden Quadrilateral. The Golden Quadrilateral (GQ) is a highway system launched in 2001 comprising close to 6,000 kilometers of roadway and connecting the four major Indian industrial and cultural centers: Delhi, Mumbai, Kolkata, and Chennai. In empirical work conducted for this report, Ghani, Goswami, and Kerr (2013) seek to evaluate the impacts of this network on levels of manufacturing activity in nonnodal districts (that is, districts outside the four major cities) that fall along its route. To do so, they compare changes in levels of manufacturing activity in nonnodal districts within 10 kilometers of the route before and after the building of the GQ with changes in levels of manufacturing activity in more distant districts. They find that the GQ had significant positive impacts on the entry of new manufacturing firms within 10 kilometers of the highway.

However, although the GQ highways have encouraged manufacturing activity along the corridors they have created, some critics suggest

that had India followed the example of China by building its highway network to directly link intermediate cities instead of to link large centers, more intermediate cities would have benefited from better connectivity (Alder 2015). This approach nonetheless can be taken up in the next phase of India's transportation network development, given that significant gaps still remain at the subnational level. For example, Uttar Pradesh, which is one of the least developed states in India, not only has high overall poverty but also a high degree of spatial inequality. Poor roads and congested rail links within the state are constraining the prosperity of the National Capital Region from spilling over to the state.

India's Dedicated Freight Corridors. The main rail corridors in India are also part of the GQ. Although they account for only 16 percent of the railway network's length, they carry more than 60 percent of its freight load.

(continues next page)

devoted more than 15 percent of their GDP to infrastructure investment. But improved intercity and port connectivity contributes to the development of a network of prosperous cities by reducing trade costs and facilitating more efficient allocation of resources across cities. Gradually, as cities and their hinterlands become better connected, land- and capital-intensive firms in maturing industries relocate to lower-cost areas while retaining good access to large cities. This process also frees up land in the cores of large cities for the potential entry of higher-value-added, more human-capital-intensive, services sector industries such as banking and finance, creating agglomeration economies across systems of cities.

Schramm (2013), in modeling the impact of India's dedicated freight corridors on regional wages using a "new economic geography" approach, reinforces this finding. Transportation connectivity, along with the size of the city, are the principal determinants of market access: increasing connectivity helps boost trade and economic activity and has the added advantage of fostering rural-urban migration and providing typically poor rural residents faster and cheaper access to urban services such as health care and education. Similarly, in a detailed study of transportation and urbanization in Sri Lanka, Lall and Claus (2009) find that proximity to Colombo and better transportation infrastructure fosters migration of the poor to employment centers within the metropolitan area.

Intercity connectivity has profound effects on the formation of urban areas by facilitating agglomeration economies, through either localization or urbanization economies (see chapter 1). Examples of localization economies include Bangalore, Gurgaon, and Noida; specifically for banks and financial institutions, Colombo, Karachi, and Mumbai; and for textiles, Chittagong, Dhaka, and Tiruppur.

Many of these initiatives were privately driven. Once a large private firm locates or grows, it attracts smaller firms that provide it with services and inputs. Public policy plays a critical role as well, exerting real influence by providing critical backbone infrastructure.

Industrial or business clusters cannot form without supportive land-use policies that encourage formation of a critical mass of complementary activities.

Over time, such policies could lead to a shift to higher-value clusters and the creation of new subcenters. As land-use intensity increases, land prices increase, and many mature firms that no longer need to focus on product or service innovation naturally seek locations in lower-cost areas, essentially "suburbanizing." Improved connectivity helps this process along by making less congested suburban locations relatively more attractive. In this case, improved connectivity helps to "pull" firms out from more congested to less congested places. Firms, however, may also suburbanize even in the absence of significant improvements in connectivity when, for example, congestion forces are exacerbated by failures in policy and thereby serve to "push" firms out from what would otherwise be attractive locations. In Mumbai, manufacturing activities have moved further inland because of high land and associated costs, partly due to Mumbai's restrictive urban development plans and partly because its transportation system is underdeveloped for a city of its size.

In successful and well-planned cities, areas vacated by industries are usually revitalized by high-value services. For example, Puerto Madero in Buenos Aires was once a maritime-oriented warehouse district but is now a vibrant entertainment area (box 4.3). Unfortunately, in major South Asian cities—with the exceptions of Colombo and Bangalore—this process has not happened. Rather, as formal manufacturing has suburbanized in response to excessive congestion forces in cities such as Delhi and Dhaka, urban cores have stagnated (see chapter 2, "Spatial deconcentration of manufacturing").

A city's spatial structure can gradually transform through land-use changes to respond to market needs and higher intensities in central locations or new subcenters. This transformation is often marked by a shift from monocentric to polycentric urban forms,

BOX 4.3 Rejuvenating Puerto Madero, Buenos Aires

FIGURE B4.3.1 Illustrative plan of Puerto Madero, 2014



Source: Based on Corporacion Antiquo Puerto Madero S.A., Plano Madero.

The autonomous city of Buenos Aires, the Argentinian capital, has a stable population of 3 million and an area of 200 square kilometers and is part of a greater metropolitan area with about 13 million inhabitants (2010) covering 4,500 square kilometers. The city accounts for less than 8 percent of the country's population but generates 25 percent of GDP.

The regeneration of Puerto Madero harbor played a key role in revitalizing the central business district and surrounding neighborhoods. In the 1980s and 1990s, businesses rapidly left the downtown area in the north and northwest of the city, seriously threatening Buenos Aires's economic sustainability. The idea of redeveloping

Puerto Madero's vacant land was not new, dating as far back as the 1940 Buenos Aires master plan, which called for combined recreational and cultural uses. Administrative and financial conditions, as well as land-ownership issues, prevented the plan's adoption.

The economic crisis of 1989 stimulated the passage of the Administrative Emergency Law and the Economic Emergency Law, which allowed federal property to be privatized, particularly in Puerto Madero. The land was transferred from the General Administration of Ports to the Corporacion Antiquo Puerto Madero Sociedad, a quasi-private corporation created for running the project without the standard congressional approvals. Given its central location and perceived high value of the waterfront land, the project was financed by the sale of some of the land without the need for the municipality to contribute.

The Corporacion used the 1940 master plan as an instrument for negotiating with developers and local professional bodies rather than as a strict regulatory framework. The plan also underwent a national design competition in 1992, with a strong emphasis on green space, waterfront access, mixed use, and preservation of historic warehouses (figure B4.3.1).

Source: Amirtahmasebi and others, forthcoming.

resulting in multiple subcenters specialized according to services or land-use activities. Such forms often require master plans that allow for changes in land use and intensity. Mumbai could redevelop central districts such as the Mumbai Port area as Buenos Aires did, bringing vital benefits to the city. Transformation typically requires infrastructure investment—particularly in enhanced connectivity—to motivate change and create efficient links between multiple centers, as in Canary Wharf in London, where improved

metrorail connectivity and government incentives were essential.

Many South Asian cities need to approach transportation planning at a broad subnational scale to ease congestion constraints and leverage agglomeration economies. Planning at this scale will require metropolitan-level plans and programs and the institutional structures to implement them. South Asian countries such as India and Sri Lanka have already made large investments in transportation networks across subnational regions,

but it is critical that this momentum be continued to lead to better overall development outcomes.

As many South Asian cities strengthen their intercity connectivity to facilitate efficient systems of cities, they will also need to improve intracity infrastructure and manage local congestion pressures. In Bangladesh, congestion and high land and housing prices have encouraged garment manufacturers to relocate to suburban areas outside Dhaka but vacated buildings have not been repurposed, most likely because transportation infrastructure has not been upgraded. Therefore, Dhaka is not developing activities with higher economic productivity (Muzzini and Aparicio 2013a).

Managing intracity connectivity and congestion

Managing intracity connectivity and congestion forces arising from the pressure of population on land, housing, and basic services is critical to leveraging agglomeration economies. Congestion forces work against city growth and urbanization and hence the prosperity afforded by agglomeration economies (see chapter 1). When urbanization increases faster than a city's infrastructure capacity, businesses may relocate to other cities or countries with more reliable services. This trend is common to many South Asian cities, which suffer from unreliable power and water supply (World Bank 2013c).

The challenge of ensuring good intracity connectivity tends to increase with city size, and a common threat to large cities is the lack of adequate transportation infrastructure, roads, and mass transit. As per capita income rises, demand for automobiles, motorbikes, and small buses typically increases in a motorization trend seen in many of the larger South Asian cities. The number of powered vehicles in Delhi, for instance, surged from 521,000 in 1981 to 7.44 million in 2012. In Pakistan, the number of motorized vehicles per 1,000 persons increased more than 50 percent between 2002 and 2009 (World Bank 2013e).

To manage this increase in vehicles, South Asian cities can focus on developing public transport infrastructure and policies as Ahmedabad has done with its Bus Rapid Transit System (box 4.4). Cities facing traffic congestion pressures can look toward either reducing overall demand or distributing it over time, as well as pairing investment in public transport with policies to manage automobile use. Singapore is one of the best-known examples of managed motorization, having combined high vehicle taxes on auto purchases, ownership quotas, congestion pricing that charges cars to enter the central business district (CBD), and an extensive and efficient mass transit system to help keep automobile ownership rates relatively low (Han 2010). Although South Asian cities generally may not be ready to adopt congestion pricing and tolling, implement parking controls, or levy taxes on luxury vehicles, they could start with basic traffic management initiatives, such as charging for on-street parking, and then move toward pay-to-use parking lots and garages.

Most South Asian cities are poorly planned and managed, but the transformative initiatives of cities like Ahmedabad suggest that managing motorization and urbanization is possible. In fact, cities like Chennai and Delhi have also recently invested in new metrorail lines to improve intracity connectivity. Cities that mobilize resources to provide infrastructure to support growth and those that manage congestion and invest in enhanced mobility fare better. Balancing intracity mobility with physical expansion is a way that cities can achieve a more efficient spatial structure and provide better prosperity and livability outcomes.

To meet increasing travel demand from population growth, even cities with relatively developed infrastructure and public transport must continue to optimize their services. At peak hours, road congestion can easily cause travel times to double and metrorail systems and buses to reach capacity, leading to a decline in service quality. Governments and service providers need to improve their ability to anticipate demand and provide more road

BOX 4.4 Ahmedabad Bus Rapid Transit System: The Janmarg

Ahmedabad's Bus Rapid Transit System (BRTS) has emerged as an example of how a planned commuting system can help reduce emissions and improve air quality as well as have a positive impact on urban development. Going by the name "Janmarg" or "the people's way," the BRTS is a road-based public transport service operated by Ahmedabad Municipal Transport Services, featuring a closed system with bus stations along road medians as well as revamped rights-of-way to include cycle tracks and pedestrian

facilities (figure B4.4.1). The BRTS began operation in 2009 and has grown from a route length of 12 kilometers serving 18,000 passengers a day to about 90 kilometers serving 175,000 passengers a day in 2014. City residents are also served by private bus operators, buses run by Gujarat State Transport Corporation, and railway.

State and local governments have prepared an expansion plan of the mass transit system comprising metrorail and BRTS (World Bank 2013b). Ahmedabad has also used land

FIGURE B4.4.1 Bird's-eye view of the BRTS station at Jhansi ki Rani junction, Ahmedabad, India



Source: Centre of Excellence in Urban Transport, CEPT University from *Innovations in Design: Ahmedabad Bus Rapid Transit System*, published by Mapin Publishing in association with the Centre of Excellence in Urban Transport, CEPT University.

(continues next page)

BOX 4.4 Ahmedabad Bus Rapid Transit System: The Janmarg (continued)

readjustment to upgrade informal areas and to increase density in central-city areas (Annez and others 2010).

The BRTS is considered a success for several reasons:

- *Environmental benefits.* About 20–22 percent of commuters have moved from motorcycles to buses, saving almost 200,000 vehicle-kilometers per day. The Janmarg is expected to continue attracting passengers and is part of a larger regional plan for Ahmedabad with far wider coverage.
- *Social benefits and catalyst for development.* The extensive network (figure B4.4.2) has benefited previously underserved groups. For example, there has been a rise in female travelers, and almost 40 percent of commuters in the afternoon off-peak hours are women. Janmarg has also helped rejuvenate Ahmedabad, encouraging redevelopment of vacant, former mill lands and the building of new housing and shopping areas for the urban poor along its corridors.
- *Citizen engagement.* A big factor in the success of Janmarg has been the positive role played by citizens through consultation. During planning and design, the Ahmedabad

FIGURE B4.4.2 The Bus Rapid Transit System network



Source: Ahmedabad Municipal Corporation, Ahmedabad Bus Rapid Transit System (<http://www.ahmedabadbrts.org/web/operationplanmap.html>).

municipal council held regular press briefings, public exhibitions, and presentations, engaging citizens for suggestions and recommendations.

Sources: World Bank 2013b; United Nations Framework Convention on Climate Change 2012.

network capacity and public transport services as well as enhance service levels.

Mumbai has implemented a traffic control system for monitoring traffic in the central part of the city with about 700 cameras, capable of controlling roughly 250 signal intersections to achieve network-wide optimization of traffic flow. Intelligent transport systems are becoming increasingly popular in bus services in Indian cities. Buses are equipped with on-board units to transmit location, speed, and other operational information to control centers, enabling more efficient dispatching of vehicles and provision of passenger information. Smart-card ticketing—a prepaid card system that can also be used for different

modes of travel if such function is enabled—is in operation in the Delhi Metro and experimentally in buses of the Bangladesh Road Transport Corporation in Dhaka.

In the future, strategies to better integrate transport networks with land use, such as transit-oriented development and transport demand management, can be further developed in the larger cities. Integration of land use and development densities into transport networks at a granular level will be critical to improving intracity connectivity, including modal integration among rail, bus, road, and nonmotorized transport. Ensuring sufficient sidewalk space at metro entrances and safe waiting areas for buses and taxis can also

tighten intermodal links. Metro stations can add more pedestrian-friendly features and incorporate barrier-free access for the disabled. As new metro networks are introduced (Chennai) or current ones expanded (Delhi), more planned features around metro stations, such as bridges across main roads and pedestrian crossings, should integrate more fluidly with the rest of the city's pedestrian network.

Managing urban expansion and rejuvenating city cores

Spatial structure broadly refers to the organization and patterns of land use (for instance, businesses, housing, public amenities), densities (for instance, building height, floor area, persons per unit of land area), and connecting infrastructure (for instance, roads, metrorail systems, and the like) within cities and across subnational regions. Sarzynski and Levy (2010, 4) define spatial efficiency as

the geographic arrangement of businesses and residences, the physical infrastructure that connects the region (i.e., transportation, communication, green space), and the orientation of each towards the other that minimizes the time, effort, or cost required to conduct economic activities for the entire metropolitan region.

Globally, urbanized land area is expanding faster than population—in South Asia, at about twice the rate (see chapter 2). However, urban expansion is often poorly planned and not well integrated with land use and transportation networks. In cities such as Kabul, Karachi, and Kathmandu, rapid urban population growth has led to sprawl that is poorly connected to urban activity centers, exacerbating congestion forces (figure 4.5). This rapid expansion of urban areas relative to the urban population is also reflected in the sprawl and ribbon development that is characteristic of Sri Lanka (Lall and Claus 2009). Urban expansion, if not managed preemptively, becomes locked into the city's spatial structure and becomes almost impossible to

reverse, rendering service provision difficult and upgrades, like road widening, more challenging.

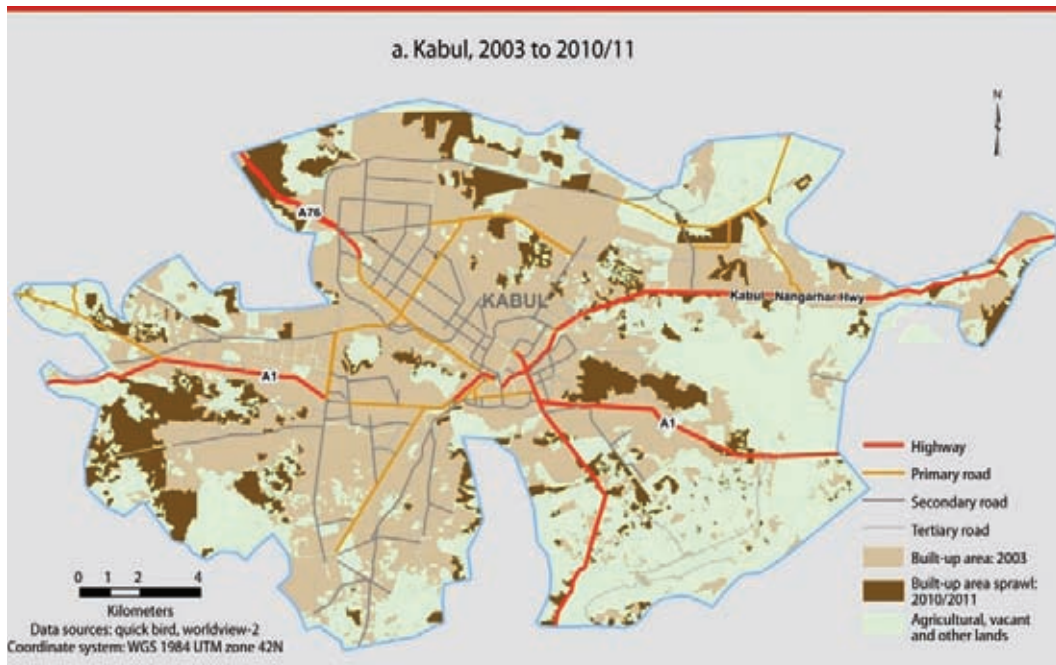
Planning for efficient spatial structures and integrating with transportation

Market forces play an important role in shaping the spatial structure of cities, but planning is required to provide infrastructure and other public goods; to coordinate and promote synergies between land uses; and, more generally, to help manage the trade-offs that cities face between agglomeration economies and congestion forces. Planning can also be important in promoting equity, especially for the poor (box 4.5 and box 4.13). Good connectivity combined with efficient spatial structures facilitates face-to-face business transactions and goods movement and minimizes the costs of commuting. And cities that can integrate and coordinate land use and transportation tend to have efficient and productive economies.

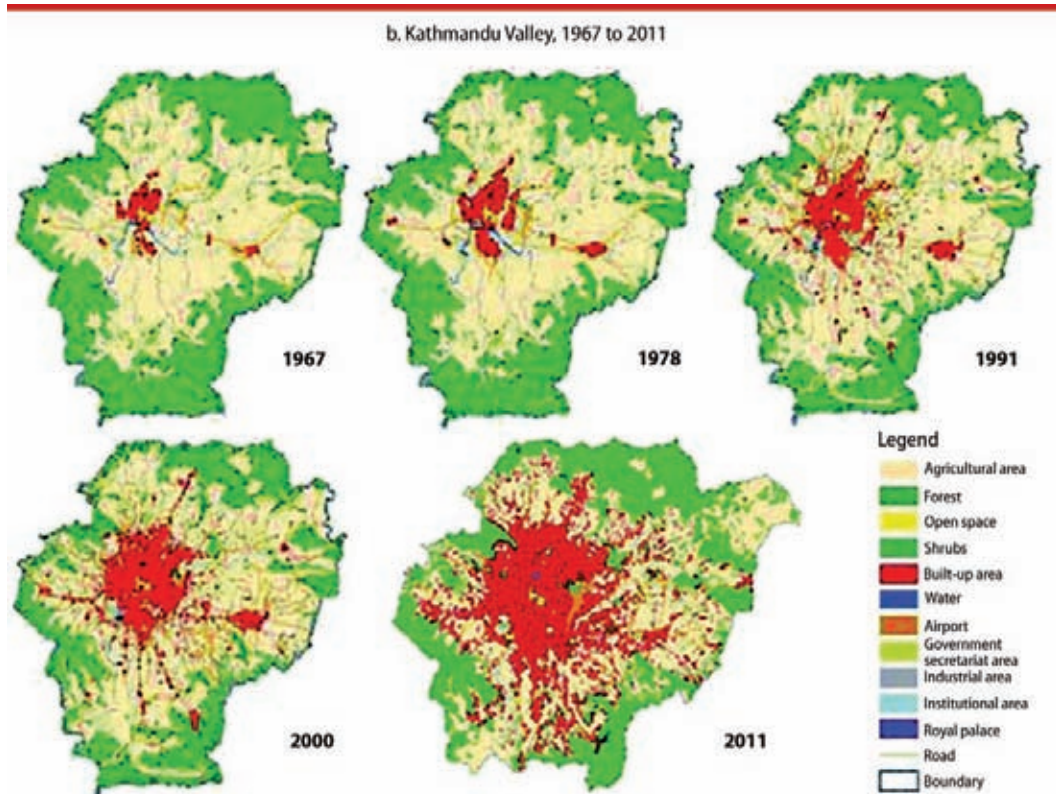
Spatial planning also affects the organization of activities within cities, from location of businesses to housing provision. Because employment density is partly shaped by land use and spatial structure—commercial districts and building heights—planners need to consider how to promote dense employment districts through effective planning and integrated infrastructure programming. Employment density, in turn, drives economic productivity; Abel, Dey, and Gabe (2013), for example, find that a doubling of employment density increases economic productivity by 2–4 percent. Much of this work is based on studies of developed economies, but researchers are now starting to examine developing regions, including India (Chauvin, Glaeser, and Tobio 2013).

In managing the spatial structure of cities, spatial and urban planning should consider how the various tools available to control density—such as floor area ratio (FAR) and building envelope, land-use controls, and urban planning and design standards—can be used to facilitate development and to mitigate infrastructure bottlenecks, manage adverse

FIGURE 4.5 Expansion of built-up area



Source: Zhou 2014.



Source: JICA 2012.

BOX 4.5 Equitable planning: Planning, when done right, benefits the poor in multiple ways

First, if land-use patterns permit or facilitate affordable housing close to work, the poor have better access and lower commuting costs. Second, when the poor have close and easy access to urban services—water, health care, child care, welfare offices, and other community services—they will be more likely to use them and spend less on traveling to them.

In a detailed study of travel patterns of the poor in Mumbai, Baker and others (2005) find that the poor traveled shorter distances than the lower-middle class and tended to travel by foot

because of high transit fares and lower opportunity costs. This finding suggests that affordable intracity transit and pedestrian-friendly streets are important for helping the poor access jobs and urban services. A second finding is that public transit is important in the mobility of the poor and lower-middle class. Rail is the main mode for commuting to work for 23 percent of commuters, while bus remains the main mode for 16 percent. The modal shares for bus are highest for the poor in areas with service, whereas rail shares are highest for the poor in the suburbs.

impacts from incompatible uses, and provide amenities. Increasing density in urban areas and promoting compact urban development can facilitate agglomeration economies, improve access to services, and generate property tax revenues. If implemented well, these density and spatial-structure-shaping actions can also lead to more efficient transportation networks. The converse is also true: unbridled increase in the density of a city could lead to unmanageable congestion forces that manifest themselves in the form of, among other ways, streets always clogged with traffic, unaffordable commercial and residential space, and polluted air. Many successful cities have designed and used density controls creatively with urban planning design guidelines to offer incentives to developers to provide public amenities on their development in return for higher plot ratios.

Managing sprawl and density in urban areas

Overly dispersed land-use patterns with homogeneous, low densities and urban sprawl usually require more land for development, and infrastructure costs per person are higher than where densities are higher. The spread effects and ribbon developments

commonly found in many South Asian cities undermine the exploitation of agglomeration economies and fail to optimize land resources. Spatial planning, land management, and addressing informality are thus important in guiding the expansion of cities.

