Renee Martin-Nagle on Bringing Sustainability to the Airlines

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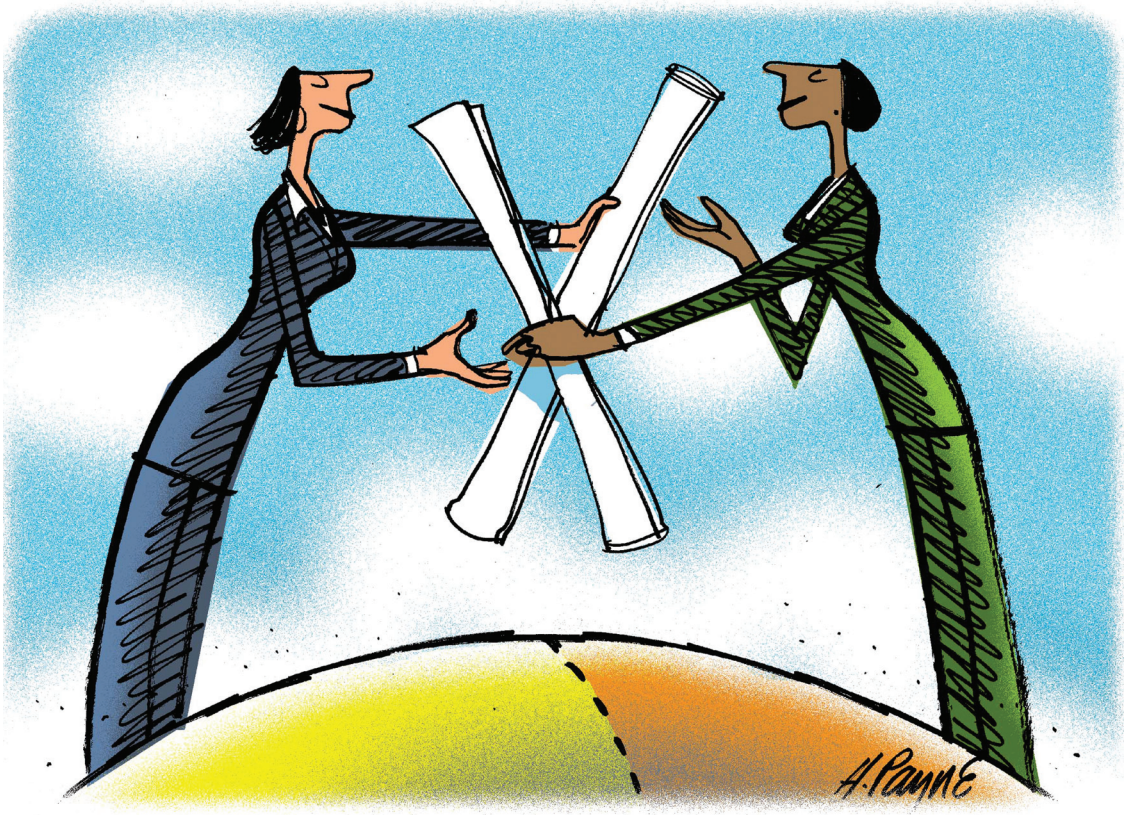

Trade and Treaties: Meeting in the Middle

Civil Rights
An Agency and a Tale of Two Sections

NYC v. EPA
Clean Water Infrastructure

Sustainable Cities
Harnessing Urbanization to Achieve Social Goals

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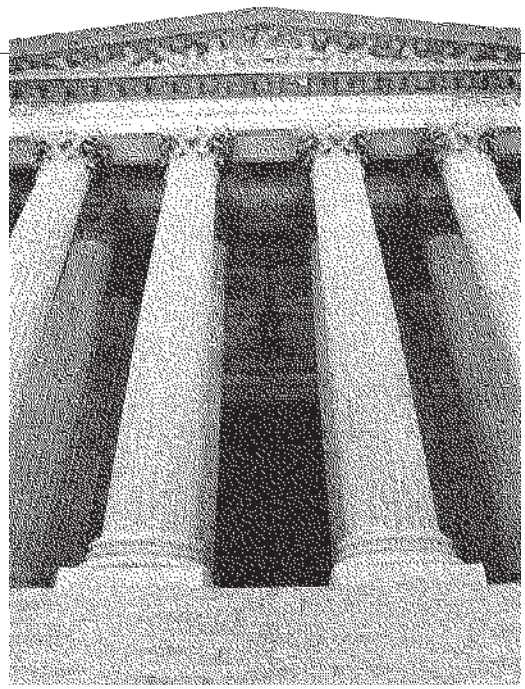

