

PROVISIONING CITIES — A NEW URBAN AGENDA

Roy Woodbridge

Last February, the federal government took a major step in the implementation of its New Deal for Cities and Communities when the prime minister announced that he would transfer \$5 billion from the gas tax to Canadian cities. Unfortunately, says Roy Woodbridge, there is no compelling vision underlying these transfers: Ottawa's new deal "risks providing cities with more money to continue doing the things that caused them to need more money in the first place." Cities' financial problems, he says, are the result of outdated planning precepts based on few people and abundant environmental resources. The financial and ecological implications of this pattern are real, even though they are not incorporated directly in city budgets but rather in costs imposed on citizens and the environment. Woodbridge makes the case for a new urban agenda where urban development would be based on four self-reinforcing strategies: increased population densities, mass transit systems, green buildings, and a policy of recycling everything.

En février dernier, Ottawa franchissait une étape clé vers l'application de son nouveau pacte pour les villes avec l'annonce du transfert aux municipalités de 5 milliards de dollars issus de la taxe sur l'essence. Roy Woodbridge déplore toutefois qu'aucune réelle vision n'encadre cette mesure, d'où le risque d'accorder aux villes plus d'argent pour continuer de faire ce qui a précisément vidé leurs coffres. Car les problèmes financiers des villes, juge-t-il, découlent de principes de planification désuets fondés sur la rareté des populations et l'abondance des ressources environnementales. Un schéma dont les répercussions écologiques et financières sont bien réelles, même si elles ne sont pas directement intégrées aux budgets municipaux mais plutôt dans ce qu'il en coûte aux citoyens et à l'environnement. L'auteur propose un nouveau programme d'urbanisme faisant reposer le développement urbain sur quatre stratégies complémentaires : densité accrue des populations, transports en commun, bâtiments écologiques et politique du tout-recyclage.



The New Deal proposed by the federal government for our cash-strapped cities consists of GST refunds and harmonized sales taxes that were approved in 2004; the allocation of a share of gas tax revenues proposed in the 2005 budget; and contributions to the Green Municipal Fund, the Canadian Strategic Municipal Fund, the Municipal Rural Infrastructure Fund and the Border Infrastructure Fund. It could soon make over \$3 billion available each year for investment in urban projects, and the total over 20 years could reach \$50 to \$60 billion. At the provincial level, the Ontario government has just announced it will invest over \$30 billion over five years to rehabilitate deteriorating infrastructure. Similar initiatives are being planned in other provinces.

Unfortunately, no compelling vision underlies the transfer of these funds. Nor do the programs attack the reasons for the underlying financial malaise plaguing civic administrations. Thus they run a great risk of simply pro-

viding cities with more money to continue doing the things that caused them to need more money in the first place.

Imagine what could be done over a 20-year period with a program of this magnitude if the monies were spent within the framework of a coherent vision for the redesign of our cities to address the challenges of the new millennium.

In the paragraphs that follow I will make the case for restructuring the federal program around a new vision of how we might wish to see our cities evolve. Present urban development is organized on the basis of planning precepts conceived in earlier eras of few people and abundant environmental resources. The vision I propose is based on the need to redesign urban areas for our new era of huge populations and scarce ecosystem goods and services.

Cities are human constructs. The only "natural" thing about them is that everything in them is made from

materials derived from nature, and everyone living in them is totally dependent on access to natural capital derived from other regions. Cities are also enormous generators of waste products that must be absorbed by natural systems. The incessant expansion of these urban demands is now grinding down our global ecosystems and threatening the capacity to meet future provisioning needs. In our urban age, provisioning cities is the overwhelming cause of global environmental degradation, and it is in cities that solutions must be found if we are to meet growing urban demands for natural capital.

The urban provisioning challenge is intimately linked to urban financial woes. The way our cities are organized influences the costs of running them and determines the scope of urban demand for ecological goods and services. We cannot solve one without addressing the other. To solve their financial problems, cities must reorganize themselves to reduce the demands they are making on global ecosystems.

And, we must do this quickly. Within 20 years our cities will have sunk into virtual bankruptcy, while the requirements of provisioning urban populations with essential ecological goods and services will have eroded our planet to the point where economic growth will be curtailed and much of the world will be forced into potentially violent competition for access to increasingly scarce natural capital.

For most of their 11,000-year history, cities consciously organized around emigration, trade, war and technological advance to access necessary flows of in-bound natural capital. From about 3,000 years ago, when the first attempts at implementing centralized urban sanitation systems began, cities have also been experimenting with ways to moderate the localized effects of their waste streams.