Cities in South Asia can be better structured as they expand through the creation of compact, polycentric, and articulated spatial structures. Multiple specialized subdistricts can drive localization economies (Henderson 2003). Examples of such clustering can be found around the world: financial districts in Mumbai as well as New York, London, and Tokyo; entertainment districts in Hollywood and Bollywood; and high-tech districts such as Silicon Valley, Silicon Alley in New York, and Bangalore. Multiple centers also generally mean shorter commuting times for workers because they have a wider range of choices to locate near work.

Karachi, for example, is a sprawling city of about 19.5 million people where low-income settlements and unplanned residential areas (mainly squatter settlements) make up 16.9 percent (152.8 square kilometers) of the city's urban land area, and more than half of its population lives more than 10 kilometers from the center (Qureshi 2010). It also lacks modern mass transit and is wholly dependent

on road-based public transport, primarily taxis and rickshaws. Karachi should place more emphasis on transit systems such as bus rapid transit, light rail, and subways. It could seek to emulate cities such as Delhi and, outside of the region, Bogotá, where the TransMilenio BRTS has succeeded in reducing the average commute time experienced by workers by more than 10 minutes (Yepes 2008).

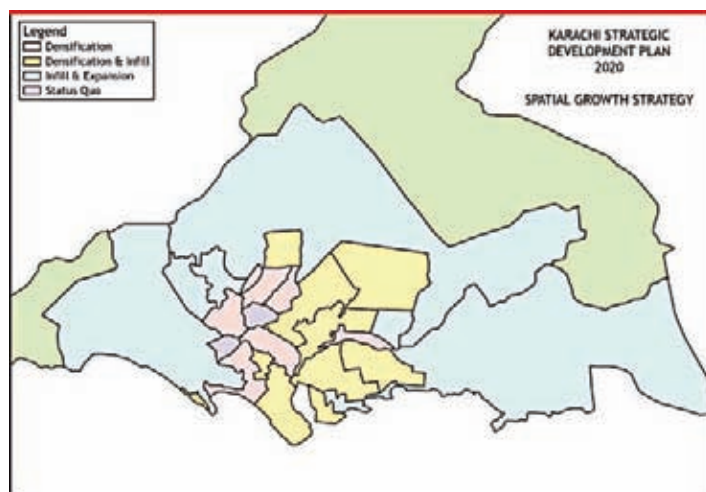
But Karachi can do more to revise its development plans (figure 4.6) to prevent further low-density sprawl by considering increased land-use intensity and the formation of polycentric structures across the city rather than just focusing on the already congested city center. But a more critical problem is that Karachi needs to improve its inter-agency coordination, given that the city is fragmented into more than 25 land-owning agencies that need to come together to ensure that any planned centers will have the necessary infrastructure in place and services to meet the needs of the residences and businesses located there.

In Afghan cities such as Kabul, unbridled expansion and sprawl on the city periphery also undermine livability and lead to costly provision of services, inefficient use of land, and loss of agricultural land. Afghanistan saw

a staggering 3.8-fold spatial expansion in night-lit areas in 2001–12, indicating that cities are expanding very rapidly on their peripheries.² The poor are highly concentrated in this space, with severe unmet demand for urban services. Upgrading informal settlements, including regularizing land tenure, is crucial to land management in Afghanistan. In Kabul, rapid population growth has been partly driven by the return to the country since 2002 of more than 5.8 million refugees, representing 20 percent of the country's population, as well as an inflow of internally displaced persons from, in particular, rural areas.³ As a result, approximately 80 percent of households have some irregularity in land tenure, including limitations on using land as collateral.

At the other extreme, very dense cities lead to congestion of roads, basic services, and land and housing markets, not to mention pollution. However, an increasing number of cities are successfully combining density with high standards of living through innovative spatial planning policies. A comparison of city densities and Mercer's livability survey (figure 4.7) suggests that high livability can be achieved at either high densities (although fewer cities succeed) or lower densities. Singapore and New York are two examples that offer many lessons in spatial planning and urban management for the dense megacities of South Asia. After all, only 50 years ago it was almost unimaginable that the small city-state of Singapore—plagued with slums, poor infrastructure, high unemployment, and a growing population—could make the transition from a developing nation into a thriving economy with one of the highest densities of people per land area along with very high living standards. This outcome can also be achieved in South Asian cities through innovative spatial planning policies.

FIGURE 4.6 Karachi's 2020 Development Plan

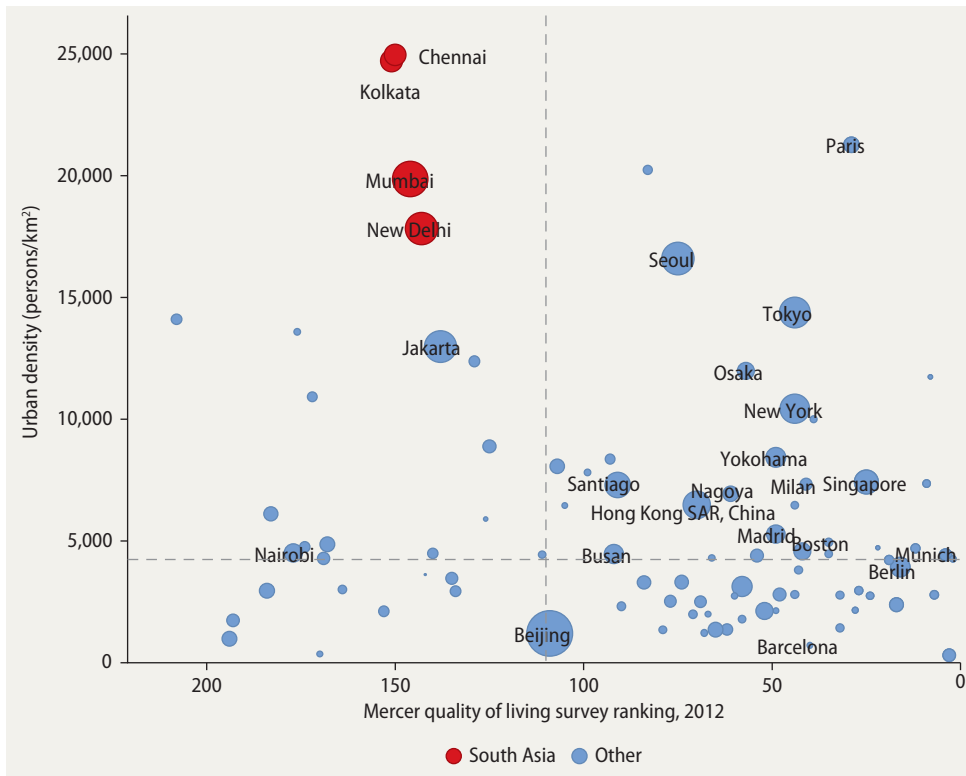


Source: Based on Karachi City District Government 2007.

Shaping vibrant neighborhoods through granular planning and smart policies

Density can be balanced with livability at a granular level by using innovative urban

FIGURE 4.7 Global urban population density and quality of living, 2012



Sources: Ranking surveys by Mercer (<https://www.imercer.com/products/2014/quality-of-living.aspx>); population density derived from UNSD 2014. Note: Size of bubble is proportional to total population of city. Dashed lines in figure show median values.

design and flexible policies. Recognizing the need to manage density within a limited land area, Singapore created market-based policies and incentives in the form of additional floor area (above master plan–approved plot ratios) and relaxation of building height controls to shape urban design. These policies balance the need to conserve and adaptively reuse historic buildings and the provision of ample open space while encouraging denser development. Some of these innovative policies can be explored in South Asian cities that have strong clusters of heritage buildings within their city cores, such as Kandy, Kathmandu, and Thimphu. Singapore’s Landscaping for Urban Spaces and High Rises program promotes green and open spaces in dense built-up areas (Singapore, Urban Redevelopment Authority 2014a), and, in some areas, conservation guidelines allow the extension of

conserved buildings at the rear while preserving the visible features of traditional shophouses in some areas (Singapore, Urban Redevelopment Authority n.d.).

South Asian cities can do more to unlock development potential by promoting more granular patterns of variation in land uses and land-use intensities. In Mumbai, which has roughly the same land area as Singapore, undifferentiated floor space indexes (FSIs; similar to FARs) throughout large areas, economically incoherent use of transferable development rights where higher FSIs are allowed farther from the city center, and historical withholding of large tracts of public land from the market are clearly responsible for congestion forces.

A comparison of Mumbai’s and New York’s or Singapore’s zoning ordinance maps shows this dramatically. The current

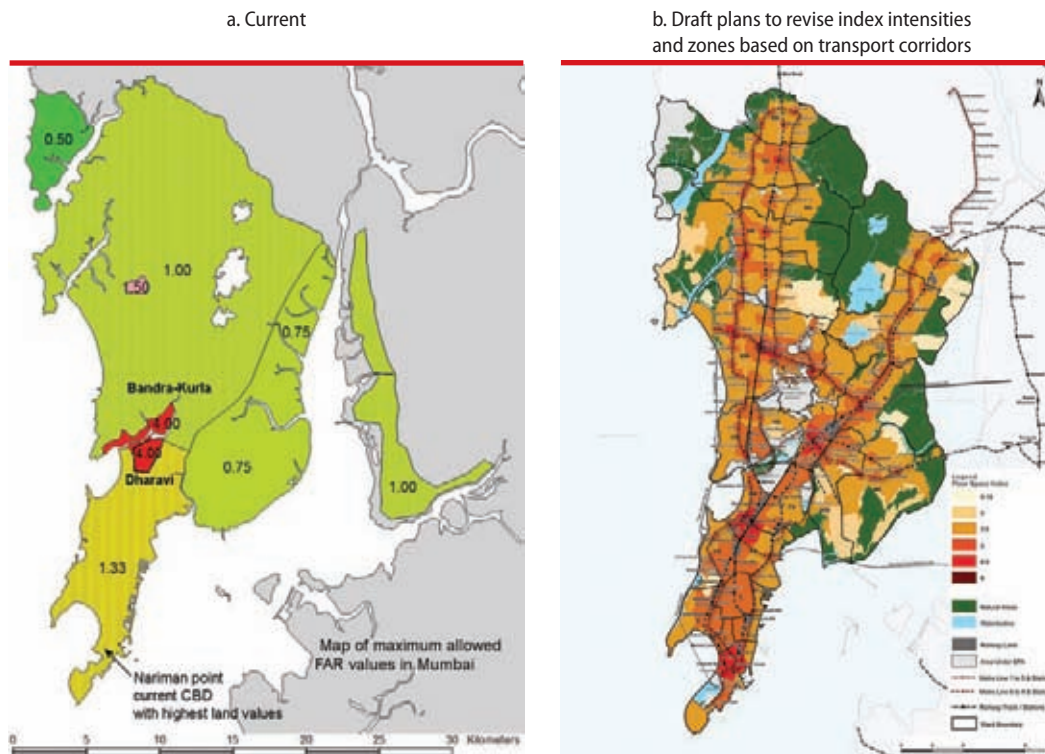
FSI zones in Mumbai (figure 4.8, panel a) appear uniform over large tracts of land and are not well connected with specific land uses. By contrast, Singapore’s zoning and development control regulations exhibit high granularity and high levels of land-use variation, and the patterns that emerge in its core are highly livable because of the layering of various components. While new areas near transport nodes foster high-density commercial activities and residential housing, other areas preserve historic buildings for adaptive reuse. Where the CBD sees demand for taller office towers, care is taken to also create open spaces and parks. Within each parcel of land, urban design and planning guidelines are put in place to manage density.

South Asian cities need to reform their land-use practices and promote more

granularity and variation in land uses and land-use intensities in key areas. Mumbai is revising its development plans to better accommodate development pressures and the need for open space at a granular level by giving more flexibility for higher density around transport nodes (figure 4.8, panel b). Ahmedabad also has a draft of a detailed local area plan and guidelines at the parcel level to facilitate the revitalization of its CBD, with higher densities, more green cover, and a better street network that is pedestrian-friendly (box 4.6).

If managing land use and density on developable urban land is critical to promoting prosperity outcomes, enhancing the open spaces between buildings, such as streetscapes within the right-of-way and public urban spaces, is equally crucial in fostering greater livability. Many of the most

FIGURE 4.8 Floor space index patterns in Mumbai



Sources: World Bank 2013d; Municipal Corporation of Greater Mumbai 2015.
 Note: Greater Mumbai land area = 603 square kilometers. CBD = central business district; FAR = floor area ratio. The numbers included in panel a denote the maximum allowed FAR. Areas that are shaded the same color have the same maximum allowed FAR.

livable cities in the world, such as London, New York, and Vancouver, place heavy emphasis on management of public spaces, streetscape improvements, and pedestrian walkability.

Some South Asian cities have also implemented initiatives to improve public spaces. Colombo has invested heavily in its public spaces, streetscapes, and waterfront areas. Ahmedabad has used rights-of-way to incorporate its BRTS and pedestrian pathways (see box 4.4). Chennai has plans to improve pedestrian walkability and encourage cycling at the commercial hub of Thyagaraya Nagar through a comprehensive area plan focused on public land: streetscape enhancements, pedestrianized streets, and public parks (Tamil Nadu Urban Development Fund, Jones Lang Laselle, and Townland 2011). This plan is complemented by interventions to manage traffic and improve public transport, such as bus priority lanes and designated zones for on-street and multi-story car parks.

Policies that exacerbate congestion forces—overly restrictive density controls, the withholding of land from the market, lack of coordination of infrastructure

development—are known to be key issues facing South Asian cities today. These structural and policy failures impede development opportunities and result in artificially high land prices for businesses. They also restrict the supply of serviced land for residential development and distort the housing market. The results are poorly serviced informal settlements where sizable segments of the urban population live and high congestion costs that harm both firms and households.

The outcomes associated with poor planning are shared with much of the rest of the developing world. Yet other cities in developing countries—such as Surabaya, Indonesia—provide examples of good practices and offer lessons for fostering sustainable regeneration in the city center by improving urban-suburban connectivity. Surabaya has also made parks and open spaces a priority.

Learning from the planning failures of the past means abandoning uniform blanket densities, static plans, and underutilization of large tracts of public land and adopting new tools. Granular planning and development control strategies, successfully adopted by cities such as New York, allow a city to vary

BOX 4.6 Transforming Ahmedabad's commercial center through granular planning

Ahmedabad's central business district (CBD) is characterized by a fragmented stretch of mostly small-scale buildings. The current floor area ratio in some areas is a mere 1.0 and the CBD is often choked with traffic, impeding pedestrian movement. During the past few decades, highly restrictive building bylaws have led to new commercial and residential buildings being scattered across the city. These new developments could have added luster to the skyline and helped to define a vibrant focal point if they had been concentrated in one area.

Change is happening, however, with an ambitious local area plan drafted by the Ahmedabad

Urban Redevelopment Authority (AUDA). The plan proposes to transform the CBD by leveraging its connectivity to a proposed metrorail system and its location along the waterfront. It also proposes to triple the floor area ratio from 1.8 to 5.4, quadruple the population from 85,000 to 357,000, and double the street network coverage and green cover (figure B4.6.1).

The plan includes key elements such as adding new streets to improve connectivity and walkability, appropriating street-side setbacks and reducing building footprints, relaxing building envelope and height restrictions, incorporating design elements such as arcades, and transferring

BOX 4.6 Transforming Ahmedabad's commercial center through granular planning (continued)**FIGURE B4.6.1 The Ahmedabad central business district**

Source: Based on Patel 2014.

development rights up to the maximum building height. In driving the design and implementation of the local area plan, the AUDA focused on the following:

- *Detailed granular design.* The AUDA first conducted a detailed survey of the area, which allowed it to draw up a detailed plan to improve the street network while taking all

features of the area into account, including plots, buildings, streets, trees, and infrastructure.

- *Supporting regulations.* Next, progressive building regulations were drawn up. These regulations allow street widening in parallel with redevelopment of existing buildings and will allow more efficient use of precious

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BOX 4.6 Transforming Ahmedabad's commercial center through granular planning (continued)

city-center land. They will also require developers to provide public arcades and other urban design elements.

- *Working with the market.* The AUDA ensured that developers will pay for the additional floor area ratio so as to provide resources for infrastructure development. Thus, the plan is

designed to work with, rather than against, market forces to realize public objectives.

Even though local planning agencies can only provide incentives for development, build infrastructure, and regulate development, these actions play a critical role in sculpting the spatial structure of cities.

land-use types, densities, and built forms (such as height) at the neighborhood level. One of the main benefits of granular planning is that a city can increase the diversity and texture of its neighborhoods by promoting high densities in CBDs and strategic transit nodes, as is planned for Ahmedabad (box 4.6), while preserving the intimacy of historic buildings through adaptive reuse and low densities. These plans must be accompanied by periodic reviews to help the city respond to changing market conditions and demographic shocks. In essence, urban planners need to balance the real estate market's demand for land against development that is sustainable and a city's prosperity and livability.

Unlocking resources and innovating to rejuvenate city cores

As manufacturing moves out of cities like Dhaka, Kanpur, and Kolkata, the centers need to upgrade economically by attracting advanced services sector or other firms. Physical rejuvenation is needed to take on these new functions. Chapter 2 observes that several South Asian cities exhibit patterns of stagnation and even decline in their core areas, explained in part by their inability to fill the void caused by the suburbanization of formal manufacturing. These trends provide good opportunities to plug the gap with higher-value-added uses. Cities must actively respond to this deconcentration trend by

planning and implementing policies to increase dynamism in city cores.

The potential of existing city centers can be unlocked with better land management and with infill development. Puerto Madero (see box 4.3) and Santiago, Chile, are examples of cities that have undertaken successful and transformative redevelopment. Santiago found that it was more cost-effective to build infill developments in the city, supported by existing infrastructure, than to build completely new developments on the city periphery (box 4.7), especially if buildings on the periphery risked being underserved if amenities and connecting infrastructure were not built. Inner-city projects are often more expensive and challenging than greenfield development because of the frequently significant demolition costs that can be involved and the need to engage in environmental cleanup of sites. However, such projects can also greatly benefit surrounding neighborhoods and the rest of the city by acting as a catalyst for regeneration.

Improved land-administration systems would not just enable systematic land-use planning and support urbanization, but would also facilitate investment in industry and infrastructure development. According to the Association of Builders and Developers of Pakistan, the government of Pakistan owns 40 percent of land in the country, which is far higher than the 5 percent or so owned by the government in other countries

with well-functioning land markets. These lands are often auctioned off by land-owning government agencies in Pakistan to the highest bidder, causing speculative secondary trading and increased land values that are not linked to underlying market fundamentals. In India, poor land records are a critical component of larger land-administration bottlenecks that have hindered growth across many sectors.

Colombo has recognized the value of converting central-city land to better uses and

has plans to move some of its central ministries away, thereby freeing up land for more productive uses. Several historic buildings—the Auditor General’s Department, an Urban Development Authority office, and an asylum established by the British—were renovated and adaptively reused as Independence Square, a commercial complex with public open spaces. The waterfront in Colombo is already being developed for public uses and hotel development to cater to tourism growth. But such development must be accompanied

BOX 4.7 Santiago’s repopulation and housing rehabilitation programs

Santiago’s urban municipal district deteriorated for several decades as residents moved to low-density housing on the city outskirts. By the early 1990s, the city core had degenerated, having lost almost 50 percent of its population and 33 percent of its housing stock in just four decades. Housing was replaced by warehouses, workshops, motels, and parking lots.

The mayor started a participatory planning process in 1990 for the renovation of Santiago. This process created two programs: Santiago’s Repopulation Program (SRP), which used a public-private partnership structure to attract new residents and galvanize the housing market in the municipal district; and the Housing Rehabilitation Program (REHA), which built or improved 500 apartment buildings comprising 7,500 housing units to serve the housing needs of the most vulnerable.

SRP and REHA were part of the broader initiative to revitalize the inner city. The mayor led this effort with the Santiago Development Corporation (SDC) as a vehicle to stimulate land and housing supply and demand. The city sought to improve Santiago’s livability by building accessible services and public spaces close to workplaces and by persuading developers to invest, given renewed demand for housing in the city center.

SDC calculated that providing services and infrastructure for low-density social housing on the outskirts with often underutilized infrastructure costs about 17 times as much as allocating the resources to municipalities with existing infrastructure, services, and accessibility such as Santiago’s Municipal District (figure B4.7.1). This information helped convince the Ministry of Housing and Urban Development to support the program through a subsidy for urban renovation with the aim of helping lower-middle- and middle-income households buy property in priority areas for urban development.

These efforts were successful, and Santiago’s population grew by about 55 percent between 2002 and 2012. Since 1990, about 650 building permits have been issued and 124,000 housing units were built, with total private sector investment of about \$3 billion in the residential sector.

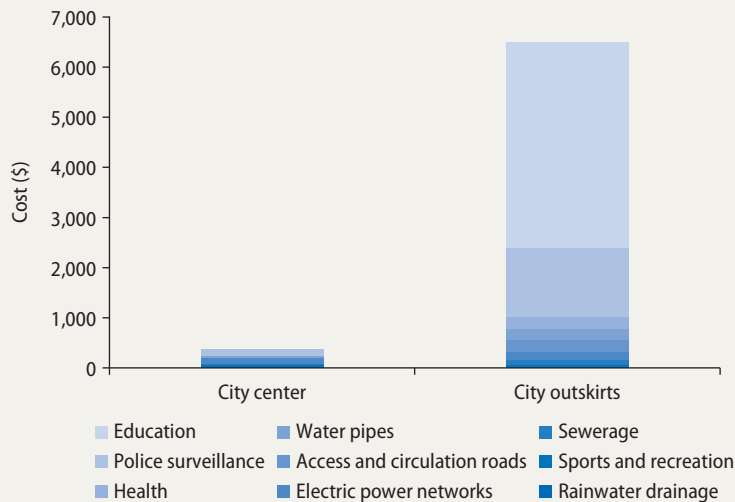
The main lessons are as follows:

- *Adopt proactive leadership, holistic approaches, and appropriate institutional arrangements.* The mayor was instrumental in articulating a vision for the city and obtaining support from the private sector as well as the Ministry of Housing and Urban Development. Setting up the SDC also created the conditions for public-private partnerships with real estate developers.

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BOX 4.7 Santiago’s repopulation and housing rehabilitation programs (continued)

FIGURE B4.7.1 Cost of developing a new residential unit in city center versus periphery



Source: Verdugo 2003.

- *Use master plans, urban design, and cost-benefit analysis.* The master plan was used to attract real estate developers’ interest, which allowed great flexibility; and the use of cost-benefit analysis (city center versus periphery) provided strong justification for the program. However, with the high floor area ratios and building heights, critics felt that urban design could have been more sensitive to the surrounding context.
- *Ensure continuous stakeholder and community participation.* Private sector participation

was essential to the program and the community was consulted at the planning and design stages. Participation should have continued into implementation with better public access to information, given that the program revolved around the community. Continued community involvement could have prevented neighborhood associations’ lobbying efforts to stop new development, which emerged in the 2000s.

Source: Amirtahmasebi and others, forthcoming.

by long-term transformative strategies that avoid replicating the inefficiencies that increase congestion forces.

Cities should also develop innovative strategies to make the best use of their assets and improve their productivity and livability. Apart from tackling traffic congestion, they must redevelop freed-up space, adaptively

reuse existing structures, and formulate new policies to rejuvenate city centers. Singapore’s successful built heritage conservation program, as discussed, allows new uses that respond to market demand and creates incentives for owners to maintain and renew dilapidated structures. It even permits parts of heritage buildings to be rebuilt to

accommodate higher-intensity uses without compromising the historic nature of the building.

