

Cities that Work 

**IGC**  
International  
Growth Centre

POLICY FRAMING PAPER

# Policies for prosperity in middle income cities: Planning, transportation and resilience

Paul Collier, Edward Glaeser and Anthony Venables

DIRECTED BY



FUNDED BY



# CONTENTS

---

<b>1</b>	<b>Cities as drivers of growth and development</b>	<b>3</b>
	Urbanisation and national growth	3
	Connectivity	4
	Human capital	5
	Trade networks	6
<hr/>		
<b>2</b>	<b>Barriers to prosperity: the role of policy</b>	<b>8</b>
	Public goods and market failures	8
	Shaping the city: policy to coordinate expectations	9
	Good governance	9
<hr/>		
<b>3</b>	<b>Three pillars of intervention: Urban planning, transportation and resilience</b>	<b>11</b>
	Urban planning	11
	Transportation	18
	Resilience	26
<hr/>		
<b>4</b>	<b>Making urbanisation work</b>	<b>30</b>

# 1

## Cities as drivers of growth and development

### Urbanisation and national growth

Urbanisation and economic development have been almost inextricably linked together for centuries. On average, countries that are more than 50 percent urbanized have incomes that are five times higher than those less than 50 percent urbanized, and infant mortality levels that are two-thirds lower. Figure 1 shows the strong cross-sectional relationship between per capita income and the percentage of population living in urban areas in countries across the world.<sup>1</sup>

**Figure 1:** Urbanisation and Per Capita GDP globally

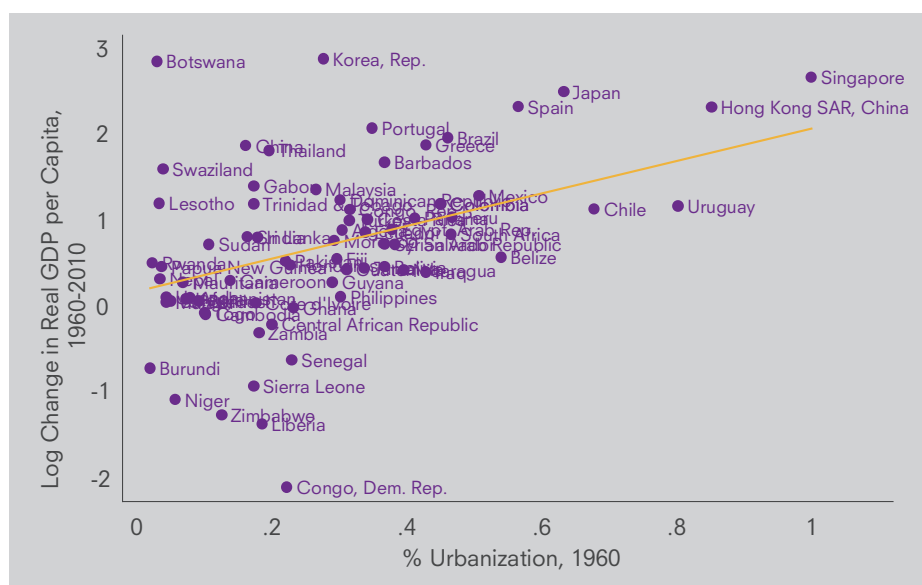


<sup>1</sup> The vertical axis is a log scale, capturing an income range from \$400 to \$60,000 per person per year.

In the 1960s, numerous authors raised worries that Latin America was urbanizing but not industrializing.<sup>2</sup> Although this has now changed for the Latin American region, similar fears have been more recently raised about sub-Saharan Africa.<sup>3,4</sup> This is in contrast to many Asian countries that have managed to increase their share of manufacturing and services in GDP in conjunction with urbanisation. As Figure 2 highlights, the connection between urbanisation and economic growth continues to hold strong even among developing and middle income countries.<sup>5</sup> Moreover, incomes rise dramatically with urban density in the developing world.<sup>6</sup>

Incomes rise dramatically with urban density in the developing world

**Figure 2:** Economic growth 1960 – 2010 (initial per capita income below \$5,000)



## Connectivity

The importance of cities in driving growth and prosperity is related to their ability to bring firms and workers together in a way that fosters agglomeration economies. Urban density connects: by people being physically located close to each other, producers are connected to consumers and markets, their labour as well as other necessary inputs. Productivity increases dramatically

2 Durand, J.D., Peláez, C., Thomas, D.S., Carleton, R.O., Baumgartner, L. and Lee, E.S., (1965) Patterns of urbanization in Latin America. *The Milbank Memorial Fund Quarterly*, 43(4), pp.166-196.

3 Fay, M., and Opal, C. (2000) Urbanisation without Growth: A not so uncommon Phenomenon. World Bank.

4 Gollin, D., Jedwab, R., and Vollrath, D. (2016) Urbanization with and without Industrialization. *Journal of Economic Growth*, 21(1), pp.35-70.

5 The log scale on the vertical axis ranges from a 13% decline to a 20-fold increase in per capita income.

6 The connection between urban density and earnings is shown in both standard correlational cross-section work such as Glaeser et al. (2016), and in experimental papers such as Mubarak (2016).

when workers are organized to work on different specialisms within a single enterprise, thereby reaping the economies of specialisation and scale.

Density itself can be achieved through two primary means. The first is, as highlighted, spatially, by ensuring that buildings, including houses and firms, are located in close proximity to each other. Secondly, particularly in the case of a city characterised by sprawl, by ensuring there is an efficient and effective public transportation system. Both these means are fostered and thus underpinned by credible planning and investments in infrastructure.

Connectivity, therefore, provides the foundation for scale and specialisation, which makes people and firms more productive. Through connectivity, these same firms are able to sell their goods. For example, through urban airports and ports, manufacturers in developing and middle income cities are connected to global markets and talent. In urban centres, workers find jobs with firms that are serving regional markets at the same time exporting to the outside world. In the markets of urban slums, poor rural migrants find a living by selling inexpensive goods and services to the rest of the city. While segregation and congestion can reduce connectivity, when cities function well they enable the economic partnerships and trade that are the foundations of economic success.

**Density itself can be achieved through two primary means. The first is ensuring that buildings are located in close proximity to each other. The second is ensuring there is an efficient and effective public transportation system**

## Human capital

Cities are also sites of rapid learning and skills development, as workers are exposed to a wider range of tasks and occupations. Alfred Marshall famously suggested that in dense industrial areas “the mysteries of the trade become no mystery but are, as it were, in the air.” Evidence from both the U.S. and Spain shows that migrants to cities do not experience wage jumps overnight, but rather experience faster wage growth, which is compatible with the view that cities enable learning on-the-job and in the market.<sup>7,8</sup>

Even academic human capital is forged more easily in cities. Colleges and universities are far more likely to be urban in the developing world – and the quality of this education is likely to be higher. Teachers’ absence is far more severe in rural than in urban India, presumably because teachers prefer living in urban areas.<sup>9</sup> Cities also enable small and large scale private school provision that sometimes competes effectively even with free public schools.

**Connectivity provides the foundation for scale and specialisation, which makes people and firms more productive**

With these greater skills comes higher wages for citizens. The evidence for this from developing and middle income cities is still being established; for example, while urbanites have been found to have higher wages in both India and sub-Saharan Africa, the actual urban wage growth advantage has not yet been documented. Yet, there are many reasons to expect the urban-rural divide

---

7 Glaeser, E., and Mare, D. (2001) Cities and Skills. *Journal of Labor Economics*, 19, 316–342

8 De La Roca, J., and D. Puga, D. (2017) Learning by working in big cities. *Review of Economic Studies*, 84, 106–42.

9 Glewwe, P. and Muralidharan, K., (2016) Improving education outcomes in developing countries: Evidence, knowledge gaps, and policy implications. In *Handbook of the Economics of Education* 5, pp. 653–743. Elsevier.

in skill accumulation to be particularly strong in those areas. These regions, are for example, far more separated from the mainstream global economy than low density Spain or America. While some parts of their urban economies are also economically isolated, taken as a whole, the change in economic horizons associated with urbanizing in these places is still vast. Even basic urban markets in Lagos, Nigeria or Kolkata, India are enmeshed in global trading and transportation networks that offer opportunities for knowledge and skill accumulation.

Cities also provide local forms of insurance to their residents that can drive entrepreneurship. Since cities are the location of multiple employers, workers can find new jobs if one firm ceases to exist or if they have a bad experience with a particular employer. They enable individuals to test different occupations and find the work fit that is best for them. Furthermore, where there are not enough formal types of employment, cities can typically provide back-stop work options, including street vending or basic service provision. Therefore, given these choices, it is possible for people to take entrepreneurial risks, knowing that there are other options in case of failure.

