

Engines of Sustainability

Humanity created cities millennia ago, but now as the planet confronts challenges like climate change and loss of biodiversity resulting from over consumption of resources, urban areas' advantages as centers of economic innovation and environmental efficiency come to the fore



Douglas H. Keare is a semi-retired micro economist who has concentrated on urban, education, health, and environmental issues. He was the first head of the World Bank unit responsible for urban research and policy and also pursued such issues at the Harvard Institute for International Development and the Lincoln Institute of Land Policy.

I was inspired to write this essay by Ed Glaeser's excellent — and we must all fervently hope inspirational — 2011 book *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. In this very readable analysis, Glaeser explains how cities, particularly large ones, are where smart and innovative people come together to interact with countless other smart and innovative people in an efficient local economy to produce new ideas and products of all kinds. The city, in short, is humanity's most important creation.

Glaeser's book is timely, for it coincides with an important benchmark — the majority of the world's population now lives in cities. The globe's urban population is expected to grow to more than two thirds of the total by mid-century.

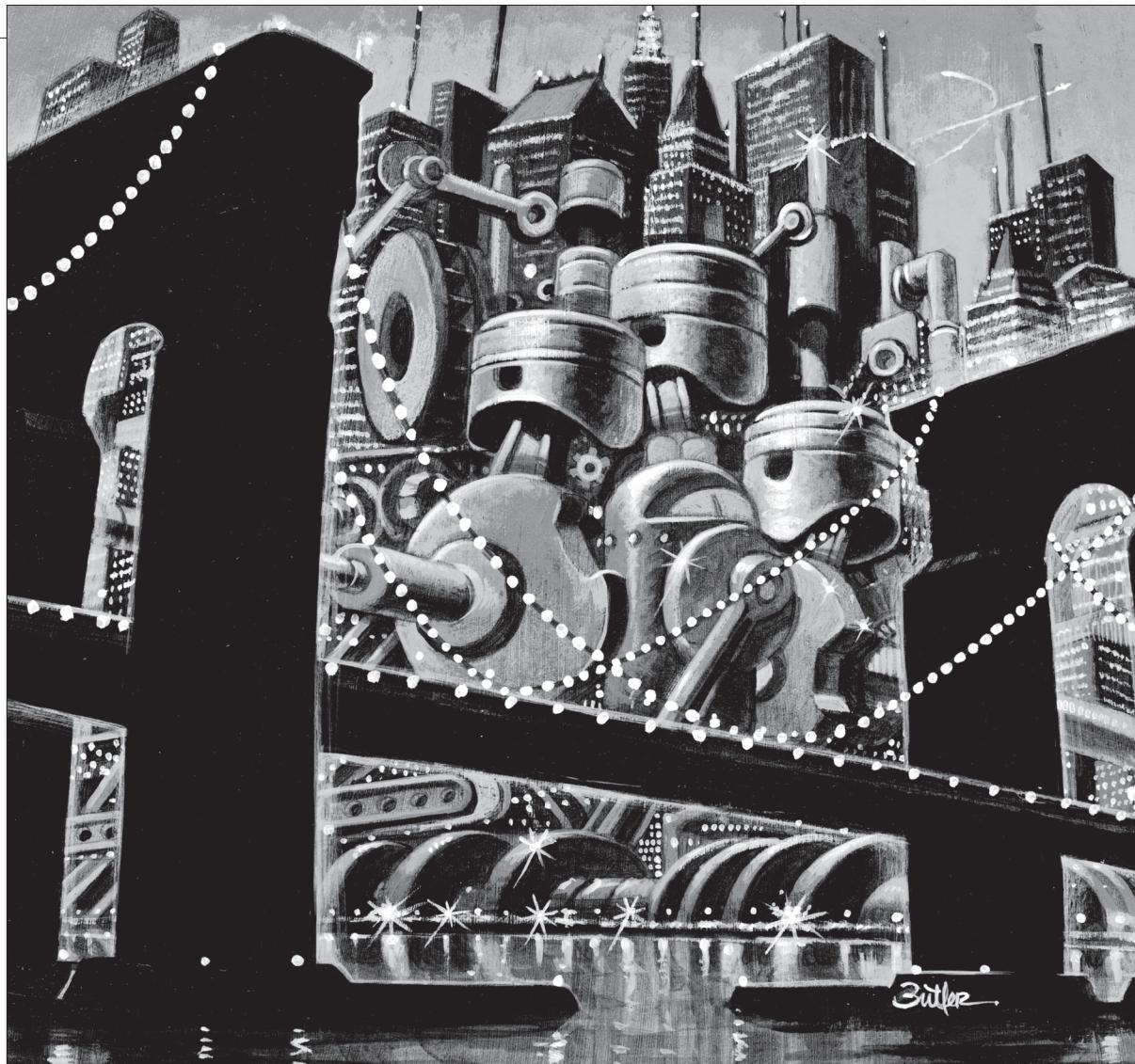
Yet not all cities are engines of sustainability. For cities to succeed in this 21st century role requires a broad and deep appreciation of what their potential can be. If humankind is to achieve survival, it must come to grips with climate change and the other consequences of relentlessly wasteful resource use. Cities are our greatest hope for the future for a number of reasons principally centered about two fundamental facts. The first is that it is in cities, due to efficiencies depending on scale and agglomeration economies, resource use per capita is lowest, and, with improved policies and wiser investments, can be driven far lower. The second is that it is predominantly via the knowledge clusters nurtured in cities