THE FORUM

Success and the City: Harnessing Urbanization to Achieve Social and Environmental Goals

The catchphrase is "sustainable cities," densely populated regions that in theory can efficiently provide environmental and social services for the urban population of the world, which in 2008 became a majority of the human race, according to the U.N. Population Fund. By 2030, this number will swell to 5 billion people, and many prognosticators foresee 70 percent of the world's population living in cities.

Cities have great advantages. They provide good jobs and are the most efficient form for delivery of services such as waste disposal, power, education, fire protection, and transportation, when compared with rural areas. City dwellers also use less energy than their rural counterparts. However, poverty is already growing faster in urban areas than the countryside, and unless we address the ability of cities to have adequate supplies of water, sewage treatment, energy, food, public safety and transportation we will see many failed cities around the world.

The question for the panel is: How can we leverage the benefits of urbanization while avoiding the perils? What can we do to make cities vibrant communities achieving sustainable development through the rule of law?

Please join us for "Sustainable Cities," the ELI-Miriam Hamilton Keare Policy Forum, on the afternoon of the annual Award Dinner, 4-5:30 p.m., Thursday, November 8, at the Omni Shoreham Hotel in Washington, D.C. Email McMurrin@eli.org to reserve your place.

"America needs to invest in public infrastructure right now. Doing so will put us back on a path toward genuine prosperity"

Daryl Dulaney
Chief Executive Officer, Infrastructure and Cities Sector — U.S.
Siemens

"Can our cities support the long-term influx of some 180,000 people per day without reconsidering their assumptions?"

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"While technology is providing sustainable options, it is still the people who will pull the levers of change"

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"Urban sustainability considers all benefits and costs to the economy, environment, health, and quality of life"

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Coordinator
Urban Sustainability Directors Network

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Lynn Scarlett
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Resources for the Future

"Innovation, governance, and the scale of collaborations need to be significantly reevaluated and redirected"

Terry Yosie
President and Chief Executive Officer
World Environment Center

A Way Forward on Infrastructure Challenges

Daryl Dulaney

United States Senator Bernie Sanders likes to tell the story of the time he visited a mayor in a small town in Vermont. The mayor invited the senator to take a tour of the town's water and sewer lines. When they came to one of the aging pipes, the mayor said, "The worker who laid this pipe finished the project, and then left Vermont to fight in the war." The senator asked, "Which war?" The mayor replied, "The Civil War."

There's no word on whether the water coming out of those pipes is now tinged blue or grey — but the sad part is, that small Vermont town is not alone. Much of America today is fighting the global competitiveness battle of the 21st century using roads, bridges, and airports from the early to mid-20th century, and pipes and rail lines from the 19th century. It's one of the reasons the American Society of Civil Engineers recently gave the U.S. a "D" grade on its infrastructure. No other part of any industry in the world is competing and winning with machines, technology, or systems that are even a third as old as the national infrastructure the U.S. is relying upon. By contrast, China will build 56 new airports alone over the next five years, on top of the 66 it has built or renovated since 2005.

As one of the few Fortune 50 companies that was doing business in America when that pipe in Vermont was practically new — our company is 165 years old, and currently employs 400,000 people, including 62,000 in the United States — we have been forced to do something in the United States in recent years that we have done in very few of the other 195 countries where we do business: if we want to create jobs, we have to bring our own infrastructure.

For instance, when we announced our intent to build a new wind blade manufacturing facility in Fort Madison, Iowa, in 2006 — creating more than 600 jobs — we first had to build our own rail spur (rail is more reliable and cost-effective than trucks, with a carbon footprint that is 80 percent smaller). When we announced plans in 2008 to build a 300,000-square-foot wind turbine facility in Hutchinson, Kansas — creating more than 800 jobs — we first had to work with the state to build new off-ramps from the interstate highway capable of moving these football field-sized blades. Another East Coast plant set to open soon — creating 1,000 direct jobs and 2,000 indirect jobs — also required us to first build our own rail spur. Similar investments were required for other job-creating ventures in Colorado, Texas, and Illinois.