Such local entrepreneurship provides a further path to economic growth; some spectacular successes have started with small shops. Soichiro Honda, for example, began as a garage apprentice and then started his own car repair shop. It grew into what is now one of the biggest companies in Japan, the Honda Motor Company. Other examples include the current Mayor of Johannesburg, Herman Mashaba, who grew up in poverty but found success with his hair care company *Black Like Me*, or in Bangalore, India, which is a particular hotbed of Indian entrepreneurship. These successes illustrate the power of cities to inculcate new business formation.

## Trade networks

The benefits that cities provide is particularly vital to middle income countries today because of the uncertainty surrounding economic catch-up in the 21<sup>st</sup> century. The traditional economic growth pathway, followed, for example, by the Germans in the late 19<sup>th</sup> century and the East Asian Tigers in the late 20<sup>th</sup> century alike, is to combine transportation infrastructure, capital-intensive factories and low-cost labour to produce less costly manufactured goods for the global market. Whilst this path may remain open for other middle income and developing cities, ever-increasing automation and the rise of robotics are reducing the cost advantage generated by their lower wages, making productivity gains from connectivity and human capital formation even more important. Furthermore, the shortcomings of transportation infrastructure, and therefore connectivity, in these cities make it hard to imagine how industrialisation could possibly succeed.

Therefore, cities play an even larger role when considering alternative pathways to prosperity, particularly looking at services in driving growth. Service economies, depend even more on proximity than industrial economies, because face-to-face contact plays a particularly large role in service provision. Middle income cities, therefore, can seriously consider how to export significant

amounts of tradable services, such as programming and call centres, to the developed world.

Being enmeshed in those trading networks is particularly important if the future is to be full of unpredictable shocks, for example as a result of climate change. All agriculture is subject to weather-related risk, but richer countries typically provide some form of crop insurance, and in some cases, the functioning of the market means that poor crop yields may be offset by high crop prices. Subsistence farmers in developing and middle income countries have neither explicit insurance, nor the implicit insurance generated by the inverse relationship of price and quantity. If high temperatures cause their crops to fail, then poor world farmers face real starvation risk. Urbanisation mitigates some climate risks by enabling access to global agriculture through trade. Climate change will undoubtedly impact different regions differently, and since urbanites can import food from anywhere they are hedged against local risks. Moreover, the process of urbanisation should mean more land per capita in rural areas, which should mean that fewer farmers are close to the starvation point even in the event of a climate shock.

**Dense urban areas desperately need better management if they are going to become attract external investment and prosper**

As can be surmised therefore, the potential advantages of urbanisation are many, but density also creates enormous challenges. As there is little future in rural poverty, dense urban areas desperately need better management if they are going to become attract external investment and prosper. Our focus in this paper, therefore, is to highlight the policy areas that need improvement and to focus on the sectors where more research is particularly vital: if middle income cities are going to provide economic transformation, then they will need to become adequately planned, better connected and more resilient.

Below: automation and the rise of robotics are reducing the cost advantage generated by lower wages



Image: KUKA Roboter GmbH, Bachmann, Germany, 2005

## 2

# Barriers to prosperity: the role of policy

### Public goods and market failures

Cities are complex environments made up of millions of decision takers – workers, landowners, firms and consumers. As highlighted, their proximity and intense interaction generates the potential for high productivity and good access to amenities, but also creates risks of congestion and contagion. How the interactions of these decision takers are coordinated is key in delivering urbanisation’s potential, highlighting the crucial role of policy for cities. Most economic interactions in the city, as elsewhere, are coordinated through markets, especially those for labour, land, goods and services. However, markets are not adequate to solve the coordination issues inherent in urban life; without effective policy to fill the gaps and failures of the market mechanism cities will fail to deliver their potential productivity or to deliver the amenities, security, public spaces and public goods that are necessary for cities to be liveable places. Therefore, the major question for decision makers is: what are the gaps that need to be filled by policy?

The first is that there is a range of services and goods, essential to city living, that the private sector is unlikely or unable to provide, particularly to poor people. These range from pure public goods, such as public spaces and roads, through to utilities that require scale and city-wide coordination, such as sanitation and water supplies. Some publicly supplied services, such as health and education, face broadly similar challenges in urban and rural areas but others – notably public transport – are particularly challenging in the urban environment.

Secondly, intense human interaction in cities creates externalities, both positive and negative. Positive externalities are principally those of scale and specialisation, driven by agglomeration effects and the intense economic interactions outlined in section 1 of this paper. Negative ones include risks from communicable disease, air quality, and congestion. The market will under-supply positive externalities and over-supply negative ones. Both regulation and public spending (e.g. on sanitation and transport) are therefore needed to manage and ensure favourable outcomes.

Thirdly, there are areas where markets can – in principle – deliver efficient outcomes, but where practical obstacles create barriers to their operation. The land market is perhaps the best example. Efficiency in the land market requires clarity of land rights and security of tenure, features often absent in developing and middle-income cities. Furthermore, land development and construction

**Efficiency in the land market requires clarity of land rights and security of tenure, features often absent in developing and middle-income cities**



incur upfront costs of long-lived investments; effective capital and mortgage markets are required to finance these, but may be absent. These market imperfections will create inefficient outcomes that urban policy makers need to address.

## Shaping the city: policy to coordinate expectations

The longevity of the urban fabric means that private choices will be based on expectations about the future development of each area of the city and of the growth of the city as a whole. Expectations about the future are inherently uncertain, and this uncertainty can stifle investment. Each investor is uncertain about the future actions of other investors, yet there are likely to be complementarities between their investments. In particular, as already outlined, firms want to locate close to workers, and close to other firms with which they have links. A firm will therefore be reluctant to invest in a new place unless it is confident that the area will attract other firms and thus flourish.

To resolve this ‘first-mover problem’, common knowledge is needed i.e. expectations have to be coordinated such that everyone has a reasonable degree of confidence that one area of the city will develop in one way, and another in a different way. The market mechanism cannot achieve this as, for example, it will never be possible to take insurance on an area not prospering. Policy intervention is required to create a widely accepted vision of how and where the city will develop. In practical terms this requires credible urban planning, drawn up in close cooperation with a wide range of stakeholders, and complemented by public investments (e.g. in transport hubs) which will focus activity in a particular place.

A further source of uncertainty is with respect to shocks arising from outside the city, such as in the world economy or natural environment. Cities, especially those in low-lying coastal areas, are particularly vulnerable to water-related climate shocks. Private insurance can handle some risks, but many are city wide and may even spill over into other regions, such that their mitigation requires collective action. There are economies of scale and scope in addressing climate risks as, for example, a flood barrier, which to be effective, may have to be built around a large area of a city.

## Good governance

Effective selection and subsequent implementation of policies requires capable city governance and political will at the highest level. The scope of urban issues ranges across government ministries including finance, law, health, transport as well as those directly charged with urban affairs. Policy design and implementation needs to be integrated across these departments and their plans.

**Policy design and implementation needs to be integrated across these departments and their plans**

Doing this effectively requires that many conditions are met. The city needs financial capacity as the costs of infrastructure and urban construction are enormous, for both public and private sectors. Fiscal capacity needs to leverage

urban based tax instruments such as land value capture that provide both equitable and efficient self-sustaining revenues. Technical capacity is needed to handle the complexity of the issues faced. This requires human capital embodied in a skilled and motivated city administration. It requires data so that city managers know in a timely manner what is happening in their cities, and have information on which to formulate forward looking (and long-lasting) urban investments. And it requires knowledge, in the sense of understanding the trade-offs that are faced, the range of alternatives and the costs and benefits of each, and the evidence on what works best in particular circumstances. There is a crucial role for rigorous research, for policy experimentation, and for cross-country learning.

These are the arguments for urban policy and addressing them requires multiple instruments; planning, transportation and resilience are three key pillars. Urban planning uses a variety of regulatory instruments as well as the development of long-run strategies to shape expectations. Transport is important, both through its direct effects in facilitating movement in the city as well as its impact on shaping the future of the city. Resilience needs to feed into both planning and governance as well as other aspects of city governance. Remaining sections of the paper look at each of these in turn.