that solutions to many of our resource-use problems, whether urban or otherwise, can be generated.

To illustrate the first point Glaeser points out that throughout the United States, big cities mean less driving. As population density increases, household carbon dioxide emissions from driving declines. Cities also use less electricity per capita than suburbs. Appropriate policies could greatly amplify these differences and reduce the currently great variations from city to city. According to Glaeser, "Southern cities have particularly high driving levels and over 75 percent more gasoline usage than New York City." To illustrate the second point, Glaeser has a section on "The Smart City," where he focuses on Boston, Minneapolis, and Milan, though he might well have chosen from a longer list containing, for example, Chicago, the San Francisco Bay Area (including Silicon Valley), Paris, and Tokyo.

World travelers may well appreciate the efficiencies of operation in such cities as Singapore, Hong Kong, Stockholm, London, Portland, and Curitiba; they will also have been staggered by confronting the air of Beijing or Chongqing without gas masks, or viewing, even from a distance, the roiling slums of Mumbai or Buenos Aires, and the putrid black waters that pour from countless other cities into nearby rivers, lakes, and seas, or seeing the scores of thousands of cars idling in traffic jams in most cities, particularly in the United States.

It is the job of policymakers to understand why some cities fester where others succeed, and then



help raise the bar even in the leading ones to become better role models for the still developing and rapidly urbanizing cities of Latin America, Africa, the Middle East, and particularly the two Asian giants; Glaeser devotes an important section of a chapter to "The Biggest Battle: Greening India and China."

It will be no mean feat to achieve serious progress in greening urbanization. The battle starts with educating national governments and international organizations, plus vital NGOs. There are powerful and influential forces that are hostile to cities — with significant effect. The most important of these are rural and "downstate-upstate" interests, who are in a contest with cities for resources and have some legitimate claims. But in the United States their case is aggravated by conservatives who shortsightedly seek to penalize cities for their liberal electorate rather than recognizing that the bulk of voters live in cities and adjusting their strategies accordingly.

Cities are already doing a better job worldwide in combating climate change and other forms of environmental degradation by moving to more

sustainable forms of development and operation. Throughout his book, Glaeser — who is as skillful in using historical and anecdotal evidence as econometric analyses to lay out his arguments — explains how cities are formed by and in turn give rise to clusters of talents. These clusters and the mixes of clusters that develop in a given city are as variable as the people who make them up. Whatever a city's clusters, there are a number of factors that are crucial to how well the various individuals and elements come together and how effectively their efforts are advanced and sustained.