And we have gladly made those investments: over the past decade alone, we have invested $25 billion in manufacturing and services based in the United States; in the past five years, we have created more than 3,000 clean technology manufacturing jobs. Many would argue that business should make infrastructure investments that support its own success, and we agree. But we are also in a position to notice that we are a $75 billion company that has the ability to make those kinds of bets. Not many other companies can shoulder that kind of burden on their own. Even we can't do it everywhere, or in every instance.

That's why public investment in infrastructure is so important. Multinational corporations consistently list infrastructure as one of their top four concerns when determining where to build a new facility. As Treasury Secretary Tim Geithner rightly said, "Infrastructure spending is like a tax cut. You do a better job repairing roads and bridges, highways, airports, railways, it makes companies more competitive, [and] lowers their costs."

In an economy as global as ours, when businesses can build and invest just about anywhere, the countries that will succeed are those that can best attract those investments. Yet the United States now ranks 23rd out of 139 countries in quality of our infrastructure, a dubious distinction that inspires little confidence. If we're going to create the jobs of the future in America, we need an infrastructure that can support them. America is not going to get the job done with water pipes built when Abraham Lincoln was president, bridges built when Teddy Roosevelt was president—and airports built when jets had only two engines and rarely flew overseas.

From 1950 to 1979, public investment in infrastructure grew at 4.1 percent per year, while the U.S. economy averaged 4.0 percent growth. When infrastructure investments dropped to 2.3 percent between 1980 and 2007, economic growth fell to a 2.9 percent. Between 2008 and 2009, the Chamber of Commerce estimates that infrastructure shortfalls cost the economy almost $2 trillion. That's the equivalent of a national recession. And it's getting worse.

America needs to invest in public infrastructure right now. Doing so will put us back on a path toward genuine prosperity. It will make the United States a far more attractive place for businesses to put down roots. And, critically, at a time of high unemployment, it will create millions of new jobs — while putting 21st century tools to work to compete and win in the global economy.

Daryl Dulaney is Chief Executive Officer of Siemens Infrastructure and Cities Sector in the United States.

IBM: Smart Cities Are Resilient Cities

Colin Harrison

It is extremely difficult to destroy a city. Earthquake, flood, fire, pestilence, war, economic collapse, and the departure of half the population will not, in most cases and in the long-term, prevent a city from surviving and even recovering and adapting to its new circumstances. The life of a city represents an amazing collective act of will by its populace that gives it on the one hand a rich network of choices and on the other hand a core set of beliefs that knit the community together in a way that can only be described as spiritual.

Cities are amazingly resilient to acute threats. Witness the many cities of Europe afflicted by the Great Plague; the Great Fire of London and the many 19th century fires in American cities; Hiroshima and Nagasaki; Kobe, leveled by an earthquake; and Sheffield, England, and Dubuque, Iowa — two of many cities to have lost or nearly lost their economic bases. But like the legendary frog in the saucepan, many cities and regions deal poorly with long-term threats.

Over time cities accumulate complex networks of assumptions and dependencies, some explicit, some implicit, and many unknown. The assumption that there will always be electricity to pump water or fuel out of tanks. The assumption that the food supply chain will always work and that a week's stock of food is sufficient. The assumption that there will never be a hurricane or an earthquake. Over long periods of time — decades or centuries — such assumptions will be valid and then, without anyone noticing, they may begin to erode. As Jared Diamond illustrated in *Collapse*, ignoring or failing to understand these assumptions has often led to over-expansion of a the city or region in ways that left it unable to cope when long-term threats result in these assumptions becoming invalid.

The late 20th century was a period in which the frequency and impact of natural disasters increased exponentially. Some of this might be attributed to better monitoring and reporting of such events compared to previous centuries. Some of it to the increasing urbanization and increasing density of settlement. Some of it to increased flooding due to removal of forests and buffer zones. Whether it can be explained or not, it is clear that globally we are exposed to significantly higher natural hazard threats that may invalidate many long-held assumptions. Yet the greatest long-term threat to our cities comes from human sources.

Jeramy Bentham of Royal Dutch Shell's Stress-Nexus challenge may represent the test of over-extension for much of the developed and developing world in the mid-21st century. The Stress-Nexus is the struggle we face over the coming decades of providing water, food, and energy not only for the needs of an additional 2 billion inhabits but for the growing appetites of a much larger middle-class. Beyond mid-century, the global population may decline, but much of the world will continue to aspire to a middle-class lifestyle with far higher resource demands.