Partnerships with enlightened stakeholders who see value in city assets such as historic buildings and public spaces for better livability can be an important driver of rejuvenation. In Shanghai, China, a private developer saw value in preserving two dilapidated blocks of historic *shikumen* (stone gatehouses) to enhance the urban street life and cultural setting as part of the redevelopment of the Taipingqiao neighborhood (figure 4.9, panel a). In New York, the High Line is a 1.6 kilometer linear park built on a disused elevated railroad spur along the west side of Manhattan (figure 4.9, panel b). Based on the results of a design competition inspired by a similar project in Paris, the Promenade Plantée, the railroad structure has been redesigned and reused. The park, which opened in 2009, has revitalized the Chelsea neighborhood and spurred real estate development in neighborhoods along the out-of-use line. New York Mayor Michael Bloomberg was

an important supporter, but it was the non-profit Friends of the High Line, formed in 1999 by two local residents, that advocated for the structure's preservation and reuse as a public open space.⁴

Urban governance in spatial and transportation planning in cities

To support integrated management of cities and a more granular approach to spatial planning, South Asian cities need to strengthen urban governance and implementation capacity and reform their approach to spatial planning and urban land management. A city's ability to plan is underpinned by the strength of its institutions and its implementation capacity.

Better land-resource management

In many South Asian cities, congestion pressures in land and property markets are exacerbated by large tracts of valuable land kept off the market and left undeveloped (see also chapter 5). Prime parcels of land

FIGURE 4.9 Redevelopment in major cities

a. Taipingqiao redevelopment master plan



Source: Based on Shui On Group (http://www.shuionland.com/en-us/property/project/detail/shanghai_xintiandi).
Note: Historic Xintiandi blocks shown in gray on the western edge.

b. Winning design for the High Line



Source: James Corner Field Operations and Diller Scofidio + Renfro, Courtesy of the City of New York.

are often taken up by government buildings or military cantonments or occupied by an activity that need not reside in the city (box 4.8). Public landowners often do not follow local land-use regulations, resulting in further issues ranging from inadequate road networks to nonexistent urban services. But the main result of high rates of public landownership is high land prices caused by supply constraints, which contribute to the low affordability of housing and disenfranchisement of lower-income groups. Planners should ask: Do these publicly held lands unduly constrain supply and create connectivity bottlenecks between different areas within the city? And can they be put to better use?

Furthermore, weak institutional land-management structures have led to high transaction costs as well as rampant rent seeking by government authorities and private sector players, often impeding the efficient functioning of land markets. It is ironic that many spatial planning and land-management policies aimed at addressing spatial bottlenecks in South Asian cities have only led to the informal system operating far more efficiently than the formal system.

Many instances can be cited of poor policy implementation and distortions of land markets in developing countries that have resulted in strong incentives for squatting on land in anticipation of windfall gains from rezoning and higher FARs. In addition, fraudulent practices are often used to obtain higher FARs. Fraud is more common when the base FAR is kept low and homogeneous across large areas without accommodating localized pressures. The resulting delays in judicial processes also often create further inefficiencies, poor accountability, and credibility gaps with the public.

Improving institutional and technical capacity to manage cities

A major success factor for urban renewal is institutional and technical capacity that is sufficient to develop effective urban spatial plans and policies. Achieving efficient spatial form requires more than coordination and management of density and land use. Shaping livable and prosperous cities requires capable city planners to monitor and facilitate development at a local or granular level and to balance development

BOX 4.8 Land use in Kanpur and Amritsar from satellite imagery analysis and ground surveys

According to the United Nations, Kanpur has a population of about 2.6 million in the city proper and covers 267 square kilometers (9,565 people per square kilometer). Satellite imagery analysis and ground surveys of the core city area (measuring about 158 square kilometers) reveal that a large proportion of land is occupied by military cantonments (23 percent, light brown), which appear to divide the city (figure B4.8.1). Much of the land in the city core is also occupied by informal and poorly planned neighborhoods

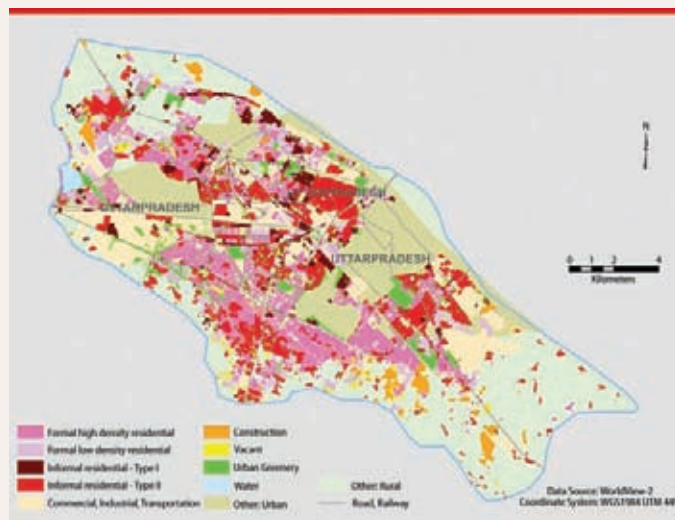
(22 percent, red and magenta) dispersed throughout the city.

Amritsar (figure B4.8.2) is slightly smaller, with a city-proper population of about 967,000 on 136 square kilometers (7,109 people per square kilometer). Similar satellite analysis and ground surveys covering about 107 square kilometers of the core suggest that, here too, large tracts of land in the core are reserved for military use (9 percent, light brown). Also similar to Kanpur, much of the city is occupied by informal neighborhoods (20 percent, red and magenta).

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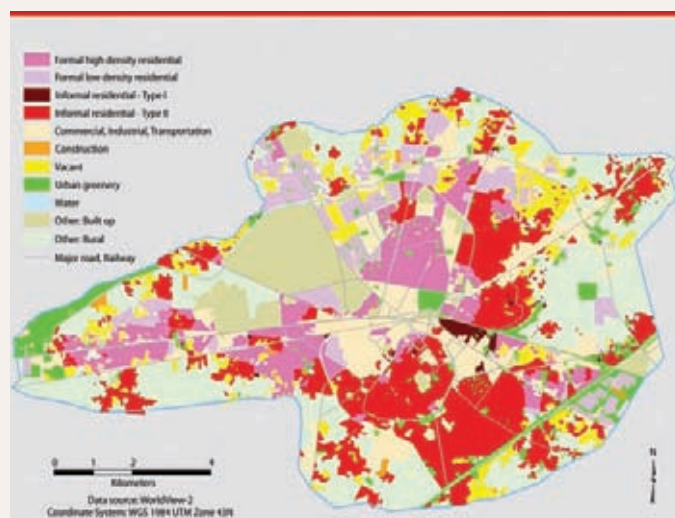
BOX 4.8 Land use in Kanpur and Amritsar from satellite imagery analysis and ground surveys
(continued)

FIGURE B4.8.1 Kanpur land use, 2011



Sources: Based on analysis of very high resolution satellite imagery (Zhou 2014). Population data and city size are from the United Nations 2012 Demographic Yearbook.

FIGURE B4.8.2 Amritsar land use, 2010–11



Sources: Based on analysis of very high resolution satellite imagery (Zhou 2014). Population data and city size are from the United Nations 2012 Demographic Yearbook.

options and their trade-offs: roads versus walkability, density versus sprawl, built-up area versus open space, and development versus heritage (box 4.9).

Unfortunately, such capacity is commonly lacking in South Asia. In India, the number of planners registered with the Institute of Town Planners, India (their quality aside) is estimated to be about 3,000—or 1 planner per 100,000 urban residents, a far cry from, say, the United States and Canada with about 1 planner per 5,000 people (Ramanathan 2013). This capacity shortage is notable in small and medium cities as well as in large metropolitan areas fragmented into multiple cities that show little coordination. Such administrative fragmentation is widespread across South Asia, in cities such as Chennai, Delhi, Kathmandu, and Lahore.

Therefore, a new approach is needed to address city planning and management in South Asia's cities. Although international planners can help meet immediate needs, as in

the numerous planning and design competitions held in China, South Asian cities need to build their own technical capacity in the longer term.

Taking a long term view on urban development

Even as South Asian cities wrestle with urgent short-term problems, administrators must also take an integrated, coordinated, and proactive view toward their long-term transformations. Long-term planning prevents new, foreseeable problems and ensures that future-focused projects, such as city resilience and disaster management, are begun. South Asian cities must take proactive approaches to planning and ensure that urban policies provide a supply of serviceable land for urban use in both the short and long terms. A proactive approach means coordinating land-use decisions and transportation planning with an emphasis on accessibility; allocating FAR in a rational way that promotes intense land uses

BOX 4.9 Balancing trade-offs in urban development, housing land supply, traffic, tourism, cultural heritage, and environmental assets in Kandy

The city of Kandy centers around an internationally acclaimed United Nations Educational, Scientific, and Cultural Organization (UNESCO) world heritage site anchored by the Temple of the Sacred Tooth Relic. Kandy has an urban population of only about 166,000, but the city functions as a regional transport and services hub in the Central Province, serving about 350,000 daily commuters, more than 60 percent of whom arrive by public transport. Kandy also attracts many tourists. Sited in hilly terrain and an environmentally sensitive area, it faces critical challenges of traffic congestion due to through traffic, growing demand for basic services such as drinking water, and the need for environmental protection.

Kandy is also highly constrained spatially for the land and development intensity of its business

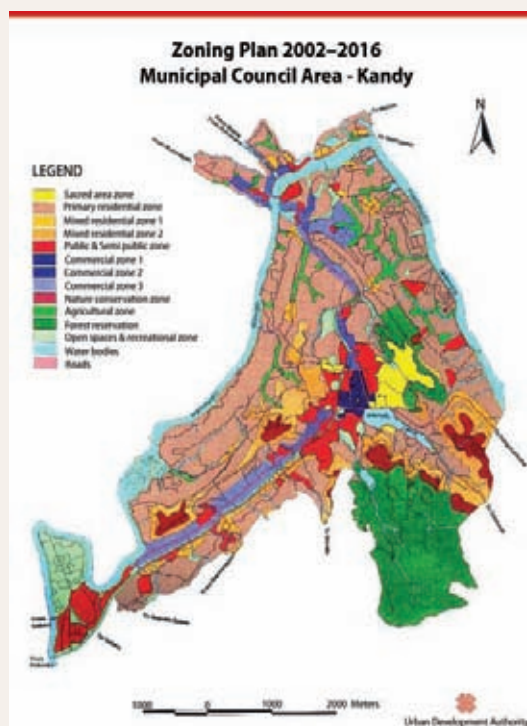
and housing: much of Kandy is close to protected forest reserves and sacred areas. Its situation on hilly, landslide-prone terrain restricts access and overcoming such hazards is costly. A comparison of the zoning plan (figure B4.9.1) and the hazard zonation map (figure B4.9.2; scale is roughly the same as the zoning plan map) shows that much of the Kandy municipal council area zoned for residential use is within landslide areas. Adding to these pressures are urban design restrictions: The main commercial areas (commercial zone 1) are within the city center adjacent to the sacred areas of the UNESCO site. Accordingly, the city has imposed height controls on development and conservation requirements in this area.

Because Kandy continues to play a major transport and tourism role, the long-term

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BOX 4.9 Balancing trade-offs in urban development, housing land supply, traffic, tourism, cultural heritage, and environmental assets in Kandy (continued)

FIGURE B4.9.1 Zoning plan for Kandy



Source: Sri Lanka, Urban Development Authority, n.d.

FIGURE B4.9.2 Hazard zonation map for Kandy and surrounding areas



Source: Sri Lanka, Ministry of Disaster Management 2000.

challenges for its transformation are clear. It will be critical for Kandy to develop a spatial strategy and innovative policies to balance economic development and activities (such as tourism) with the need to protect heritage and environmental assets by unlocking resources and mitigating

traffic congestion pressures. As an example, the recent freeing up of a large disused former prison in the city center offers an opportunity for transformative infill interventions, while its numerous heritage buildings offer further unleveraged potential for adaptive reuse.

closer to city centers and facilitates private sector development; identifying peripheral lands where population expansion is likely; making preparations for future settlement demands, such as demarcating and protecting an arterial network of future transportation rights-of-way; and protecting land resources from urban growth.

Any city development strategy, any spatial-development master plan or policy, is only as good as its content, inclusivity, and enforcement. In South Asian cities, existing uses on the ground are rarely consistent with their corresponding master plans. Master plans are also used as documents to convey ideas and as negotiation tools for arriving at consensus

with developers and various stakeholders, as in Puerto Madero (see box 4.3) and Santiago (see box 4.7). However, in South Asia, master and land-use plans are often vague, outdated, and lacking the type of review that would ensure they meet long-term economic and social needs. Most important, public participation is often inadequate, so that the visions these plans present are not truly shared by the main stakeholders.

Many cities also lack targeted, proper land-use and development controls; even when they do include regulations, such as zoning, they are infrequently enforced. Across South Asia, considerable land is owned by public agencies, and these entities typically do not follow municipal land-use regulations. Land is also often developed without proper titling and registration (see also chapter 5). Informal settlements tend to have roads that are neither of a width adequate to accommodate vehicles nor integrated with adjacent subdivisions, resulting in poor accessibility.

Responding to current needs

Development master plans should be seen as living documents that are continuously updated and aligned with urbanization challenges. They anticipate needs, function as regulatory frameworks, and build consensus. A common problem in South Asia, however, is that population increases frequently overshoot projections. For example, the city plan for Chandigarh assumed a population of 500,000, but as of 2011 the population had reached nearly 1.5 million, resulting in overwhelmed transportation systems and infrastructure. Because such underprojections are not uncommon, master plans need to be revised regularly to match population growth and to accommodate development—an activity not well practiced in South Asia.

To serve urban population growth and economic growth, plans must provide land, services, and infrastructure to meet current commercial and housing needs. These plans should be responsive to market demand, periodically reviewed, and updated frequently.

Equally important is the ability to design effective policies and tools to implement plans and exercise development control. Singapore has relied on a strong, proactive planning framework to guide its development in the long term. Since 1971, its Concept Plan has been reviewed four times (every 10 years) and incorporated revised growth projections. This progress is reflected in the statutory Master Plan that guides land use, development intensity, and land supply (box 4.10). The Master Plan is reviewed every five years, and the release and allocation of land to the market by the government is reviewed every six months.

Despite the need for long-term vision, plans and zoning designations cannot remain static; they need to reflect immediate market realities while meeting long-term goals. If a city does not zone enough land or facilitate land assembly for a particular use in a timely manner, the supply of land for that use will be constrained and could lead to higher land prices. It is therefore vital that plans and development control regulations be aligned with market demands and be able to engage private sector developers. In many South Asian cities, land-market outcomes suffer from policies and plans founded on inadequate land-market information or deficient interpretations of this information. Effective planning requires up-to-date real estate information—in particular, spatially refined data on land and housing prices. These data can be used to monitor land-market performance and shortages in land supply and to design effective land-value capture mechanisms to help finance infrastructure development (box 4.11).

Communicating a strong vision, focusing on coordination and implementation

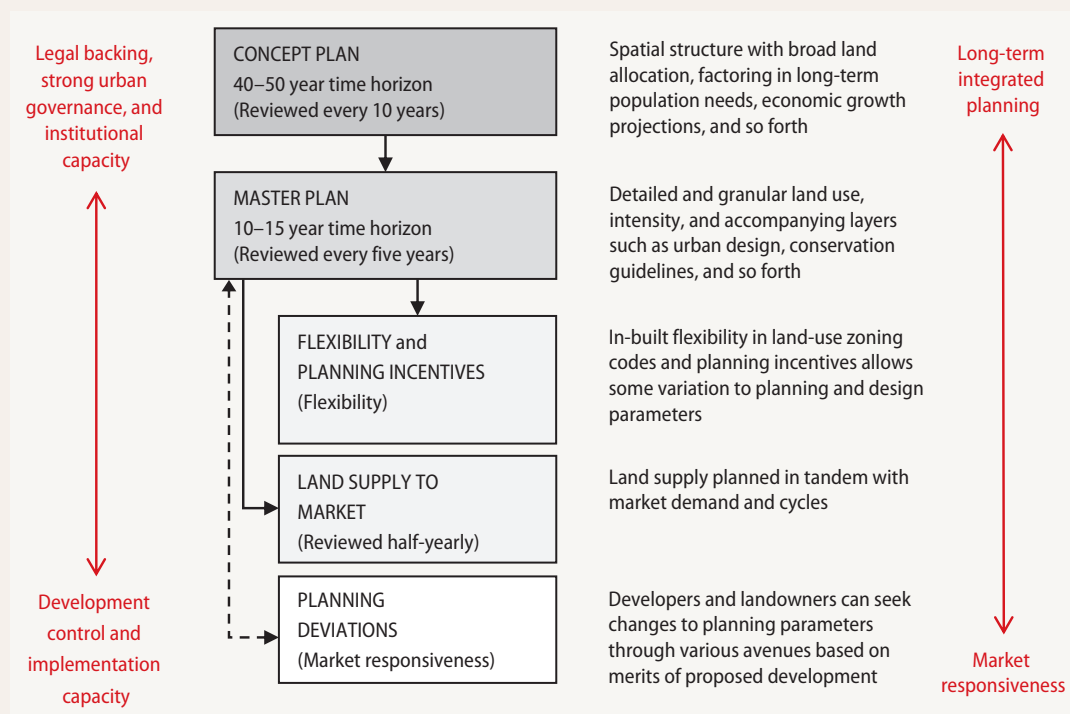
To engage in integrated and coordinated land-use planning, city planners must be backed by strong urban governance and institutional coordination to prepare, implement, and enforce plans. The key challenges are as follows:

BOX 4.10 Singapore's urban planning framework and approach to granularity and implementation

Land is a scarce resource in Singapore. With slightly more than 719 square kilometers supporting a growing population of about 5.5 million, the city-state has invested heavily in planning to balance competing land uses and meet the needs and aspirations of its people. It has put in place an integrated planning and development framework that guides plans at the national and local scales, including public-private partnerships, supply of land, and development control (figure B4.10.1).

The statutory Master Plan typically includes detailed land use to safeguard and accommodate

existing and growth areas such as commerce, industry, housing, amenities, open space and greenery, transportation networks, and infrastructure. Beyond specifying land use and density for developments, the Master Plan contains detailed layers to further shape the spatial structure of the city: plans for parks and bodies of water; landed housing areas; building heights; activity-generating uses; and street blocks, urban design, conservation areas, and monuments (Singapore, Urban Redevelopment Authority 2014b).

FIGURE B4.10.1 Singapore's urban planning framework

- *Preparation.* Limited interpretation of plans; few detailed neighborhood plans; limited integration with a regional framework; lack of integration and ownership across different agencies; and neglect of heritage, transportation, and affordable housing.
- *Implementation.* Issues of land acquisition for development projects; lack of funding to implement state and central

BOX 4.11 Land-value capture in Hong Kong SAR, China

Transportation investments are largely publicly financed, yet owners of property adjacent to roads, transit stations, and other accessibility-enhancing facilities typically see their property values increase. This outcome can be viewed as a social inequity and a conflict of public and private interests—although the public pays for the investment, the private owner benefits from it financially.

Many planning and infrastructure specialists argue that the value gained by landowners should be taxed or the total value increase recovered through land-value capture or benefit levies. In many countries, transportation and infrastructure authorities do, in fact, capture some or all of these gains. There are several models, such as land readjustment, development impact fees, and tax increment financing (see Ingram and Hong [2012], for a detailed discussion of these models and their applications).

Hong Kong SAR, China's metropolitan transportation authority, the MTR Corporation, provides a best practice for using land-value capture to bridge its infrastructure investment funding gaps. MTR Corporation does not sell land-development rights to other private developers but instead partners with property developers to construct both the transit infrastructure and property based on a market value that factors in the "new" transit line. It remains in full control of the land and can subsequently sell the completed units. This mechanism is different from other models, which typically sell off the development rights of public land upfront to private developers and thus risk losing control over the land. MTR Corporation is thus able to effectively capture the real estate income from the increased value of the land resulting from improved connectivity and accessibility.

projects; lack of synchronization with master plan recommendations; ease of deviation from master plan land-use recommendations; approval processes burdened with multiple windows, delays, and graft that affect financial viability; and poor ability to structure public-private partnership incentives.

- *Enforcement.* Complicated development controls and codes that are difficult to interpret, thereby creating uncertainty; poor connection between planning and enforcement bodies that have little ownership or input; nonparticipatory nature of planning document; ease of land-use manipulation and unauthorized boundary expansion beyond the plan by individuals or groups with vested interests; and a general lack of enabling policies for enforcement.

Key institutions typically have limited implementation capacity, lack decentralization, possess different information, and are fragmented

in authority. In Pakistan, high levels of institutional fragmentation in and around Karachi make it difficult to provide integrated basic services. In India, one survey by the Indian Institute for Human Settlements (IIHS 2011) reveals fragmentation of responsibility for coverage and integration of spatial and land-use planning in large Indian cities. India's key shortcomings in delivering effective planning have been documented by the Jana Urban Space Foundation (JUSF 2013), which estimates that only 30 percent of the 4,041 statutory towns in India have any spatial plans.

Even a clear vision and a sound development plan will remain unrealized without appropriate land-management tools. Many cities in South Asia face the problem of land assembly to regularize existing developments, even before any new development can happen. Even though land assembly is the first step in allowing city planners to provide better infrastructure and services, it is often a contentious, complex, and politically fraught

process. Bhutan and Gujarat have had some success in the use of land-pooling mechanisms for land readjustment (box 4.12). Recognizing the need to manage urbanization, Bhutan has begun developing the necessary legal framework to allow planners to better coordinate and guide urban development.

Engaging citizens and inclusive planning

To complement these tools, continuous public engagement and transparency in

urban planning and policy making is needed. A focus on implementable solutions that work with markets is also required. In Santiago (see box 4.7), citizen engagement was strong during the planning and design phases of the repopulation and urban regeneration program, but was not carried through to implementation, which resulted in resistance. Similarly, public consensus was needed for Puerto Madero before any master plans were implemented (see box 4.3). In Medellín, Colombia, the focus on public participation and inclusive urban

BOX 4.12 Land pooling and its application in Bhutan and Gujarat

Land pooling and land readjustment refer to land assembly through a process by which land parcels with different owners are combined into a larger, contiguous land area for more efficient subdivision and development. Landowners equitably contribute a proportion of their plots for infrastructure rights-of-way and surplus land parcels. These parcels may be sold for either commercial purposes or higher-income housing to recover part or all of the infrastructure construction costs, or may be used for public amenities or low-income housing. The economic rationale for land pooling is that the value of the redeveloped land will be increased for the landowners.

Land pooling and readjustment are often favored for the following reasons:

- *Politically feasible.* Because existing landowners share in development gains and costs and benefits are equitably distributed, land pooling and readjustment are less likely to be contested.
- *Cost effective.* The government does not have to directly finance the purchase of rights-of-way or compensate resettled residents. Some infrastructure construction costs can be recovered through the sale of surplus plots created by the redevelopment.
- *Minimally disruptive.* Owners retain a large part of their land.

- *Public participation.* Typically, the agreement of a majority of individual landowners is required to proceed.