The ancient Greeks tried to scale their small cities for harmony with the provisioning capacities of their immediate hinterlands. The original idea of the “polis” as expounded by Aristotle was for cities of a scale that “could be taken in at a single view.” However, population growth and increased requirements for natural capital eventually altered the nature of these settlements. By the fourth century BC, Athens, for example, had grown to become a city of great public wealth but private squalor and Aristotle lamented the erosion of local agricultural lands and the loss of forest cover on surrounding hills. The city continued to grow through trade and about a hundred years later, in a debate that predated present discussions over globalization by 2,400 years, Pericles marvelled that “the fruits of the entire earth flow in upon us,” while Plato complained that traders “have filled the city with harbours and dockyards and walls and tributes instead of with righteousness and temperance.”

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Several centuries later, the Romans adopted the Greek ideal and planned their colonial towns for a maximum of 50,000 people. The results, however, were the same. Caesar had to ban horses and carts from entering the centre of Rome to cut the volume of dung and noise in the streets. At the same time, the historian, Cicero, was again railing against those tempted by “soaring hopes and dreams” of commercial profit and blaming the “lust for trafficking” for the downfall of Corinth and Carthage.

The hard reality is that it was not the pursuit of profit or trade that eroded the civic fabric of these early cities but the loss of local self-sufficiency.

After exceeding the capacity of nearer relationships with nature, cities had to reach out to more distant sources of natural capital to provision their growing populations.

In our modern, urban age, we continue to emulate this unflattering model of outreach. We rely, of course, on the international business networks of the global economy to meet the provisioning needs of cities in advanced economies and the wealthy enclaves of Third World cities. However, in earlier times ecological scarcity occurred on a local or regional basis. In sharp contrast, we now scour the entire earth to meet urban needs for in-bound flows of natural capital, and cumulative waste flows and pollution from the world’s cities and the dispersed processes through which they meet their provisioning needs are eroding global ecosystems.

To break this destructive pattern, cities must shift their focus from tapping ever-more distant sources of natural capital to making vastly better use

of the limited ecological goods and services available to them.

The specific shape of North American cities and the scale of urban provisioning requirements are largely determined by the dictates of bylaws and zoning regulations developed to meet urban needs and the sense of limitless natural resource availability that prevailed at the end of the First World War. As summarized by Jane Jacobs in *The Dark Age Ahead* (2004), these planning rules regard high ground coverage, high population densities and the mingling of commercial and work uses with residences as things to be avoided. In sum,

they favour decentralized development and urban sprawl.

The impact of these planning parameters is now carried to the extremes of economic and ecological expense by the continued fixation on the centralized provision of infrastructure services and planning for the extension and maintenance of this infrastructure around the use of the private automobile. Despite the fact that almost all cities are fighting traffic gridlock, they persist in delivering the full range of hard infrastructure services — water and sanitation, power lines, gas connections, communication cables, etc. — as an integrated package along with the extension and upgrading of road networks.

The confluence of these planning assumptions is causing the outpouring of cities into surrounding regions everywhere on Earth. Like ink blots spreading out from thousands of black wells, cities are obliterating local sources of natural capital and extending their urban provisioning tentacles into the distant edges of global ecological envelopes. The whole Atlantic seaboard of the United States from Maine to Florida, for example, is coalescing into an undifferentiated continuum of formless urban agglomeration. The same thing is occurring in Ontario's Golden Horseshoe. The population infill that has been developing for years between Rotterdam and Amsterdam is being replicated across Europe. In the coastal regions of Asia, a 1,500 km urban belt extending from Beijing to Tokyo via Pyongyang and Seoul, now connects 77 cities of over 200,000 inhabitants each, creating an urban corridor that is home to well over 100 million people.

Few citizens or politicians seem to comprehend the financial and ecological implications of this pattern of urban development. Many of these costs are not incorporated directly in city budgets but in costs imposed on individual citizens and the environment by bad urban design.

New suburbs, for example, seldom create the population densities required to justify mass transit systems. This forces continued reliance on the car, while committing cities to endless subsidies for public transit. Civic financial requirements are then inflated by high road and infrastructure construction and maintenance costs. As city tax rolls are based on property ownership, and the number of properties at any one time is fixed, the result of inefficient urban and infrastructure design is either excessive property taxes or constraints on the

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ability of cities to finance other social and common services.

These expensive and wasteful forms of urban development then flow back to impair the nature of our communities through the ghettoization of poverty and crime in the inner cores of Western cities and the vast, sprawling, poverty-laden peri-areas of Third World cities. They contribute to social stratification and the sharpening of economic divides between street people, at one end, and the wealthy, locked away in double-gated communities built around golf courses, at the other. They add serious financial bur-

dens to civic budgets to fight crime, maintain underutilized school systems and extend social services to the needy. They also limit the ability to change and to experiment with and use new technologies and urban development ideas.