There are three important factors at play in realizing the potential of urbanization. First is the education system in each city, its quality and how well it is upgraded and adapted to the changing requirements of the economic actors within the city or that the city desires to attract. Second is the infrastructure of the city, its quality and how well it can be adapted to changing requirements. Third is the management

of the spatial relations of the core city and metropolitan region, basically land-use and transportation and their interactions, and how harmoniously these move and adapt with the evolving needs of the city and the larger society.

Eric Hanushek of Stanford University's Hoover Institute, a leading education economist, has worked and published extensively on educational quality, and, with his colleague Dennis Kimko of the Institute for Defense Analysis, on school quality and economic growth. They have demonstrated that while the *quantity* of education in a society is important, the *quality* of that education is far more so. In an important example, in a research report for the World Bank entitled "Education Quality and Economic Growth," they find a statistically and economically significant positive effect of the quality of education on economic growth in Organization for Economic Cooperation and Development countries from 1960–90 that is far larger than the association between quantity and growth.

Glaeser makes many similar observations in his concluding chapter, and particularly stresses that giving poor children a good education may be the single best way to help them become prosperous adults. This is particularly important because, as he also stresses throughout, cities the world wide are overbrimming with poor people not because cities create poverty but because poor people swarm to them in order to become un-poor. To fully leverage the education factor, most societies the world over need to expand their education coverage — i.e., quantity — substantially, increase its overall quality even more so, and do a much improved job of applying existing measures to bring effective education to societies' disadvantaged members. Only in this way can they be transformed from drags on development and contributors to environmental problems into part of the solutions to both.

At the other end of the spectrum, it should be quite easy for most to appreciate the importance of vibrant higher education clusters built around the likes of Harvard/MIT; Stanford/Cal Berkeley; University of Paris/Sorbonne. What is equally important to realize is that, as Glaeser points out, traditionally single-industry cities, like Detroit and Manchester, haven't done well in the long run because their industrial monocultures (and, in the case of Detroit, neglect of building a vibrant higher education complex) discourage the growth of new ideas and clusters of talents — in other words, thriving companies.

Infrastructure has been proved critically important to the success of cities and societies dependent upon them for millennia. The Roman Empire would not have existed, let alone thrived, were it not for its engineers and their roads, aqueducts, and the internal infrastructure of Rome itself. Similarly, cities everywhere through time have been successful only if they have been wise about their infrastructure. This means both the infrastructure that links them efficiently to the national and global economies and effectively utilizes their hinterlands, and that which permits them to operate efficiently and in relative health and safety internally.

Glaeser explains clearly in his section on "How the Rust Belt Rose" that major cities of the Midwest began by locating on lakes and rivers to give them affordable access to markets. When these proved not entirely adequate, canals and then railroads rose — and, of course, eventually, roads entered the picture. New York and Boston, for example, were at pains, and successfully, very early in their development to ensure the availability and viability of relevant watersheds to serve their needs. Internal infrastructure — water, sewerage, gas, electricity, transportation, and communications — is vital. It must be universally available, affordable — and paid for. Throughout history, the cities that have best sustained their roles, such as London and Paris, and successfully emerged, such as New York, Chicago, Tokyo, Stockholm, Singapore, and Hong Kong, have paid attention to their infrastructure.

Spatial planning too is critically important. Its essence is to provide an efficient network of mass transit. This will ensure a substantial density and variety of population and occupations around the nodes of this system, such that a large proportion of the trips people make in the city are either on foot or via transit. Jane Jacobs in her pathbreaking book *The Death and Life of Great American Cities* (1961) dealt with these issues, mainly at the micro level, where she meticulously laid out and explained the advantages, indeed the essentialness, of densely settled neighborhoods, with a substantial variety of activities and residents that would generate a substantial number of feet on the pavement and eyes on the streets at virtually all times. She also stressed that transportation systems should serve rather than disrupt such neighborhoods.