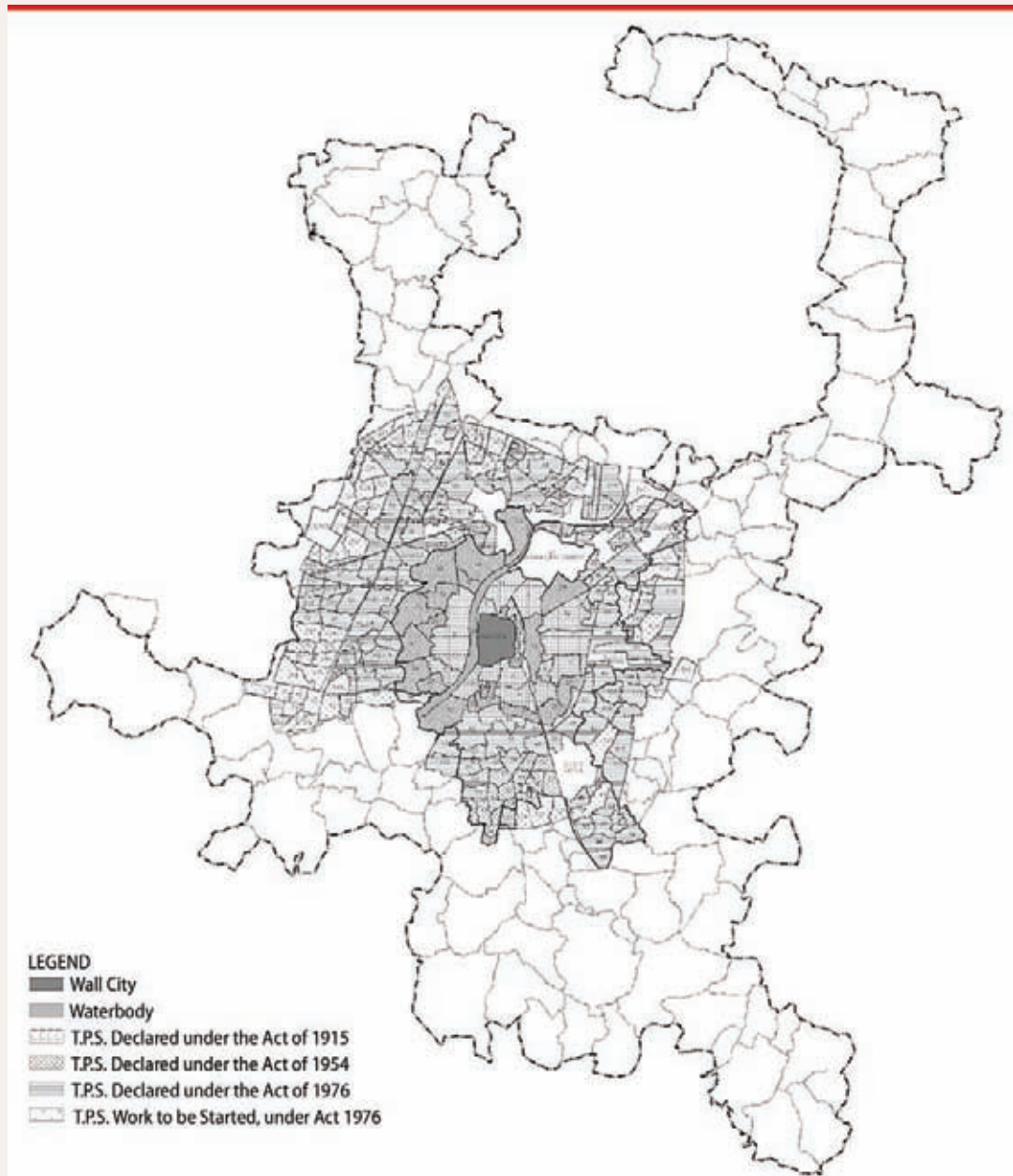
Bhutan. In 2007, land pooling was recognized by municipal act as a development tool and approved by the Cabinet in 2009, the same year the Local Government Act gave Thimphu powers to carry out land pooling. Bhutan land-pooling rules require more than two-thirds of landowners to agree to land expropriation, with a maximum land contribution of 30 percent. These rules on land transactions in land-pooling areas are complemented by processes and procedures for community consultation and redress of grievances.

Gujarat. Gujarat has widely and effectively used its town planning scheme as a land assembly tool for almost a century. It has been claimed (Sharma, n.d.) that 95 percent of Ahmedabad (outside downtown) was developed through the town planning scheme (figure B4.12.1). The first such scheme was implemented in 1920 and consisted of 270 hectares, followed by a sharp rise in schemes after 1985. In 2012, town planning schemes had increased to 1,200 hectares in urban areas (figure B4.12.2). The town planning scheme has also evolved to allow land deductions of up to 40 percent from the earlier 20 percent.

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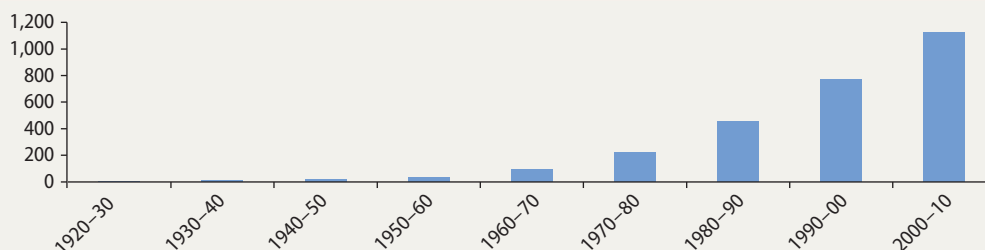
BOX 4.12 Land pooling and its application in Bhutan and Gujarat (continued)

FIGURE B4.12.1 Map of town planning schemes in Ahmedabad, 1915–76



Source: Ballaney 2008.

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BOX 4.12 Land pooling and its application in Bhutan and Gujarat (continued)**FIGURE B4.12.2** Number of town planning schemes in Ahmedabad

Source: Sharma, n.d.

BOX 4.13 Inclusive urban planning and city revitalization in Medellín

Medellín, the second-largest city in Colombia, has experienced rapid growth since the middle of the 20th century, from a population of about 358,000 in 1951 to an estimated 2.44 million in 2013. Its metropolitan region consists of more than 3.5 million people spread across the Aburrá Valley.

In the 1990s, Medellín’s reputation was as the world’s murder capital. This characterization turned around when, in 2004, the city underwent radical urban revitalization under the leadership of Mayor Sergio Fajardo. Medellín enhanced law enforcement and initiated a series of innovative public investments. Mayor Fajardo led a process of community involvement in the planning and design of these investments as well as public participation in municipal funds allocation. The investments in public works focused on the poorest and most violent areas. Many of these projects were designed to integrate the city’s low-income residents and communities with its commercial center. In 2014, the municipal government spent 85 percent of its \$2.2 billion budget on infrastructure and services for the poorest parts of the city.

That spending has included community programs, public transportation, and modern

architecture. A metrorail system opened in 1995, linking the north and south of the Aburrá Valley. To connect the poorest districts, the city later built two aerial cable-car lines. It used the system stations as anchors for “integrated urban plans”—a combination of new buildings (such as libraries, schools, and galleries), public spaces (such as concert venues and parks), and social programs. It has since built 120 schools and nine signature library parks. A third of the city’s budget is allocated to education.

The revitalization and social urbanism project was paid for by revenues from the city’s ownership of its utility company. Since its creation in the 1950s, Empresas Publicas de Medellín has transferred approximately 30 percent of its annual profits to the municipality for social investment projects. And while gang violence and homicides have not disappeared, they are remarkably lower than in the 1990s. Inequality and unemployment remain key challenges for the city, but as a result of the vision of its leadership and the buy-in of its citizens, Medellín was named the Urban Land Institute’s Most Innovative City in 2013.

planning that included the informal settlement areas and investments in public spaces and amenities, helped transform the city from a crime-ridden one into a dramatically more livable urban center (box 4.13). In South Asia, social mobilization was fundamental to the success of the Lahore Walled City historic residential district rehabilitation (box 4.14).

Having a stake in shaping cities

Last, transforming cities in South Asia requires champions—leaders who are able to communicate a compelling vision for the city, to innovate, and to forge stakeholder

consensus with the business community and local population. They must win support for transformation and be backed by capable and talented public employees who are accountable for their actions—just as the mayor of Santiago was instrumental in the success of its repopulation and urban regeneration program, and the government of Sri Lanka laid out a clear plan for a well-connected urban system. These champions need not be politicians or administrators: they can include any stakeholders who help shape the city, like the nonprofit Friends of the Highline, which advocated for preservation of a disused elevated rail line as an urban park.

BOX 4.14 Preserving heritage and improving livelihoods in Lahore Walled City through social mobilization

Lahore's Walled City was the capital of the Mughal and Sikh empires and continues to be a rich part of Pakistan's cultural heritage. As Lahore grew beyond the Walled City, much of the grandeur of its historic structures, brick façades, carved wooden balconies, and overhanging *jharokas* (windows with wooden shutters) fell into disrepair, in part due to unplanned and haphazard construction, illegal encroachments, and neglect of municipal services. The resulting traffic congestion within the Walled City's narrow streets also became a hazard to both homes and residents.

The Walled City of Lahore Authority, established by the government of Punjab, has been working to restore these neighborhoods. The authority has restored the Royal Trail, a 383 meter heritage trail leading from the Delhi Gate to the Chowk Kotwali market. It has completed restoration of heritage architecture, street paving, and street furniture and the replacement of infrastructure with underground telecommunications,

electricity, gas, water, and sewerage. The project also regularized encroachments.

Because the purpose of the project is to improve residents' lives through the restoration and rehabilitation of their heritage, social mobilization was fundamental to its success. Led by the local community, the project was supported by social mobilization teams that convinced residents of its benefits. About 1,500 households were engaged in this process, and this community involvement enabled the project to succeed. Social mobilization and local activism also played an important role in engaging with squatters outside the 380-year-old Shahi Hamam (Royal Bath) in their voluntary resettlement outside the Walled City and in negotiating a compensation package. The area around the Shahi Hamam has since changed dramatically as the building's façade has been revealed and is being restored.

Source: World Bank 2013a.

Notes

1. The population of Dhaka Statistical Metropolitan Area according to Bangladesh's 2011 population and housing census was 14,543,124.
2. Night-lit areas were defined using a digital number threshold of 13 and provide a proxy measure of built-up urban area (see chapter 2, box 2.1, for more discussion of the use of nighttime lights data to measure patterns of urban expansion).
3. See <http://www.unhcr.org/pages/49e486eb6.html>. According to UN High Commission for Refugees estimates, 683,000 people were internally displaced by conflict in Afghanistan as of mid-2014, more than half of whom live in urban areas.
4. See <http://www.thehighline.org> for more information.

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Providing Affordable Land and Housing | 5

Key messages

At least 26 percent of South Asia's urban population, an estimated 30 million households, lives in informal settlements (slums). Both low-income and middle-income households live in these slums. Between 2010 and 2050, the region will require an additional 203 million housing units, mostly targeted to low- and middle-income households, to accommodate projected urban population growth without further expanding the slum population. This challenge can only be met if the following changes occur:

- Urban plans, development controls, and the efficiency of land markets (including informal markets) are improved.
- Cities provide and maintain sufficient infrastructure to meet anticipated urban growth.
- The residential construction industry produces affordable housing for all households.
- Capital markets channel more funding into housing construction and mortgage finance.

Introduction

Properly functioning urban land and housing markets are critically needed to accommodate South Asia's growing urban population. Even though regional urbanization is advancing at a relatively steady pace,¹ the absolute volume of the overall demand for good-quality housing and serviced land is already daunting. As described in chapter 1, countering the adverse impacts of congestion forces, particularly in land and housing markets, is an urgent priority for the region. Fundamental reforms are

required if these markets are to meet the increasing demand for affordable urban housing.

Many South Asian cities fail to enable the emergence of efficient and affordable housing markets. Some examples of cities that follow comparatively good practices exist, such as Ahmedabad in India and Colombo in Sri Lanka, but the vast majority have limited technical capacity, inadequate resources to finance infrastructure, and counterproductive planning and development control regulations (see chapters 3 and 4). The resulting

highly constrained land and housing markets exacerbate congestion forces and contribute to a lack of affordable housing and low livability in cities across the region. South Asia's municipal, state, and national governments must actively address all these limitations.

Market and policy failures cause land and housing prices to be high relative to most incomes, which in turn affects households' ability to access shelter. For shelter to be affordable, a household should spend no more than 25–30 percent of its monthly income on housing costs, whether for rent, servicing a mortgage and paying property taxes, or acquiring land and undertaking incremental construction and property improvement on a pay-as-you-go basis. Another accepted standard for rental housing is that monthly rent should not exceed weekly household income. When costs are higher, as they are in many South Asian cities, households have difficulty either owning or renting.

Generally, although conditions vary from country to country, the supply of affordable urban land and housing lags far behind demand. This affordability gap forces households priced out of the formal market to live in slums and squatter settlements, move in with extended family members, rent smaller units, or move to the city periphery and commute long distances. The lack of access to affordable housing is, in turn, an important factor in the generally lagging levels of livability in South Asian cities (see “Livability of South Asia's cities” in chapter 1).

South Asian cities must both reform land and housing policies and foster innovative housing finance. High housing prices can be attenuated over time by relaxing land use and development control regulations, building infrastructure to open up land for residential development, adopting efficient and easy-to-use land-titling and land-registration systems, and increasing access to construction and mortgage finance. Government regulations also need to stimulate the supply of affordable rental housing. Finally, city and suburban governments need to change their policy stance on informal housing from “curative” to “preventive” measures—to go beyond slum

upgrading to actually slowing the growth of the slum population in the first place. Offering more options to low- and middle-income households will increase prosperity, reduce poverty, and enhance the quality of life for urban dwellers across South Asia.

This chapter's four sections discuss the impact of urbanization on housing, the failure of South Asian governments to provide affordable housing, strategies to enable creation of affordable housing, and key recommendations.

Impact of urbanization on housing

Urban population growth, whether through natural increase or net migration, drives urban household formation, generating demand for more housing units. The variation in household formation—from families to single-person households to groups of unrelated individuals—affects the actual type of unit demanded. Increases in household income also raise demand for housing, since higher-income households want larger units with better services. Finally, if household size (persons per household) continues its current gradual downward trend, more units will be demanded for a given population.

Based on national census and World Urbanization Prospects data (UN 2012), in 2010 South Asia was home to an estimated 403 million households and a population of 1.63 billion, thus averaging four persons per household. Household size tends to be smaller in urban than in rural areas—research conducted by Bongaarts (2001) shows that average urban household size for a sample of Asian countries (including Bangladesh, India, Nepal, and Pakistan) is 96.1 percent of overall average household size. Using urban population projections and assuming (again based on Bongaarts [2001]) that average household size declines by 5 percent per 20-year period, it is possible to extrapolate household formation trends in the eight South Asian countries. This exercise reveals that the compound annual growth rate in the number of urban

households averaged 2.8 percent during 1990–2010 and will average 2.7 percent during 2010–30 and 2.1 percent during 2030–50. These growth rates confirm that South Asia faces substantial affordable housing challenges. Between 2010 and 2050, the region will add 203 million new households to its cities—an average of 5.1 million households a year. Of this increase, 171 million will be driven by urban population growth and the remainder by the projected decline in average household size.

The challenge appears to be even greater when considering the need to reduce current overcrowding, provide shelter for the homeless, and upgrade dilapidated and precarious structures. In 2010, an estimated 30 million urban households in South Asia lived in slums (table 5.1). Therefore, across South Asia, between 2010 and 2050, at least 233 million housing units will be required to accommodate projected urban growth and address the existing backlog of affordable housing.

Delivering the necessary affordable housing will be extremely challenging and will require making land and housing markets work more efficiently. Private sector real estate developers tend to build for higher-income households, designing and constructing housing on purchased lots. But low- and

lower-middle-income households typically cannot afford developer-built housing because they cannot mobilize down payments, obtain bank financing,² or afford land in serviced subdivisions (UN-HABITAT 2011). Therefore, low- and lower-middle-income households commonly build incrementally, improving their dwellings over time as they accumulate resources to buy building materials—a time-consuming and laborious process.

Low-income, not to mention many lower-middle-income, households simply cannot afford to buy or rent formal housing—that is, durable housing that is built on legally titled land, is constructed with proper planning permission, and normally complies with building codes and standards. Land constraints due to government land ownership, topography, limitations on infrastructure networks, and restrictive zoning drive up land prices and undermine low-income housing delivery. In some countries, public sector land development agencies restrict land supply and target sales to middle-income public workers, ignoring the needs of the poor. And housing finance—for both construction and long-term funding—is inadequate to support the needs of low- and lower-middle-income households, making credit expensive and mortgage periods short.

TABLE 5.1 Estimated slum population and number of slum households in South Asian cities, 2010 (except as noted)

Country	Urban population (thousands)	Average household size	Total urban households (thousands)	Proportion of urban population living in slums (percent)	Urban slum population (thousands)	Estimated slum households (thousands)
Afghanistan	7,300	7.2	1,014	88.6	6,468	898
Bangladesh	41,476	4.4	9,392	61.6	25,549	5,807
Bhutan	253	5.4	47	–	–	–
India	378,775	3.6	106,637	17.4	65,907	18,307
Maldives	126	6.9	18	–	–	–
Nepal	4,990	6.0	825	58.1	2,899	483
Pakistan	62,290	6.6	9,404	46.6	29,027	4,398
Sri Lanka	3,188	3.8	830	12.0	383	101
Total	498,398	3.9	128,167	26.1	130,233	29,994

Sources: UN *World Urbanization Prospects: 2011 Revision*; UNESCAP 2012, 126; UN-HABITAT 2013, 126–28; and Office of the Registrar General and Census Commissioner 2013.

Note: – = not available. Data on proportion of urban population living in slums are for the most recently available years, as follows: 2011 (India); 2009 (Bangladesh, Nepal, and Pakistan); 2005 (Afghanistan and Sri Lanka).

The consequences of failing to provide affordable housing: At least one in four urban dwellers lives in slums

Slums and informal settlements are widespread in South Asia and may house, at a minimum, a staggering 130 million people in nearly 30 million households. According to the most recently available estimates, about 26 percent of regional urban development is unplanned and informal, though this proportion varies greatly across countries, from only 12 percent in Sri Lanka to nearly 90 percent in Afghanistan (see table 5.1). Estimates for Bangladesh, Nepal, and Pakistan range between 46.6 percent and 61.6 percent of the urban population. In addition to Sri Lanka, the estimated share of the urban population living in slums is much lower for India.

According to India's 2011 census, approximately one in six urban residents lives in slums. But since the 2001 census, serious

concerns have been expressed at multiple levels of government that India's census approach dramatically understates the country's slum population. UN-HABITAT (2013) estimates India's slum population in 2009 as nearly one in three urban residents. This potential additional slum population suggests that the number of urban slum dwellers for the region as a whole may have been as high as 157 million in 2011, equivalent to the entire population of Bangladesh.

However, not only the poor live in slums and informal settlements. In Afghanistan, Bangladesh, Nepal, and Pakistan, the most recently available estimates show that between 7 percent and 30 percent of urban residents live below the official national poverty line. But in each country, the share of the urban population living in slums is significantly higher (figure 5.1). In Afghanistan, the most extreme case, the estimated share of the urban population living in slums exceeds

BOX 5.1 Estimating India's slum population

According to India's 2011 census, 17.4 percent of the country's urban population—equivalent to 65.5 million people—lived in slum settlements. This figure is little changed from the 18.3 percent reported by the country's 2001 census.

But concerns have arisen within India that the census dramatically underestimates the country's true slum population. The UN estimates that in 2009, 29.4 percent of India's urban population was living in slums (UN-HABITAT 2013).

The 2001 census estimates were based on the definition of slums adopted by the Office of the Registrar General and Census Commissioner of India (Census of India). This definition identifies three types of slums: (1) *notified slums*—all specified areas in a town or city notified as “slum” by state, union territories administration, or local government, under any act including a “Slum Act”; (2) *recognized slums*—all areas recognized as “slum” by state, union territories

administration, or local government, as well as housing and slum boards, that may not have been formally notified as “slum” under any act; and (3) *identified slums*—compact areas of at least 300 people (or about 60–70 households) of poorly built congested tenements, usually unhygienic environments with inadequate infrastructure and lacking proper sanitary and drinking water facilities.

Several problems with the definition of slums and the way the slum population was enumerated caused the 2001 census to dramatically understate India's slum population:

- The definition excludes pockets with fewer than 60 households having slum-like features. In many places, slums may be found that have only 20–25 households.
- The census excluded several smaller states: Arunachal Pradesh, Dadra and Nagar Haveli,

(continues next page)

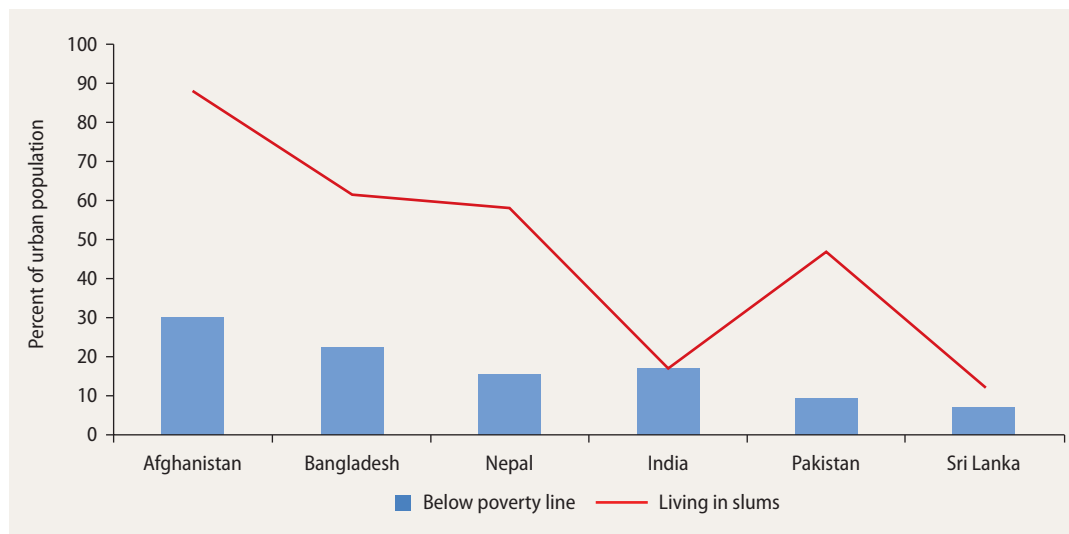
BOX 5.1 Estimating India’s slum population (continued)

Daman and Diu, Himachal Pradesh, Lakshadweep, Manipur, Mizoram, Nagaland, and Sikkim.

- In some states, district or town authorities did not report all the towns and enumeration blocks that needed enumeration.
- In cities and towns covered under the census, district and town authorities did not consider nonnotified or nonrecognized slums that were the subject of land disputes.

Although the 2011 census increased its coverage to include some of the previously missing states, it still only covered slums in the country’s 4,041 statutory towns and therefore failed to enumerate the slum population of India’s 3,894 census towns (settlements that the Indian census recognizes as urban even though they are governed as rural areas). In addition, the 2011 census persisted in using the minimum 60–70 household definition of a slum.

