

15. Global Good Practices in Sustainable Urban Region Development

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A search on the Internet on the topic of good practice in sustainable urban development will yield more than 9 million hits. Literally, hundreds of examples of good practices are to be found, illustrating ways that local governments, businesses, and communities have gone about improving development practices and achieved more sustainable development outcomes. There are also many databases of good practice in sustainable urban and regional development. These include the United Nations (UN)-HABITAT Database of Best Practice,¹ Better e-Europe practices,² MOST³, EPA Gateway to International Best Practices & Innovations⁴, and many others. However, many examples of best practice included in these databases can no longer be considered best practice because practices are constantly changing.

In putting together the ideas for this book, the Asian Development Bank and Cities Alliance felt it would be useful to provide small case studies (vignettes) of cities considered global leaders in developing and applying good practice in sustainable urban region development. The intent was to provide a benchmark for approaches to good practices, which cities in Asian countries could aim to achieve, recognizing the need to consider cultural,

governance, legal, and level of development factors in applying these to specific countries.

Many cities around the world are applying global good practices to achieve more sustainable urban region development. Selecting five case studies was very difficult. It was decided to select case studies of cities from each continent that demonstrate a high level of commitment and performance in achieving sustainable urban region development.

The cities selected for the case studies are Curitiba, Vancouver, Brisbane, Singapore, and Manchester. Curitiba, Brazil was selected as it is internationally acknowledged as a leader in the application of sustainable development good practice. Vancouver, Canada is internationally recognized for its work in relation to applying the concept of the ecological footprint to urban development. Brisbane, Australia has been internationally recognized as one of the world's most livable cities and for its innovation in public sector management. Singapore has been an international leader in sustainable urban design, housing development, logistics, and recycling. Manchester, England was selected because it was the first city in the world to experience rapid urbanization resulting from industrialization. The city has gone through many transformations in response to environmental, economic, and social threats, and has emerged to become one of the most sustainable cities in Europe.

The case studies for each city are presented as vignettes. They are designed to demonstrate different applications of good practice in sustainable urban region development. These range from management and planning of transportation systems, urban governance and management, resource leveraging, and environmental improvements to economic development. The case studies present only a few examples of applications of good practices. More examples could be found by perusing the range of publications or visiting websites for the respective cities.

CURITIBA, BRAZIL: AN UNLIKELY BUT STRIKING SUCCESS OF URBAN REVITALIZATION

Hugh Schwartz

Curitiba, the capital of the then eminently agricultural Brazilian State of Paraná, must not have seemed a likely place for major urban renewal in the mid-20th century, with farmlands and nearly 2,000 miles of rivers and streams within city limits. The laid-back provincial capital was known primarily for small lumber mills, yerba mate (green tea) processing plants, and the first public university in the country. Coffee was relatively new to the state, but by

1960, two thirds of Brazil's production and a third of the world's output came from Paraná. The coffee boom brought increased prosperity to Curitiba, but also more congestion and pollution. The population of the 300-year-old city exploded, increasing 7% annually in the 1950s, with the 1960s rate nearly as high. The city's infrastructure, modest to begin with, was severely strained. Municipal leaders voiced concern and talk turned to considerations of urban renewal. At that point, several years of frosts led to a sharp reduction in the output of labor-intensive coffee and a migration of nearly a third of the state's rural population, many to Curitiba. The city's population continued to increase at nearly 6% a year, and the small communities on the outskirts of the city grew even more rapidly. Although Brazil was experiencing its most rapid rate of economic growth, Paraná was in crisis and the state's 1960s programs of road and electric power expansion and lending for agriculture and industry were not having the desired effect.

History of Urban Renewal

The urban renewal of Curitiba began with the *Plano Diretor* (Master Plan), approved in 1966, and the establishment of the Curitiba Research and Planning Institute (IPPUC). The Master Plan provided only a set of guidelines but, unlike similar efforts in many cities, the local counterpart involved in preparing those guidelines continued to be active in expounding its visions of urban restructuring, in elaborating them at IPPUC, and in helping to implement them. Involving the planners in the implementation of urban renewal, in particular, through the establishment of IPPUC and oversight entities, was critical to the sustainability of urban planning. Continuity was also a key to success.

Full-fledged implementation began in 1971, with the naming of architect-urban planner, former IPPUC Director Jaime Lerner, to be mayor, and continued with his involvement or that of his close colleagues through 1982 and again in 1989–2005. In the generation since urban renewal was initiated, per capita income in the city has risen from just below the national average to nearly 70% above it, even while the city received an extraordinary influx of migrants from other regions of the country. If one takes into account the entire Curitiba Metropolitan Region, the increase in per capita income would be smaller.

The sustainability of what was achieved also rested on other factors, most notably the emphasis given to providing a solid economic base for the restructuring. The latter, sometimes overlooked in urban renewal projects, was aided by the promotion of what was being done, which stressed the quality of life as well as what was offered to prospective investors in financial terms. The result has been an extraordinary private response to public initiatives, numerous factories, and billions of dollars of investment from outside

the city, primarily from abroad. Also of importance in assuring sustainability was the attention to environmental matters and the achievement of good governance. The latter was important in part to offset the uneven nature of public participation in the Curitiba experience.

Townhall-type open meetings were held to discuss the proposed master plan during the period of military dictatorship, although transparency regarding urban renewal deliberations subsequent to this was low. Input from the neighborhoods was not much considered until the late 1990s. While this may have contributed to the eventually declining margins of public support for the Lerner Group, this has been abated not only by recognition of the socioeconomic gains for most in the city and the many social action programs aimed at target groups who did not benefit significantly from increased prosperity, but also by the lackluster performance of the highly touted neighborhood participatory urban restructuring of Porto Alegre, Brazil. However, several of the more serious criticisms of Curitiba's urban renewal were eventually taken into account. From the outset, attention was paid to the various interest groups, informally as well as by their membership in municipal commissions, which led to modification of some of the planners' proposals. This has been criticized as corporatism, but the continuing support of the interest groups was important to get the urban restructuring underway.

Renewal Innovations

Curitiba's urban renewal has been characterized by a number of innovations. The most recognized are in public transport, where the city has been a model for medium-sized cities. The changes have involved traffic flows, the mode of transport, and the design of vehicles. Financial and ecological considerations led to a decision against a subway or a light rail system in favor of bus transportation, with public infrastructure (including several routes with dedicated, exclusive bus lanes) and public regulations. The actual transportation operations are, however, in the hands of private companies. Dedicated lanes, combined with passenger loading platforms and vehicle design modifications have greatly reduced travel time and the capital expenditures required for equipment.

Two dozen terminals have been located around the city, sharply reducing the proportion of those going from one extremity of the city to another, and through the downtown area. This has alleviated congestion and contributed to the preservation of the historic district. Although per capita ownership of automobiles is among the highest of Brazilian cities, nearly 75% of daily commuters use public transport. Variations of Curitiba's transport system have been adopted by cities around the world.

A second group of innovations has been with respect to the environment. The former approach to flood control was expensive and did not prevent periodic inundations. This was replaced by one that has virtually eliminated the problem and, at the same time, has vastly expanded recreational space, such that it now greatly exceeds UN per capita recommendations. Several hundred thousand trees have been planted and garbage collection programs instituted that contribute to the separation of different types of garbage and obtain refuse collected from difficult-to-reach areas; however, neither of these is as widespread as claimed. Abandoned quarries, which were dangerous as well as being eyesores, have been transformed into magnificent public sites. Efforts have also been made to protect river basins in the greater metropolitan region, although the latter achievements have not been uniform.

One of the very first major innovations was the revitalization of the historic downtown area at a time when such districts in most Brazilian cities were in rapid decline. The five most important blocks of Curitiba's commercial area were transformed—dramatically and controversially—into an attractive pedestrian mall, extended since then, and less controversially, to 20 blocks. This was accompanied by the restoration of many historic buildings, the rehabilitation of former industrial and commercial sites for cultural purposes, and the establishment of a major new shopping center, as well as the initiation of an increased number of fairs and special events, making for a unique urban atmosphere and helping maintain much of the focus of *Curitibaños* on the city center.