The hidden costs are dramatically inflated by the wasteful and expensive use of natural capital by decentralized cities. To illustrate, environmentally aware civic administrations will take great credit for converting municipal fleets to the use of fuel-efficient technologies. However, they fail totally to address the way in which their urban planning decisions impose high energy costs and increased tax burdens on private citizens. Urban sprawl is synonymous with the waste of materials and energy in our buildings and public infrastructure, and the per capita costs of infrastructure are much higher than they need to be. For historical reasons, most cities are located adjacent to the world's best agricultural lands. As urban sprawl converts these lands to suburbs and road networks, agriculture is forced out into ever less productive areas where costs are increased by irrigation requirements and the need to use more energy-intensive farming and husbandry practices. All of these excessive environmental and social costs are being replicated around the world.

The utter folly of continuing down this path becomes clear when we look at the scale of rapidly growing urban provisioning needs.

To understand the formidable dimensions of this challenge, we need only look ahead two decades to 2025. By then, the global economy could be two or three times its present size. This growth must be provisioned from natural systems. We cannot alleviate global poverty without increasing the ability of the poor to consume natural capital. (Three billion people still live on less



CP Photo

Calgary, Alberta: a show case of urban sprawl. With its 900,000 inhabitants occupying an area the size of New York City, Calgary is a good example of what not to do in urban development, says Roy Woodbridge.

than \$2 per day, and they each consume about 1/20th the natural capital that we do!) We must also meet the provisioning needs of the additional 1.5 billion people that will have swollen our ranks by then. In 20 years, and starting from an already impaired base, cumulative provisioning requirements imply the need, on an annual basis, for the ecological equivalent of three or four earths.

This prospect is particularly worrisome in light of the challenges facing Third World cities. Because of the

emphasis on the centralized provision of infrastructure, participation in the advanced enclaves of these cities is dependent on the slow extension of these services to the poor, who otherwise lack access to clean water, cheap energy, health care, education and rudimentary communication services, and whose wastes fester in their backyards. By 2025, urban migrations, combined with natural population growth, could add another 2.5 to 3 billion people to already bloated Third World cities. This

makes the slow pace at which infrastructure services trickle down to the poor even more problematic.

As ecosystems falter, competition for natural capital will become intense. The erosion of natural systems is already shrinking the ability of many societies to access essential ecological goods and services. It could soon starve the processes of economic growth, cause the global economy to implode and halt efforts to reduce global poverty.

To get out of this mess we must accept the provisioning challenge as the most fundamental issue facing urban regions. We must break out of the constraints of outmoded planning frameworks, inappropriate zoning rules and fatally flawed patterns of urban development. We must set and

investment in municipal infrastructure, including roads. The potential reduction in urban provisioning requirements from this policy change are indicated by the fact that high-density housing is about 2.5 times less materials and energy intensive per inhabitant than low-density housing. If zoning rules and building

The second planning challenge, the creation of viable mass transit systems, can only be achieved by breaking the stranglehold the car has on urban growth. Attempts to do this have so far proven unproductive, and few cities have tapped the economic benefits of reduced energy and materials consumption and infrastructure costs that would result from dramatic reductions in automobile use.

If the goal is to reduce urban provisioning requirements, the starting point for the redesign of cities must be to increase population densities. In this regard, the motto for urban development should be "Build up, not out."

achieve aggressive targets for reducing the totality of stress placed on natural systems by inappropriate forms of urban organization and growth.

If we take three to four earths as the measure of the provisioning challenge, then the task for cities is to reduce the demands on global ecosystems that they are responsible for by similar orders of magnitude. This means that in just 20 years we must reorganize our cities in ways that will reduce the totality of per capita stress they impose on natural systems to one-third of present levels of demand.

At first glance, this might seem like a tall order. However, huge reductions in provisioning requirements could be surprisingly easy to achieve by building a new urban agenda around just four self-reinforcing strategic initiatives: increased population densities; a focus on mass transit systems to break the tyranny of planning around the car; green buildings; and a policy of recycling everything.

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Potential gains from this approach begin with the vast scope for reducing materials use by forcing investment from low- to high-density developments. They continue with the benefits of greater energy efficiency and significant reductions in the per capita cost of

codes then force the construction of green buildings, energy and water use to operate the buildings can be reduced by 30 to 50 percent. The benefits are then augmented by significant reductions in the per capita cost of investment in the maintenance of municipal infrastructure, including roads.