Below: Flooding in urban Manila, Philippines represents a key barrier to prosperity



Image: Jörg Dietze/flickr

# 3

## Three pillars of intervention: Urban planning, transportation and resilience

### Urban planning

Urban planning is needed both to guide public decisions and to harness private investment in order to create a pattern of land-use supportive of a productive and liveable city. This means filling the gaps left by the market failures and also creating a view of the future shape of the city as an integrated economic and social system. This section outlines some of the challenges faced in planning for urban land use, and the state of knowledge on policies to address these challenges.

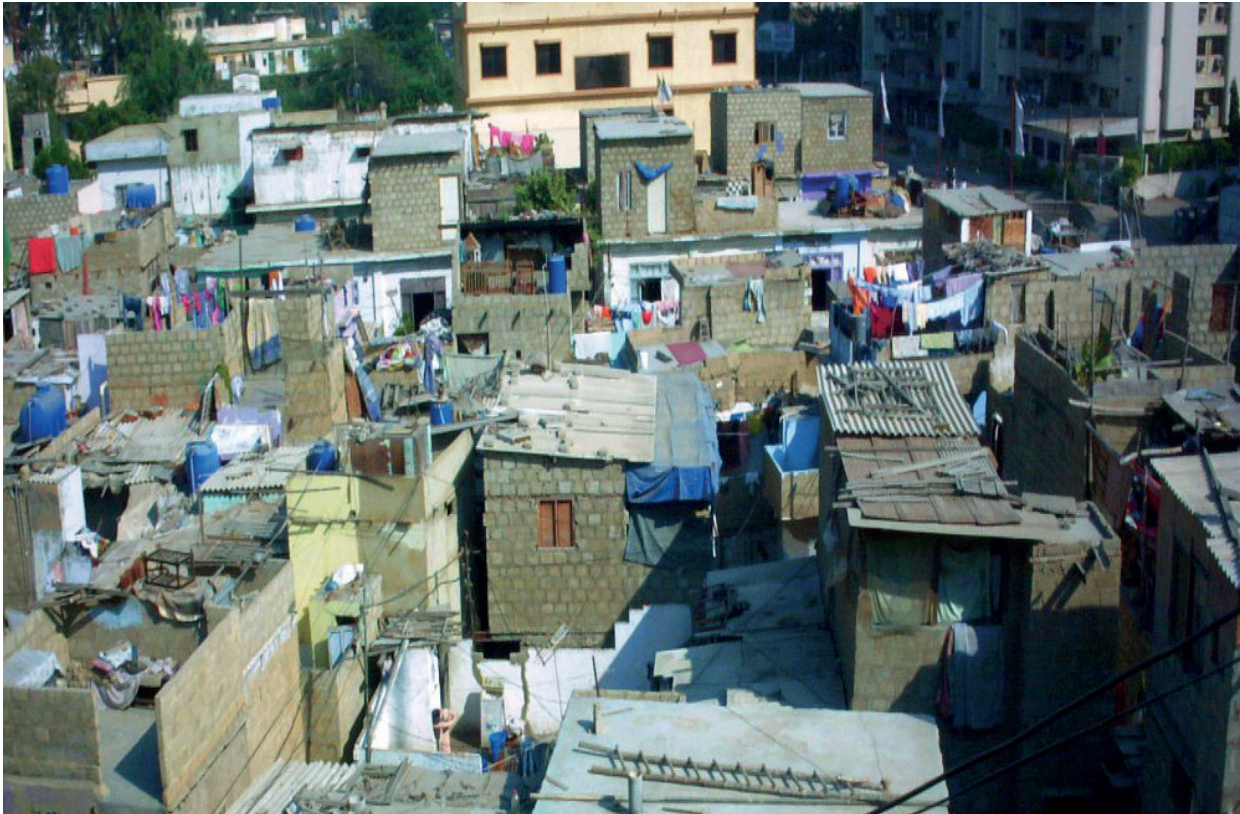
**Urban planning is needed both to guide public decisions and to harness private investment in order to create a pattern of land-use supportive of a productive and liveable city**

### Barriers to efficient land use

Land is the ultimate scarce factor in a city, so needs to be used efficiently. In broad terms, efficient land use means three things: One is that sufficient land is utilised for public space, including roads, parks and other amenities. The second is that the legal, regulatory and institutional structure is such that investors are willing to sink capital in construction of appropriate quality structures. The third is that the spatial layout of these buildings is efficient, for example in providing relatively high density near the city centre, and in allowing commercial sectors to develop. How can urban planning achieve these objectives?

### Land Tenure

The classic theoretical model of spatial structure is the monocentric city, in which much employment concentrates in a central business district. In this model, demand by firms to occupy a particular area increases land values there and consequently results in greater density, usually achieved through high-rise structures. Residential areas located close to this centre of activity benefit from low costs of accessing the amenities and jobs in the centre. Therefore, they too are characterised by density as well as higher land and property values compared to those areas located further away. High land and property prices mean that it is cost-effective to build tall as a way of achieving both density and quality. This pattern of land use is efficient as it maximises the value of real income net of commuting costs. Variants of this model, where for example a



city has multiple centres and firms that require a lot of land are located on the edge rather than in the centre, can also be designed to give efficient land use.

Above: informal settlements next to the upscale Race Course neighborhood in Karachi, Pakistan

In practice, however, in many middle income and developing country cities, some high value land relatively close to urban centres is occupied by low quality structures, such as the presence of slums. This is symptomatic of a variety of factors that make investment in long-lived formal structures unattractive, including a lack of clarity and security of land-tenure. For instance, there is enormous heterogeneity in land-tenure systems, ranging from alternative more modern systems (freehold and long-leasehold) through leases issued on government lands to more traditional mixed customary systems. In many developing and middle income cities, a lack of clarity on tenure can lead to insecurity of land rights. Evidence from Lima suggests that improving security of rights to the return from investments is key to encouraging more efficient formal construction.<sup>10</sup>

A related but distinct point is the transferability of land-tenure. It matters not only that the current holder of tenure is able to invest, but also that plots of land can be re-arranged into an efficient (e.g. not excessively fragmented) pattern, and that land is used – and investments undertaken – by those who can add the most value. Marketability of land, together with clear and secure titles, can achieve this. However, this requires formal, legally enforceable land titles documented through registration. An alternative for policymakers, that goes some way to securing the objective of more efficient land use, is land readjustment. In such schemes, land in an area in which

**Evidence from Lima suggests that improving security of rights to the return from investments is key to encouraging more efficient formal construction**

---

<sup>10</sup> Field, E. (2005) Property Rights and Investment in Urban Slums. *Journal of the European Economic Association* 3(2–3): 279–90. <https://doi.org/10.1162/jeea.2005.3.2-3.279>.

plots are inefficiently organised (perhaps in irregular shapes, and without road access or clear property rights) is consolidated and reallocated to its original occupants. Efficiency gains from the re-organisation may be sufficient to fund infrastructure and other improvements, leaving all participants better off. More than half the land in Seoul, South Korea, for example, was reorganised by government schemes of this type.<sup>11</sup>

## Regulations

Obstacles to investment in high-quality structures on valuable land can also be created by regulations. The need for building regulations is clear; there are externalities, as the quality of one property impinges on the value of its neighbours; information asymmetries require construction codes as house purchasers cannot observe all aspects of the quality of the property. However, such regulations need to be appropriate for the income levels and needs of the city. Excessively high standards (e.g. on plot sizes) are set in many developing and middle income countries and can encourage the emergence of informal settlements as citizens are unable to afford the standards set. In Karachi, for example, only 36% of the population lives in formal residences where urban density is as low as 84 people/hectare, while informal settlements can reach densities of over 4,500/hectare.<sup>12</sup> It is generally better to have standards that fulfil basic minimum requirements and that can be respected and are enforced, rather than higher standards that are widely ignored.

**Regulations need to be appropriate for the income levels and needs of the city. Excessively high standards (e.g. on plot sizes) are set in many developing and middle income countries and can encourage the emergence of informal settlements as citizens are unable to afford the standards set**

## Zoning

Zoning is a further restriction on flexibility of land-use. Conventional zoning is single use, i.e. separating residential, commercial, and industrial uses. This emerged with industrialisation during the 19th century. Industrial factories were large structures often creating pollution that was a profound nuisance to their neighbours. As a result, industrial cities that rose up around these factories featured the classic separation of workplace from living space that has largely continued until this day. Euclidean ‘Single-Use’ Zoning, namely creating uniform zones in different geographic divisions, is common in countries like the USA. This has largely emerged in the shadow of this industrial revolution, because, in case of the USA, the U.S. Supreme Court noted that cities should have the right to protect citizens from industrial pollution by separating urban land uses.<sup>13</sup>

In the 21st century, however, the nuisance-based case for Euclidean zoning is far less clear. When urban output is oriented towards services, technology and finance, there are few health-related reasons to separate work and home. Therefore, a slightly more flexible form of zoning is ‘mixed-use’, typically allowing small scale economic activity in otherwise residential neighbourhoods.