Glaeser endorses this perspective, and adds a complementary and necessary macro one. "Tokyo's size is manageable, and in many ways it provides a model for many of Asia's megacities. Japan's bu-

reocrats . . . wisely allowed Tokyo to grow tall, and they built a superb public transit system." Glaeser also notes that "Singapore's success reflects the remarkable ability of a dense agglomeration of smart people to innovate and thrive when blessed with a remarkably competent public sector." He does not mention that this public sector worked with the World Bank as early as 1972 to introduce the world's first traffic management system based on pricing road use.

Unfortunately, while there are strong examples of good practice on all three of the above fronts, the majority of the world's cities have not benefited sufficiently from knowing this. Much of the blame can be attributed to the fact that the 20th century, which was a century of burgeoning urbanization, was also the century of the automobile. We humans have allowed ourselves to become the servants of the auto rather than its masters, with all the attendant undesirable outcomes that entails. This conflict of roles has distracted the managers of most cities from taking a sensible approach to their regions' spatial management. One need look no further than at any U.S. city during the 1950s and 1960s to observe the undesirable (and not easily corrected) effects of sprawl or to understand the disasters wrought by new categories of mistakes. These were introduced ill advisedly to deal with the resulting deterioration of inner cities by driving expressways through the middle of thriving urban neighborhoods and attempting to pack the displaced persons into ill-designed public housing projects.

Matters have not improved materially since that time, despite the fact that countless persons from all over the world have passed through Hong Kong, where the model we should all be following is already (and has been for a few decades) pretty much in place. It consists of a state-of-the-art public transit system, ranging from that which brings passengers smoothly in from the international airport to the metro system that links the entire city — well-designed policies which create vital urban centers around every transit node. Finally, vertical zoning, which is admittedly natural to Hong Kong, but could nevertheless be very advantageously introduced all over the world.

Moreover, road-user pricing, first advocated by Nobel Prize economist William Vickrey in the 1950s, has been applied only to a very limited ex-

tent today, although the practice does appear to have begun picking up. Singapore's had been the only comprehensive program for a city until London's fractious mayor, Ken Livingstone, introduced a successful scheme some 10 years ago. Meanwhile, there has been limited usage in and around Scandinavian cities, Los Angeles, and, more recently, Washington, D.C. Even Hong Kong, in the mid-1990s, just prior to the reversion of control from Britain to China, rejected a very well designed system because the majority of the population feared that the controls necessary to make it work might well be abused by their new masters.

Moreover, the percentage of cities worldwide that would earn high marks for their overall spatial planning remains distressingly low. Some of them have made serious errors along the way. In its efforts to maintain the integrity of Paris proper, the city embarked in the 1970s on spotting its environs with new cities to draw off substantial portions of population growth. These have been a substantial failure, effectively turning the U.S. problem of deteriorated inner cities inside out. On the other hand, Curitiba introduced, also in the 1970s, a novel and effective scheme of dedicated bus ways, which serve like surface-level subways. Variation on this theme have by been introduced in more than a handful of Latin American cities.

The picture with regard to infrastructure is no better. A new book on *Governing and Financing Metropolitan Areas in the Developing World* (2013), by Roy Bahl, Johannes Linn, and Deborah Wetzel, which updates the work of the World Bank and others since the publication of a first book by Bahl and Linn in 1993, disappointingly documents the general lack of progress across developing countries despite the substantial increase in our understanding of what ought to be done. In general, revenues have not grown commensurately with their expanding bases, and infrastructure and services continue to lag very badly; those that are provided are not generally of high quality. The record is no better in the United States, where the quadrennial assessment by the American Society of Civil Engineers has, since 1998, accorded the country and its cities a grade of D, barely rising this year to a D+, in 6 of the 16 categories.