What is especially challenging about the Stress-Nexus is the inter-dependence of these primary resources. To produce more food we need to irrigate more land and to apply more chemical fertilizer. Even assuming that sufficient natural water could be found, pumping it from its source over longer distances to the point of consumption requires a great deal of energy. Already regions of water-scarcity consume 10 percent or more of their electricity supply in water pumping. Producing additional fertilizer requires large amounts of water and energy for chemical processes. And generating additional electricity also consumes large amounts of water. Improving the supply of any one of the members of this triad places additional stress on the other two.

The advent during the 19th century of industrial systems for transportation, for water production and distribution, and for sewage systems allowed a dramatic expansion of cities. And the emergence of large, dense populations has been shown to be a major driver of innovation, a principal source of modern wealth creation. Moreover for a given population, dense cities reduce energy consumption compared to urban sprawl or rural living. Can our cities support the long-term influx of some 180,000 people per day without reconsidering their assumptions about the supply of water, food, and energy?

These are long-term problems and will demand long-term solutions. IBM's work on Smarter Cities has given us initial insights into how to understand and model both acute- and long-term vulnerabilities that arise from these complexes of assumptions and inter-dependencies. This new work on "resilient cities" benefits from the integration of an even wider range of information sources than we consider for Smarter Cities solutions. These sources are no longer the well-defined systems of urban infrastructure and are no longer confined to the immediate vicinity of the city. They pose difficult challenges of "sense-making" and provide new and promising directions for our technical strategy.

Colin Harrison is Distinguished Engineer, Enterprise Initiatives, at IBM.

The City of the Future Will Need to Evolve Rapidly

Jim Hunt

Last year I visited Hong Kong for the first time. I was struck by both the scale and elegance of the city, with housing developments and skyscrapers towering above, and seven million people moving on the streets and in the mass transit system below ground with surprising ease. I was on an official government exchange and had the fortune of joining a helicopter tour of the Pearl Delta. As the helicopter veered toward mainland China, our Hong Kong government liaison pointed at another series of massive skyscrapers rising out of the north and told the story of Shenzhen, a one-time village that grew exponentially from 350,000 people in 1982 to more than 10 million people now, just 30 years later. Throughout the world people continue to flock to cities, with urban centers now home to more than half of the world's population and growing fast.

Cities are amazing creations, a series of intricate systems, markets, and networks that support living and commerce. Cities are inherently efficient, with greater density, inhabitants are within close proximity to goods, services, and each other. And successful cities that have stood the test of time are dynamic, constantly innovating and evolving in response to the needs of people and businesses. The sustainable city of the future will need to evolve rapidly to revolutionize urban systems, catalyze markets, and leverage networks to meet the increasing needs of more and more people while at the same time dramatically reducing impacts on environmental resources. While this is a daunting challenge, much of the knowledge base and technology already exists to make it happen.

First, we need to reimagine the systems that support cities and optimize performance, from infrastructure, to waste management, to how food is produced and arrives on our tables. Through better urban planning and integrating innovations in communications and other technology, these systems and our cities can be smarter, healthier, and produce a greater sustainable return on investment.

In order to enhance urban mobility and deal with congestion and pollution from cars in Curitiba, Brazil, the city reclaimed streets and developed a cost-effective model bus rapid transit system with dedicated lanes, smart signals, and attractive waiting stations. This visioning and ingenuity leveraged private sector investment in the BRT system and today 85 percent of residents ride the system, providing access to jobs and markets for residents while reducing air pollution and other urban environmental impacts. This kind of systems rethinking is occurring in cities across the globe, with sewage biogas and food waste being harnessed for energy production, stormwater being diverted and harvested to meet urban water needs, and smart phone apps being designed to manage household energy use in real time.

Second, we need to help grow a marketplace to make our cities greener, more livable, and prosperous. One model for this is our efforts to mine energy savings from existing buildings. Here in Boston, building energy accounts for 73 percent of the greenhouse gas emissions in the city. Much of our building stock has been in place for more than a hundred years, and will remain for the next hundred. With high energy costs, we have prioritized energy efficiency as our first fuel, dramatically reducing consumption through a series of new green building regulations, energy codes, and efficiency programs.