---

11 Schnidman, F. (1998) Land Readjustment. *Urban Land*, 2, 2-6

12 Shaikh, H., and Nabi, I. (2017) The Six Biggest Challenges Facing Pakistan’s Urban Future. Pakistan’s Growth Story (blog). Available at <<https://pakistangrowthstory.org/2017/01/10/6-challenges-facing-pakistans-urban-future/>>

13 Platt, R. (2004) *Land Use and Society: Geography, Law, and Public Policy*. Island Press.

Furthermore, a broad-consensus among land-use planning professionals increasingly favours mixed-use planning to create a more vibrant 24-hour space. The latter has clear benefits in cities where a high proportion of economic activity takes place in establishments with only one or two workers, although it does not (as sometimes claimed) significantly reduce the need for transport routes into the city centre and other more concentrated centres of economic activity.

Zoning regulations also need to be designed carefully keeping in mind the city's need for differentiated land uses. If zoning overly restricts certain types of land use, particularly housing, this can have extremely adverse effects on those who can no longer afford to live or produce in these areas, resulting in increased inequality. Evidence suggests, for example, that high house prices in a number of American cities is the result of restrictive zoning and other land use controls.<sup>14</sup> Similarly, inappropriate zoning regulation has been shown to encourage informal settlement in Brazilian cities.<sup>15</sup>

Whilst setting restrictive policies such as zoning is city specific, there are several general conclusions that can be drawn. Where there is the risk that the political process can influence zoning, such as through area-specific lobbies, planning will place too little weight on the functioning of the city system as a whole. Furthermore, once in place, zoning regulations can be extremely difficult to remove, even after they have outlived any useful purpose. Therefore, given many developing and middle income cities are still in the initial stages of their growth, any plans should ensure that zoning can be subject to regular review. Following from this, cities should implement (or tighten) such policies only when a strong and city-wide argument is made for their use. Finally, resilience to shocks is a factor that needs to be taken into account in the design of urban zoning.

## Proactive planning, regeneration and retrofitting

### Proactive planning

Rapid urban growth involves both densification of existing areas and expansion at the city edge. Proactive planning for effective land-use management around the edge of a city offers the opportunity to get things right from the start. However, this has not been the case in many cities in developing and middle income countries. As a result, they have lost density in recent years as unplanned leapfrog development and thus urban sprawl has occurred at the city fringe.<sup>16</sup>

**If zoning overly restricts certain types of land use, particularly housing, this can have extremely adverse effects on those who can no longer afford to live or produce in these areas, resulting in increased inequality**

**Proactive planning for effective land-use management around the edge of a city offers the opportunity to get things right from the start. However, this has not been the case in many cities in developing and middle income countries**

---

<sup>14</sup> Glaeser, E., and Gyourko, J (2002) The Impact of Zoning on Housing Affordability. *Working Paper 8835. National Bureau of Economic Research*. <https://doi.org/10.3386/w8835>

<sup>15</sup> Biderman, C. (2008) Informality in Brazil: Does Urban Land Use and Building Regulation Matter? Lincoln Institute of Land Policy.

<sup>16</sup> Angel, S., Parent, J., Civco, D., and Blei, A (2011) Making Room for a Planet of Cities. Lincoln Institute of Land Policy.

Orderly development at the city-edge requires several conditions to be met. In particular, plots of land need to be well defined, both spatially and in terms of legal rights. In practical terms this means that a road structure needs to be set out that both delineates plots and connects them to opportunities and services in the city centre. The classic example of this is New York City's 1811 Grid Plan, which remains relevant to the developing world today. The plan, covering an area seven times the size of the then existing city, established Manhattan's system of avenues and streets decades before the upper reaches of the island were actually developed. Consequently, at low cost, Manhattan's orderly road network was in place. As long as builders respected the space allocated for roads, the city could keep moving as it crept northward.<sup>17,18</sup>

Development will also require the provision of local public goods and utilities, such as water, storm drainage, sewerage, all of which require scale if they are to be provided efficiently. For example, it is inefficient for each house to have its own well or cess-pit. It is possible that the private sector provides such services at scale in relatively large developments. However, in most cases their provision needs to be from the public sector. In either case, preparing for this is central to effective urban planning, particularly as retrofitting such services once people have already settled is extremely costly. An interesting halfway house is the public establishment of 'sites and services', in which the public sector lays out the structure of plots and provides rudimentary public services, while making the plots available for private (typically small scale and possibly self-build) development.

### Regeneration and Retrofitting

Within the city core there will be continuing need to redevelop areas as patterns of land-use change. Some areas will go into decline, buildings will need renewal, and there is likely to be demand for new sub-centres of commercial and residential activity. The difficulty with bringing this about comes principally from coordination failure and the 'first-mover' problem, as it is not worthwhile for one individual to improve a dilapidated property if their neighbours do not. Similarly, one developer is not going to make a major investment in an area unless they are confident that others will, thereby building the area into a viable sub-centre.

One particular challenge in many middle income and developing cities land use planning, is that informal settlements have grown up, often in places like Kibera in Nairobi or Dharavi in Mumbai, that are quite close to the central business district. From a purely transportation perspective these central locations may indeed reduce traffic congestion and commute times. However, at the same time, the central location of informal settlements can crowd out businesses, which become dispersed, leading to an increase in travel times for other residents and possibly a loss of agglomeration economies as well.

---

17 Romer, P. (2015) Urban Expansion in Colombia.

18 Kimmelman, M. (2012) The Grid at 200: Lines That Shaped Manhattan. *The New York Times*, 2012, sec. Art & Design. <https://www.nytimes.com/2012/01/03/arts/design/manhattan-street-grid-at-museum-of-city-of-new-york.html>.



Image: Andres de Wet

As a general principle, it is hard not to support centralized residential development when that development is paying for land costs, construction costs and any other social costs of construction. We should be much warier where centralized development occurs informally, without any of those costs being paid. One of the vital reasons to move quickly with land use planning, therefore, is to ensure that land is used in a thoughtful way that balances different objectives, including sustainability, equity, agglomeration economies and mobility, rather than in an unplanned way that only reflects facts on the ground. Retrofitting good planning is likely to be prohibitively expensive, with the cost of installing drainage and roads after settlement has already occurred up to three times more expensive than doing so alongside housing construction.<sup>19</sup>

Above: aerial view of Johannesburg, South Africa highlights the necessity of urban planning

## Practical roles for urban planning

How does this translate into practical roles for urban planning? First, it is important to let prices speak; locations where lots of people want to live or work will have higher demand leading to increases in land-prices. With the appropriate regulatory environment, this can attract investments in high-rise structures that will ultimately result in increasing density. Choking off these price signals, through inappropriate policies and regulations, will prevent investors from delivering the efficient density. This in turn creates real costs to urbanisation as benefits of clustering are lost and additional travel times and congestion are imposed.

Second, linking planning to the transport system is crucial. There are productivity gains from clustering some activities together, but this requires that workers can get to these clusters from their places of residence. Employment densities in the centre of major cities are high (in some cases in excess of

**Linking planning to the transport system is crucial. There are productivity gains from clustering some activities together, but this requires that workers can get to these clusters from their places of residence**

---

<sup>19</sup> Fernandes, E. (2011) Regularization of Informal Settlements in Latin America. Lincoln Institute of Land Policy.



150,000 workers per square kilometre), requiring investments in increasing the capacity of public transport. Such investments are costly and there are trade-offs, as transport enables workers to commute to the centre, while also facilitating urban sprawl. These are further discussed in the section on transport.

Third, is policy on regulation and zoning, which face inherent tensions. On the one hand these types of policies are necessary in order to regulate burdens on public and to control negative externalities from industrial activity, as well as promoting positive ones from business clustering. At the same time, regulation and zoning which is largely restrictive, can place obstacles to private sector investment. The imposition of low density regulations on floor-area ratios (FARs) is a good example of the potential negative effects: these types of regulations have prevented many middle income and developing country cities from attaining high densities in the centre where land values are highest.