FIGURE 5.1 Slum share exceeds poverty rates, 2005–11



Sources: UNESCAP 2012; UN-HABITAT 2013; Office of the Registrar General and Census Commissioner 2013; and World Bank World Development Indicators data 2011.
 Note: Estimates are for the most recently available years, as follows: 2011 (India); 2009 (Bangladesh and Pakistan); 2005 (Afghanistan and Sri Lanka). For Nepal, poverty data are for 2010 and slum data for 2009. Bhutan and Maldives are not shown owing to lack of data.

that living below the poverty line by 58 percentage points; for Bangladesh, Nepal, and Pakistan the gap is about 40 percentage points. For Sri Lanka, based on the most recent (2005) estimates, the gap is much smaller—4.8 percentage points. India presents an exception in that the estimated share of the urban population living in slums is

basically identical to the proportion living below the poverty line. However, this statement depends on accepting the 17.4 percent estimate of India’s urban slum population from the 2011 census.

This disparity means that vast numbers of people live in South Asian urban slums who are not poor by local standards, whose

household incomes put them above nationally defined poverty lines. The implication is that factors beyond poverty—such as poorly performing urban land and housing markets, inadequate infrastructure, poor or expensive land titling, and lack of housing finance—are important contributory factors in the formation and expansion of slums and informal settlements.

Fortunately, the share of the urban population living in slums in South Asia declined during 2000–11 (table 5.2). But this positive trend should be qualified. Much of the reduction derives from the removal of one or more of the UN-HABITAT (2003a) deprivations (that is, nonpermanent shelters, insufficient living space; no access to safe water; no access to adequate sanitation) and rarely reflects the establishment of formal land and property title. In other words, reductions tend to reflect improved infrastructure access rather than improved security of tenure. Also, while the relative proportion of urban populations living in slums is falling, in most countries the absolute number of urban slum dwellers is increasing.

Living in slums puts enormous social, economic, and financial burdens on households and can lead to intergenerational poverty. Some analysts argue that slums are a natural process of development and that they are simply a transition to modernization and adequate housing (Glaeser 2011). But many argue that they are a poverty trap—that living

in slums makes it harder for households to move out of poverty. Marx, Stoker, and Suri (2013) present compelling evidence that several slum-related factors contribute to the perpetuation of poverty, including poor health outcomes; an inability to access finance and, more generally, leverage property assets; lack of access to basic services; and difficulty in commuting to jobs.

Slum residents are subjected to low-quality housing in often precarious areas, which adversely affects their health and quality of life. It is common for these settlements to be in areas prone to flooding and landslides. Slum housing is on land that has been squatted on or has not been properly subdivided and titled; it is built without planning permission and does not comply with local building codes. Construction therefore is often unsafe—being, for example, more liable to collapse in extreme weather conditions or in the event of a natural disaster. Additionally, most informal settlements do not have full access to infrastructure services such as water and sanitation, paved roads, and sidewalks. As noted by UN-HABITAT (2003b, 172), “In accessible parts of the city, the poor can often afford only precarious sites with insecure tenure.... Conversely, affordable sites that may have more secure tenure are more likely to be located in the less accessible periphery of the city and involve higher commuting times and costs.” For example, in Mumbai a disproportionate share of the urban poor live on

TABLE 5.2 Proportion of urban population living in slums for South Asian countries
Percent

Country	2000	2001	2005	2007	2009	2011
Afghanistan	98.5	–	88.6	–	–	–
Bangladesh	77.8	–	70.8	70.8	61.6	–
Bhutan	44.1	–	–	–	–	–
India: Census	–	18.3	–	–	–	17.4
UNESCAP/UN-HABITAT	41.5	–	34.8	32.1	29.4	–
Nepal	64.0	–	60.7	59.4	58.1	–
Pakistan	48.7	–	47.5	47.0	46.6	–
Sri Lanka	13.6	–	12.0	–	–	–

Sources: UNESCAP 2012 (2000, 2005, 2007 data); UN-HABITAT 2013 (2009 data).

Note: – = not available. UNESCAP = United Nations Economic and Social Commission for Asia and the Pacific; UN-HABITAT = United Nations Human Settlements Programme. Maldives is not included owing to lack of data.

the periphery in the poorly connected eastern part of the city (Baker and others 2005).

Worse, as formal urban development continues across the region, slum dwellers face considerable eviction pressures because they typically lack property title. For example, UN-HABITAT (2007) reports that, between 1995 and 2005, 1.12 million persons were evicted in India and more than 242,000 people in Bangladesh. When slums are on private land, owners may take back their land to either sell it at high prices or develop it profitably. Nor are slums on public land exempt from these pressures: governments are increasingly relocating slum dwellers to build infrastructure or to rectify environmentally hazardous areas. But because low-income urbanites lack the funds to commute long distances to work, they often prefer to live as close as possible to their workplaces, frequently in center-city areas where land is in high demand and thus expensive.

When they are evicted, slum dwellers' social and economic networks can be severely disrupted, depending on the place of their relocation. As a recent UNESCAP report states, "Evicting slum households might be an effective way of clearing land for other uses, but almost all evictions, directly or indirectly, result in increased poverty" (UNESCAP 2012, 14–15). The threat of eviction also reduces incentives for households to upgrade their housing in place.

Overcoming housing supply constraints: A two-pronged approach

Urban land and housing markets are highly complex and require a flexible supply of land and developed housing stock to meet growing demand. If markets are operating effectively, housing supply should expand to accommodate increasing demand, easing upward pressure on prices and facilitating provision of accessible options to households of different income levels. Improving the responsiveness of land and housing markets to demand is difficult, but not impossible. Two complementary approaches are required

for tackling South Asia's affordable housing predicament:

- A short-term approach that is curative or remedial and aimed at upgrading and regularizing existing slum settlements
- A long-term approach that is preventive and intended to prevent both the expansion of existing slum settlements and the emergence of new ones.

Upgrading of slums is a palliative that will improve slum conditions but not resolve the basic contradictions that cause informal housing to arise in the first place. Therefore, cities must combine short-term upgrading with longer-term measures to reduce or reverse the expansion of informal settlements. This dual approach requires concerted efforts from the region's governments to create enabling environments, including efficient property registers and permissive urban planning and development controls that encourage provision of affordable rental and owner-occupied housing. Reforms are needed at all levels to increase the supply of developable land, expand urban infrastructure, establish sound governmental and financial institutions, develop new financing mechanisms, and nurture formal rental housing markets.

Upgrading and regularizing informal settlements

The critical element slums lack is formal ownership, whether by a resident or a rental property owner. Informal settlements in stable areas that are not obstructing infrastructure development should be recognized (that is, residents should be provided with security of tenure through titling) and simultaneously upgraded. Such tenure should adapt to local conditions and cultures. Cities should also develop land-regularization and land-readjustment programs to improve infrastructure networks and rationalize street patterns. In some cases, cities may need to rejuvenate and improve underutilized space—including existing slums and old derelict areas—by redeveloping and readjusting land parcels that are too small and

irregular to support higher-density modern development (see also chapter 4).

Much attention has focused on land-readjustment policies. Nepal, to cite one example, has claimed that its land readjustment process is effective at redeveloping irregular areas. Closer examination, however, suggests that the pace has been very slow, with fewer than 20 projects in 15 years (Karki 2004). Experience in India also shows that land readjustment is very complex and time consuming (Ballaney 2008). As a consequence, the country struggles to keep pace with slum proliferation. Although land readjustment has laudable goals, more streamlined approaches are needed to foster rapid redevelopment. Even with such streamlining, however, land readjustment by itself is unlikely to be a sufficient strategy to combat slum proliferation.

Estimating land requirements for meeting housing demand by 2050

In a long-term, preventive approach, planning and land-management processes need to carefully balance projected housing demand and population growth with land and housing supply or production capacity. Before considering what governments should do to carry out this approach, it is useful to estimate how

much land is needed to meet the projected demand for housing arising from urbanization and household formation trends through 2050. Assuming that most of the existing backlog of 30 million units will be accommodated on existing urbanized land, the answer depends on the population density of new development.

The analysis in chapter 2 concludes that South Asian cities and metropolitan areas are rapidly sprawling and observes an overall trend toward declining urban population densities. During 1999–2010, urban land area within South Asia grew a little more rapidly than 5 percent a year, about twice the growth rate of the region's urban population.³ Excluding Afghanistan and Maldives, urban population densities decreased at an annual average rate of 2.6 percent.⁴ This rate is consistent with Angel, Sheppard, and Civco (2005), who estimate that global urban population densities declined by 2.7 percent a year between 1990 and 2000.

Based on a similar analysis using projected data, table 5.3 illustrates worst- and best-case urban land requirement scenarios for South Asian countries for the period 2010–50. The worst-case scenario assumes that urban population densities continue to decline at the same rate as in 1999–2010, the best-case scenario that they remain constant

TABLE 5.3 Urban land requirement scenarios, 2010–50
Square kilometers

Country	Urban area (2010)	Best-case		Worst-case	
		Urban area (2050) ^a	Change in urban area 2010–50	Urban area (2050) ^b	Change in urban area 2010–50
Afghanistan	1,969	8,928	6,959	23,560	21,591
Bangladesh	4,865	11,889	7,024	31,844	26,979
Bhutan	148	322	174	866	718
India	236,924	547,553	310,629	1,468,580	1,213,656
Nepal	742	2,536	1,794	6,736	5,994
Pakistan	47,956	118,537	70,581	317,405	269,449
Sri Lanka	4,695	10,512	5,817	28,216	23,521
Total	297,299	700,277	402,978	1,877,207	1,579,908

Sources: Based on UN *World Urbanization Prospects: 2011 Revision* and analysis of Defense Meteorological Satellite Program—Operational Linescan System nighttime lights data.

Note: Urban area is measured as urban lit area with a nighttime light intensity of digital number = 13 or greater (see chapter 2, box 2.1).

a. Assuming 2010 population density.

b. Assuming 2.55 percent a year reduction in population density.

at their 2010 levels. If the worst-case scenario materializes, cities will need to plan for huge spatial expansion—almost 1.6 million square kilometers. Even in the best-case scenario, an additional 403,000 square kilometers of land will be required, equivalent to slightly more than 50 percent of the entire land area of Pakistan.⁵

Reforming land management to increase the supply of land

One of land management's main functions is making land available for development. A critical concern for South Asia is to make land management more effective. To increase the supply of developable residential land, cities must carry out strategic and integrated planning to ensure housing requirements are met and that space is efficiently used for sustainable urban development. Accomplishing this task will require cities to enhance their capacity to guide urban development and to provide a framework for planning infrastructure investments.

Many South Asian government agencies in fact own vast tracts of land, but as Bertaud (2009) points out, they often mismanage it and constrain urban land supply (see also Ballaney and others 2013 and Dowall 1991). A good example comes from Karachi, where a large proportion of land is controlled by parastatal organizations and only 31 percent of the city's land area is under the control of the city district government, thereby restricting development (figure 5.2). Many of Karachi Metropolitan Corporation's land subdivisions remain vacant, even though the land was subdivided and serviced with infrastructure in the 1980s (Karachi City District Government 2007). Further examples of public ownership imposing constraints on the supply of land are provided by Kanpur and Amritsar in India (see chapter 4, box 4.8).

Cities with massive public ownership of land, such as Karachi, should consider selling excess land for residential development. The land should be planned and zoned for residential development and priced based on

market principles. Berlin, New York City, and San Francisco have reallocated large public land holdings (an old airport, rail yards, and a navy shipyard, respectively), increasing their housing stocks and earning windfall gains from the sales.

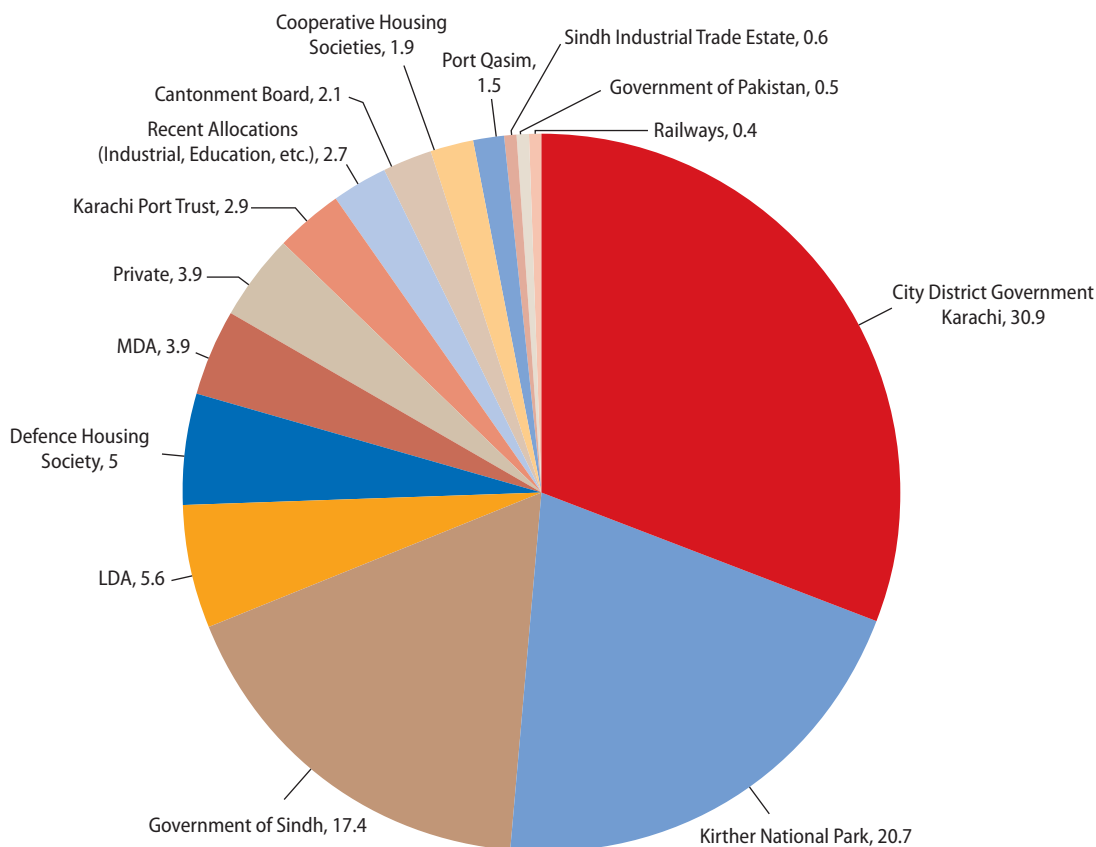
To carry out this transfer from public to private ownership, South Asia's cities desperately need efficient land tenure and ownership record systems. Their absence prevents private residential development from reaching a scale sufficient to accommodate urbanization. Land titling and transfer procedures are particularly dysfunctional and expensive in the region (though less so in Nepal; table 5.4), enough so that people tend to rely on unofficial and undocumented mechanisms to transfer land, particularly when the risk of eviction or sanctions is low. As a result, private developers are reluctant to acquire and assemble multiple parcels of land for residential development because they are unsure of the security of title. Financial institutions are similarly reluctant to finance land development or to accept land as collateral (de Soto 2000). South Asia can learn from other regions to make these procedures more efficient, systematic, accurate, transparent, and easy to navigate (World Bank 2005a, 2005b).

Effective urban planning and regulation to foster the supply of affordable land and housing

Sound urban planning considers how spatial development patterns are related to both accessibility and cost. Spatial patterns of housing, employment, and services, as well as the speed, cost, and network density of transit systems, exert an important influence on urban residents' access to jobs and services. Housing is the largest investment asset most households possess, and its location has a huge impact on commuting times. South Asian cities need to anticipate urban growth and provide adequate, effective, and affordable transportation services.

In most South Asian countries, urban planning regulations, including development

FIGURE 5.2 Large and fragmented public holdings of land in Karachi
Percent



Source: Karachi City District Government 2007.

Note: LDA = Lyari Development Authority; MDA = Malir Development Authority.

TABLE 5.4 Land registration and titling performance, by three measures, 2014

Country	Number of procedures	Time required to title (days)	Cost of titling (as a percentage of property value)
Afghanistan	9	250	5.0
Bangladesh	8	244	7.2
Bhutan	3	92	5.0
India	7	47	7.0
Maldives	6	57	16.2
Nepal	3	5	4.8
Pakistan	6	50	7.6
Sri Lanka	9	51	5.1

Source: *Doing Business: Measuring Business Regulations*, World Bank Group (<http://www.doingbusiness.org/data/exploretopics/registering-property>).

Note: Number of procedures is defined as the total number of procedures legally required to register property. A procedure is any interaction of the buyer or seller, their agents (if an agent is legally or in practice required), or the property with external parties.

control and zoning regulations, are either overly restrictive and inflexible or out of date and unenforced. Consequently, urban development often occurs in a haphazard and unplanned manner, resulting in the formation of slums and informal settlements. As with land registration, complying with planning regulations, obtaining development permission, and acquiring building permits is complex and time consuming. It is therefore common for builders to fail to comply with the formal process of obtaining permits, again fostering informal development.⁶

Land costs in most South Asian cities are also very high relative to the incomes of poor and many middle-income households. In the formal sector, households adjust to high land prices by living in high-rise structures, as development control regulations allow. But although high-rise construction lowers per unit land costs, construction costs increase with height and can easily jump fivefold—meaning that the poor cannot afford to go “high rise” (Bertaud 2010). However, it is possible to design low- and mid-rise high-density residential structures that are more affordable. Depending on building codes and practices, ground plus four-story structures can often optimize density while maintaining affordability.

Land and housing policy reforms in South Asia must therefore focus on a range of interventions—rezoning more land for low-income housing, changing development control regulations to permit construction of more low-cost housing (that is, smaller units on smaller plots), ensuring that infrastructure services are expanded to support urban growth, and fostering the formation of both nonprofit and for-profit housing developers to provide affordable housing.

Accommodative urban housing policies intended to increase the supply of developable land and housing can make an enormous difference in housing affordability and quality of life. Box 5.2 discusses how housing supply elasticity can vary under rapid growth conditions, depending on government housing policies.

Increasing the supply of serviced land through investments in urban infrastructure

Cities need to finance the expansion of infrastructure and engage in sustainable asset management to increase the supply of developed and accessible land. Infrastructure in many South Asian cities has failed to keep pace with urbanization; large areas of many cities lack basic urban services and have poor livability. Expanding urban land supply is an important step toward increasing access to affordable land and housing, but must be matched by increases in infrastructure services if land is to be considered developable (World Bank 2013).

Chatterton and Puerto (2006) estimate new and replacement investment requirements for a range of infrastructure: electricity, telecommunications, roads, rail routes, improved water supply, and improved sanitation. They estimate that between 2006 and 2010, South Asia would need to spend \$88 billion (in constant 2004 U.S. dollars) a year on infrastructure if the region were to maintain a 7.5 percent GDP growth rate. Focusing only on roads, water, and sanitation, the annual amount required for new investment and replacement was estimated to be \$44 billion—approximately 50 percent of the region’s total infrastructure needs in 2006. Of this amount, \$15 billion was required for water and \$10 billion for sanitation.

The per capita costs of road, water, and sanitation infrastructure investments can be estimated for South Asia. Assuming an urban population density of 7,000 persons per square kilometer, two-lane roads are estimated to cost \$100 per capita (this is higher than Chatterton and Puerto’s estimates and reflects resettlement costs in urban areas), improved water \$400 per capita, and improved sanitation \$700 per capita (World Bank 2001; Fay and Yepes 2003; Yepes 2005). Table 5.5 presents estimates of new and replacement infrastructure costs for South Asian cities. These estimates should be treated as rough approximations, being subject to variations in urbanization,

BOX 5.2 Impact of regulations on housing supply elasticity

In a classic comparative analysis of the Republic of Korea, Thailand, and Malaysia, Stephen Mayo and Stephen Sheppard (1996) assess the effects of land use and development control regulations on the elasticity of housing supply.

In Seoul, development control regulations were strict and efficiently enforced. The most binding regulation was the adoption of a green-belt that, once Seoul's growth increased, dramatically constrained housing production. Kim and Mills (1988) identify national land use policies as a source of reduced elasticity of housing supply and increased prices.

In Thailand, land-use regulations were relatively lax during 1970–2000 and enforcement was poor. In the 1980s, Bangkok was one of the few Asian cities to experience a decline in the share of housing classified as informal (Dowall 1989). This decline was largely attributed to a very high price elasticity of housing supply that helped to contain house prices as demand increased, due primarily to unenforced regulations.

Using an approach between a very restrictive Seoul and a more laissez-faire Bangkok, Kuala Lumpur's regulations and land-use policies were moderately restrictive—following the models used in England and Wales, which balance public versus private interests in the planning approval process. The system constrained residential development and increased developer uncertainty, but allowed local authorities to prepare master and structural plans and use them to control development character and intensity.

Mayo and Sheppard (1996) developed an econometric model to estimate price elasticities of housing supply across countries. Applying it, they find that price elasticities were significantly lower in Korea and Malaysia than in Thailand. Assuming a midpoint income elasticity of demand for housing of 0.75, the price elasticity of housing supply estimates ranged from –0.03 for Malaysia to –0.02 for Korea and +6.83 for Thailand—confirming the impacts of land-use and development control regulations on housing supply.

TABLE 5.5 Urban infrastructure (new and replacement) investment requirements, 2010–50, South Asia

Thousands of constant 2004 U.S. dollars

	Absolute change in urban population 2010–50 (thousands)	Road investments, \$100 per capita	Improved water investments, \$400 per capita	Improved sanitation investments, \$700 per capita	Total infrastructure investment costs, 2010–50, South Asian urban areas
Afghanistan	25,802	2,580,200	10,320,800	18,061,400	30,962,400
Bangladesh	59,881	5,988,100	23,952,400	41,916,700	71,857,200
Bhutan	298	29,800	119,200	208,600	357,600
India	496,608	49,660,800	198,643,200	347,625,600	595,929,600
Maldives	140	14,000	56,000	98,000	168,000
Nepal	12,062	1,206,200	4,824,800	8,443,400	14,474,400
Pakistan	91,677	9,167,700	36,670,800	64,173,900	110,012,400
Sri Lanka	3,888	388,800	1,555,200	2,721,600	4,665,600
Total	690,356	69,035,600	276,142,400	483,249,200	828,427,200

Sources: UN World Urbanization Prospects: 2011 Revision; Chatterton and Puerto 2006.

infrastructure costs, technological change, and design innovation. With this caveat in mind, the infrastructure investment costs are staggering—more than \$800 billion over 40 years, an average of \$20 billion per year, nearly three-quarters of which is required for India alone.

Improving access to affordable land and housing will require massive investments in financially sustainable and affordable models of infrastructure finance. One reason for the failure of housing markets to drive development is that developers (both private and public) are unable to afford the investment to build, operate, and maintain infrastructure without financial instruments that allow them to recover their costs. Innovative approaches to infrastructure provision should include an overhaul of existing policies and the introduction of tools to enable infrastructure financing, such as ad valorem property taxes, strategic disposition of publicly held land, betterment levies, developer exactions, impact fees, and public-private partnerships (Peterson and Annez 2007; Peterson 2009). Cross-subsidies between national and local governments could be introduced. Countries in the region could also learn from Indonesia, where the government has introduced mechanisms such as viability gap funding to help mobilize the private sector for public-private projects that are economically feasible but not yet financially viable.⁷

Tariff and rate structures for utilities should be reviewed and aligned with investment, operations, and maintenance costs for long-term financial sustainability along with social equity. For example, studies of water pricing in Bangalore, Chennai, Colombo, Dhaka, Hyderabad, and Kathmandu have concluded that subsidies delivered through tariffs often do not reach their intended beneficiaries—the urban poor—instead frequently benefiting wealthier segments of society. In some cases, the poor actually pay a higher price for water than the rich. Subsidies also threaten utilities' financial sustainability, undermining equitable provision (World Bank 2002).