For every dollar invested in efficiency in Boston, we will see a three dollar return on that investment through energy savings. And while we are reducing consumption and operating costs over time, we are creating jobs today to perform energy assessments, weatherize buildings, and install state of the art systems. One clean tech startup, Next Step Living, grew its home energy performance business from three employees to 350 in just over two years. In 2011, clean energy jobs grew 6.7 percent in Massachusetts, and jobs in the clean tech sector are projected to grow another 15 percent this year. This connection between policy changes and market development is catalyzing energy efficiency in Boston and beyond.

Lastly, we must not forget that cities, their systems, and their markets cannot thrive without engaged people. While technology is providing information and more sustainable options than ever before, it is still the people of our communities that will pull the levers of change to remake the sustainable city of the 21st century.

Jim Hunt is Chief of Environment and Energy for the City of Boston.

Directions for Cities in Search of Sustainability

Julia Parzen

Urban sustainability is a crucial leverage point for avoiding the failed cities of tomorrow, providing healthy, safe, and affordable environments for the growing number of people living in cities and their surrounding metropolitan areas across the globe.

Urban sustainability is the set of values, goals, strategies, and initiatives that communities — and the institutions and individuals within them — adopt to meet their needs without compromising the ability of future generations to meet their own needs. Increasingly cities are interpreting urban sustainability as a decisionmaking framework that considers all benefits and costs to the economy, environment, health, and quality of life.

Cities and the metropolitan regions of which they are a part increasingly have the public/private leadership to lead the way to sustainability, as demonstrated by the members of the Urban Sustainability Directors Network. USDN is a four-year-old, rapidly growing, member-driven network of 114 municipal sustainability directors in North American cities with a total population of 50 million, whose members are on the front lines of collaboration on innovations for local environmental, economic, social, and equitable sustainability.

More than 77 percent of USDN members have set specific goals for greenhouse gas reduction in the next 10–20 years. At least 35 percent have set or are considering setting goals for longer term, more transformative GHG reduction. 75 percent have adaptation and resiliency plans or are starting to incorporate adaptation and resiliency into existing plans. USDN members are fostering a multitude of experiments to drive toward these goals in the realms of transportation, land use, food, buildings, waste, water, and energy, and increasingly use a triple bottom-line measuring stick.

However, as we and our partners at the Innovation Network for Communities have found, to meet the ambitious goals cities have adopted requires a more organized innovation system that:

- Prioritizes. Identifies the highest priority innovation niches for urban sustainability.
- Strategizes. Develops strategic intelligence about innovation needs and opportunities in high priority innovation niches.
- Selects. Creates an innovation agenda with specific projects and brings together expert teams to develop and spread innovations.
- Capitalizes. Funds the most promising innovation projects, leveraging public and private resources.
- Replicates. Builds practitioner networks to share and spread proven innovations.
- Learns. Continuously improves its own system's performance.

USDN has been building a small-scale prototype for a sustainability innovation system that provides a hint of how to more rapidly and strategically advance urban sustainability. With support from the Innovation Network for Communities and a long list of foundation partners, USDN built a strong peer-to-peer network for information sharing. Members joined the network because their field (urban sustainability) was changing rapidly and they wanted quick access to ideas and information they could trust. Then members began to form groups not just to share information, but also to converge around some basic definitions, goals, and strategies. Some members began to work together to create new tools and craft new public policies.

An innovation system emerged that aggregates member knowledge into a picture of the field, helps members to identify priority innovation niches, supports member collaborations to advance in these niches, builds new innovation investment funds in partnership with funders, and supports new sustainability networks at the regional level across North America so that more cities can reap the benefits.

The Urban Sustainability Innovation Fund launched in 2009 to support member collaboration to identify, develop, and spread urgently needed practices, policies, tools, and systems that substantially improve the environmental, economic, and social sustainability of cities. The Local Sustainability Matching Fund, a partnership with the Funders' Network for Smart Growth and Livable Communities, launched in January 2012 to catalyze partnerships between municipal or county-level sustainability directors and local, place-based foundations to implement these community-based sustainability initiatives.

USDN members are, for example, collaborating with each other to identify strategies for supporting local food-system jobs and businesses, create new tools for measuring triple-bottom-line return on investment, develop processes to work across cities on climate change adaptation, learn to use community based social marketing to create turnkey programs for shifting energy decisions, codify and pass on lessons for advancing building energy disclosure, develop a North American eco-districts program design, and remove barriers to electric vehicle adoption.