Fourth is to coordinate expectations. One instrument to achieve this realistic city plans that create common knowledge about where and how the city is likely to develop. However, these plans have to be credible – they will not coordinate expectations and induce private investment if no one expects them to be implemented. This requires that urban plans are well designed, and are based on realistic data about the present and the future population, income and fiscal capacity of the city. Private agents must expect plans to be implemented, this including enforcement of land use regulations and zoning as well as undertaking investment and other spending plans. Investments in anchor infrastructure such as roads are an important part of achieving credibility, acting as a signal of future development whilst making new areas easily accessed by workers and therefore attractive to investors (see section on transport).

To attain development at scale, however, a ‘big-push’ may be needed, and the vehicle for this can be a development corporation or similar public body. This will have powers of compulsory purchase of land, funding for infrastructure and environmental improvement, and should work with large private developers to catalyse the necessary investments. In Kigali, Rwanda, for example, the Rwanda Development Board, in collaboration with the City of Kigali, has established a one-stop-shop (OSS) for foreign businesses with large capital investments. In 2010, the OSS was given the mandate to issue deed plans, construction permits and land titles with a maximum delay of 30 days. The OSS also facilitates connection to utilities, tax services and environmental impact assessments. The creation of the one-stop shop has increased business registrations in the short-term by more than 180 percent.<sup>20</sup>

**Regulation and zoning which is largely restrictive, can place obstacles to private sector investment**

**To attain development at scale, however, a ‘big-push’ may be needed, and the vehicle for this can be a development corporation or similar public body. The creation of the one-stop shop has increased business registrations in the short-term by more than 180 percent**

---

20 Gathani, S., Santini, M. and Stoelinga, D. (2013) Innovative techniques to evaluate the impact of private sector development reforms: An application to Rwanda and 11 other countries. The World Bank.

## Transportation

Transportation policy is concerned with three major elements: the location of origins and destinations within the city, as governed by land use planning; the physical space that is dedicated to mobility; and the vehicles that traverse that physical space. These three elements may be governed by regulation or by price, and the dominant actors may be either the public sector or the private sector. Effective transportation policy is the art of the managing those three elements sustainably with tools that are appropriate for the situation at hand.

The challenge of transportation planning is that it must reverse the historical order with which these elements have typically come about. The typical ordering of innovation is that vehicular innovation, such as the horse-drawn omnibus, the steam engine or the car, comes first. After the vehicle is well developed, then there is a re-arrangement of city space to accommodate the form of transport, such as putting rails down main streets to accommodate the omnibuses or building limited access highways in older cities. Finally, after the physical space for mobility is put into place, the city rearranges itself to adjust for the new form of mobility, such as the suburbanisation of America that followed the construction of highways.<sup>21</sup>

By contrast, and ideally, urban planning typically starts by envisioning the location of businesses and homes. Then some form of transportation space, such as a grid is then laid down and protected. Only when these elements are set in place, do buses and bicycles begin to move people around. The mismatch between the ideal and the historical record may explain why this idea is rarely seen in practice. In the next section, we will follow the structure suggested by the ideal, with the understanding that it is often unattainable in practice.

### Land use planning: The first step in transportation policy

The easiest way to avoid traffic is to make sure that people live near to their places of work. Yet, as already highlighted, often land use controls, especially Euclidean ‘Single-Use’ Zoning, ensure a distinct separation between work places and residential locations. Even if land use is not specified by code, then limitations on density may ensure that workers need to travel excessive distances which clog up the roads resulting in congestion.<sup>22</sup> As noted, the case for any particular land use model depends on the setting<sup>23</sup>, but it is always vital to simultaneously consider rules about land use and transportation policy.

Historically, in many of the world’s oldest cities, travel distances were minuscule. For example, the remnants of Pompeii indicate that craftsmen typically slept above their shops. Pre-modern cities were mostly modest in size,

**Effective transportation policy is the art of the managing the location of origins and destinations within the city; the physical space dedicated to mobility; and the vehicles that traverse that physical space sustainably with tools that are appropriate for the situation at hand**

---

21 Baum-Snow, N. (2007) Did Highways Cause Suburbanisation? *The Quarterly Journal of Economics* 122 (2): 775–805.

22 Bertaud, A., and Brueckner, J. (2005) Analyzing Building-Height Restrictions: Predicted Impacts and Welfare Costs. *Regional Science and Urban Economics* 35 (2): 109–25. <https://doi.org/10.1016/j.regsciurbeco.2004.02.004>.

23 For more on land use regulations, see *Cities that Work* policy paper on *Urban planning for productive and liveable cities* (2018)

walking was the dominant transport mode, and few land use controls restricted activities per se. Instead, there were rules that focused on public safety, such as Boston's ban on thatched roofs in 1631, and the ability to use the legal system, following Aldred's Case in 1610, to bar noxious urban activities, such as pigsties.

The classic developed world city, with its long and painful commutes, emerged with industrialisation. Transportation also helps the dispersal of urban systems. In countries where urban systems emerged during a pre-train era, such as Germany and indeed much of mainland Europe, for example, cities tend to be more modest in size and dispersed throughout the hinterland because they emerged out of regional trading centres. In countries, like the U.S. or indeed most of the middle income and developing countries today, where urban system grew up after cars or highways, cities could be farther apart and mega-cities more easily came to dominate vast rural areas.

Changing patterns of urban activity and land use mean that there are good reasons to rethink barriers to building that have artificially restricted the mixing of uses, highlighted in the previous section. Similarly, barriers to building at higher densities are also being questioned in the 21<sup>st</sup> century understanding of city spaces. Typically, high density construction was also opposed because of downsides of density, including congestion of traffic and other infrastructure provision. However, when density is delivered close to workplaces so that commuting can involve walking, then building up means less building out and less traffic. Naturally, care must be taken to ensure that the full costs of associated infrastructure provision are met, and public safety requires that higher density buildings are rigorously inspected for structural integrity.

## Space for movement: The grid, tunnels, bridges and eminent domain

### The Grid System

As noted, the 1811 grid model in Manhattan, New York, is most appropriate for green fields sites that have not yet been developed. However, in much of the world, development has occurred and there is too little space available to move vehicles over land. In some cases, this shortage reflects total impassability of informal settlements. In other cases, such as 19<sup>th</sup> century London, the demand for transportation is so vast that it overwhelms the roads that have been set aside for that purpose.

As a result, Nobel prize winning economist, Paul Romer, and others have argued that a grid system is a good model for many developing and middle income cities where development has not yet occurred. The transportation case for planning ahead with a street plan, particularly a grid, is strong. If space can be set aside for transport, even before any buildings appear, then mobility can be protected. Moreover, technologically it is easy to protect street space and any buildings in the street space are illegal and can be removed using force of law. Such forward planning for grid systems is being implemented in cities in Ethiopia and Colombia.

**A grid system is a good model for many developing and middle income cities where development has not yet occurred. The transportation case for planning ahead with a street plan, particularly a grid, is strong**

Yet politically, protecting the street space may be more difficult. Governments may be unwilling to evict structures from road spaces, and unwilling to invest to protect the construction of these structures in the first place. For planning to have positive effects it must be done in a politically sustainable manner, which requires cooperation from the neighbourhood, not just initially but over time as well. Moreover, the government must invest in community relations and policing so that communities are able and willing to protect their road space against illegal loss from private and public developers. In the Colombian city of Valledupar, for example, a future grid system has been demarcated by planting trees on acquired land, along the sides of future roads. This provides a visible and popular signal of future transport links to limit costly and disruptive resettlement in the future.

### Adding mobility-oriented space

Governments have addressed an undersupply of mobility-oriented space in three distinct ways: (1) clearing currently utilized ground space by the use of eminent domain; (2) adding to the supply of mobility-oriented space by digging under or building over the current ground space; and (3) managing the use of ground space by pricing or regulation.

Expanding the supply of mobility-oriented space by converting ground space that is currently used in other ways into roads or transit space can often seem like the lowest cost option. Typically, such ground is acquired by eminent domain, i.e. the power of the government to acquire land for public use, which can make the costs seem artificially low. Yet the opportunity cost of the lost ground land can be significant. Furthermore, there may be considerable costs of compensation and the political costs of taking ground can be prohibitively high. Ideally, the decision to expand ground space, or use other methods, would be based on a rigorous cost-benefit analysis as well as careful consideration of social justice and sustainability.

Below: the Metrocable gondola provides mobility across parts of Medellin, Colombia, that are not accessible by ground transit



Image: Jorge Láscaz

The alternative is to supply mobility space by either building above or building below. For example, when trains transformed urban transport in the 19th century, they needed new space to travel into the heart of the city. London responded by building below ground; New York built elevated railways, at least initially. Tunnelling, which although it is more expensive than building elevation, is generally more environmentally friendly. In a more modern context, the Metrocable gondola provides mobility across parts of Medellin, Colombia that are not accessible by ground transit. Flyovers too have been used to add road capacity in many middle income and developing world cities, although sometimes at the cost of merely shifting congestion elsewhere in the city.