An important aspect of Curitiba's success has rested in the city's accomplishments in infrastructure and the provision of services even as the population in the city tripled. This has been both in regard to the aspects already mentioned, and with respect to access to electricity, clean water, sewerage, education, and public health facilities. However, the key to sustainability may well have been the attention given to increasing the economic base, as noted above. From the outset, architects and urban planners sought a separate industrial district, though to an extent for esthetic reasons. As the migration due to the coffee crisis grew, it was decided that an industrial district larger, greener, and with more infrastructure than perhaps any in the world be established; this at a time when many Latin American industrial parks were proving to be white elephants. The Curitiba Industrial City was located within the city limits and, despite the tax incentives, provided revenue that helped fund what was accomplished in the city and alleviated what might otherwise have become a disaster in terms of unemployment.

The success of Curitiba—though sometimes exaggerated—has given the city and the State of Paraná important leverage with international aid agencies. Loans, even for new types of projects, have been readily available.

In the words of one prominent foreign development executive: “In Paraná, they get things done.” One aspect that has not progressed as rapidly as might be desired in this metropolitan area of now nearly 3 million people is the integration of urban planning for the suburban communities with that of the city itself—although this has improved since 1995.

GREATER VANCOUVER REGIONAL DISTRICT SUSTAINABLE REGION INITIATIVE: TURNING IDEAS INTO ACTION

Johnny Carline and Lynda King

One major challenge facing all governments today is how to achieve sustainable regional development—development that meets both the vocal present day and unspoken future generation’s desire for economic prosperity, community well-being, and environmental health.

This case study describes the Greater Vancouver Regional District (GVRD) Sustainable Region Initiative (SRI). The SRI provides not only a framework for planning for and reporting on sustainable regional development but also for turning ideas into action—for identifying and implementing “best sustainable practices.” The SRI contributes to improved urban management, effective and efficient infrastructure and services, and social and environmental sustainability in the Greater Vancouver region.

Greater Vancouver and the GVRD

The Greater Vancouver region is the third largest urban region in Canada, with a population of 2.1 million, and Canada’s fastest-growing metropolitan region. It stretches over approximately 4,500 square kilometers (km²) in the southwestern part of the country. The region consistently ranks as one of the world’s best places to live. Contributing to the quality of life in Greater Vancouver is the stunning natural setting combined with extensive public green space and the overall high quality of air and water.

The Greater Vancouver region is the last non-amalgamated large urban region in Canada. The GVRD was formed in 1967 to provide coordination and planning function for the many municipalities that make up the Greater Vancouver region. Today, the GVRD is a federation of 22 local jurisdictions. In 2005, the GVRD had a budget of \$366.7 million.

The GVRD governance model focuses on cooperation among municipalities to achieve a high level of service delivery. The GVRD’s Board of Directors is composed of elected representatives—mayors and councilors—from the member municipalities, on a representation by population basis. Because

the GVRD serves as a collective voice and a decision-making body on a variety of issues, the system is structured so that each member municipality has a voice in how the GVRD is run.

In operation, this nonhierarchical partnership works through municipalities delivering services to the taxpayer while the regional district provides services mostly to municipalities. The GVRD's responsibilities include:

- essential utility services for participating municipalities that are most economical and effective to provide on a regional basis: potable water, sewage collection and treatment, and solid waste disposal and recycling
- regional parks and greenways
- affordable rental housing
- labor relations services for participating municipalities
- strategic growth management planning
- air quality management and pollution control
- strategic and financial oversight of Greater Vancouver Transportation Authority (TransLink), and
- electoral area administration, Sasamat Volunteer Fire Department, and management of the 9-1-1 emergency phone system.

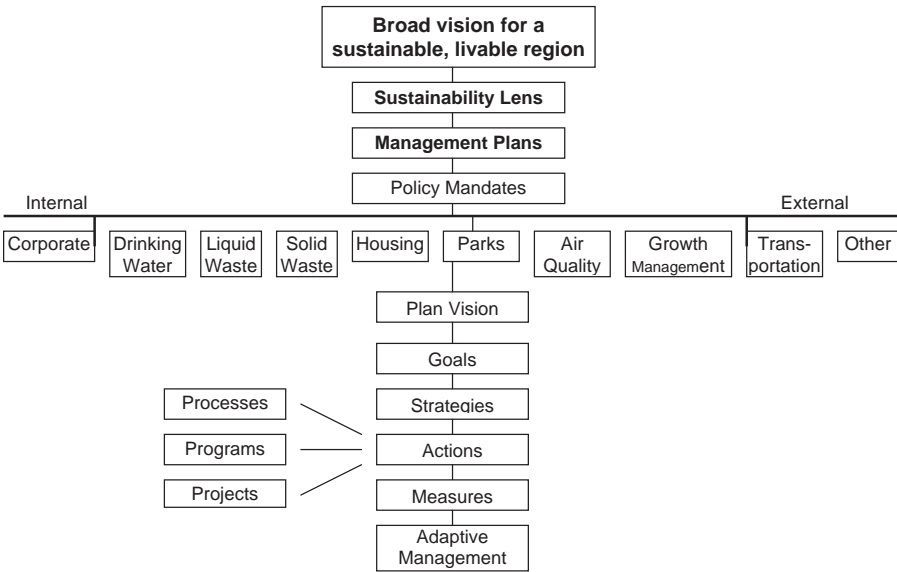
One of the major challenges facing the GVRD is how to ensure sustainable regional development while providing efficient and affordable regional services and a coordinating and planning function for a large number of local municipalities. Like others around the world, the GVRD is seeking ways to ensure that regional development plans and actions support greater economic prosperity, community well-being, and environmental health.

Sustainable Region Initiative

Launched in 2001, the SRI is a vision for the region and the organization, a management philosophy, and an overarching organizational framework. The SRI is used to integrate all GVRD corporate activities, regionally mandated plans, and partnership initiatives and align them with the principles of sustainability, recognizing and reflecting the integrated nature of urban systems.

The conceptualization and implementation of the SRI has been a dynamic process, beginning with corporate implementation, adjusting policies and business practices, redefining business cases to incorporate sustainability, engaging staff, and reporting on progress. Success in this area supported the political buy-in necessary to align these plans with sustainability principles and to begin to expand the SRI to the broader regional community.

Figure 15.1: The SRI Framework



Planning and Reporting

Under the SRI, the GVRD is revising all management plans as they come up for renewal, including plans on growth management, air quality, liquid waste, solid waste and recycling, drinking water, and regional parks.

The SRI Framework for Regional Mandates is premised on the concept that the region comprises a system of systems that are in part represented by GVRD mandates and in part represented by other areas of interest. As such, the SRI Framework for Regional Mandates creates a set of integrated management plans that reflect the integrated systems of a sustainable urban region.

For GVRD mandates, the SRI Framework sets out a template for developing management plans according to the principles of sustainability. The Framework establishes links between the regional vision, sustainability principles, and the execution of individual plans. It also establishes links across regionally mandated plans and links to other initiatives beyond regional mandates that are executed by other agencies.

Each management plan identifies actions that contribute to a sustainable region through social, economic, and environmental considerations; links to the goals of other GVRD management plans; performance measures to track implementation progress; and adaptive management considerations on how

the plan might respond to new and emerging issues so as to build in resiliency and opportunities for continuous improvement.

The GVRD is also committed to reporting on how its plans and actions contribute to the sustainable development of the region. In 2003, the GVRD launched its first sustainability report—a report card intended to stimulate open dialog about progress toward sustainability. The performance categories reflect the GVRD’s main responsibilities, including its regional mandates and services. The report is guided by the Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI) as well as the Sector Supplement for Public Agencies. The report and a GVRD-GRI comparative index are available online.

Turning Ideas into Action

The SRI provides not only a framework for planning for and reporting on sustainable regional development but also for turning ideas into action—for identifying and implementing best sustainable practices.