No one runs USDN. It has a coordinator, but no board of directors, no executive director or CEO, no employees. All it really has are members — volunteers — who direct and adapt the network through their dialogue and actions. How else to get scores of independent cities to collaborate and amass to design the resilient, vital, and equitable cities of the future?

Julia Parzen of JP Consulting advises on projects that have led the way on urban sustainability. She is the coordinator of Urban Sustainability Directors Network.

Cities Blending Ecology and Economics

Lynn Scarlett

In 1983, the Brundtland Commission put the idea of sustainable development into world headlines with its report *Our Common Future.* It defined sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." By 2010, concepts of sustainability had surfaced in the goals, plans, and actions of some corporations, communities, and cities around the world.

With over half the world's population now living in cities, global sustainability may hinge on these efforts. But their success requires comprehending linkages between cities, nature, and countryside and thinking holistically about the interconnections of water, energy, transportation, communications, and other infrastructure.

In *Cities and the Wealth of Nations,* Jane Jacobs describes innovations that anticipate present discussions of cities and sustainability. She discusses "biomimicry," in which she perceives "nature as a source of inspiration." Some cities are beginning to use "nature" to provide basic urban services. Trees, permeable ground surfaces, natural stream channels, wetlands, and other natural systems and their components reduce stormwater, absorb air pollutants, help purify water, and provide shading to reduce summer air conditioning needs.

Philadelphia, for example, is transitioning 34 percent of its lands to permeable surface, which will absorb and reduce runoff to meet sewage overflow requirements, while also producing cleaner air, cleaner water, and greenhouse gas emission reductions. In Houston, trees are estimated to reduce energy costs by $26 million annually through their cooling effects. Ironically, as populations move to cities, sustainability may depend on making cities more like the countryside.

Links between cities and countryside are important. So, too, are linkages among critical infrastructure and services. Power failures have shut down water systems in New York and Los Angeles. Oil terminals after Hurricane Katrina shut down because workers could not reach them due to transportation disruptions and not due to direct damage to the facilities. These interconnected challenges are not new — but their significance grows as billions of people become dependent on urban infrastructure for basic needs.

Fragmented government jurisdictions and coordination difficulties among agencies complicate efforts to address these interconnected challenges and link cities to countryside. Often, greening efforts depend on undeveloped or agricultural lands beyond city boundaries. These areas sustain water supplies, provide coastal storm buffers, and are essential to providing food to nourish urban communities. Yet they lie outside the governing reach of many cities. Quito, Ecuador, for example, gets all of its drinking water from Andean creeks and rivers in the Condor Bioreserve. Protection of the Bioreserve is one of Ecuador's greatest conservation challenges. Transcending this challenge, the city uses a special water conservation fund to finance projects to conserve this water source that lies outside city boundaries but is essential to its well-being.

City sustainability efforts, thus, relate to outcomes and to governance and social processes. Early literature on sustainability emphasized the three-pronged goals of sustainability — social, economic, and environmental benefits. But more recent discussions (and practice) of sustainability describe people both as beneficiaries of sustainability and as practitioners, innovators, and decisionmakers. Local people are critical to helping define what is desirable and what is doable.

Nearly four decades ago, British economist E. F. Schumacher critiqued economic development practice in *Small Is Beautiful: Economics As If People Mattered*. He argued that technologies appropriate to circumstance that reflect the capacities and resources available to local communities were more likely to be used and sustained than (often) large-scale technologies designed for different settings. While "small" may not always be preferable, Schumacher's important insight was in his focus on economic and social decision processes that directly engage those affected by decisions.

Strengthening citizen engagement in decisionmaking is gaining momentum. When Seattle proposed to address its waste management needs by building incinerators, city officials faced an upheaval among citizens. In a departure from its top-down decision process, the city changed gears, formed citizen task forces, and used their deliberations as the basis for overhauling its waste management vision.

Seattle implemented this new vision through pay-as-you-throw fees that rewarded recycling and waste reduction. The city's use of these incentives in its fee structure reflected another emergent phenomenon in sustainability efforts — the use of market-based policy tools that align personal and economic decisions with environmental and other goals.

As cities re-examine how to address municipal infrastructure, waste management, climate change adaptation, transportation, and other challenges, whether in developed or developing countries, the need for governing processes that transcend agency and city boundaries, engage citizens, and apply decision tools that motivate conservation is well-recognized. How to fulfill that need, however, often remains an elusive part of the sustainability equation. This challenge, as much as the challenges of technological and service innovations, now animates the sustainability dialogue.