The issue on the infrastructure front going forward is not that suitable methodologies do not exist. They do, as is also the case in education. But, rather, most societies are too slow to learn and apply existing knowledge. For example, the World Bank

had learned by the mid-1970s that societies could only serve their populations with potable water by charging for the full cost of provision. The bank and others have been pushing this message ever since, but to little avail; such policies are not being pursued to the extent they should be in most developed countries. Meanwhile, China is vaulting ahead, not always most wisely, with creating a new approach to building society based substantially on state-of-the-art infrastructure, drawing, at least at times, on best practices from Europe and its own Hong Kong.

If one is looking for solace on the education front, one looks in vain. To be sure, there are stars, from Finland and Estonia to South Korea, Taiwan, Japan, Hong Kong, and Singapore. But, for the most part, the picture is unnecessarily bleak in both poor and rich countries alike. There are many reasons for this, but a common one about the world, with the exception of countries such as those mentioned above that have had the situation in hand, is the role of schools of education and teachers unions, which are jointly a major part of the problem. The solutions to education problems in general will not be found unless the countries that have not achieved a suitable professionalization of their teachers have done so, and these institutions stand in the way. In addition, few countries outside of Europe even begin to address effectively the question of training and retraining of those who are not up to the standards of the general education system or have had the bad luck of entering a sector of an economy that is failing to stand up to global competition.

This leads us back to the heart of the problem, which is a serious lack of understanding of the importance and the roles, both actual and potential, of cities, and even of their essential nature. These issues are marvelously well explained in Glaeser's book, which should be required reading for citizens, planners, and policymakers. They *are* understood and fully appreciated in some quarters. For example, Amsterdam, which has established a "smart city platform" designed to nurture intelligent discussion toward improving that city's performance. They are very well understood in Singapore, where Liu Thai-Ker, chairman of the Center for Livable Cities, correctly states that "the earlier you start proper planning, the lower the price you pay in getting it right."

And they are understood by Henry M. Paulson Jr., former chairman of Goldman Sachs, former treasury secretary, and former chairman and still an important force in The Nature Conservancy, who wrote in an op-ed in the *New York Times* titled

"How Cities Can Save China," that "a flawed system of municipal finance is driving debt . . . while unsustainable urban planning has yielded polluted cities that are destroying China's ecosystems. . . . Cities can, however, be part of the solution." He cites in particular municipal finance reform, transparent budgets, and somehow managing to contain policies promoting sprawl. What Paulson says is true not merely about China (though it is surely nowhere else demonstrated in such bold relief), but everywhere. It is around such an appreciation that a successful approach might be organized: one based on the realization that, while many if not most of our most grievous problems manifest in cities, it is only in and through cities that the solutions to these problems might be generated through their greater and increasingly effective efficiency of resource use and their ability to generate new solutions.

What seems necessary now is effective advocacy for cities on a global scale, for most cities the world over are starved of both resources and understanding. Many good things can be generated locally and from the bottom up. They have been, are being, and will continue to be; however, they will not — if unassisted — add up to more than a modest hill of beans compared to the mountains of ignorance, hostility, and unconcern that stand in their path.

As Fareed Zakaria has wisely counseled in his 2008 book *The Post-American World*, "Governments on their own can do only so much to tackle a problem like climate change. A real solution requires creating a much broader coalition that includes the private sector, nongovernmental groups, cities and localities, and the media." This powerful insight resonates because achieving the sustainability of cities is absolutely fundamental to any hope we might have of dealing effectively with climate change and, indeed, with most of our environmental challenges. A powerful urban coalition might be made to emerge, for example, from the C40 Cities Climate Leadership Group established and currently chaired by Michael Bloomberg, particularly if it could adopt a more comprehensive view of the problem and its solutions. Then perhaps such a group, abetted by the World Bank and other international development banks and a number of other organizations, might prevail upon the G20 to make these concerns central to its agenda. And, of course, it would be a great deal more than wonderful if this were to become a test case in helping the G20 itself to become more focused, effective, and assertive in addressing the world's principal problems. •