Four examples of the GVRD’s best sustainable practices are: (i) integrated greenways and utility corridors; (ii) Surrey transfer station; (iii) sanitary sewer overflow facility; and (iv) conservation at wastewater treatment plants.

Integrated Greenways and Utility Corridors

Integrating greenways and utility corridors is an innovative approach to sustainability incorporating recreation, habitat protection, public transportation, and utility functions.

A new recreational greenway was recently created in two Greater Vancouver municipalities by projects that combined installation of sewer pipes with plans to connect natural open spaces for people and animals. The project also involved resurfacing utility access roads for cyclists and walkers and replacing culverts to allow free movement of fish.

Successful integrated utility and greenway planning required collaboration between the GVRD and the community. The cooperative approach saved money and other resources.

Sewer alignment was evaluated based on social, environmental, technical, and financial factors. Meetings held with interested groups included the local municipality, community committees, and the federal government department responsible for fisheries. Open houses were held in local municipalities to outline the proposal before public gatherings.

The partnership approach resulted in an off-channel fish habitat being developed with design by the federal government responsible for fisheries,

construction on land donated by the local municipality, channel design by the GVRD, and trees bought and planted by a local community committee.

Integrated planning saved GVRD money, protected environmentally sensitive areas through carefully developed trails, and helped support environmental stewardship by encouraging community organizations, such as schools, to adopt streams near the greenway.

Surrey Transfer Station

On 28 April 2004, the GVRD's Surrey transfer station (STS) located in Surrey, BC, opened to the public on schedule and under budget. The facility was designed and constructed employing the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System for guidance and received Silver certification in 2005. The LEED™ Rating System is a set of standards developed by the United States Green Building Council and evaluates building performance in six categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design processes.

Construction of a waste management facility was a key component of the project. As the agency responsible for managing the region's waste, the GVRD both advocates and facilitates waste reduction through their regional recycling programs, of which the STS is a key component. These programs accommodate the diversion of construction debris from the waste stream. Over 80% of the STS project's potential waste was recycled and a further 15% was recovered as marketable fuel. In total, over 95% of the construction debris from the STS was diverted from disposal. The native trees that could be salvaged from the site were replanted, and those that could not be replanted were chipped on site for use as mulch.

The 5,600 square meter facility was designed to serve 2,021 waste flow projections with minimal impact on its neighbors and was constructed on a remediated site in an industrial area of Surrey. Design input was solicited early on from a committee that represented community associations, property and business owners, and the host municipality. This committee met regularly throughout the design and construction phases and continues to meet to monitor the ongoing operations and maintenance of the facility.

Sanitary Sewer Overflow Facility

To manage sanitary sewer overflows caused by excessive infiltration and inflow of storm water into sewers during major storm events, the GVRD

built an innovative sanitary sewer overflow storage facility, among the first of its kind in North America.

The system operates automatically to divert sanitary sewer overflows into the storage facility during major storms, and to return stored flows back to the pump station after the storm. The energy efficient design allows for over 60% of the tank to be drained by gravity. The innovative vacuum flush system uses retained wastewater for flushing, and has a circular tank design that requires less concrete than the standard rectangular tank with tipping bucket. This innovative system eliminates the use of potable water to flush the tank.

Sustainable design features also include the use of sustainable materials, such as a high volume recycled fly ash concrete mix, natural landscaping to reduce surface runoff and reuse of existing soils, and extensive consultation with the surrounding farming community and the local municipality, incorporating their issues and concerns into the design.

Conservation at Wastewater Treatment Plants

By working together, GVRD staff at the Annacis and Lulu wastewater treatment plants developed an innovative, award-winning plan to simultaneously save money and protect the environment. The initiative won the 2002 Federation of Canadian Municipalities Sustainable Community Award for excellence in municipal service delivery.

Faced with high natural gas bills for the plant, operations and maintenance staff came up with a way to reduce natural gas consumption and cut the flaring of digester gas produced in the wastewater treatment process. While some digester gas was already being recycled within the plant to fuel boilers and engines that produce electricity, staff thought more could be done.

Utilizing a computerized data acquisition and control system, new computer logic was developed and initiated to optimize and balance gas feeds to the plant's hot water boilers and cogeneration units. The changes resulted in \$60,000 savings during the cold winter months, and a big cut in the flaring of greenhouse gases. Additional savings of \$130,000 are expected.

Other conservation methods are being worked on to further reduce digester gas flaring and cut natural gas consumption. Measures include optimizing generator heat recovery to use more of the waste heat.

Challenged to find better, more sustainable practices in their day-to-day work, staff at GVRD wastewater treatment plants found ways to reduce potable water consumption at the plants by over 50% in less than 2 years by substituting groundwater where appropriate, and installing water-efficient fixtures and other aids to save enough drinking water to supply the daily needs

of 8,000 people. The Reclamation Pilot Plant under construction will further reduce the wastewater treatment plants' consumption of potable water by using reclaimed effluent instead of municipal water for various applications.

Conclusion

The SRI provides not only a framework for planning and reporting on sustainable regional development but also for turning ideas into action—for identifying and implementing best sustainable practices. The SRI is fundamentally an innovative change management strategy for both the organization and the region. Working with government, industry and business, and nongovernment organizations (NGOs) and community groups, the GVRD is using the SRI to improve urban management in Greater Vancouver, deliver effective and efficient regional infrastructure and services in a sustainable manner, and build a broad partnership committed to ensuring that Greater Vancouver is one of the most sustainable regions in the world as well as one of the most livable.

INNOVATION: KEY TO SUSTAINABLE URBAN DEVELOPMENT IN SINGAPORE

Belinda Yuen

Singapore is a small island economy at the southern end of the Malay Peninsula, which is heavily dependent on the import and export of goods and services to support its development. Since its independence in 1965, Singapore has worked hard to make the most efficient use of the region's limited natural resources and to capitalize on its strategic location as a world transport hub, and knowledge and financial center. The planning, design, and management of the urban environments are much admired by other Asian nations. Singapore has been a leader in the development of improved housing, environmental management, transportation, and innovation. The following outlines three good practice examples of approaches to sustainable urban development that have relevance to other Asian cities.

From Slums to Quality Living

Affordable housing provision for the growing urban population remains a challenge to many cities. Among Asian cities, Singapore is often held up as a success story in affordable housing delivery (Castells et al. 1990; Doling

1999). Singapore's shelter provision since the 1960s has been nothing short of phenomenal. Nearly all (99%) squatter settlements have been cleared. Most (84%) of Singapore's 3.2 million residents are provided with security of tenure, including home ownership (92%) in state-provided housing. More than 850,000 public housing units in 23 new towns have been constructed, and the worst of the housing shortages have been resolved. The statistics bear witness to the realization of access to housing.

A central focus of Singapore's public housing program is to provide good affordable housing for all who lack it, in particular, poor families. This has encouraged the formulation of policies aimed at transparent housing allocation, reducing housing cost, and easing access to owner occupancy in public housing for lower-income residents (Yuen 2005). Mortgage finance assistance, including the innovative use of homebuyers' central provident fund (CPF) savings has increased the ability of householders to accelerate their purchase of housing. CPF savings are essentially accumulated funds from the worker's pay-as-you-go social security scheme to which both employer and employee make mandatory contributions of a certain percentage of the employee's monthly contractual wage (Low and Aw 1997). At the heart of these policies is an inclusive housing delivery system that recognizes the needs of varying income earners and family sizes.

At the outset, the Government has participated in and taken a major and responsible role in organizing the conditions for public housing development and consumption. It set up a national housing authority, the Housing and Development Board (HDB), in 1960 and vested it with wide legal, land, and financial powers to implement the public housing program. While this may not be the only institutional framework for housing delivery, Singapore, in centralizing all public housing functions under a single authority, has circumvented the problems of bureaucratic fragmentation often associated with multi-agency implementation. Through this program, poor quality, overcrowded housing and temporary self-help housing in unimproved squatter settlements have been progressively cleared and replaced by high-rise accommodation and improved services in public housing estates and new towns. With an emphasis on comprehensive service development, the new towns enhance the quality of life. The thrust is not just on providing dwelling units but also developing a good housing environment and community in the new towns (Teo and Phillips 1989; Yuen et al. forthcoming).