**In many cases, some form of user fee financing is desirable, both because charging drivers reduces congestion and because requiring drivers to pay for the costs of their infrastructure can enhance equity**

Any addition of space is expensive, however, and it is critical both to make the right decisions trading off costs and benefits of different forms of space, and to appropriately fund it. In many cases, some form of user fee financing is desirable, both because charging drivers reduces congestion and because requiring drivers to pay for the costs of their infrastructure can enhance equity. In Hong Kong, for example, high density means that that fares from public transit services were able to cover 149% of costs in 2007.<sup>24</sup>

### Pricing the use of public space

This mismatch between the demand for mobility-related space and the supply of that space is partially a reflection of a pricing decision. In much of the world, the use of public space is free, and that includes the use of roads in crowded urban areas. Just as we know that any free good will lead to its overconsumption and eventual depletion, the same is the case free road space, which will lead to congestion. Therefore, for over 50 years, economists have advocated some form of congestion pricing as a tool for both reducing the overuse of city streets and as a means of funding the maintenance and construction of mobility-related infrastructure.

**For over 50 years, economists have advocated some form of congestion pricing as a tool for both reducing the overuse of city streets and as a means of funding the maintenance and construction of mobility-related infrastructure**

Historically, there were legitimate reasons to oppose pricing on roads. Due to a lack of automation, in an earlier era, the process of paying for roads would often involve long delays at toll booths. Therefore, when roads were largely uncongested, there were fewer efficiency gains from tolling roads. Yet over time, we have developed tools of efficiently charging drivers. Singapore's Electronic Road Pricing, for example, allows the streets of the second densest country on the planet to move fluidly at all times of day. Singapore is also experimenting with global positioning system based road charging, which is surely the wave of the future. It may be tempting to think that the Singaporean model is inappropriate for developing world cities today, but Singapore began congestion pricing in 1975, when it was still a developing country.

Much of the gains from congestion pricing come from allowing the fees to vary by time of day. Many roads are crowded during peak hours, but empty earlier and later. If congestion pricing can spread the road traffic more evenly, then the roads can move more quickly and cities can avoid the cost of adding more

---

<sup>24</sup> UN-HABITAT. (2013) Planning and Design for Sustainable Urban Mobility. Global Report on Human Settlements. UN-HABITAT. <https://unhabitat.org/planning-and-design-for-sustainable-urban-mobility-global-report-on-human-settlements-2013/>.

road capacity. Moreover, while building more highways typically elicits a large behavioural response,<sup>25</sup> charging drivers will deter extra driving. In London, for example, the introduction of a congestion charge fee in resulted in a 30% decline in excess delays from traffic congestion<sup>26</sup>, and has resulted in a 6 percent increase in the number of passengers using buses during charge hours.<sup>27</sup>

Further innovations in transportation, such as autonomous vehicles, also have the capacity to elicit a significant behavioural response. If technology reduces the effective cost of sitting in traffic, because riders can work or play instead of drive, whilst in the vehicle, then more people will not mind sitting in traffic and congestion will get worse. Autonomous vehicles consequently could easily make managing traffic congestion more difficult if they are not accompanied by sensible congestion pricing.

The political challenges for imposing congestion pricing can be enormous, however. Often voters seem to underestimate the traffic benefits that come from the tax, as suggested by evidence from the increased support for congestion pricing in Stockholm after a one-year trial period.<sup>28,29,30</sup> Typically, it is easier to impose traffic congestion on new travel options, including new bridges, roads, tunnels and technologies, than to impose a fee on a road that used to be free. Consequently, it makes particular sense to contemplate using congestion pricing when new forms of infrastructure or vehicles come on line.

**It makes particular sense to contemplate using congestion pricing when new forms of infrastructure or vehicles come on line**

The political case for congestion pricing can become easier when the revenues are targeted towards a particular service stream. For example, London's Mayor Ken Livingstone used congestion charge funds to support public transportation. Consequently, charging the rich to drive benefitted the lower-income residents who were more likely to use public transport in two ways: first by increasing speeds on buses and second by increasing public funding for buses.

In middle income and developing country cities, enforcement of congestion pricing may also be a major issue. Can governments actually stop people from

---

25 Duranton, G., and Turner, M. (2012) Urban Growth and Transportation, *The Review of Economic Studies*, 79, pp. 1407-1440.

26 Kreindler, G. (2016) Driving Delhi: The Impact of Driving Restrictions on Driver Behaviour. IGC/J-PAL.

27 Lall, S.V. (2013) Planning, Connecting, and Financing Cities - Now : Priorities for City Leaders. 74920. The World Bank. <http://documents.worldbank.org/curated/en/512131468149090268/Planning-connecting-and-financing-cities-now-priorities-for-city-leaders>.

28 Börjesson, M., Eliasson, J., Hugosson, M., and Brundell-Freij, K. (2012) The Stockholm Congestion Charges—5 Years on. Effects, Acceptability and Lessons Learnt. *Transport Policy*, URBAN TRANSPORT INITIATIVES, 20 (Supplement C): 1-12. <https://doi.org/10.1016/j.tranpol.2011.11.001>.

29 Eliasson, J., Hultkrantz, L., Nerhagen, L., and Rosqvist, L. (2009) The Stockholm Congestion – Charging Trial 2006: Overview of Effects. *Transportation Research Part A: Policy and Practice*, Stockholm Congestion Charging Trial, 43 (3): 240-50. <https://doi.org/10.1016/j.tra.2008.09.007>.

30 TUT-POL. (2016). Congestion Charging in Stockholm: The Path from Opposition to Advocacy. TUT-POL Case Study. Transforming Urban Transport – The Role of Political Leadership.

using the roads if they do not pay? Even New York City had to impose physical barriers to bridge access because cheating was too easy for the electronic system. The policies selected, therefore, need to be matched to the institutional capacity of the location. A similar point occurs when considering alternatives for public transit, as outlined in the next section.

## Maintenance, project choice and private roads

Maintenance and road quality represent a major challenge associated with providing transportation access. For many years, a consensus among transportation economists has held that in the wealthy world, investments in maintenance have higher social returns than new construction.<sup>31</sup> This claim is less likely to hold in middle income and developing countries, which have far less existing infrastructure. However, the need for maintenance remains vital everywhere. Yet, too often, politicians prefer the glamour of announcing new roads over the more pedestrian task of fixing an old road.

A tendency to prefer new to old projects can be seen as an example of the larger challenge of where to direct transportation funding. While economists have steadfastly advocated the use of comprehensive cost-benefit analysis for decades, such analysis is often missing in both rich and poor countries alike. Cost-benefit analysis is also a particularly natural place to incorporate the critical concerns surrounding social justice and sustainability. The need for cost-benefit analysis is distinctly reduced when infrastructure is self-funded through user fees. For example, many of the most successful forms of transportation infrastructure, such as America's Erie Canal, were paid for by tolls in a few years. If a road is really going to be transformative, then it should be able to generate enough toll revenue to cover its costs.

The principle of user-fee financing is particularly powerful precisely because it disciplines the choice over project selection. It becomes less plausible if infrastructure is aimed particularly at providing services to poorer residents. In that case, good cost benefit analysis may mimic the process of user fee financing. For example, to understand the costs and benefits, one would assume that if each poorer user paid 25 cents per usage – even if the service is in actuality free—to help evaluate whether the service would pay for itself. The answer to such a question will help ascertain whether the service is actually delivering enough value to cover its costs.

Private provision, which is typically funded by user fees, has a long history in transportation. The work of Eduardo Engel and his co-authors has illustrated the upsides and downsides of public private partnerships, particularly in transportation. The great advantage of private provision is that private owners have good incentives to maintain roads and bridges and they can sometimes cut costs in new construction. The disadvantage is that these providers may come

---

31 Gramlich, E. (1994) Infrastructure Investment: A Review Essay. *Journal of Economic Literature* 32(3): 1176–96.

with high private premiums. Furthermore, they may have good incentives to subvert any regulatory authority.<sup>32</sup>

Typically, public private partnerships require strong public oversight and therefore institutional capacity to work well. Where this does not exist, they are often abused by private providers who offer politicians cash up front (legal or illegal) in exchange for a public asset that pays off over decades. For example, Charles Yerkes, who later helped electrify London's Underground, got his start in Philadelphia and Chicago, by rewarding city council members for granting him long, low-cost leases to public space. Any subsidy that operates through private provision is an invitation to abuse, which suggests that services for the poor are typically best left in public hands.