Establishing well-defined institutional arrangements and good governance

Developers need access to capital to finance land acquisition and construction, which in turn requires efficient banking systems to mobilize funds from savers and disperse them to borrowers. Unfortunately, many developing countries have inadequate financial markets. Local governments must be empowered and enabled to develop new financial tools for funding infrastructure investment and operations. At the same time, reforms that remove disincentives to raise local revenues to fund infrastructure (for example, major trunk networks that straddle jurisdictions) need to be expedited. Financial tools should be supported by, at a minimum, developer impact fees, vacant land taxes, user charges, beneficiary charges, land-readjustment tools, property taxes, and special assessment districts.

Institutional arrangements are crucial in service provision and delivery in cities. Their importance extends beyond implementing policies and programs to identifying issues at the national and local levels. In South Asian countries, ensuring smooth horizontal coordination (across local jurisdictions) and vertical coordination (between different levels of government) is a major challenge. Financial and other arrangements between national and subnational governments need greater functional clarity. (Chapter 3 provides a detailed discussion of issues relating to the governance and financing of South Asian cities.)

Employing innovative financing mechanisms

Improving access to affordable land and housing will not work without a robust housing finance system. Financing is important for both the demand and supply sides of the market. Developer access to finance for both land acquisition and construction is important for helping to stimulate housing supply and thereby keeping housing affordable in the face of growing demand. Meanwhile, even with enhanced supply, households of all income

levels need access to mortgage financing to be able to afford housing.

Although India is the undisputed leader in housing finance in South Asia, mortgage balances stood at a mere 3.97 billion rupees (equivalent to \$62 million in current U.S. dollars) in 2009, with housing finance limited to upper-income, formally employed population groups (Nenova 2010).

To improve market conditions, three elements are required: First, more capital should be mobilized in the housing sector, helping expand secondary mortgage markets and thus access to mortgage lending. Second, developers need more specialized lenders for construction and land acquisition finance. Third, specialized lending programs need to be developed to ensure that low- and lower-middle-income households gain access to affordable credit.

These changes will be difficult. Among the main reasons for the lack of financing options for both developers and households are the lack of an adequate supporting legal framework, including poor foreclosure and eviction procedures and land titling regimes; absence of reliable property valuation; lack of a well-functioning collateral system; a missing yield curve; and absence of long-term treasury instruments in some countries. Further complications include weak competition in the financial sector, poor transparency, underdeveloped market structural features such as second-tier lenders, and the lack of a level playing field for financial institutions. Funding distortions tend to handicap the most dynamic and efficient actors; in some countries, a legacy of nonperforming housing loans among state-owned banks plagues the system to this day (Nenova 2010).

Both demand- and supply-side approaches should be explored by governments to support the poor in obtaining rental or owner-occupied housing—each country should pursue an approach that best meets local conditions and capacity. On the demand side, governments could provide housing vouchers or other forms of targeted subsidies to help the poor gain access to market-rate housing. On the supply side, cities could implement

inclusionary zoning to provide developers with density bonuses in return for building housing for low- and lower-middle-income households. Such strategies have been very effective in the United States. Another supply-side strategy would be to offer builders tax credits or incentives to build low-income units.

Enabling a sustainable, formal rental housing market

Relatively little research has been done into rental housing markets in developing countries. Notable exceptions are Peppercorn and Taffin (2013) and UN-HABITAT (2003b). Peppercorn and Taffin argue that all countries should be concerned about the development of sustainable rental housing markets as part of their overall housing strategies. As they suggest (Peppercorn and Taffin 2013, xvi),

Enabling the development of a healthy formal rental housing sector is important for a number of reasons. First, the rental sector is a natural outlet for those households that do not have sufficient income to afford a home or have not saved enough to meet down-payment requirements. Second, because in many countries, a good percentage of the income earned is informal, there are limits to the share of the population that can qualify for mortgage loans. Third, vibrant rental markets are necessary for workers' mobility. Fourth, home ownership produces greater urban sprawl. This is particularly true as housing prices increase and people are forced to move farther and farther away from the city center.

The supply of both public and private sector rental housing in South Asia lags behind demand. According to UNESCAP (2012), the overall share of urban rental housing across South Asia is estimated to be 30 percent of the housing market. Most rental housing is private, owned and operated by small-scale property owners (Peppercorn and Taffin 2013). Much of it is rented on an informal basis with no lease or strong tenure security.

Such practices circumvent payment of income taxes and other government levies. In manufacturing zones, private rental housing is often aimed at single tenants, not families. Although most governments in the region operate rental-housing programs, they are small and grossly underfunded.

Private rental housing in South Asian cities can be expensive and beyond the reach of the poor as well as the middle class. Historically, this situation has prompted countries such as India to impose rent controls. Although well intended, rent controls lead to disinvestment in the existing rental stock, resulting in its deterioration, and limit the production of new rental housing, thus exacerbating the shortage of decent, affordable rental housing. In Mumbai, where rents are controlled by the Maharashtra Rent Control Bill,⁸ 20,000 rental properties were abandoned by their owners. These units suffered deferred maintenance, and each year many units became uninhabitable (Keating, Teitz, and Skaburskis 1998).⁹ Recognizing these side effects, many South Asian cities (but not Mumbai) have repealed their rent control policies or limited their application to existing buildings (Arnott 2008). Meanwhile, informal rental units such as those in slums and informal settlements may provide affordable accommodation, but often of poor quality, limited space, and weak tenure security (property owners can raise rents or evict tenants at will).

The government could also directly provide low-income rental housing. Although practiced by many countries, the direct provision of low-income housing has fallen out of favor in developed and developing countries alike for several reasons. First, production is expensive and generally cannot keep pace with demand. Second, large-scale projects tend to concentrate the poor in “ghettos.” Third, most of these projects are on inexpensive land far from jobs. In many documented cases, housing recipients game the system by renting out their units to higher-income households willing to commute longer distances (because they can afford the higher transportation costs).

Key recommendations

The key message of this chapter is that South Asian cities are struggling to provide affordable land and housing to accommodate urban growth. Four imperatives are critical to making housing affordable:

- Land inventory must be managed to ensure that housing demand and supply are in balance, and an adequate stock of affordable land must be provided to accommodate growth.
- Land must be provided with infrastructure services to be developable; therefore, cities need to actively program infrastructure investment to support growth.
- Land and housing development requires scalable residential development that meets the needs of all households and income groups.
- Finance plays a critical role in supporting land and housing development, in construction finance, and in mortgages.

Regardless of country, city size, or land and housing market conditions, policy makers should follow a common sequence of reform activities. First, local and central governments should loosen the constraints that bind land market supply. Freeing up supply means releasing public land holdings, reforming land-use plans and regulations, and increasing the supply of land for residential development. Publicly owned land should be sold to residential developers, a move that would both increase residential land supply and generate revenues from land sales or leases (Annez, Huet, and Peterson 2010). Second, cities should revise land-use regulations to facilitate increased housing production. Third, and related to the first step, local and central governments should foster increased investment in infrastructure to support land development for housing. Local resources need to be mobilized to program and maintain infrastructure systems. Fourth, real estate construction firms need to be restructured and modernized to increase the quantity and affordability of their housing output.

Finally, construction and housing finance needs to be broadened and deepened to foster the production of affordable housing.

Crosscutting recommendations are as follows:

Land

- Improve the responsiveness of urban land and housing markets to housing demand by revising urban planning and development control regulations and establishing practices that encourage private development of housing. Enabling actions include revising standards for dwelling units and investing in local and national capacity to manage and control development.
- Adopt reforms to improve the efficiency of land and property registration systems.
- Divest excess publicly held land in cities and reallocate it to residential use.
- Target opportune sites for affordable housing provision.

Infrastructure

- Improve the monitoring of housing demand and supply conditions at city and metropolitan levels and adjust plans and infrastructure programs. In large agglomerations fragmented across several jurisdictions, enhance horizontal coordination and collaboration in the provision of infrastructure.
- Develop financially sustainable and affordable models of infrastructure finance that provide sufficient funds for building, operating, and maintaining infrastructure. Adequate financing will require substantial resource mobilization, including user fees and taxes.
- Overhaul infrastructure provision and give greater consideration to public-private partnerships.
- Review tariff and rate structures for utilities and realign with investment, operations, and maintenance costs.
- Develop new financial tools at the local government level for funding

infrastructure investment and operations. Tools that should be considered include, at a minimum, developer impact fees, vacant land taxes, user charges, beneficiary charges, land-readjustment tools, property taxes, and special assessment districts.

Real estate industry

- Set annual targets for the production of affordable housing, including incremental housing development.
- Convene taskforces, sponsored by both central and local governments, to formulate recommendations for modernizing the construction industry.
- Examine the following: removal of barriers to land assembly and subdivision, land titling and registration, and access to infrastructure; impacts of urban planning and development control regulations on housing construction costs; and methods for improving housing and residential construction finance.
- Encourage developers to invest in rental housing for those who cannot afford owner-occupied housing or who prefer renting.
- Guide households that cannot afford formal housing in incremental development of shelter on the plots they occupy.

Finance

- Develop or expand existing housing finance institutions to channel more funding into housing.
- Consider underwriting, risk management, and loan allocation policies to improve access to, and affordability of, long-term mortgages. Develop underwriting criteria to provide developers with access to construction loans.

Policy makers should not assume that the above recommendations are geared to work in all countries and in all sizes of cities.

The potential effectiveness of each action should be evaluated locally based on cultural context and institutional and technical capacity. In federally structured countries—India and Pakistan, for example—the central government should play a larger role in fostering efficient and affordable land and housing market operations. In more decentralized countries, cities should consider options that they can implement effectively.

Notes

1. However, as discussed in chapter 2, there are important variations in the pace of urbanization across countries in the region. In particular, the pace has been more rapid in Maldives, Bhutan, Nepal, and Bangladesh than in the rest of the region.
2. Experience in the United States indicates that when a household devotes more than 40 percent of its income to housing, it is at risk of default.
3. As mentioned in chapter 2 (see, in particular, note 24), some care is, however, required in comparing the estimated rate of expansion of urban land with the growth rate of urban population. Although the estimated rate of expansion is based on an analysis of nighttime lights data, the growth rate of urban population is derived from *World Urbanization Prospects: 2011 Revision* data and based on official national definitions of urban areas.
4. Maldives has a limited island land area and cannot expand except through reclamation. Consequently, it has an extremely high population density of nearly 47,000 persons per square kilometer (470 persons per hectare). Instability in Afghanistan has also affected urban population density as households move to urban areas for better security. In 1999–2000, Afghanistan had a very high urban population density of 19,314 persons per square kilometer.
5. Pakistan has a land area of 770,880 square kilometers according to data from the World Bank World Development Indicators.
6. Recommendations on improving urban planning that would also assist in stimulating the supply of formal affordable housing are covered in depth in chapter 4.

7. See http://www.jica.go.jp/press/2012/ku57pq000012e8t8-att/20130124_02_04.pdf.
8. The Maharashtra Rent Control Bill was passed in 1999 and replaced the Bombay Rents, Hotel and Lodging Housing Rates Control Act of 1947. The approaches to rent control in the two acts closely resemble one another (Gandhi and others 2014).
9. See Gandhi and others (2014) for a discussion of Mumbai's rent control system and its adverse impacts on the city's rental housing stock.

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Sustaining Prosperity by Building Disaster-Resilient Cities

6

Key messages

Many South Asian cities are immensely vulnerable to natural disasters because economic activity and residents are highly concentrated in areas prone to natural risks. This risk is exacerbated by high poverty rates and weak governmental readiness for natural hazards, which result in a high human impact of disasters. To reduce hazard risks and plan for more resilient cities, policy makers need to do the following:

- Identify risk by developing urban risk assessment frameworks and hazard maps
- Mitigate risk by planning critical and multi-purpose infrastructure to be safe and resilient
- Build management capacity in urban resilience among national and local institutions, and develop extensive risk data platforms and make them publicly available
- Establish a national catastrophe risk financing mechanism.

Introduction

Historically, South Asia has been one of the least urbanized global regions. However, its urban population has grown steadily during recent decades as the result of both natural increase and rural-urban migration. Between 2011 and 2030, 302 million inhabitants will be added to South Asia's urban population (see chapter 1). So far, urban population growth in both megacities and secondary cities has to a large extent been unplanned, resulting in the concentration of the poor population in risk-prone areas and increasing

their exposure to natural risks. Megacities have larger populations at risk, while secondary cities have less capacity to manage natural disasters.

Increasing urban resilience is particularly vital because of the large numbers of people at risk and because physical assets in cities are concentrated in risk-prone areas. If South Asia is to leverage urbanization for economic growth, it must ensure that its cities can limit the impacts of natural disasters.

Disasters are a function of three inputs: hazards, exposure to hazards, and vulnerability. Hazards are a fixed element in this equation

because of the geoclimatic characteristics of the South Asian region. The presence of the Himalayan Mountains and the coasts of the Indian Ocean, the Bay of Bengal, and the Arabian Sea interact to result in droughts and floods on the plains and cyclones that start in the Bay of Bengal and the Arabian Sea. Natural hazards are a regional phenomenon because geological formations and river basins are shared among countries.

The exposure of people and assets to hazards is significant because of unplanned growth (see chapter 4) and the lack of risk-identification measures. Exposure to natural disasters is a result of the concentration of people and assets in risk-prone areas such as flood zones or areas vulnerable to earthquakes. In South Asia, the number of people exposed to natural hazards is growing by 3.5 percent a year—the fastest growth rate in the world. By 2050, 246 million South Asians will reside in cities in cyclone-prone areas, compared with 160 million people in member countries of the Organisation for Economic Co-operation and Development (Bronkhorst 2012).

Vulnerability to natural disasters is extremely high because of socioeconomic factors and lack of proper governance of hazard risk. Most of the population in risk-prone areas are the poor and underserved groups living in temporary structures and without access to either early warnings or means to evacuate quickly in the face of a natural disaster. The poor are concentrated in high-risk, dense urban areas so that they can be close to jobs, which has increased the number of vulnerable people exposed to imminent danger. The number of fatalities due to disasters since 1900 in South Asia is second only to that in East Asia and the Pacific, and hydro-meteorological (hydromet for short) disasters figure more prominently in South Asia than in East Asia.¹

The region faces high probabilities of natural hazard risk, of which earthquakes, floods, cyclones, droughts, and landslides are among the five most significant (Gupta and Muralikrishna 2010). In its *Global Assessment Report*, the United Nations International Strategy for Disaster Reduction (UNISDR)

ranks South Asian countries as having medium (Bhutan, Nepal, and Sri Lanka) to very high (Afghanistan, Bangladesh, India, and Pakistan) potential mortality risk due to exposure to multiple disasters and extreme vulnerability (UNISDR 2009). The mountainous regions of Afghanistan, Bhutan, India, Nepal, and Pakistan face risks from earthquakes and landslides; the coastal regions of Bangladesh, India, Maldives, and Sri Lanka are at risk of cyclones, storm surges, and coastal erosion; and coastal regions throughout South Asia as well as riparian regions² of Nepal and Bhutan are highly prone to flooding. Drought, the disaster that affects the largest number of people in the region, is especially important in most of Afghanistan, India, and Pakistan, and parts of Nepal and Sri Lanka (Practical Action 2009; Gupta and Muralikrishna 2010).

The underlying natural risks combined with the region's large population, inadequate infrastructure, and socioeconomic conditions result in high vulnerability to hazard impacts (Bronkhorst 2012). From 1971 to 2009, South Asia experienced 1,017 natural disasters that affected more than 2 billion people, caused more than 800,000 deaths, and led to more than \$80 billion in direct losses (Bronkhorst 2012). This exposure is shaped in large part by the region's geography as a major drainage basin of the Himalayas and proximity to the monsoon and typhoon trajectories.

South Asian countries are developing and strengthening their institutions to mitigate the problems of natural hazard risk. However, the local and national disaster risk management (DRM) institutions that have been established across the region have not been allowed to influence overall planning and development programs. Despite being tasked with empowering different line ministries to incorporate effective DRM practices, they have not performed well because they lack human and financial resources (Bronkhorst 2012). Weak governance and ineffective DRM institutions result in slow progress in mitigating disaster risk and building resilience in South Asian cities.

This chapter first provides an overview of the risks and exposure to risks in the region's urban areas. It then outlines vulnerabilities of different countries based on risks and exposures, followed by a description of the impacts of climate change and global warming in exacerbating disaster risk in South Asia. It then classifies South Asian cities based on size, urban risk exposure, and socioeconomic factors. Finally, four recommendations are made for the first steps to be taken to increase urban resilience and DRM.

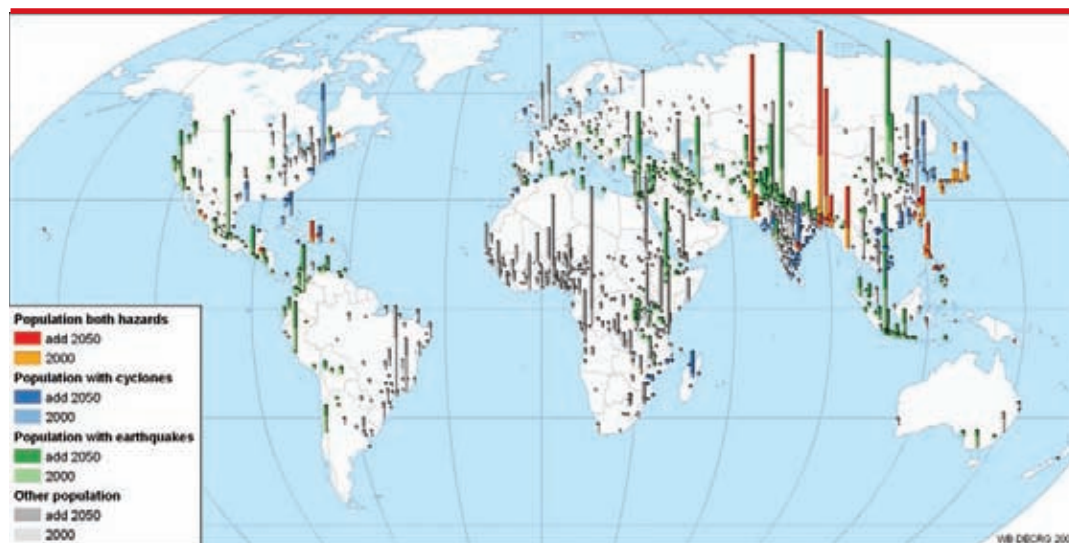
Urban risks and exposure

Urban population growth and economic development have increased the exposure in South Asia to natural hazards by concentrating people and assets in risk-prone areas such as deltas, floodplains, coasts, and the Himalayan belt (figure 6.1). Overlaying a flood risk map³ (UNISDR 2009) and the 2010 urban footprint map based on nighttime lights data (see chapter 2, "Rapid relative expansion of urban footprints and the rise of the multicity agglomeration") suggests that 80 percent of major South Asian cities are

exposed to floods, with about 45 percent of urbanized extents in flood-prone areas and 14 percent in extremely flood-prone areas (figure 6.2). Most city centers sit on riverbanks and coastal land, so most of the peripheral expansion has been in the hinterlands, away from the largest waterways. Based on historical trends going back to 1970, as much as half of all future urban expansion could be in flood-prone areas, underlining the need for anticipatory planning and mitigating infrastructure.

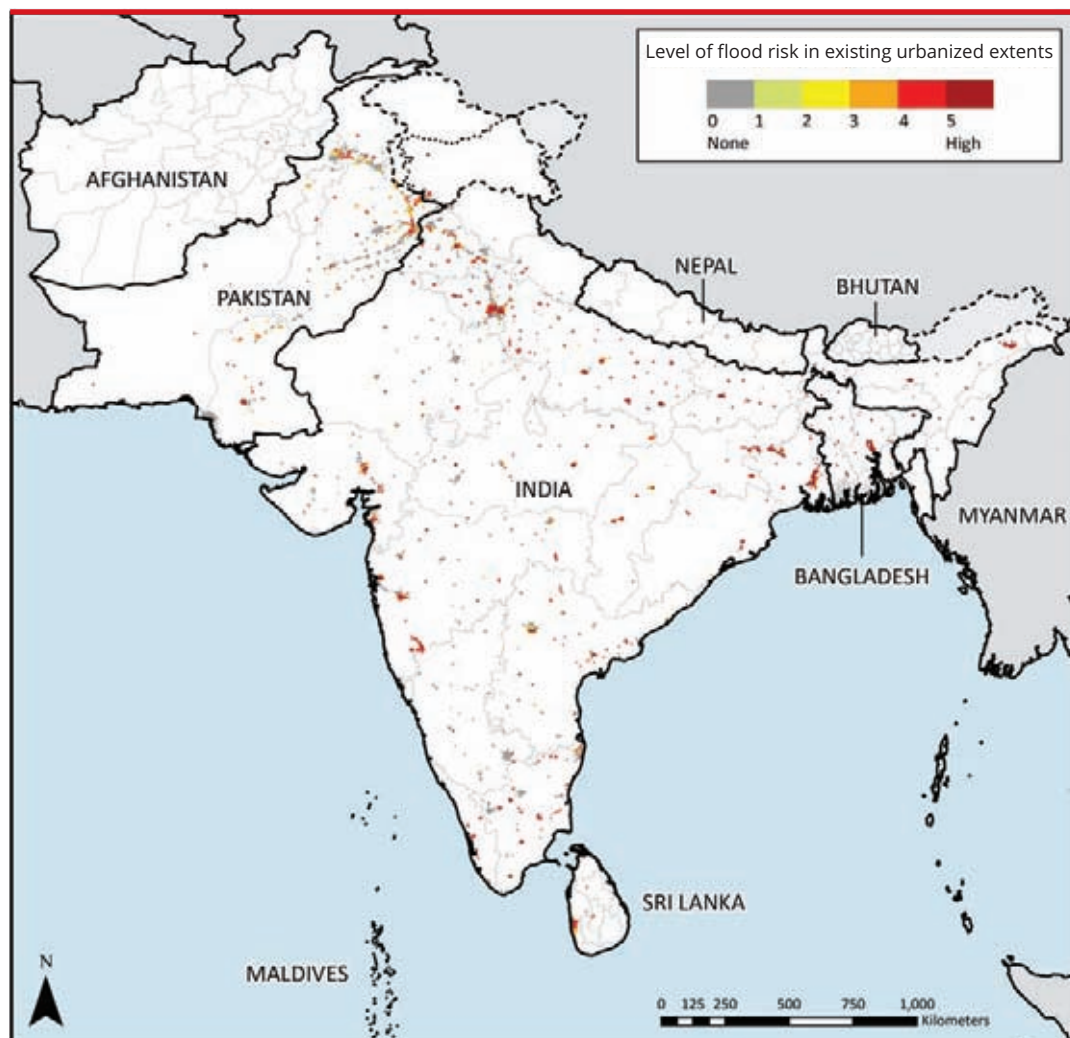
Cities in Afghanistan, Nepal, Pakistan, and northern India that lie along the Himalayan range are all at risk of earthquakes. Many cities in northern India and Pakistan are also at risk of heavy inland flooding. Almost all cities in Bangladesh are at some earthquake risk, but the lack of earthquakes affecting cities in recent memory and the higher frequency and impact of flooding and cyclones have reduced people's awareness of earthquake risk. Chittagong and Sylhet (in Bangladesh) are in the highest earthquake hazard zones, and although Dhaka lies in a moderate zone, it has been rated among the top 20 most earthquake-vulnerable cities

FIGURE 6.1 Urban population growth by hazard risk, 2000 and 2050



Source: World Bank and UN 2010.