Moving with Speed

Over the past 4 decades, Singapore has moved from a practice of little or no systematic transport planning to problem-driven transport planning to

vision-driven transport planning (Chin 1998). Since the 1990s, the vision has been to develop Singapore into a tropical city of excellence with world-class infrastructure and facilities (Urban Redevelopment Authority 1991). In transport terms, the objective has been to achieve an effective land transport system that is integrated, efficient, cost-effective, and at the same time meets the needs of the population, economy, and environment (Land Transport Authority 1996). To this end, the city has implemented a multipronged approach, comprising:

- integration of land use and transport planning, including regional centers and mixed-use development to minimize the need to travel
- expansion of the road network and maximization of road capacity through intelligent transport systems to increase transport network capacity
- demand management of road usage through restraint measures on vehicle ownership and usage to alleviate traffic congestion, and
- provision of quality public transport choices, including the development of mass rapid transit, light rail and integrated, seamless public transport travel to offer alternatives to the private car.

Singapore has introduced various innovations toward solving urban mobility problems in the market economy, for example, the car quota system (1990, certificate of entitlement and bidding system for car purchase), area licensing scheme (1975, which allows holders to pay to enter restricted zones in the city), and electronic road pricing (1998, electronic system of road usage charge based on pay-as-you-use principle). In the case of the car quota scheme, the primary idea is, as Thomson (1978, p. 292) explains, that the Government decides on the maximum number of cars to be owned on the island and issues no more than that number of licenses while the market determines the cost of owning the car. Registration fees, taxes, and fiscal disincentives have increased the cost of owning and operating a private car in Singapore to among the highest in the world. Basically, the Singapore prescription is to make people pay for the convenience of their cars, which consume and emit greater energy per person than other transport modes. Given the success in keeping traffic moving in Singapore (Doli 1993; *The Straits Times*, 26 November 2002), the Singapore experience shows the importance of an integrated transport policy approach to solving the problem of urban traffic congestion.

Bringing Nature into Urban Singapore

The rapid growth of cities and the increasing concentration of people in urban areas have accentuated the need to make the city a pleasant place in which to

live and work and to visit. As early as 1967, under a postindependence policy of balanced economic and urban growth, Singapore set in motion a greening program to transform Singapore into a garden city—a city with nature in mind (Urban Redevelopment Authority 1991). The aim is to make rapidly urbanizing Singapore a better place to live.

A surfeit of urban problems (rapid population growth, housing shortage, unemployment, and inadequate urban infrastructure) led to extensive clearance and loss of the country's natural vegetation. During 1967–1982, Singapore's built-up area expanded by 80% with substantial increases in land allocated to industry, transport, public utilities and telecommunications, housing, and commerce. This stirred up the sensibilities for an urban greening program that eventually saw the careful introduction of various forms of greenery into the city-state: green buffers between new towns; parks and gardens; park connectors; roadside trees and shrubs; creepers and climbers on lamp posts, walls, overhead pedestrian bridges and other concrete surfaces; and rooftop gardens (Yuen 1996; Oi 1998). Beyond the creation of new parks, there is an increasing emphasis on the preservation of existing natural areas, such as hills, wooded areas, riverbanks, mangrove swamps, and coral reefs. The groundswell opinion is that these areas would yield environmentally pleasant, identifiable, and empathetic places to strengthen a local sense of belonging (Yuen 2005).

As a declared objective of the Government, Singapore's garden city development is assiduously pursued as a state project and accorded institutional, financial, and legislative support. It is embodied in the national policy of keeping Singapore “clean and green” and every effort is made to engage community participation in the beautification. An important process in the garden city implementation is the coordinating framework of the country's planning system of development plans and development control. Under this framework, provision for greenery is secured and codified into planning standards—such as for communal open space provision in private condominium development, buffer and roadside planting, neighborhood parks, and open space provision in residential areas, for implementation at the start of development planning. Three main strategies have been proposed to enhance greenery in the urban environment:

- having more parks and gardens
- carefully tending the natural foliage, and
- bringing the natural environment closer to the urban areas.

The approach is to provide “seamless greenery” through a network of park connectors and, most recently, “vertical greenery” on rooftops of tall

buildings (Yuen and Wong 2005). By adopting an integrated approach to the environment and development, Singapore's long-range development plan, the Concept Plan, has demonstrated that the environment need not suffer because of strong economic growth and urbanization. The task of creating a garden city is framed in the larger and more holistic perspective of developing Singapore into a dynamic, distinctive, and delightful global city (Motha and Yuen 1998). This has provided a reference point for individual and national participation in greening.

At the microlevel of implementation, building stakeholding and continuous maintenance are important aspects of the greening process, especially in sustaining and giving meaning to development. The challenge is not only to understand and respond to the changing patterns of urban living but also to continually encourage community involvement and support of the greening effort. In this regard, the Adopt-the-Park community program and the installation of fruit trees in public housing parks and gardens are some schemes that encourage schools, residents, and other community groups and organizations to feel a greater sense of ownership and to participate in the garden city initiative. Even though the plan to transform Singapore into a garden city is largely government-led, several NGOs have increasingly argued for greater nature conservation to preserve the country's biodiversity.

Their voices have been heard through the *Singapore Green Plan: Towards a Model Green City*, by the Ministry of Environment in 1992, and presented to the 1992 Earth Summit in Rio de Janeiro. This plan reviews all areas of environmental concern and charts the policy directions and key strategies for preserving, protecting, and enhancing Singapore's environment, including a proposal to set aside 5% of the country's land—forests, swamps, marine environments, and other areas of ecological merit—for nature conservation. The Singapore Green Plan, recently updated for 2012, shows that cities do not need to accept concrete jungles and unsustainable urban growth as inevitable. Other options are possible with forward planning.

BRISBANE: SUSTAINABILITY THROUGH IMPROVED CITY MANAGEMENT

John Orange, Peter Cumming, and Brian Roberts

Brisbane, located in the southeast of the State of Queensland, is unique in Australia because it has a single metropolitan government covering the entire urban area of the city. In all other Australian states, the capital cities, such as Sydney and Melbourne, are divided into multiple, smaller local

government areas. This unique state came about through a 1924 Act of State Parliament that aggregated 20 small local governments into one metropolitan government. Brisbane City covers an area of 1,220 km². It is the largest local government in Australia with a population of 900,000 residents. The Brisbane City Council employs 6,200 people, has a 2005 budget of \$1.1 billion, and manages assets worth around \$9.3 billion.

For many years, Brisbane lord mayors and councilors have recognized the importance of fostering and developing closer links with Asia and Pacific neighbors as a means of developing trade and investment in the city. The city has had a succession of mayors over 20 years who have provided strong vision and leadership, and who understood the need for city government to be efficient, effective, and competitive. Planning has played a key role in the city's development. Brisbane City Council's 2010 vision includes a regional and world city theme that seeks to both reinforce and promote Brisbane as part of the region of southeast Queensland nationally and as part of the Asia and Pacific region. The city is possibly one of the best-run local governments in Australia. It is the only city in Australia with a Standard and Poor's credit rating (AA+), which is a reflection of the sound approach it has taken to financial management.

The importance of creating a livable city has been central to the policies and plans of the City Council. Brisbane ranks in the top 10 of the world's most livable cities. Over the past 20 years, the city has embarked upon major projects and programs to clean up the Brisbane River; to develop an intermodal transport hub and industrial area, with the co-location of transport infrastructure involving the city airport and port; to redevelop large parts of the inner city, including improvement of urban design of urban areas; to improve city management and cost recovery; and to provide public infrastructure services. In 1995, the city council underwent a major restructure to introduce a purchaser-provider model of public sector management.