## Transportation technology replacement versus improvement

In transportation, as in many other aspects of developing world urbanism, there often coexist two urban technologies. One technology, like fast trains or high rise dwellings, were developed in the developed world and cater to the wealthier residents of developing and middle income cities. The second technology, like minibuses, jitneys and tuk-tuks, are far more indigenous and cater to the poorer residents. One central question for urban transport in developing and middle income countries, therefore, is when rich-world technology should replace the poor-world technology and when should the poor-world technology be improved.

### BRTs

It has been argued that at almost any density level, buses are more cost-effective than trains.<sup>33</sup> Evidence showed there was little that you could do with a train that you could not do with a bus on a dedicated lane. That insight planted the seed for the wave of Bus-Rapid Transit (BRT) systems that started in Curitiba, Brazil and has then spread through much of the developing world. The basic case for the BRT is that it can provide speeds that are comparable to those of light rail at a far lower cost.<sup>34,35,36,37</sup> However, the carrying capacity is lower than metro systems and therefore, Bogota, Colombia, has begun to rethink its commitment to BRTs because the level of demand is simply staggering.

**Typically, public private partnerships require strong public oversight and therefore institutional capacity to work well. Where this does not exist, they are often abused by private providers who offer politicians cash up front (legal or illegal) in exchange for a public asset that pays off over decades**

**The basic case for the BRT is that it can provide speeds that are comparable to those of light rail at a far lower cost**

---

<sup>32</sup> Siemiatycki, M, and McQuaid, R. (2012) The Theory and Practice of Infrastructure Public-Private Partnerships Revisited: The Case of the Transportation Sector. Available at </paper/The-Theory-and-Practice-of-Infrastructure-Public-Siemiatycki-McQuaid/77of817df85694fo2fc69dd8d1a9863803b285b6.>

<sup>33</sup> Meyer, J.R., Kain, J.F. and Wohl, M., (1965) The urban transportation problem.

<sup>34</sup> O'Sullivan, A. (2011). Urban Economics. 8 edition. New York, NY: McGraw-Hill Education.

<sup>35</sup> Cervero, R. (2013) Linking Urban Transport and Land Use in Developing Countries.

*Journal of Transport and Land Use* 6 (1): 7-24.

<sup>36</sup> Hensher, D., and Golob, T. (2008) Bus Rapid Transit Systems: A Comparative Assessment. *World Transit Research*, January. <http://www.worldtransitresearch.info/research/2293>.

<sup>37</sup> Gomez-Ibanez, J., Tye, W and Winston, C. (2011) Essays in Transportation Economics and Policy: A Handbook in Honor of John R. Meyer. Brookings Institution Press.





Image: Mairo Roberto Duran Ortiz

There is much to like about bus systems that run on their own lanes. They have the great advantage of flexibility compared to a rail system that is fixed, possibly for centuries. A bus system can be shifted almost overnight and even dedicated lanes can be repurposed for other uses. Yet, at the same time, the very flexibility of dedicated bus lanes makes them more vulnerable to abuse. If private vehicles start to use these bus lanes then speeds come to a crawl. Trains are much less vulnerable, since few drivers can access train tunnels or use the tracks, and few drivers would really want to brave a train travelling down the tracks at 60 kilometres per hour. Therefore, while typical experiences with BRTs have been quite positive,<sup>38</sup> Jakarta's experience has been far more mixed. The system had limited access to most of the city and speeds were held back by other users crowding the buses' supposedly dedicated lanes.<sup>39</sup> The Jakarta experience reminds us that even with transportation ideas that are as sensible as BRTs local conditions and, particularly in this case, the ability to enforce, still matter.

Above: Marechal Floriano BRT station, Linha Verde (Green Line), Curitiba RIT, Brazil

### Paratransit sector

In most developing and middle income cities, the paratransit sector, such as minibuses or jitneys, are the mode of choice, particularly for many poorer residents. These are typically privately run and, as a result of their informality, with relatively little regulatory oversight. They are inexpensive both to users and to the government, but have considerable downsides. To the rider, the vehicles themselves can be unsafe, crowded and slow. In some cases, they wait until they are full before starting to drive. To the city as a whole, they generate congestion and pollution, because of their relatively low carrying capacity which requires a large supply of them to service demand, and their engines which are usually old and do not conform to modern emission standards. They also lead to the depreciation of roads, just like any wheeled vehicle. In some cases, these modes of transport can have adverse effect on public bus services by cherry-picking customers who were waiting for regularly scheduled bus service.

<sup>38</sup> Hadia, M., Malik, A and Vyborny, K. (2018) Infrastructure Investments, Public Transport Use and Sustainability: Evidence from Lahore, Pakistan.

<sup>39</sup> Gaduh, A., Gracner, T., and Rothenberg, A. (2018) Improving Mobility in Developing Country Cities: Evaluating Bus Rapid Transit and Other Policies in Jakarta.

There are many reasons to think that improving an informal private transportation system is almost always part of a sensible local transportation policy. Middle income and developing world cities typically suffer from sprawl, as outlined in the planning section of this paper. Therefore, trains, BRTs or other forms of mass public transport will always have trouble reaching far flung urban spaces. The low capacity of many of the private sector options, such as minibuses and jitneys, mean that they have the capacity to scale up swiftly. Furthermore, they can provide employment for local entrepreneurs. Comparatively, building or expanding train lines can take years or decades and are far more capital intensive.

Consequently, almost every middle income and developing world city that currently has a significant informal private transportation fleet in operation, needs to have a strategy for improving its service quality. For example, better regulation should improve safety or integration into an electronic platform could make it easier for customers and drivers to coordinate. Furthermore, some form of congestion control will be necessary to address the natural abuse of free public roads.

Deng Xiaoping famously said that it did not matter if a cat was black or white as long as it caught mice. This claim remains true in transportation today, and ideology has no place in providing urban mobility: different conditions and settings make the case for private provision stronger and weaker. Any decisions about privatization must be made with a full awareness of the downsides of introducing highly incentivized private actors who have much to gain by subverting the relevant public actors.

**Almost every middle income and developing world city that currently has a significant informal private transportation fleet in operation, needs to have a strategy for improving its service quality**

## Resilience

Resilience to shocks comes from reducing exposure to them, and building cushions that manage them better. It is important that it is considered in a short, medium and longer term perspective, such that any shorter term costs that result from adaptation and mitigation are framed within their potential to reduce the impact of adverse shocks overall. Furthermore, estimates show that investments in resilience is pertinent: the global economic costs to cities due to flooding and sea level rises by 2050, if nothing is changed, will be about 1 trillion USD.

**Estimates show that investments in resilience is pertinent: the global economic costs to cities due to flooding and sea level rises by 2050, if nothing is changed, will be about 1 trillion USD**

## Climate, flooding and earthquake resilience

Cities' resilience to climatic events needs to be in place to manage acute short term shocks, such as flash flooding and earthquakes. Further to this, however, it is important that cities are prepared for medium term chronic stresses, such as urban heat islands and air pollution as well as sea level rise and other longer term consequences of climate change. As cities grow, these stresses will be enhanced as populations will, for example start settling on less suitable wetlands or floodplains. In many developing and middle income cities, this is already the case. Therefore, in the event of a shock, these lower income populations will be more adversely affected. Geographically, low-lying coastal cities will be particularly vulnerable too.



Left: water awareness leaflet in Cape Town, South Africa

Image: Sparrow

Any effective longer term resilience strategy, therefore, needs to ensure a suitable mix between both adaptation and mitigation strategies. However, the susceptibility of cities to climatic shocks is extremely context specific and therefore there can be no standardised solutions. A city should analyse its specific context to understand its own vulnerabilities. Based on this, it can then establish a cache of policies and tools that can help both adapt and mitigate the impact of any shock. For example, within urban planning, the development and enforcement of adequate building regulations can help limit the destruction of buildings during earthquakes. Establishment of zoning regulations, particularly around wetlands and floodplains, can prevent people settling there decreasing their overall susceptibility to flooding.

In conjunction with policies, sufficient proactive investment in infrastructure will also be needed. The focus of policy makers should be on those infrastructures that are critical for the city's economy and where damages to them could result in a large loss of life as well as severely impact the city system as a whole. These include infrastructures such as hospitals and bridges. Furthermore, policy makers should also determine which types of infrastructure are more cost-effective to invest in strengthening from the outset compared to repairing at a later stage.