Former Deputy Secretary of the Interior **Lynn Scarlett** is Co-Director of the Center for the Management of Ecological Wealth at Resources for the Future.

Searching for the Livable City of the Future

Terry F. Yosie

Two ideas continue to compete for how to design, organize, and improve the quality of everyday life in cities. The first concept conceives of the city as a set of interlinked economic and mechanical functions that, over time, has adopted new technologies to enable the efficient movement of people and goods within an urban core that eventually expanded to a mega-size, impact, and influence. This "imperial city" has generated considerable wealth, created economic opportunities for people to migrate to urban areas, advanced learning and disseminated culture, disrupted and contaminated neighborhoods, and disenfranchised citizens beginning in 17th century London through present day manifestations in Beijing, Cairo, Manila, and Mexico City.

The second concept derives from the negative externalities of the first. It views cities as organisms and draws upon the study of ecology to analyze the biological and physiological processes that cities require. These include air, energy, water, nutrients, housing, health services, and the removal of waste products. The recognition of "the metabolism of cities" was itself a response to deteriorating air, land, and water quality that spawned public health and environmental crises in many urban areas in both developed and developing nations in the second half of the 20th century.

The interaction between cities and their environments is a search for equilibrium between natural and man-made systems. The outcome will determine whether cities more closely resemble the Mumbai slum depicted in Katherine Boo's eloquent *Behind the Beautiful Forevers* or the regenerative prosperity of diverse Singapore.

Neither the "imperial city" nor the "metabolic city" is likely to be an adequate future model for cities due to three reasons.

First, cities are growing at a pace that has already exceeded the ability of existing infrastructure to accommodate current and projected population growth rates. Faced with the scale of such growth, calls for greater efficiency or regulation by proponents of environmental sustainability will make only marginal improvements in living standards.

Second, public policy continues to promote behaviors that waste or expand consumption of resources. Many U.S. metropolitan water districts, for example, depend on increasing revenue from consumption, thus running counter to water conservation initiatives. Third, neither cities nor the private sector have integrated their traditional function of advancing commerce with the acceptance of more responsibility for solving large problems such as poverty and inequality.

Three strategies can break this cycle of regression or limited success. They each must acknowledge that no single institution, public or private, has the capability to solve the large-scale problems of cities.

First, constructing global scale public and private partnerships that can practice radical innovation. Such a strategy will be advanced by the participation of global companies whose products, business skills, and market scale can be adapted into public goods. Thus, the learning derived from Coca-Cola's partnership with the World Wildlife Fund in protecting major global watersheds can be extended into sustainable water resource management in urban areas. IBM's smarter systems and technologies that can "see" the system-level interactions across energy, food, telecommunications, and transportation can be applied to a new generation of urban asset management guided by intelligent, integrated, and more cost-effective data management rather than disconnected, incremental, and more costly and inefficient decisionmaking approaches. In short, the capabilities of multinational companies, in partnership with cities and nongovernmental organizations, can be repurposed to solve global scale urban problems both now and in the future.

Second, rethinking the governance of cities as a system of integrated networks whose interdependencies promote economic opportunity, security, and alignment with natural systems. Rather than governing on the basis primarily of function (e.g., public works, revenue collection) or territory, cities and their stakeholders can also collaborate through a system of shared responsibilities for managing natural resource and raw material consumption, utilizing infrastructure, and identifying market needs for business and social services that reflect market clearing rather than subsidized prices. This approach, which has worked successfully on community policing and crime reduction, can be extended to energy and water management and other social services.

Third, building new educational skills and capacities. Today, the majority of business schools teach the fundamentals of marketing and finance but not the economic value of protecting natural systems. Most engineering schools instruct their students on the latest techniques in the design and construction of fossil fuel–powered infrastructure but not the need for innovative raw materials derived from alternative energy.

Cities both consume the natural environment and regenerate them. Unfortunately, the margin of time for such regeneration has rapidly declined in comparison to previous eras of urban reform. If cities are to continue as the vital centers for human progress, their receptivity to innovation, their governance, and the scale of their collaborations need to be significantly reevaluated and redirected.

Terry F. Yosie is President and Chief Executive Officer of the World Environment Center.