This vignette describes two elements of good practice urban management implemented by Brisbane City Council to improve the sustainability and development of the city. The first involves a case study of the purchaser-provider model, which separates the functions of council into purchasers and providers of services. The second case study involves infrastructure charges plans (ICPs), which were introduced as part of a user-pays policy on the provision of infrastructure to new development areas or areas undergoing urban renewal.

Purchaser-Provider Model of Service Delivery

Over the past decade, Australia has followed international trends in delegating greater financial and administrative responsibilities to local government for the delivery of public services. Australia's version was the National

Competition Policy (NCP), which came to life as an agreement between the state governments and the federal Government in 1995. It was designed to lower costs and to improve the quality of public sector service delivery. In 2000, the federal Government introduced a goods and service tax (GST) with all revenues being passed to the state and territory governments. The GST replaced a range of taxes and charges that created inequalities and undermined business and institutional competitiveness between the states.

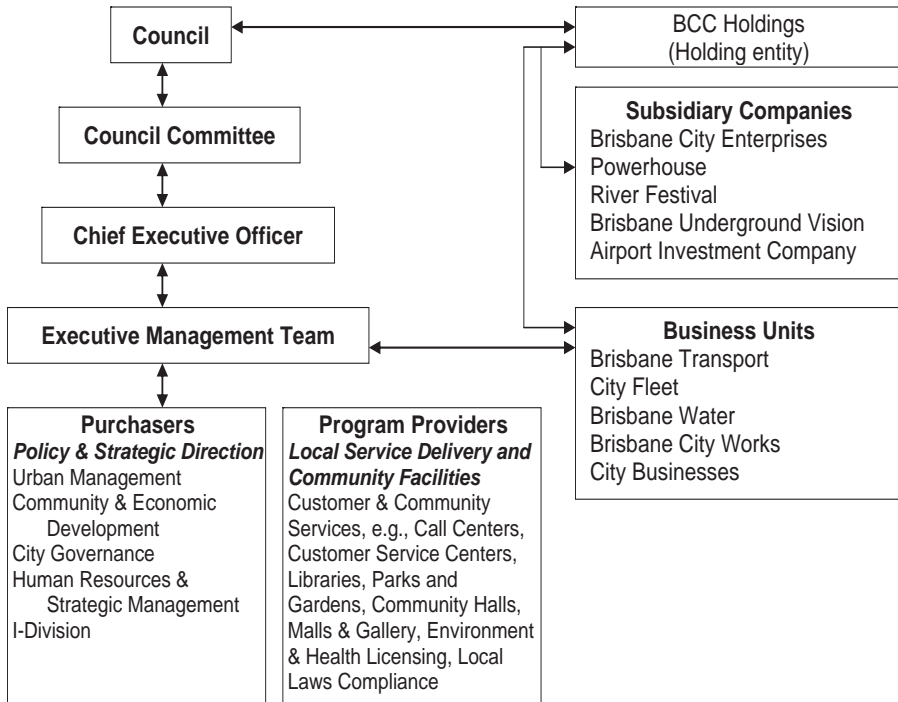
To respond to this top-down reform agenda, Brisbane City found itself needing to review not only its business activities but also all of its functional activities. This drove the city to introduce a clearer segregation of responsibilities, roles, and functions of its operational areas. Prior to 1996, most service delivery activities were embedded within policy and regulatory arms of the organization. NCP argued that policy and regulation should be distinct and separate from service delivery and that service delivery functions should be made competitive and business-like. The means of doing this, after looking at approaches in Denmark, Netherlands, New Zealand, and Sweden (Orange 2004) was the adoption of a purchaser-provider model⁵ for the delivery of urban services.

The adoption of the purchaser-provider model introduced many changes. Under the Brisbane City Council's internal reform process, politicians have had to develop corporate governance skills and bureaucrats have been segregated into policy, regulatory, administration, and service provision functions. The chart below (Fig. 15.2) identifies the purchaser or policy divisions of the council, the regulatory, customer and community divisions (program providers) and its commercial and business divisions (the business units, commercial service providers and subsidiaries).

The purchasers own the assets, secure any rights, are the source of funding, and negotiate contracts for service delivery with program providers and providers. The difference between program providers and providers is that the former are not set up as a business in a competitive or reporting sense because they largely deal with a regulatory enforcement, community engagement, and customer service channels. Providers are the segregated business units involved in activities that deliver services procured from them by the purchasers. They are accountable for the quality, timeliness, and prices of their services through negotiated agreements.

Brisbane City Council's organizational structure is set up under the purchaser-provider model. Under this model, purchasers procure products and services on behalf of stakeholders (largely the Brisbane community) from providers, who deliver these to agreed specifications or standards of service at competitive prices. Providers are of four types: commercial providers, program providers, business units, and subsidiary companies.

Figure 15.2: Brisbane's Purchaser-provider Model



Lessons Learned

Through an appropriate segregation of the various functions and decision-making areas, Brisbane City was able to provide clarity of purpose and ownership by staff; clearly identify accountabilities; apply improved oversight and monitoring; and, as a consequence, reduce duplication, streamline processes, and improve efficiency and service levels. These benefits were neither instantaneous nor easily achieved. Brisbane City Council is still on its journey of reform and improvement, some 9 years after it started. There have been blind alleys—some internal shared service areas have been reaggregated back into the purchaser group. Some businesses have failed and have been closed or sold. The governance structure is complex and senior managers can be responsible to a number of masters.

Beneath the single governing purchaser-provider principle, Brisbane City Council has adopted a pragmatic approach in selecting its service delivery models. Political management of the past 10 years has decided that some assets and activities are essential to the delivery of local government

services should be retained within public ownership. For Brisbane, this means that essential assets and activities—such as water supply, public transport, wastewater management, public venues, parks and designated green space, and a regulatory policy and compliance activities—will not be outsourced or privatized under the current political administration. Within this constraint, Brisbane has selected the following array of service delivery methods:

Table 15.1: Service Delivery Methods

Internal service provider	→	Revenue collection, accounting, HR and IR, IT support, legal services.
Business-like activity	→	Cemeteries, design, vegetation and pest control, building and maintenance, supply services.
Business units	→	Water and wastewater, transport, civil works, fleet.
Outsourced	→	Refuse collection, landfill management, building certification, printing services.
100%-owned company	→	Consulting and product sales, an entertainment venue, the annual river festival, an investment company.
Minority equity ownership	→	Bulk water storage company, Brisbane Airport.

HR = human resources, IR = information resources, IT = information technology.

Through international research and Brisbane's practical experience, the Council has recognized that service delivery choices are driven by different forms of motivation. Clear evidence shows that where fiscal concerns exist, external service delivery choices (such as contracting out and privatization) are most often favored. Where the fiscal situation is such that it allows a focus on matters other than financial, such as service delivery improvements and internal efficiency, internal reform options (like internal service providers and business units) are often preferred. As a rule, internal reforms create more complex governance arrangements while external reforms are simpler but more traumatic in terms of organizational change.

Infrastructure Charges Plans

In 1997, the Queensland State Government introduced the Integrated Planning Act. This law required local governments to adopt an integrated approach to multisector planning and development assessment. It also provided for headworks charges to be introduced as part of a full user-pays approach to the provision, and improvement of citywide infrastructure. Headworks are major infrastructure investments, such as plant, equipment, or structures for water supply, floodways, and sewers. Previously, the city council carried the costs of providing or upgrading headworks. Since 2000, the Brisbane City Council has progressively introduced infrastructure charges plans⁶ to ensure a more

equitable and sustainable approach to the provision of major infrastructure and urban services.

Infrastructure charges are based on the notion of the user pays where infrastructure provides a direct, private benefit to an immediate user. Infrastructure charges are not used to provide funding for community facilities, such as schools, public hospitals, and national highways. Central to the user-pays notion is the principle of fair apportionment. This implies that the infrastructure charges levy imposed by local government on a developer must be apportioned in relation to the total development of an area. This means that a developer only pays a levy on his proportion of the costs of infrastructure head works in relation to the total cost of providing infrastructure to a new development area.