**Any effective longer term resilience strategy, therefore, needs to ensure a suitable mix between both adaptation and mitigation strategies**

Adaptation and behaviour change is also needed to be able to prevent and mitigate crises. One area, for example, that many cities will suffer in the future is in water provision. Recent precedent for this is from the city of Cape Town, which following lower rainfall from 2015 onwards, suffered a severe water shortage by 2018. However, as the case of São Paulo shows, using prices to incentivise behaviour change can both address the immediate consequences of the shock as well as provide effective longer term solutions. Following a water crisis in 2015, the water utility gave residents discounts on their water bills, and by doing so reduced consumption by on average 20%. This had the immediate effect of lessening the stress on the system overall. Additionally, it also incentivised a change in consumption behaviour as today water consumption levels lower by about 10% than before the crisis.

Given full protection and prevention of any shocks, particularly external ones are unrealistic, city governments must ensure that they have social safety nets in place for when crises occur. These include, for example, backup power grids for essential services or food programmes. As the example of the earthquake that hit Concepción in Chile showed, there can be deep and longer term consequences of having no power in responding to a shocks both to the number of lives lost and the economy overall. The key features of these safety nets is that they can be rapidly deployed in the event of large shocks in order to prevent wider adverse outcomes.

## Economic resilience

As noted earlier, in low and middle-income economies, where agriculture and resource extraction remain large and shock-prone sectors, urbanisation is actually a way to reduce exposure to shocks for the overall economy. In particular, agriculture is exposed to climatic risk, which will inevitably increase during the next two decades, due to past carbon emissions that have yet to take effect. At the same time, resource extraction is exposed to the risk of violence.<sup>40</sup> Both sectors are exposed to wide fluctuations in the prices of their key commodities. Each of these shocks has repercussions for demand in the rest of the economy, and so makes the entire economy shock-prone. As urbanisation diversifies the sectoral composition of the economy away from these shock-exposed sectors.

A successful urban economy becomes resilient partly by means of increased worker productivity, and partly by diversification. Higher productivity translates into higher incomes and this both directly and indirectly increases resilience. Directly, as incomes rise, the proportion of expenditure on essentials such as food decreases, so that a shock to consumption is less consequential. Further, as more incomes are earned in formal employment, jobs become more secure and so income shocks less frequent. Indirectly, with higher incomes, people are better able to accumulate some assets that enable them to cushion consumption even when faced by a shock to income.

**Urbanisation is actually a way to reduce exposure to shocks for the overall economy**

**A successful urban economy becomes resilient partly by means of increased worker productivity, and partly by diversification. Higher productivity translates into higher incomes and this both directly and indirectly increases resilience**

---

<sup>40</sup> Berman, N., Couttenier, M., Rohner, D. and Thoenig, M. (2017) This mine is mine! How minerals fuel conflicts in Africa. *American Economic Review*, 107(6), pp.1564-1610.

Diversification occurs both within and between cities. The largest cities tend to thrive by bringing together many different activities that benefit from being near each other, and so they become resilient as a result of this diversity of activities. Among smaller cities there is more specialisation in one major activity in order to reap economies of scale in a cluster such as an industrial zone. However, as long as different cities specialise in different activities, the national economy becomes more resilient.

## Financing resilience

By the above mechanisms, well-functioning cities increase resilience. However, to become well-functioning, a city needs major public investments in the infrastructure for energy and transport. Financing these investments is difficult in low-and-middle-income countries. A challenge when it comes to financing resilience is that the timing and severity of shocks is often unknown. Therefore, for city leaders to mobilise and deploy funds accordingly can often be politically challenging. Although longer term planning and investments must take place, acute shocks and events can represent unfortunate, but important opportunities for city leaders to further expand their resilience budgets.

Access to financial markets is limited, and known psychological biases in decisions work against finding the money from squeezing recurrent spending. A possible solution to this common political problem is to link the management of commodity shocks to the need to invest in urban infrastructure. Typically, governments spend commodity booms on consumption booms, because saving the money ‘for a rainy day’ has proved to be politically too difficult: an alternative that may be politically more feasible is to use the revenue booms for investing in the key infrastructure that cities need. Such spending is highly visible, so citizens can readily understand how the money is being used. The link avoids unsustainable consumption booms, and makes cities more functional, both of which increase resilience.

In many middle income countries, foreign investment is key to lifting large numbers of people out of poverty and into productive jobs. Urban clustering makes it easier for foreign firms to find large numbers of workers, whilst at the same time helping to mitigate political barriers to investment. Foreign direct investment in particular and growth more generally in developing and middle income countries has often been held back by a challenging institutional environment. While these public problems do not automatically disappear with urbanisation, historically cities have often acted as forces for positive political and institutional change and for the development of civil society. For example, the growing middle-class populations of Dutch cities threw off their Spanish overlords in the 17th century and established a remarkably successful commercial republic as well as cities played an outsized role in the American revolution.

**In many middle income countries, foreign investment is key to lifting large numbers of people out of poverty and into productive jobs. Urban clustering makes it easier for foreign firms to find large numbers of workers, whilst at the same time helping to mitigate political barriers to investment**

## 4

# Making urbanisation work

Density, and therefore cities, have tremendous upsides, such as the enhanced ability to trade goods and services and to achieve high productivity. Urbanisation is also economically stabilising and therefore can be seen as a tool for resilience. Yet in some countries it is currently resisted by political leaders because it is regarded as politically destabilising. Often, urban populations are disaffected, support the opposition, and through the power of the street sometimes have the potential to topple a government, as demonstrated during the past decade in Egypt and Thailand. It is important to emphasise that this is not intrinsic to urbanisation itself. Governments become politically robust by delivering rising prosperity and evidence shows that in this case, they more likely to win elections.<sup>41</sup>

With good urban policy, cities become the platforms on which a prosperous future economy develops. Indeed, well-functioning cities are essential for the growth of the business sector on which prosperity depends: no society has ever prospered without them. Agriculture and resource extraction are not only shock-prone, they depend upon endowments of land and natural resources that are in fixed supply and so diminish per capita as the population grows. For example, several developing and middle income countries still have population growth rates of 3%, so that the natural endowment per capita is decreasing at this rate. For such countries, the rural part of the population is on a descending trajectory. Raising national living standards critically depends, therefore, on well-managed urbanisation.

The political instability arising from urbanisation occurs when urbanisation goes wrong and the costs are higher than the benefits. The urban role in revolution is still quite apparent today, such as in the Arab Spring. It is less clear if those uprisings will eventually lead to stable democracies. Similarly, we cannot be sure that increased urbanisation in developing and middle income countries will lead to governments that look like Denmark or the United Kingdom. Still, there is some hope that a highly connected, better educated urban population will force political change in a positive direction, and that such change will eventually improve economic outcomes as well.

The solution, therefore, is not to resist urbanisation, but to make it work: diversifying the economy, while defusing the political dangers. This is especially important in the context of the rapid national population growth, with a large number of people shifting to cities, that characterizes many low and middle-income societies. To do this, good city governance is key. Financially, the city will need to develop new sources of revenue to pay for the necessary

**Urbanisation is economically stabilising and therefore can be seen as a tool for resilience. Governments become politically robust by delivering rising prosperity and evidence shows that in this case, they more likely to win elections**

**Well-functioning cities are essential for the growth of the business sector on which prosperity depends: no society has ever prospered without them**

---

<sup>41</sup> Collier, P. and Hoeffler, A. (2015) Do elections matter for economic performance? *Oxford Bulletin of Economics and Statistics*, 77(1), pp.1-21.

infrastructure. Spatially, the city will need to plan the evolution of transport arteries, and the basic infrastructure grids for housing and business over an expanding area of territory. Administrative boundaries need to keep up with reality of settlement, so that public policies become fragmented over several local government units, and boundaries between national and local government responsibilities become clear. Only the top of national government can address this, and to do so political leaders will need to recognize urbanisation as both inevitable and something that can work to national advantage, rather than something that should be resisted.

Planning, transportation and resilience are all key elements of meeting these objectives. All are areas where the historical performance of many cities has been poor and where building and disseminating the knowledge base is important. And they are all areas where rapid change is occurring. On the negative side, climate change is making it imperative to develop policies towards resilience. On the positive side, new technologies for operating transport systems, for collecting and handling data, and for coordinating decision taking create need to be mastered and adopted.

Below: disaffected urban population during 'Arab Spring' in Tahrir Square, Cairo, Egypt



Image: Ahmed Abd El-Fatah