Intelligent urban design around dense population clusters can lead to eminently liveable communities. In this respect, the False Creek area of Vancouver offers an encouraging insight into the possibilities. Developments around the creek have one of the highest concentrations of people in Canada, yet the area has abundant green spaces, shopping amenities, community facilities and public transportation links, all within walking distance from where people live. This is in contrast with Calgary, whose 900,000 citizens occupy an urban area the size of New York City, where mass transit is simply not viable, and where residents seldom leave their homes without getting into their cars.

To reorganize our cities into liveable communities with higher population densities, existing zoning regulations have to be overhauled. As a first rule of thumb, new density targets should be set to meet at least the minimum concentrations of people that will support the profitable operation of mass transit systems. No further outward expansion of cities should be allowed until existing areas of development meet these minimum targets through in-fill projects.

To some extent this failure to accept civic responsibility will be addressed by increasing population densities, which will create the potential for establishing financially viable, user-friendly, public transportation systems. Mass transit stops can become nodes around which to create more densely populated urban communities, if this goal is integrated into an urban planning framework that envisions the creation of such communities.

To firmly entrench these approaches to urban development, governments need to place an immediate freeze on all new, major road developments. Cities must then set binding, 20-year targets for the reduction of automobile use in line with the overall targets for reducing urban natural capital consumption to between one-third and one-quarter of present levels. All municipal funding support for new transportation networks should then be redirected to the creation of public transit to help meet these targets.

Cities, like private companies, must become closed-loop natural capital processing machines. The goal must be nothing less than the creation of circular systems for the use and re-use of urban sources of natural capital, until nothing is left of the original flow that can be re-used or that will harm the environment if discarded.

These concepts are now incorporated in a handful of city initiatives to establish "eco-industrial parks." These operate like any industrial park, with the important difference that efforts are made to attract industries where

the waste products from one are essential material inputs into others. Ramping this concept up to become the basis for a new form of “eco-urban management” would involve the design and organization of urban waste flows on a citywide basis by taking all final industrial and municipal wastes and channelling them as inputs into other local or more distant production processes.

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To illustrate how this might work, currently available water purification and re-circulating systems could allow the on-site use and re-use of water until nothing escapes back into the environment except evaporation and organic compost. Similar approaches to the decentralized treatment of other municipal and industrial wastes would allow the separation of recyclable materials, pollutants and toxic chemicals at the point of origin where they are easily identified, rather than channelling them to inseparable slurries and poison-laden dumpsters that present unmanageable recovery challenges at centralized treatment plants.

Obviously cities will have to work closely with local industry in order to shape this new infrastructure of urban natural capital recycling. Cities will also have roles to play in finding markets for captured waste products and introducing related market mediation and incentive mechanisms. If local markets cannot be found or created for recaptured waste, then regional or broader intercity markets must be sought. Failing this, the use of noxious substances must be banned from use within

municipal areas. As these programs are implemented, they will lead to the creation of entirely new industries based on the “mining” and re-use of urban natural capital.

The starting point for determining the nature of this eco-urban management challenge is the conduct of citywide materials flow analyses to identify the nature of in-bound streams of natural capital going into

production and consumption processes as well as outbound waste streams. The information derived from these analyses can help identify the technology development needs of efficient waste recovery systems. In turn, these might be made the focus of a national technology development program.

The synergy between these policy thrusts can obviously be enhanced if planners consciously build on it. The planning of mass tran-

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sit can benefit if this is integrated with plans for creating more densely populated communities. The ambition of recycling everything will be aided by greater population densities, as this will help concentrate waste streams for recapture. These actions, in turn, will free municipal planners and developers from the constraints of designing projects around road networks and allow experimentation with new infrastructure and waste recapture technologies. If these policy initiatives are

pursued in lock-step fashion, progress on all fronts will be accelerated and the pressures on both city finances and global resources will be substantially reduced.

In 20 years the redirection of “New Deal” funding to support the adoption and implementation of these four planning parameters could go a long way towards establishing financially viable cities and securing the ability to provision continued economic growth and social advance. The program could be even more effective if a portion of the funding were set aside for a specific urban technology development fund to help create the new technologies of decentralized waste collection and urban recycling systems.

Finally, it must be stressed that while this new urban agenda will create more successful Canadian cities, it will be a short-lived triumph if this effort is not replicated around the world. If all cities do not reorganize to reduce the demands they make on global ecosystems, then many will fail miserably and the future of all of the world’s people will remain at risk. Thus national actions should be supplemented

by an international effort to develop the technologies, planning tools, management systems and political accountability required to provision the world’s cities.

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