Infrastructure charges provide a mechanism for charging for land and capital costs of supplying essential development infrastructure. Brisbane City levies contributions toward land and capital works for the following network of development infrastructure items:

Water Supply	Major reticulation mains Minor reticulation mains Water treatment
Sewerage	Major reticulation mains Minor reticulation mains Sewerage treatment
Waterways	Major relief drainage Minor relief drainage
Transport	Major roads Minor roads Public transport facilities Off-road pedestrian facilities
Community Purposes	Acquisition of new public recreation land Improvements to existing public recreation land New Farm River Walk Land for multipurpose community centers

The council levies infrastructure charges to achieve design standards of service. Setting the design standard of service is basically a policy issue set out in the City Plan. The charges for the capital cost of infrastructure are calculated to meet the life-cycle costs of the infrastructure network according to the design standard of service. The life-cycle costs are defined as the total cost (in present-day terms) of the development to the infrastructure network (including operating and maintenance costs) over a period of 30 years or longer if the council determines.

An ICP describes how charges will be applied. It forms part of the City Plan. ICPs have been prepared for different areas of the city because the contribution costs to the provision of infrastructure vary according to location, ground conditions, and ease of servicing parts of the city. The City has prepared 12 ICPs for newly developing areas and areas undergoing renewal.

ICPs identify development infrastructure items making up the network, states the desired development of services for the network, and evaluates alternative ways of funding infrastructure items. ICPs must provide information on:

- the need for the works, services, and facilities
- the amount to be funded by infrastructure charges
- the schedule of works, including timing of provision and costs
- the method by which infrastructure charges are calculated
- the boundaries to which the infrastructure charges plan applies
- the description of each type of lot or parcel of land, work or use to which charges apply, and
- the rate of charges.

These charges, called infrastructure charge units (ICUs), apply when a subdivision or reconfiguring a lot or material change of use occurs. ICUs are adjusted in the budget each financial year. The 2005/2006 infrastructure charge units value is about \$1.10. The infrastructure charge payable for each system is calculated according to the formula below. An example of the application of infrastructure charges for the Bulimba Industrial Area can be found at the footnoted website.⁷

$$\begin{array}{r}
 \text{Total} \\
 \text{Infrastructure} \\
 \text{Charge}
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 =
 \begin{array}{r}
 \text{(Amount of} \\
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 -
 \begin{array}{r}
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 \text{credit rate)}
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 \times \text{value of ICU}$$

For large-scale urban development or redevelopment projects, the council normally enters into an infrastructure charges agreement with a developer. Under these agreements, instead of the council or a public utility agency providing major infrastructure to service a new development area, the developer enters into an agreement to provide trunk infrastructure, such as a new road or water supply to a new development area. This often has significant cost savings to the council because the work can be undertaken

in conjunction with the provision of other infrastructure services to a new development area. This procedure is known as an infrastructure agreement, and may involve the government paying a share of development costs that cannot be apportioned to the developer under an ICP.

Fair apportionment is an important principle to follow when calculating infrastructure charges. Central to this principle is that a clear link can be made between infrastructure items and the user. The user is only levied for their fair share of the development infrastructure items. In calculating charges, issues that need to be addressed include

- areas to be serviced by the development infrastructure system
- development infrastructure items
- proportion of cost to be funded by the charges plan
- index to be used to adjust charges to reflect current costs, for example, an inflationary indicator
- existing infrastructure with spare capacity and estimated depreciated value
- new infrastructure required and estimated present value
- service catchments
- existing demand for each service catchment
- future demand for each service catchment; demand may vary depending on user, e.g., industrial versus residential
- future demand in present value terms
- an apportionment charge for both new and existing infrastructure, and
- the annual review of the charges plan and infrastructure supply and charges rates.

An important element of ICP is benchmark development sequencing (BDS). BDS identifies the preferred pathway to supply infrastructure to a new development area. Benchmark development sequencing plans will indicate the phasing of development for an area for 5 years and provide some estimate of the schedule of works that will be undertaken during that period. The council used BDS to ensure progressive expansion of the infrastructure network in priority development areas to avoid leapfrogging of development.

ICPs and BDS plans have particular relevance for cities in Southeast Asia, where the cost of providing and funding external infrastructure works often lies with local governments. Unless local governments in Southeast Asia move toward developers paying for the extension of major infrastructure, the backlog of infrastructure service provision will continue to rise. The Brisbane City Council has been able to substantially reduce its capital outlays on extending

infrastructure to newly developing areas, thus freeing up capital for other priority capital works projects in the city.

Conclusion

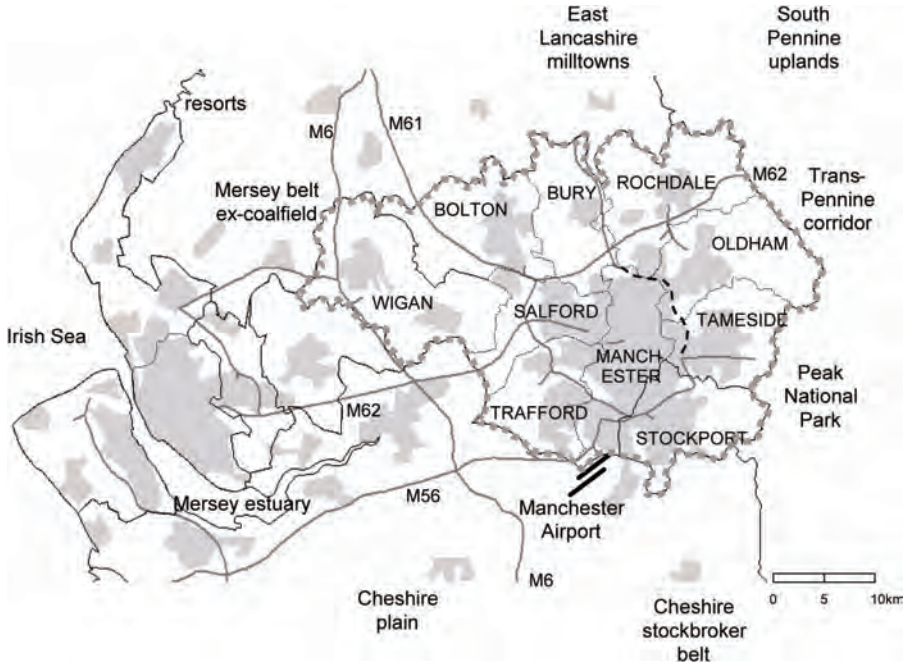
The introduction of the purchaser-provider model and ICPs has created significant improvements in the efficiency and operation of the Council. The reforms to urban management have led Brisbane City to become a leader and innovator in developing sustainable urban systems. The institutional reforms have achieved a great deal, but these have been underpinned by other factors such as the city's size, strong leadership, good governance and urban management, and a commitment to city building. However, it has taken 9 years to implement reforms, some of which are ongoing. Some things have not been successful, but in attempting to try new and innovative approaches to urban management practices, the Council has learned which practices are sustainable and which are not. The significance of staff resistance and the time involved in embedding change to institutional arrangements should not be underestimated. However, the city's commitment to sustainability, especially in planning and urban management, has paid off and ensured that Brisbane is one of the most livable cities in the world.⁸

GREATER MANCHESTER, UK: POST-INDUSTRIAL SUSTAINABILITY?

Joe Ravetz

As one of the birthplaces of the industrial revolution, Manchester suffered extreme levels of pollution, followed by 50 years of decline and restructuring. From the challenges of unemployment, ill health, obsolescence, and dereliction, the city is now reinventing itself as a globalized hub for creative and knowledge-based industries. It has also pioneered the “new urbanism” and urban environmental management in the UK, and is a major hub for sustainability research and development.