Note: Add2050 = adding the 2050 forecasted population.

FIGURE 6.2 Extent of existing urbanization in risk-prone regions, 2010

Sources: UNISDR 2009; and the 2010 urban footprints map based on nighttime lights data (see chapter 2).

Note: The map covers all cities in South Asia with a population greater than 100,000 in 2000 (Brecht, Deichmann, and Wang 2013).

(World Bank 2012a). Two-thirds of the city is built on infill, making it severely prone to liquefaction, and a major earthquake in Dhaka could cause up to 1 million fatalities (Ahmed and Ahmed 2010).

Urban vulnerability to natural hazards

Vulnerability is commonly defined as a function of natural hazard risk, the level of exposure of physical assets and people to

those risks, and their adaptive capacity to plan for and respond to systemic shocks (IPCC 2007; Adger 2006; Romero-Lankao, Qin, and Dickinson 2012). Although only 13 percent of the world's hydromet disasters between 1975 and 2012 took place in South Asia, the region accounts for 42 percent of deaths and 30 percent of the total affected population worldwide. These numbers are significant given that South Asia's share of the world population is only 23.3 percent.⁴ By some estimates, 64 percent of the global

population exposed to floods lives in South Asia (Bronkhorst 2012). In many South Asian cities, the combination of high natural risks, high concentration of resources and people in risk zones, high rates of multidimensional poverty, low levels of governmental attention to natural hazards, and large populations of informal settlements translate into high vulnerability to natural disasters.

South Asia’s urban population has increased by 130 million just since the turn of the century. Fixed gross capital formation—investment in land improvements, industrial machinery and equipment, buildings, and infrastructure—has surged. By allowing people and assets to be concentrated in at-risk areas, cities have increased their exposure to these natural hazard risks (Bronkhorst 2012; Revi 2008).

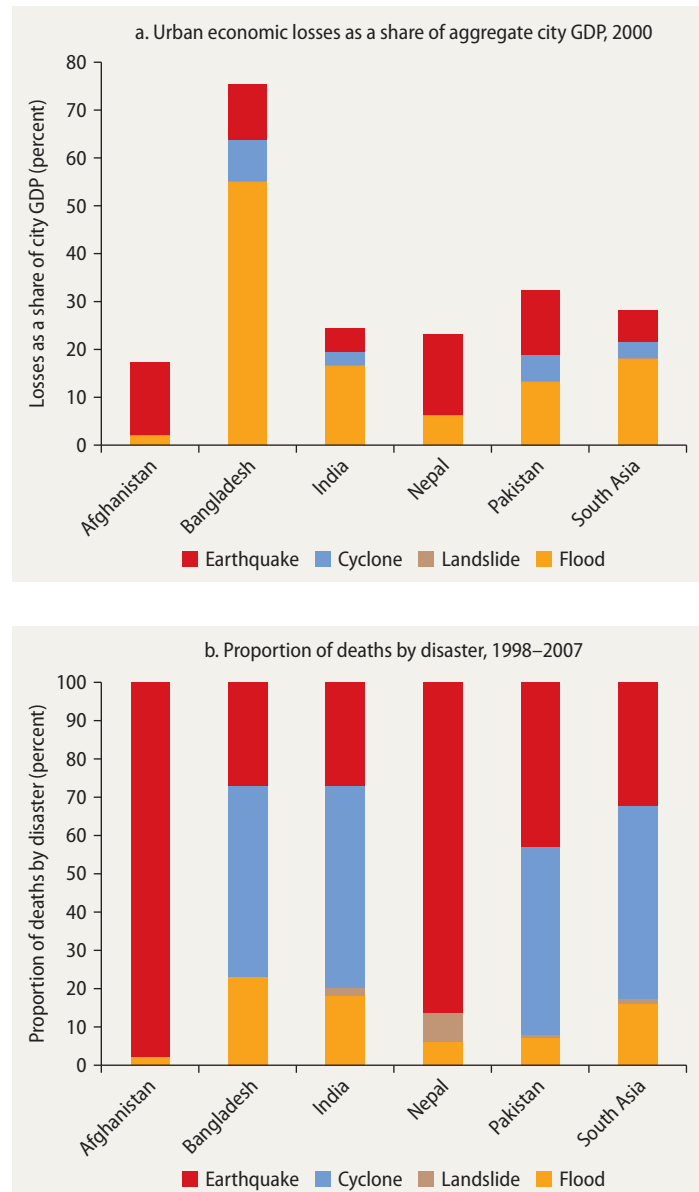
The combination of risk, exposure, and vulnerability leads to high direct urban economic and mortality losses from natural hazards. Urban assets in the region are most financially exposed to floods, whereas urban residents are most vulnerable to catastrophic events such as earthquakes and cyclones (Brecht, Deichmann, and Wang 2013). In a study of 233 South Asian cities,⁵ floods accounted for 64 percent of estimated urban economic losses over 20 years, but only 16 percent of mortality; cyclones, affecting only 13 cities, contributed 13 percent of economic losses and 50 percent of mortality; and earthquakes 23 percent and 32 percent, respectively. Because of their size and level of development, cities in India—and to a lesser extent Pakistan—account for most of the losses in absolute terms, but as a share of metropolitan gross domestic product (GDP) and population, cities in Bangladesh suffer much higher rates of loss (figure 6.3).

Impacts of climate change and global warming

Natural disasters are likely to be made worse by global warming and climate change. According to a 2013 model by the Potsdam Institute for Climate Impact Research and Climate Analytics, cities in Sri Lanka and the

state of Kerala in southern India will experience 3-sigma temperature anomalies⁶ as often as seven months out of the year if the earth warms by 2 degrees Celsius (°C). If the planet warms by 4°C, these anomalies will take place year round along the coasts of India, as well as in Bhutan, Nepal, and

FIGURE 6.3 Estimated urban economic loss and mortality loss rates in South Asia



Source: Derived from Brecht, Deichmann, and Wang 2013. For more details see Shi 2013.

northeastern Afghanistan and Pakistan. They will take place six months or more out of a given year throughout Afghanistan, Bangladesh, Pakistan, and most of India, especially along the coast. These heat waves, on top of urban heat island effects, will directly undermine urban respiratory health and make children and the elderly more vulnerable to heat stroke. Already, many cities in South Asia are forced to re-allocate long-term development budgets to rebuilding after disaster (Bronkhorst 2012). By one estimate, climate impacts could cost the region 9–13 percent of GDP a year by 2100 (Gupta and Muralikrishna 2010).

Global warming also influences precipitation patterns, resulting in more chronic droughts, especially in currently arid and semi-arid regions. A higher incidence of drought is projected for Afghanistan, Gujarat and central India, Maldives, Pakistan, and Sri Lanka (Ramesh and Yadava 2005; Practical Action 2009). In addition, reduced glacial melt leads to lower year-round water availability in Afghanistan, Bhutan, Nepal, and Pakistan.

Droughts affect not only drinking-water availability in cities but also rural-urban migration patterns. Research on urbanization in Sub-Saharan Africa has shown that lower farm income due to water shortages encourages migration to nearby cities (Henderson, Storeygard, and Deichmann 2014). Growth planning for cities throughout the region, therefore, must account for the additional “spiky” population growth caused by climate-driven rural population displacement.

However, precipitation is projected to increase significantly in eastern South Asia and moderately across India (Revi 2008; PICIRCA 2013). Warming waters in the Bay of Bengal may also lead to increased frequency and intensity of cyclones in Bangladesh and on the eastern coast of India. In these areas, intense rainfall and severe floods are likely to occur with greater frequency, even without accounting for sea-level rise and storm surges (Hirabayashi and others 2013). Increasingly frequent extreme rainfall is likely in most of

India except the northwest, as well as in all of Bangladesh, Bhutan, Nepal, and Sri Lanka, including regions that are also projected to have a decline in overall rainfall (Gupta and Muralikrishna 2010). Western and central India are expected to experience significantly more extreme floods, like those that struck Mumbai in 2005 and Gujarat in 2005 and 2006. With greater glacial melt, flooding is expected to increase in the border region between India, Nepal, and Bhutan, as well as along the Pakistan and India border region (Revi 2008).

For nine cities around the Bay of Bengal, including Chennai, what is now a 100-year storm event may occur as often as every two to five years by the end of the century. There is a high level of concurrence among models on these projections. Projections for parts of northwest India and most of Pakistan and Afghanistan, though uncertain, suggest that the frequency of severe weather may decline and that the region will instead face greater challenges of drought and water scarcity.

Another impact of climate change is sea-level rise. The average sea level is projected to increase by 30–115 centimeters by 2100, placing 6 million to 40 million people at risk in South Asia (PICIRCA 2013; McGranahan, Balk, and Anderson 2007). One model predicts the additional exposure of 136 of the world’s largest cities to 100-year floods in 2050 due to sea-level rise and land subsidence (Hallegatte and others 2013). The model assumes certain rates of population and economic growth, and that storm frequencies and intensities remain the same. By some estimates, Mumbai and Kolkata are the 5th and 14th cities in the list of 136 largest cities exposed to 100-year floods in 2050 due to sea-level rise and land subsidence. Relative to city GDP, Mumbai (India), Khulna (Bangladesh), Kochi (India), and Surat (India) are the 7th, 8th, 14th, and 17th most at risk (Hallegatte and others 2013).

With 20 centimeters of sea-level rise by 2050 (an optimistically low projection), and considering adaptations that will restrict flooding to current probabilities (for example, by raising dikes by the amount of sea-level rise), Mumbai, Kolkata, Chennai, and Surat will

become the top 2nd, 3rd, 13th, and 14th most exposed cities to flooding in the world. To retain current levels of average annual economic loss probability given 20 centimeters of sea-level rise and land subsidence, Chennai, Chittagong, Kochi, Mumbai, Surat, and Visakhapatnam would need to raise dikes by 20 centimeters, while Dhaka, Karachi, Khulna, and Kolkata would need to raise them by more than 60 centimeters (Hallegatte and others 2013).

Classification of cities based on risk and vulnerability profiles

To begin identifying packages of interventions for assistance to cities, this section classifies 241 of the largest cities in South Asia, based on available data for risk, exposure, and vulnerability.⁷ The cities are arranged based on their existing and projected risk due to earthquakes and hydromet hazards, city size, and socioeconomic vulnerability.⁸ The regional perspective provides a best-guess estimate of ecological and socioeconomic circumstances that may have direct and indirect effects on cities even if the data are uncertain for specific metropolitan areas. This classification may offer one potential strategy for prioritizing investment and climate action on a regional level, but before firm actions are taken, local and subregional models should be developed to determine which approaches are appropriate and how much disaster risk reduction and adaptation investment is right for cities.

Most cities in the region are exposed to more than one hazard (table 6.1). Flooding seems to be the most common: 187 out of

233 cities studied by Brecht, Deichmann, and Wang (2013) are in danger of flooding. Earthquake threatens 124, landslides 68, and cyclones 13. Two major cities in Bangladesh (Chittagong and Cox's Bazar) are at risk of all four major hazards. All the region's megacities (Dhaka, Kolkata, Delhi, Mumbai,⁹ and Karachi) are highly at risk of earthquakes and floods, with Dhaka, Kolkata, and Karachi also at risk of cyclones and storm surge (Gupta and Muralikrishna 2010). Disaster typologies are mapped in figure 6.4.

Classification based on earthquake risk

About 12 percent of the 233 cities in the study sample (29 cities) are mainly at risk of earthquakes and could have moderate to high economic and mortality baseline losses due to earthquakes, but low baseline losses due to hydromet events. These cities are located in the Himalayan region.¹⁰

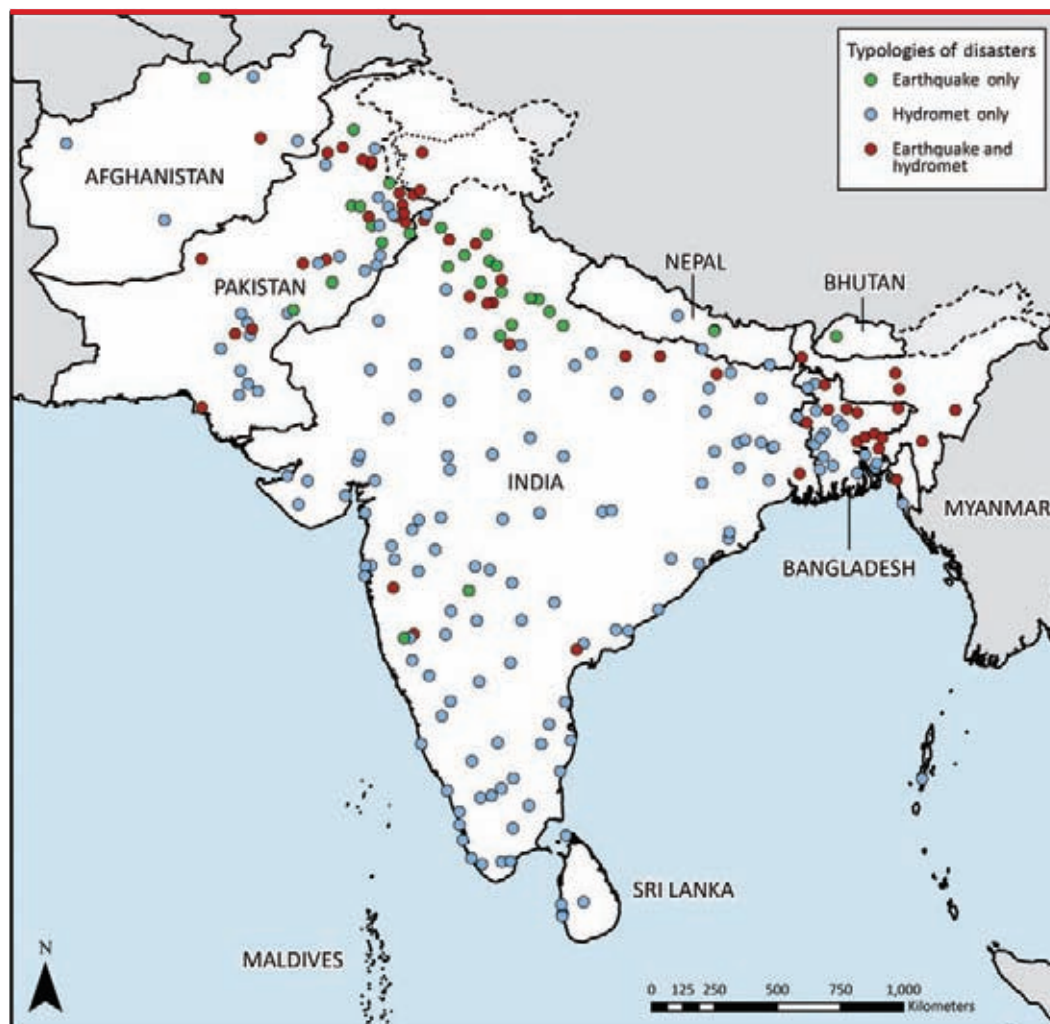
Most of the cities in this category are also projected to experience moderate to severe risks of heat anomaly and flood. Five of the cities are in danger of increasing threat, given that the current high baseline earthquake risk would be coupled with severe hydromet projections (Kathmandu, Jalandhar, and Dehradun) or moderate hydromet projections (Meerut, Faisalabad) in the medium or long term. The remaining cities in this group are exposed to moderate baseline earthquake risks, with some small to medium cities projected to experience moderate to severe hydromet impacts. For more details and to see taxonomic trees of these cities, see Shi (2013).

TABLE 6.1 Number of cities in South Asia affected by each of the four major hazards

	Afghanistan (6 total cities) (%)	Bangladesh (28 total cities) (%)	India (144 total cities) (%)	Nepal (5 total cities) (%)	Pakistan (50 total cities) (%)	Total (233 cities) (%)
Earthquakes	6 (100)	24 (85)	40 (27)	5 (100)	49 (98)	124 (53)
Flooding	4 (67)	26 (92)	120 (83)	3 (60)	34 (68)	187 (80)
Cyclones	0 (0)	5 (17)	7 (4)	0 (0)	1 (2)	13 (5)
Landslides	2 (30)	2 (7)	52 (36)	3 (60)	9 (18)	68 (29)

Source: Brecht, Deichmann, and Wang 2013.

Note: Sri Lanka was not covered in the data set used by Brecht, Deichmann, and Wang 2013.

FIGURE 6.4 Map of disaster typologies

Sources: Based on Center for International Earth Science Information Network (<http://www.ciesin.org>); UN *World Urbanization Prospects: 2011 Revision* (<http://esa.un.org/unpd/wup/>); Brecht and others 2012; Brecht, Deichmann, and Wang 2013; Hallegatte and others 2013; Hirabayashi and others 2013; OPHI 2013; PICIRCA 2013. For more information on data and methods, see Shi 2013.

Classification based on hydrometeorological risk

Baseline hydromet conditions threaten 87 cities (36 percent of the sample), causing potential moderate to high economic and mortality losses. These cities face low earthquake risk; most are in coastal India, Bangladesh, and Sri Lanka, as well as on the floodplains of the Ganges, Mahanadi, Narmada, and other rivers in central India. Of particular concern are the 10 large and 9 small to medium cities that

face high baseline risks and severe projected climate impacts by 2100 (for some, as early as the 2040s) and that are highly impoverished and socioeconomically vulnerable (Cox's Bazar is an example). Another 10 large and 5 small to medium cities face similar risks and have low to moderate vulnerability levels. Chennai and Kochi are among these. It is of particular concern that among cities facing high hydromet risks today, none are projected to experience only moderate climate impacts.

Of the other 53 cities facing moderate baseline economic and mortality risk, only 5 are projected to experience more moderate future climate impacts—the rest will experience severe impacts. These 48 cities include the large cities of Bangalore, Bhillai, Indore, and Mumbai and small to medium cities such as Birganj, Pabna, and Raipur. In each of these cities, more than half the population lives in multidimensional poverty.

Classification of cities based on hydromet and earthquake risk

Some 55 cities (23 percent of the sample) experience moderate to high economic and mortality losses from both earthquakes and baseline hydromet events. All of these cities, except for Kabul, are in India, Pakistan, and Bangladesh. Most concerning in this category are the eight large cities with high baseline risks, severe climate projections, and large vulnerable populations, including Karachi (Pakistan); Agra, Faizabad, Guwahati, and Kolkata (India); and Chittagong, Dhaka, and Rajshahi (Bangladesh). Another seven small to medium cities with similar risk factors are Quetta and Sukkur (Pakistan); Gorakhpur (India); and Brahmanbaria, Mymensingh, Narsingdi, and Sylhet (Bangladesh). Twelve cities in the more arid northwestern areas of South Asia experiencing high current losses from hydromet events are projected to experience more moderate climate impacts. Another 22 small to medium cities in the arid northwest with moderate earthquake and baseline hydromet risks are projected to experience moderate to severe impacts under climate change.¹¹

Finally, 69 cities (29 percent of the sample) now face low earthquake and hydromet risks, but are projected to experience moderate to severe climate impacts from temperature change and flood risk. Only three large cities (Aurangabad, Hubli, and Ranchi) fall into this category, and most are small to medium cities. Fifteen cities with majority vulnerable populations are at severe future risk, while another 15 cities in this group are vulnerable, facing moderate risk.

Policy implications

This classification scheme suggests that policy makers should focus their DRM efforts on highly vulnerable large cities with high present and future risk. Prioritization of typologies beyond this first grouping becomes less obvious and depends on political interests, equity considerations, and funding availability and fungibility. National governments and international banks and donor agencies often prioritize larger cities, where investments can affect more people and assets, but political and equity considerations also require distributed investments across cities of all sizes. The vulnerability measure, though helpful, is not necessarily indicative of priority rank: a large city with low to moderate levels of poverty may still have larger urban poor populations than a highly vulnerable small city, if absolute size is the target consideration. The level of urgency and degree with which future projections affect present-day investments will depend on the context and projections for each city. An example of a metropolitan investment project in resilience is discussed in box 6.1.

Key recommendations

The main responses of South Asian countries to disaster have so far been reactive rather than proactive. Some, however, have begun planning to increase their resilience and to reduce negative impacts of disasters, including integrating DRM in their national planning frameworks. However, DRM does not work as a standalone set of policies and actions. Rather, it requires parallel policies on spatial planning and the creation of functioning and formal land and housing markets, which in turn boost urban resilience by reducing the prevalence of unplanned development (see chapters 4 and 5). Because each of these policies by itself is insufficient for the development of resilient urban centers, the policy recommendations presented here complement earlier ones to directly address urban resilience planning.

BOX 6.1 Investing in urban resilience: Colombo metropolitan area

During a 15-hour period in November 2010, nearly 500 millimeters of rain fell on Colombo, the capital city of Sri Lanka, causing unprecedented flooding across the city. Many houses and buildings were destroyed, and the parliament building was in up to 1.2 meters of water. The floods caused high economic losses given that the Colombo metropolitan area accounts for about 50 percent of Sri Lanka's GDP.

The floods were particularly destructive because of poor design and maintenance of drainage systems, illegal encroachments on flood retention areas, and industrial pollution. The metropolitan area is in a low-lying flood plain and one of the urban areas in Sri Lanka most exposed to floods.

The occurrence and damage of floods in the area have steadily increased because of a combination of climate and nonclimate factors, including rapidly changing climate patterns resulting in frequent and more intense thunderstorms. Rainfall frequency has almost doubled in Colombo during the past 30 years, while the area's population has increased from 1.7 million in 1981 to 2.5 million in 2010. Investment in the drainage system, however, has been sluggish, and storage capacity in the basin has declined greatly since 2000 as a result of uncontrolled encroachment on landfills and the flood plain by illegal settlements. In the city of Colombo alone, 68,000 housing units are estimated to be in underserved pockets; most of this housing is

in flood-prone areas and subject to the environmental and health risks of floods.

The Metro Colombo Urban Development Project was launched in 2012 to solve these problems. The project supports the national government's aim to reduce flooding in the catchment of the Colombo Water Basin and strengthen the capacity of local authorities in the metropolitan area to rehabilitate, maintain, and improve local infrastructure and services through selected demonstration investments. The project has three main components: flood and drainage management, urban development and infrastructure rehabilitation, and capacity building for metropolitan Colombo local authorities.

The reduction in flood damage resulting from the project is projected to directly benefit the lives of about 232,000 people, primarily by avoiding the losses associated with damage to residential and commercial property. A further 2.5 million people are expected to benefit indirectly from avoiding losses caused by the more general disruption of economic activity resulting from flooding. Over the project period, the amount of flood damage avoided is put at \$10 million in the first year of the project, increasing to \$91 million in 2051 when the impacts of climate change on the probability of flooding are taken into account.

Source: World Bank 2012b.

Even considering that planning for disaster risk is context based, a set of essential actions should be considered by all countries:

- Identify risk by using an urban risk assessment framework
- Mitigate risk by planning critical and multipurpose infrastructure that is safe and resilient
- Build strong institutions and collect, share, and distribute disaster data

- Develop a risk financing scheme to provide immediate liquidity in the aftermath of disasters and to build financial resilience.

Identifying risk

As the impacts of climate change have become clearer in the past two decades, cities have begun to develop methods to assess its

risk and potential harm. The first step in developing a resilience strategy is to identify the risks at the national, subnational, and city levels. The classification scheme presented earlier provides a broad overview of only regional hazards.

Risk assessments define the potential risks and the characteristics (such as frequency and severity) of potential hazards, and identify vulnerabilities of communities and potential exposure to given hazards. Development of a risk assessment framework also guides governments in their prioritization of risk management measures, considering the probability and impact of potential events, cost-effectiveness of preventive measures, and resource availability (Dickson and others 2012).