Poor Face a Public Policy Challenge

The world's population will increase by about 2 billion people between now and 2025. Nearly all of this growth will be absorbed by urban areas in less-developed countries. Of the 27 urban areas with populations greater than 10 million, 21 will be in poor countries and these big cities will house about 10 percent of the world's population. Finding ways to make such cities more sustainable — home to adequate public services and shelter, greener, more inclusive, enabling the growth of human capital — is one of the great public policy challenges facing leaders in these countries. In too many cases they are ill-equipped to take it on.

The price tag for absorbing new urban residents is steep. One estimate places the annual cost of new urban infrastructure (the capital facilities that support services, such as roads and water supply) at 5 percent of GDP. Slum upgrading, which must target about 1.4 billion people, or one-third of the world's urban population, poses an even heavier financing burden. The 200 million new migrants who will arrive in Chinese cities in the next 20 years will cost about 2.5 percent of GDP per year. When one considers that less-developed countries raise an average of only about 17 percent of GDP in taxes for all the things that they must do, the magnitude of the problem comes into better focus.

Is there a way forward for these urban areas, or is "sustainable city" an interesting but unreachable goal? In fact, two policy directions might be taken, and if politics could be shunted aside, there is reason for optimism about both. One approach is based on living smarter and planning smarter to lower the cost of urbanization. More compact urban settlements can lead to a lower cost of energy consumption, as well as less new infrastructure

construction and maintenance, and can be more effective at capturing the agglomeration and scale economies that come when people and companies live and work in closer proximity. Compact cities and better mass transit can crowd out cars, something that congestion has not been able to do. In India, for example, the motor vehicle population increased by 100 times between 1951 and 2004, but the road network expanded by only eight times. There are some hopeful signs: e.g., the success with congestion pricing in Singapore and the auctioning of transportation rights in Shanghai. Even the politics might line up because the love affair between people and their automobiles is less strong in low-income countries, especially among the new migrants.

This is not to say that there aren't formidable obstacles to building the lower-cost cities. For example, standing in the way of coordinated, area-wide delivery of public services is local autonomy or home rule, which is a cherished tradition in many low-income countries. For example, the Mexico City metropolitan area, with a population of 20 million, is overlapped by a federal district, two states, and 59 municipalities, with little coordination in service delivery. Metropolitan São Paulo, also about 20 million in population, is made up of 39 municipal governments, with no area-wide government. Local boundaries do not go away quietly, yet Toronto's relatively recent success with metropolitan government does give hope for the area-wide solution.

Another obstacle is corruption. Whenever heavy public investments are made, and businesses are relocating, as will happen with rapid urbanization, there will be

more incentives for illegal money making such as through contracting, under the table land use arrangements, and such. There also will be political trading that might benefit the career advancement of local leaders, but at the expense of efficient urban development.

An alternative approach to financing sustainable cities is simply to raise more revenue. Urbanization will bring increased economic growth and a significant fiscal dividend, but this will not likely be enough to pay for the increased services demanded. There are several good routes to more revenues, if only the political roadblocks can be overcome.

First, tax those things that stand in the way of constructing a more livable city, and provide incentives for those things that do not. This would

lead to heavier charges on motor vehicle use, capturing the full social costs of urban sprawl with development charges, and levying higher taxes on under used property.

Second, rediscover the virtues of land and property taxes as local revenue instruments in cities, and use them aggressively. This would include not only the annual property tax, but also capital gains taxes on land and various land development charges and incentives that are consistent with building the more compact city. Third, set user charges at cost-recovery levels, which would reverse a long term pattern of subsidy.

Roy Bahl is Regents professor of economics and founding dean, emeritus, at the Andrew Young School of Policy Studies at Georgia State University. His most recent book is *Governing and Financing Metropolitan Areas in the Developing World* (Lincoln Institute, 2013).



Roy Bahl