This case study is a contrast to most Asian cities—the dynamic and problematic conurbation of Greater Manchester (GM) in northern England. At the center, the City of Manchester is an icon for style and sports, and a thriving center for finance, media, education, and culture. The City of Manchester is surrounded by the suburbs and ex-urbs of GM—that is, a sprawling conurbation of 2.5 million people in a large urban core and a ring of satellites. A further 1.5 million people live in the surrounding area within a 1-hour journey, including Liverpool and smaller cities. To the east and

Figure 15.3: Map of Greater Manchester

north are rolling hills surrounding an extended urban fringe, and to the west and south is mainly farmland with a patchwork of small towns and large suburbs. GM sits at a national crossroads, halfway between Scotland and London, and is also the gateway to the “peripheral” North West region, and a playground for wealthy commuters and tourists. Its governance is divided among 10 autonomous municipalities, and many vital functions are devolved to the regional level.

Some vital statistics on growth trends are shown below to serve as a guide to sources of future pressures.

Urbanization Past and Future

Manchester a century ago was the 10th largest city in the world, and the classic industrial “shock city” of free trade and enterprise. At various times, it was the site of the world’s first railway station, first free public library, first retail cooperative, first trade union congress, and first programmable computer. There emerged a unique combination of factors—access to iron and coal, and a seaport for the British trading empire; a damp climate suitable for textile processing; and the nonconformist churches with their promotion of

Table 15.2: Growth Trend, Greater Manchester

Parameter	Growth per year (%)
“World’s best” airport, 60,000 trips per day	8
Gross domestic product, \$51.6 billion	2.5
Total waste arising, 11 million tons per year	2
About 1 million cars: 6 million trips per day	2
About 1 million houses, 100,000 buildings	1.2
Carbon dioxide emissions: 32 million tons per year	0.7
Population 2.5 million people	0.2
Urban area 55,000 hectares: 43% of total	0.15
700,000 bus trips per day, 70,000 local rail trips	0.1
8,000 kilometers (km) of roads	
152 km of motorways	
350 km of railways	
10 autonomous local authorities	
land area, 1,286 square kilometers	

technical learning and innovation by the “working classes” (Hall 1998). A journey from east to west crosses many layers of this history, from the birth of the textile industry in the Pennine Valleys to the sunrise business parks surrounding the airport.

Current trends are indicative of the prospects for many such city-regions in the developed world:

- globalization – increasing integration of investment, production, trade, and consumption into global systems (Townroe 1996)
- connexity– new forms of networks and communities enabled by information and communications technology, media, and international travel (Mulgan 1996)
- exclusion – new patterns of alienation, dependency, and segmentation for large sections of the population;
- post-fordism – dissolution of former economic and political structures in favor of more complex and fluid patterns (Amin 1996). New interactions between production and consumption, between local and global, etc., exist.

For several centuries manufacturing activity was the basis of the industrial city—local and imported materials were processed to produce goods to send along water or railway corridors. Economic “advantage” could be defined in terms of the city-region’s location and resources as a “material proces-

sor.” That model is now in transition to a more postindustrial “city of flows” (Castells 1997). The city-region now functions more as a node in a global “hyper grid”—networks of motorways and airports for movement of people and goods, and networks of satellites and wires for movement of information and capital. Many patterns of urban activity and urban form are turning inside out, as the growth nodes of production and consumption migrate to the urban fringe or “edge city”—retail, leisure, and business parks with easy links to the hyper grid. City functions now center on services and consumption, and its cultural “cachet” or branding now competes in a global hierarchy.

There are many paradoxes in such a transition in GM. For instance, 19th, 20th, and 21st century cultures and economies are side by side and are often in conflict. While production and consumption are globalized, there is a countertrend of “localization”—a new kind of “place advantage” gained through cultural amenity and attraction to mobile consumption and production (Dicken 1996). In physical terms, edge cities are “counter-urbanized,” while historic centers are “re-urbanized” and industrial areas “regenerated.” In social terms, uneven development creates clusters of unemployment and exclusion. In environmental terms, the bulk of resources travel through the hyper grid, which is increasingly privatized and deregulated, and where environmental management presents an even greater challenge than before.

Economic and Social Trends

A city-region such as GM displays both vulnerability and opportunity in the global hierarchy. With an industrial base that is partly obsolete, and partly booming with hi-tech and tertiary activities, it is a major hub to a peripheral region and at the same time saddled with socioeconomic decline and dependency. The combined effect is the trend of segmentation—a “sunrise” high-tech economy with global markets is surrounded by large areas on the threshold of dependency and decline.

In parallel are equally fundamental social dynamics. Demographic trends are changing age structure, gender balance, family structure, disposable time and income, and household organization. Cultural trends see a shift from former one-nation patterns toward self-identity and empowerment, and its counterpart of alienation and disorder. Former cultures of governance and welfare provision are replaced by one of “enabling” in partnership with other organizations. The civic body is “splintering” both culturally and physically into countless fragments (Graham and Marvin 2001).

Generally, there is a prospect of an aging population, with rising disposable income and leisure time, chasing volatile employment and a diversifying set of lifestyle activities. Such trends may accelerate. Many visions of the

future, even without “surprises,” such as terrorism or sudden climate change, suggest structural conflict between cultures and corporate interests (Castells 1997). Cities and urban systems have a continuing role not only as economic producers and consumers, but as arenas for creative conflict between the local and global, and between the corporate and the civic worlds.

Environmental Trends

Environmental quality in GM shows the legacy of 200 years of heavy industry, and Manchester is still the “pollution capital” of the United Kingdom (UK). The surrounding uplands are well over their “critical loads” for acidity, river quality is only now less than toxic, and a tenth of urban land is potentially contaminated and unstable. A quarter of all households drink lead in their water, half are seriously disturbed by noise, and there is a 3% annual growth trend in household waste.

In the longer run, environmental dynamics that could enhance pollution hazards, whether actual or perceived, exist. Economic growth will tend to increase material throughput, other things being equal, with new and more complex substances and processes. There will also be ever-tighter standards for health and amenities, and better evidence on environmental pathways, processes, and impacts.

The result can be seen in the environmental history of the city-region, as the “urban environment transition” or phase model (Ravetz 2006). In its first industrial phase, 150 years ago, the combined hazards of work, housing, diet, and pollution resulted in an average life expectancy of 40 years. In a second phase, the fossil fuels used in heating and transport dominated urban air pollution. In a third phase, many impacts are displaced to a global level, and other hazards now emerge as the more insidious effects of carcinogens, trace metals, and genetic engineering. While life expectancies have doubled, public concerns on risks have multiplied (Beck 1991). The risks of production have now shifted to those of consumption—transport, noise, waste, food chains, obesity, and mental health. And in the modern risk society, social divisions are as sharp as ever. Pollution mapping shows the poor breathing the emissions of the rich: health mapping shows a 7-year life span difference between poor and rich areas—95% of all major industrial polluters are in poor areas. An increasing proportion of the environmental burden of affluence is exported to poor countries overseas via resource extraction and climate emissions, even while the UK becomes gradually cleaner and greener.

With the general shift of urban activity from production to consumption, environmental management has likewise shifted from the “dilute and disperse” approach of the industrial revolution to integrated pollution con-

trol for all media, as in the integrated pollution control system of the UK (Environment Agency 1996). More recently, environmental management has emerged as a driver for business opportunity and competitiveness, as in the principle of “eco-modernization” (Weale 1993). Taking this one step further, “integrated chain management” coordinates all materials and processes (Wolters 1997). The end goal is “de-materialization,” or de-linking of economic growth from material throughput, and this is the general goal of the UK strategy on “sustainable consumption and production” (Jackson and Michaelis 2003).

Sustainability Profile and Initiatives

Manchester-GM is often quoted as an international good practice, even while it is not obviously as green, socially responsible, or well-organized as some cities in the Nordic or Latin American countries. However, it does have a certain case to demonstrate, from which other cities might learn: this was documented in *City-Region 2020—Integrated Planning for a Sustainable Environment*, a large-scale feasibility study and history of the future (Ravetz 2000).

The case is basically that where GM is treading now, many other cities are likely to follow. If in 50 years, a typical Asian city has a mature industrial system and urban form, a settled social structure, and a need to reinvent its form and function for changing global markets, then it is likely to experience a similar challenge of “sustainable” restructuring and regeneration.