Risk assessment can be developed at various scales, from multicountry or regional to national, urban, and even community levels. For this report, risk assessment experiences at the city and community levels were reviewed. Urban risk assessments usually aim to identify critical infrastructure and develop early warning systems. Depending on scope, they may be costly, since they require asset information across wide geographic areas. On a smaller scale, community-based disaster risk assessments try to engage communities to promote local action and communicate the extent of risk and potential damage (GFDRR 2014).

Because risk is a function of hazard, exposure, and vulnerability, a sound risk assessment framework must consider all three elements. Vulnerability is the extent to which a city is predisposed to experience the adverse impacts of climate change (IPCC 2007).¹² A critical component of any risk assessment is the compilation of hazard data, which is necessary for determining the possible scope and magnitude of natural hazards. However, lack of historical hydromet data has become an obstacle to predicting risks in less developed countries, including South Asian countries, and to the potential modeling of such risks.

On the exposure side, however, the emergence of volunteer geospatial initiatives has created momentum for engaging communities in collecting data. For example, the government

of Indonesia, using a free, open-source platform (Open Street Map; <http://www.openstreetmap.org>) engaged the community in mapping 160,000 buildings. Exposure mapping has become easier because many governments have increased the accessibility of data on population, transportation, settlements, and so on. But estimating exposure still requires high-quality national statistical capacity, which may not always be present (see chapter 1, box 1.1). The increasing use of advanced satellite technology and new approaches to data collection have also facilitated risk modeling at higher resolution.

Finally, vulnerability estimates include physical and socioeconomic categories, mainly of potential damage or loss. However, only rarely do risk assessment frameworks integrate cities' socioeconomic characteristics because such data are patchy, adding to the difficulty of quantifying potential losses. Historical loss data usually include only direct, tangible losses caused by a disaster, like damage to infrastructure and housing, but not intangible and indirect losses such as interruption to business and expenses linked to temporarily housing disaster victims.

A global review of risk assessment frameworks by the Global Facility for Disaster Risk Reduction recommends that the following elements be part of any risk assessment:

- *Clearly define the purpose of the risk assessment before analysis starts.* Successful assessments begin with clear questions to answer and well-defined end users, that is, local government officials and the local community, to inform. Otherwise, they become mere engineering reports.
- *Promote and enable ownership of the risk assessment process and efforts to mitigate risk.* For risk assessments to be accepted and trusted by the community, a strong partnership between public officials and the community should be formed from the very beginning of the process.
- *Cultivate and promote open data practices.* Open data platforms have been

fundamental in gathering exposure data in past disasters. Voluntarily gathered geospatial information and remote sensing products offer new opportunities to collect and update fundamental data.

- *Make better communication of risk information an urgent priority.* In doing so, make sure that the risk information communicated is customized to the level of the audience's technical knowledge.
- *Foster multidisciplinary, multi-institutional, and multisectoral collaboration at all levels, from the international to the community level.* Effective risk assessments bring together decision makers and technical experts to agree on the purpose and scope of the risk assessment.
- *Consider the broader risk context.* As the risk classification of South Asian cities shows, successful risk assessments cover multiple hazards—an incomplete risk assessment will likely produce maladaptation.
- *Be aware of evolving risk.* Risk assessments can suggest actions to be taken now to mitigate future and evolving risk, especially in the context of rapid urban development.
- *Understand, quantify, and communicate the uncertainties and limitations of risk information.* The end users must be aware of the limitations of data and models.
- *Ensure that risk information is credible and transparent.* It is best to open data, models, and results for review by independent technical specialists to demonstrate the credibility of risk assessments (GFDRR 2014).

An example of a successful urban risk assessment is presented in box 6.2.

Mitigating risk

City governments need to develop both structural and nonstructural measures to mitigate risk. The former include dams, levies, and wave barriers and the retrofitting of buildings, or any other physical adjustment or

construction to decrease impacts. The latter comprise policies and laws and the use of knowledge, practices, and agreements to prevent future vulnerability. Specific examples of nonstructural measures include building codes, land-use planning, public awareness, and information (Bronkhorst 2012).

Identifying risks and developing risk assessment frameworks do, of course, take a lot of time, and cities have to continue building infrastructure. To avoid putting development on hold, cities need to build new infrastructure—transport infrastructure and water, sanitation, and power facilities—with optimum physical resilience. Cities often overlook these measures because of the extra marginal costs of building resilient structures (Bronkhorst 2012).

The growth of South Asian cities has increased the number of people and assets in risk-prone areas. Relocating millions of people away from their homes and jobs is not realistic. Instead, with the help of urban planners, engineers, and academics, cities can revisit urban design and ensure enforcement of building codes and land-use plans to minimize or prevent further building in risk-prone areas and to reinforce structures so that they are resilient to various hazards. As the construction industry develops further in South Asia, the region's cities can halt substandard construction practices. City leaders should use policy tools and incentives to enforce building codes, which may impose extra costs but is an investment that may well more than offset the postdisaster costs that would otherwise be incurred. The problem is that South Asia lacks empowered city leaders (see chapter 3).

Still, city leaders should, in planning to fill the huge infrastructure gap, consider future risks and hazards, and ensure that the new infrastructure is not built in hazard-prone areas and does not expose communities to additional risks. Leaders also need to identify and plan for critical infrastructure, which would be built with higher-than-usual margins of safety, such as extra strength (World Bank and United Nations 2010). Such critical infrastructure must be identified now.

BOX 6.2 Integrating risk assessment in development planning: Aqaba, Jordan

In 2001 the government of Jordan declared Aqaba a special economic zone, opening the door to tourism and trade and boosting economic growth. Aqaba is a coastal city with a population of 108,000 as of 2009 and has one of the highest population growth rates in the country. It is a major tourist attraction and the country's only seaport.

However, the city is exposed to a high risk of intense earthquakes. The status of the city as a special economic zone increased its exposure to seismic risk. To assess and mitigate potential losses from seismic hazards, in 2009 the Aqaba Special Economic Zone Authority (ASEZA) collaborated with the United Nations Development Programme and the Swiss Agency for Development and Cooperation to launch a project to integrate seismic risk reduction considerations into Aqaba's economic development planning.

To conduct the risk assessment and demonstrate potential impact and losses, an impact scenario from a maximum magnitude earthquake of 7.5 on the Aqaba fault section was produced. The risk assessment included expected losses and impacts on people, buildings, and the economy. These findings were then integrated into development planning for the worst-case scenario. As an example, the assessment pointed out that the current hospital capacity of 206 beds among three hospitals in Aqaba would be insufficient to handle potential casualties estimated to be in excess of 1,900. The assessment also took into account critical infrastructure and transportation systems, predicting that main and secondary roads would likely be disrupted for more than 40 days and wastewater systems disrupted for almost a month.

This assessment provided a broad view of losses, putting them at almost \$2.4 billion (almost 8 percent of the country's GDP), given that the earthquake would hit the country's only seaport and its gateway to international trade. The assessment predicted that the combination of earthquake-related disruption of port activities for three months and humanitarian activities could cost \$420 million directly, in addition to \$300 million in losses due to decreased tourism.

As a result of this risk assessment, a new DRM master plan was prepared for Aqaba, and a DRM unit and multistakeholder coordination committees were established within ASEZA to integrate risk reduction into development planning and to coordinate stakeholders. The Aqaba Development Company is using the findings of the assessment as part of the decision-making process on construction projects and land allocation for new businesses, to mitigate potential economic losses due to earthquakes.

Several lessons were learned when the assessment was produced. First, the focus of any risk assessment should be on decision making. Second, local experts should be consulted and involved to ensure ownership and sustainability (as were local institutions and universities in Aqaba). Third, findings must be communicated to stakeholders. Last, this communication should result in extensive engagement with stakeholders through dissemination activities, workshops, and meetings, so that the community is aware of the risks and owns the risk assessment.

Source: GFDRR 2014.

In Bangladesh, for example, the government uses safe and structurally sound schools as shelters during cyclones. Another suggestion is to build multipurpose infrastructure that can serve the community in normal times as well as after a disaster. An example of such

multipurpose infrastructure is Kuala Lumpur's Stormwater Management and Road Tunnel, which is a 9.7 kilometer tunnel, built on three levels. The upper two levels are for road traffic and the lowest level is for flood drainage, capable of transferring high

volumes of flood water to a storage reservoir and a bypass tunnel (World Bank and United Nations 2010).

Building institutions and collecting data

All countries in the region have developed national plans for DRM or have included resilience in their national development plans—usually after major disasters such as the 2001 Gujarat earthquake or the 2004 Indian Ocean tsunami. Most countries focus on disaster response rather than mitigation, but some countries, such as Bangladesh, have developed more sophisticated plans for mitigating disaster risk by concentrating on local actions, including disaster-preparedness education.

Countries with strong institutions for mitigating disaster risk can mainstream the collection and availability of data. South Asia lacks historical loss data, but national institutions have begun collecting data to conduct

scenario development and impact assessments. One role for local governments is to update data after a disaster according to international standards. These data can then be banked and made available to the public through open platforms. Dissemination has two benefits: (1) it allows residents to make informed decisions, and (2) it allows markets to function more efficiently, with real estate prices reflecting risk factors. However, these benefits are observed only in well-functioning land and housing markets (see chapter 5).

Data range from primary risk maps to loss scenarios and impact models, including land use and land cover, building area, building cover, and vulnerability curves. More sophisticated data enable disaster and climate-risk modeling, which can be used by international insurers and capital markets to develop premiums and assess risks to asset portfolios. The types of data required are given in table 6.2.

TABLE 6.2 Characteristics of hazards and assessment data requirements

Type of disaster	Measurement and characteristics	Data required to assess hazard risk
Flooding	Intensity and frequency of floods	Topography (digital elevation model), drainage patterns, built-up areas, land use and land cover, historical rain gauge data
Cyclone and storm surge	Maximum sustained wind and radius to maximum wind at landfall, central pressure from water column, height of storm surge waves	Topography (digital elevation model), drainage patterns, bathymetry, land use and land cover, historical rain gauge data
Earthquake	Magnitude expressed on Richter scale, ground shaking measured based on damage	Information on soil, geology, and liquefaction potential to develop geological, seismic, and soil maps
Tsunami	Wave height, inundation run-up	Topography of coastal areas (digital elevation model), bathymetry, location and capacity of any flood-protection infrastructure
Drought and water scarcity	Water and food availability per capita	Surface temperatures, precipitation, reservoir capacity, and actual volume stored
Sea-level rise, tidal flooding	Wave height, horizontal pressure from water column	Topography of coastal areas (digital elevation model), bathymetry, tide gauge data, coastal land subsidence data
Volcano eruption, lava flow	Pyroclastic and ash fall, explosiveness of volcano, horizontal pressure of lava flow	Topography, proximity of the volcano to people and assets
Landslides, mud flows and lahars, rock and rubble fall	Failure of slopes with mass movements, horizontal pressure of mud flows, vertical or side impact of rock debris	Topography (digital elevation model), geological data, land use and land cover
Fire	High temperature and combustion	Topography, wind, land use and land cover

Source: Dickson and others 2012.

Regional cooperation in collecting hazard data is crucial, because many countries share river deltas and mountain ranges. For example, Bangladesh would benefit from cooperation with its neighbors in gathering data on the Ganges-Brahmaputra Delta's complex hydrology. Sharing data on hydromet conditions and river flows in real time is vital to keeping or moving people out of harm's way. Without data on upstream water levels, Bangladesh cannot predict floods with any accuracy. This situation has improved in recent years thanks to satellite data, which enable 10-day flooding forecasts, but because the Brahmaputra is linked to the Ganges River's flows, the accuracy and range of predictions would improve if forecasting were done in cooperation with India (World Bank and United Nations 2010). Unfortunately, the two countries have yet to work together on this problem.

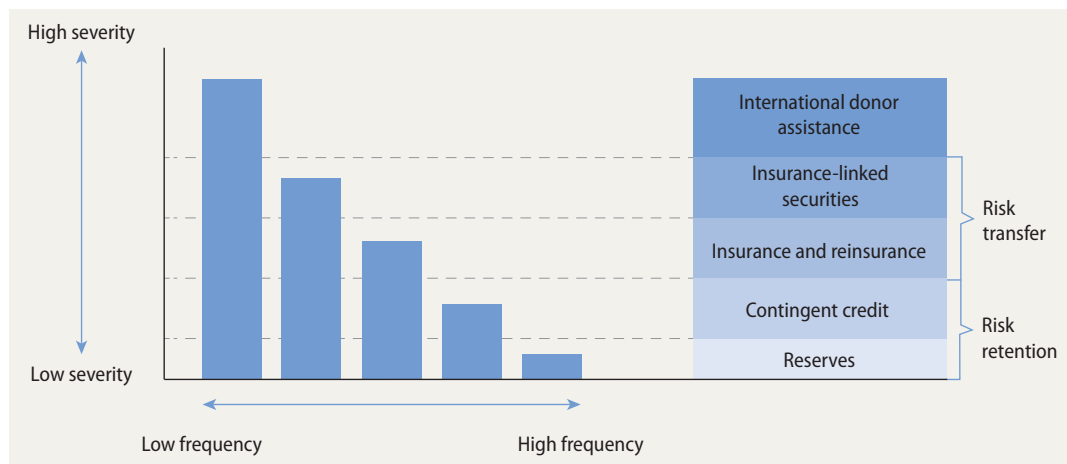
Central American countries have shared their data on exposure to seismic fault lines and hurricanes. Through the Central American Probabilistic Risk Assessment initiative, these countries together collect data on a set of evaluation techniques and have structured a communication platform to aid decision making. The platform is open to the public; if such a platform were used in South Asia, it could be adjusted for use by each country (World Bank and United Nations 2010).

Developing risk financing

How should governments finance postdisaster response and reconstruction needs? Financing can be done after or before disaster hits. After a disaster, governments usually have immediate access to various sources of funding that do not require advance planning, including budget reallocations, domestic and external credits, tax increases, and donor assistance. But financing ahead of time is, of course, a better approach. An advance financing plan should include reserves or calamity funds, budget contingencies, a contingent debt facility, and risk transfer mechanisms. Such instruments are more sophisticated and require human capacity and data. The instruments include traditional insurance and reinsurance, parametric insurance, and alternative risk transfer instruments such as catastrophe bonds. Insignificant but recurring disasters are usually covered by reserves or contingent credit. High-impact, less frequent disasters can be insured in capital markets.

National frameworks for disaster risk financing depend on "risk layering"—the risk is divided into low, medium, and high categories, and each category is paired with appropriate financing instruments (figure 6.5). Financing needs for the low-risk layer

FIGURE 6.5 Financial instruments to address different layers of risk



Source: Bronkhorst 2012.

(landslides, local floods) usually come from contingent budgets, reserves, and annual budget allocations; those for the medium-risk layer (floods and lower-frequency, small earthquakes) often come from contingent credit; those for the high-risk layer (major disasters) have to be paired with catastrophic risk transfers such as parametric insurance and catastrophe bonds (World Bank and United Nations 2010).

A detailed risk assessment is necessary for designing a national catastrophe risk strategy; the risk assessment should be followed by a hazard module for major perils. The next step in developing the catastrophe risk strategy would be to build a national georeferenced hazard exposure database that includes public and private assets. This information is critical for insurers to be able to offer affordable property catastrophe products. The strategy will help urban areas cope with disasters, but to reduce the financial risk of disasters even further, cities should develop frameworks for risk insurance independently and under a national umbrella.

Some South Asian countries have developed financing programs specifically for disasters. Nepal, for example, has developed a central disaster relief fund as well as district, municipal, and village funds. Bangladesh has developed a natural disaster risk reduction fund, a contingency line financed through government revenues (\$15 million annually). The government

also sets aside about 4.5 percent of its annual budget for disaster response. Even low-capacity countries like Afghanistan have realized the importance of holding funds for disaster response and have developed national emergency funds (Bronkhorst 2012).

But the most extensive risk financing efforts in South Asia are in Sri Lanka, the first country to develop a “catastrophe draw down option”¹³ with assistance from the World Bank through a development policy loan. Approved in April 2014, the loan provides a line of credit that can be drawn on partially or in full if the country declares a state of emergency after a natural disaster. This line of credit is part of a package that includes a loan of \$110 million for a climate resilience improvement project for financing short- and long-term flood and drought issues. This project will identify \$1 billion of investments in comprehensive and sustainable basinwide flood and drought risk mitigation. These investments are expected to encompass both the mitigation of physical structures and the improvement of the country’s water management system. This facility will help Sri Lanka access a rapidly available and flexible financial tool in the aftermath of a potential major disaster rather than spending time and resources trying to raise funds. Examples of risk financing from other regions are provided in box 6.3.

BOX 6.3 International experiences in risk financing

Fund for Natural Disasters (FONDEN) in the Ministry of Finance, Mexico. Mexico is exposed to many types of disasters, including seismic, volcanic, and cyclonic. In 1996, the national government created FONDEN mainly as an instrument to provide funds quickly after a natural disaster. FONDEN’s main purpose is to provide immediate financial support to federal agencies and local governments, particularly for providing relief supplies and financing the reconstruction of

public infrastructure and housing for the poor. It also conducts risk management studies and helps design risk transfer instruments.

FONDEN has three components. The Revolving Fund finances emergency response after disasters. The FONDEN Program finances reconstruction of public infrastructure and restoration of housing for the poor. The FONDEN Trust Fund is managed by one of Mexico’s main public development banks. FONDEN receives

(continues next page)

BOX 6.3 International experiences in risk financing (continued)

an annual allocation from the Ministry of Finance and manages the ministry's risk financing strategy. It uses a layering strategy to transfer risk to the reinsurance markets for parametric coverage or the capital markets for catastrophe bonds, after placing excess risk with the public insurer AGROASEMEX.

Caribbean Catastrophe Risk Insurance Facility (CCRIF). Small island states of the Caribbean are at elevated risk of natural disasters but have limited budgets and little access to credit to absorb the financial impacts of disasters. Because of their small levels of trade and high transaction costs they do not have access to catastrophe insurance in international markets. CCRIF is the region's first multicountry risk pool; it was set up in 2007 to allow countries to pool their individual risks into a joint reserve mechanism and provide insurance coverage at far lower cost to each. This facility has been well received in the international reinsurance market and has provided liquidity in the aftermath of disasters. CCRIF is not structured to cover all the costs associated with disasters, only the estimated liquidity needs of the first three to six months.

Turkish Catastrophe Insurance Pool (TCIP). About 70 percent of Turkey's population and 75 percent of its industrial facilities are highly exposed to earthquakes. The Marmara earthquake of 1999 caused 15,000 deaths and a huge financial burden on the economy. The following year, the government (with assistance from the World Bank) developed a property catastrophe risk insurance mechanism, which was the first national catastrophe insurance pool in World Bank client countries.

TCIP is a legal entity that provides mandatory insurance for properties built legally on registered land. Benefiting from economies of scale through national risk pooling, it provides more affordable premiums. TCIP's risk financing includes risk retention and reinsurance. Through a World Bank contingency loan of \$100 million, the government covers initial losses through its reserves and transfers excess losses to international reinsurance markets. The national government commits to further covering losses exceeding the capacity of TCIP (enough to bear a 1-in-350-year earthquake).

Source: GFDRR 2011a, 2011b, 2011c.

Notes

1. Data from EM-DAT: The International Disaster Database, Centre for Research on the Epidemiology of Disasters. <http://www.emdat.be>.
2. Areas between rivers or streams and land.
3. The UNEP/GRID-Europe flood map, produced for the *Global Assessment Report* (UNISDR 2009), was based on global data for flood hazards and should not be interpreted as specifically indicative of flood risk in a particular spot, as this is dependent on building construction, flood mitigation infrastructure, and other local issues.
4. Based on World Bank data (<http://data.worldbank.org/region/SAS>).
5. South Asian cities with populations of more than 100,000, studied by Brecht, Deichmann, and Wang (2013).
6. A 3-sigma temperature anomaly has a three-standard deviation difference from the historical average temperature, and a probabilistic return period of 720 years under baseline conditions (PICIRCA 2013). Recently, their frequency has been increasing, as seen in heatwaves in 2012 (United States), 2010 (Russian Federation), and 2003 (Western Europe).
7. This includes Brecht, Deichmann, and Wang's (2013) 233 cities (1,649 urban agglomerations from World Bank client countries with populations greater than 100,000 in 2000), in addition to Thimphu (Bhutan) and seven cities in Sri Lanka. Because of its size and location, Malé, Maldives, is not covered by regional or global risk and climate maps; it is not included in the taxonomic analysis because of lack of information. For more information on data sources, see Shi (2013).

8. The classification system depends on the quality of the models at the city level for present-day risks (Brecht, Deichmann, and Wang 2013), on rough estimates of future climate outlook that draw on global and regional projections (Hirabayashi and others 2013; PICIRCA 2013, Brecht and others 2012; Hallegatte and others 2013), and on district or provincial indexes for multidimensional poverty (OPHI 2013). Global and provincial data and projections were applied to the local conditions for this study. Local data in most cases were unavailable. For more details, see Shi (2013).
 9. However, Brecht, Deichmann, and Wang (2013) calculate Mumbai as having a relatively low risk of earthquake.
 10. The cities include Nepal (Lalitpur, Kathmandu), Bhutan (Thimphu), northwest India (the states of Uttaranchal Haryana, Punjab, Himachal Pradesh, Uttar Pradesh, and Maharashtra), Pakistan (province of Punjab), and Afghanistan (Balkh).
 11. Projections for northwest South Asia, however, are highly uncertain, with models disagreeing about whether major decreases in rainfall will occur.
 12. This definition includes the adaptive capacity of a city, which is the ability and willingness of all stakeholders and institutions to cope with disaster impacts. It also covers physical and socioeconomic elements, including population, density, quality of infrastructure, slum population, and governance (Mehrotra and others 2009).
 13. This is a contingent credit line that provides immediate liquidity to member countries after a natural disaster. It is part of a broad spectrum of World Bank Group disaster risk financing instruments to assist countries in planning disaster response.
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South Asia Development Matters

South Asia's urban population increased by 130 million from 2000-11. In this same period, GDP per capita grew, extreme poverty declined, and economies in the region became less agrarian.

At the same time, however, population growth in South Asia's cities has placed substantial pressures on infrastructure, basic services, land, housing, and the environment—pressures that have been exacerbated by failures of policy as well as of the market. These congestion pressures are contributing to a process of messy and hidden urbanization, and they are limiting the region's realization of the full prosperity and livability gains that urbanization can deliver. Messy urbanization is reflected in the estimated 130 million people living in slums and the widespread sprawl that is causing cities to spill over their administrative boundaries, both of which pose challenges for basic service delivery. Hidden urbanization is reflected in the large share of South Asia's population living in settlements that, although they may look and feel urban, nevertheless remain officially classified as rural.

Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability provides original empirical and diagnostic analysis of urbanization and related trends of economic and spatial transformation in the region. And it identifies improvements in urban governance and finance as keys to help cities better address congestion pressures so that the region can unlock the full potential of urbanization for prosperity and livability. It also discusses the importance of connectivity and planning, land and housing, and resilience to disasters and the effects of climate change as additional and interrelated policy areas that are instrumental to realizing the vision of prosperous and livable cities.

National and local policy makers are starting to recognize the need to address the challenges of urbanization in a timely and systematic manner to realize its tremendous potential. The required reforms will not be easy. If successfully achieved, however, they can help to propel countries in the region to the upper echelons of economic development.