Arguably, this is a result of the unique history and trajectory of GM, where the gross physical problems of industrial pollution and unsanitary housing have, for the most part, been overcome. What remains is a kind of showpiece for the contradictions of postindustrial or late capitalism. Environmental impacts are largely displaced overseas; the physical urban form is congested and segmented; urban governance is weak but still operates with only subtle forms of corruption; the economy has enough diversity to provide at least for the middle classes; and public services are increasingly corporatized but still mostly function for most of the population. What remains is the gap between aspirations and reality, as below.

GM can also offer a long history of initiatives and campaigns, building on a long history of urban reform and idealism. GM first quoted the word “sustainability” in the Global Forum 94 event, intended as the follow up to the Rio Summit. These are some current examples:

- At the municipality scale is Manchester Green City, a raft of local policies, including purchasing renewable energy, active curbside recycling, and large-scale urban tree planting. On a proactive front,

the website www.Manchesterismyplanet.com is a current campaign and pledge system, which over 6 months has engaged 10,000 citizens and numerous organizations.

- There is more critical mass at the regional level, much of which is promoted through NGOs, such as Sustainability North West. Responsibility North West is a networking and promotions scheme for business corporate social responsibility, while the Climate Change Charter for the North West builds capacity and offers assessment tools for larger organizations. “Enworks” promotes environmental management among small and medium-size enterprises and “Enviro-link” promotes environmental technologies.
- Most large corporate bodies have sustainability appraisals and mission statements: these include many of the largest polluters in the region, e.g., Shell UK, Manchester Airport, and British Nuclear Fuels.
- Most public policies are subject to sustainability assessment and evaluation, and there is active experimentation in toolkits for “integrated appraisal.” On close inspection, many of these are broad enough to quote the principles and then to proceed with the original plans, showing that the real issue is not the appraisal method but the definition of options, boundaries, trends, and responsibilities (Ravetz et al. 2004).

A pragmatic view of urban sustainability in GM sees much rhetoric about public transport, but 86% of all journeys go by car; much research on climate change, but an airport that doubles in size every 10 years; many policies on fostering local communities, but where 10% of local shops close every year. Possibly the largest single success is outside the urban policy agenda—the 25% per year growth of organic production and ethical food trading, with its “responsible capitalism” model for global supply chains.

Generally, the Manchester-GM model of urban sustainability is a demonstration of such contradictions, not only in physical facts but also in the discourse of the actors involved. Because the added value of urban sustainability involves local and global issues in the short and long term, this is also a source of confusion and contradiction. This is highlighted by some of the current sustainability headline themes, which can be seen to mix communications, aspirations, strategies, and tactics in a postmodern display of mediums and messages.

- “Sustainable consumption and production” is promoted by the UK Department of Environment, Food and Rural Affairs, while its more powerful neighbor, the Department of Trade and Industry, continues on a business-oriented material growth trajectory.

- “Sustainable economic development” and “sustainable regeneration” are widely sounded. On close inspection, the definition means the lowest-cost strategy that leads to economic recovery while reducing public sector funding.
- “Sustainable communities” are promoted at the city level with the agenda for social inclusion and avoidance of dependency. The same title is promoted at the national level, as a plan to relieve housing shortages in the London hinterland and revive failed housing markets in the North.

The urban development trajectory of GM over 200 years can now be observed in only 20 years in some Asian cities, and this enormous acceleration can create its own problems. However, the overlapping of different cultures, economies, spatial patterns, and environmental problems in GM can be seen from both sides. It creates the problems of weak governance, segmented societies, and fragmented urban form. But it also provides a melting pot for diversity, innovation, and new forms of networks. Other cities with greatly accelerated growth may also be able to turn such problems into opportunities.

LESSONS FOR URBAN SUSTAINABILITY

Many lessons related to sustainability can be learned from these global good practice case studies. The first is the important role that leadership has played in developing vision and winning commitment to tackle the difficult and often expensive plans to solve environmental and economic problems. Without Lerner’s vision for Curitiba, the city would never have achieved the success it has in addressing serious environmental, land-use, and transportation problems. Without strong governance, leadership, and innovation, a modern Singapore city-state would never have solved its environmental and housing problems, or transformed its economy to provide a more sustainable basis for development in the future.

Second, the emergence of a crisis or threat has been a major factor in initiating actions to ensure survival of the city’s economy. The social and environmental conditions in Manchester required action to improve public health and the quality of the environment in the 19th century, while redevelopment and economic restructuring were necessary to rebuild the economy when the impacts of globalization and change of materials used in clothing manufacturing undermined the competitiveness of the city’s economy. Singapore, as its standard of living increased, was likewise able

to transform its economy to become one of Asia's leading service centers. In Brisbane, the implication of the National Competition Policy forced a complete change in the mode of service delivery.

Third, the willingness of communities to embrace change, often reluctantly, has led to innovation in public administration, urban management, and environmental design. The establishment of the purchaser-provider model in Brisbane has led to a highly competitive and efficient local government, which outperforms most other local governments in Australia. The program, designed to encourage community engagement in Curitiba, has led to changes in behavior and support for environmental and waste management programs. The integrated greenways and utility corridor and the successes of the wastewater treatment plants in Vancouver came about because of staff initiatives, coming up with innovative approaches to old issues.

Fourth, all the cities have sought to leverage resources through various forms of partnerships to build infrastructure and provide housing and community facilities. In Curitiba, the multiple uses of facilities have reduced operational costs, enabling capital to be used for other priority projects. The Vancouver approach to sustainability has involved the engagement of many partners and municipal, business, and community organizations. The approach was to "turn ideas into action" using top-down leadership-driven and bottom-up staff engagement processes.

Fifth, the planning and integration of transportation services has led to greater efficiency in vehicle and passenger movement in the cities. Sound planning has led to the development of intermodal facilities and mixed-use developments that have created vibrancy and convenience not present in many urban developments. The integration of residential, social, cultural, and educational landuses with commerce, research, and specialized integrated low-intensity manufacturing highlights the importance of building urban places in which people feel comfortable to visit, work, and live. The focus on integrated development has had a significant impact on improving the quality of life in all five cities.

Sixth, the importance of urban planning, enforcement of construction laws and environmental policies, and attention to asset management and maintenance have enabled the cities to maintain efficient urban systems, a high quality of visual amenity and livability. The focus on livability is present in all aspects of urban planning and management.

Finally, a significant amount of trial and error has occurred in the five cities to refine and develop approaches to good practice. Mistakes have been made and some things have worked better than others. However, the willingness to change, commit to new ideas, try alternatives, and test options make these cities different. These cities have understood that risks must be

accepted if changes in community behavior, technology, governance, and approaches to urban management that benefit sustainability are to occur.

The most sobering lesson gained from all these case studies is from Manchester. The effect that more than 200 years of industrial and urban development has had on the landscape on the city and region has been devastating. Restoring the environmental capital of the region will take years. It is important that Asian cities appreciate the inheritance that current approaches to urban management and development practices might leave on their landscapes if these do not change.

Other valuable lessons can be learned from studies of these five cities. The practices, which have been presented in the vignettes, can be applied to many Asian cities. The important lesson learned from these global city examples is the need for commitment to sustainability.

Notes

¹Habitat Best practices Database: www.bestpractices.org/

²Regional development in the Europe knowledge society: www.beepregional.org/

³MOST Clearing House, Best Practices: www.unesco.org/most/bpsites.htm

⁴EPA Gateway: www.epa.gov/innovation/international/urban.htm#databases

⁵www.brisbane.qld.gov.au/BCCWR/about_council/documents/publications_annual_report_accountable_organisation.pdf?xml=/BCC:PDFHITXML:357179652:svDocNum=

⁶Infrastructure Charges Plan: www.brisbane.qld.gov.au/BCC:STANDARD:357179652:pc=PC_1765

⁷Bulimba Industrial Area ICP: www.brisbane.qld.gov.au/bccwr/building_and_development/documents/bulimba_industrial_infrastructure_charges_plan.pdf

⁸Economist Intelligence Unit Survey: theage.com.au/articles/2004/02/06/1075854028808.html