



# Curitiba

## *Orienting Urban Planning to Sustainability*

### FULL NAME OF MUNICIPALITY

Municipality of Curitiba, Brazil

### MUNICIPAL PROFILE

**POPULATION:** 1.6 million

**LAND AREA:** 142 km<sup>2</sup>

**MUNICIPAL BUDGET:** US\$600 million

### STRATEGY

Accelerate the Transition to Sustainable Communities and Societies

### CHALLENGE

To guarantee a good quality of life for Curitiba's citizens over the long term, ensuring social inclusion, accessibility, public amenities, urban transparency and environmental sustainability for the city and metropolitan area.

### GOAL

The underlying goal of Curitiba's integrated urban planning strategy—and the objective toward which the city's branches and institutions work—is to improve the life of Curitiba's citizens.

### ACTION

Undertake a series of integrated urban planning actions based on valuing the individual that have resulted in a model ecological, people-centered city.

### ABSTRACT

Curitiba, perhaps the best planned city in Brazil and an international model for sustainable development, is more than simply the result of a few successful projects. The city's achievements are the result of strategic, integrated urban planning. This overarching strategy informs all aspects of urban planning, including social, economic and environmental programs.

Curitiba's strategy focuses on putting people first and on integrated planning, and these influences are apparent in all aspects of the city. The strategy is what underpins the individual projects system-wide that improve the environment, cut pollution and waste, and make the quality of life in the city better.

A clear strategy and vision of the future in Curitiba has meant that decisions large and small made over the course of 38 years have added up to a city that's public-spirited and eco-efficient. Strong leadership resulted in successful, long-term implementation of strategy.

### CASE

#### *Municipal Context*

Curitiba is the capital of the State of Paraná, a mainly agricultural state in southern Brazil.

The city had few outstanding historical or natural features, but its architects and urban planners have transformed it into a vibrant center with good quality of life that draws many tourists. Curitiba's population has doubled to 1.6 million over the past 30 years.

Despite major challenges that came with rapid growth, significant improvements have been made to the city's quality of life in areas including public transportation, preservation of the city's cultural heritage, expansion of parks and green areas, and social and environmental programs.

Curitiba has a long tradition of innovative and integrated urban planning geared toward the strategic imperative of making the city a better place to live, as outlined in the city's Master Plan of 1965.

## Toronto, Canada

Moving the Economy, a five-year-old partnership between the City of Toronto and Transportation Options, has laid a strong foundation to support the growth of sustainable transportation. It has launched two pilot projects to test the viability of new mobility strategies locally, nationally and internationally. The projects have led to an extensive communications network that links businesses and governments with information about new mobility, experts and on-the-ground examples of where new mobility is making money. Moving the Economy's New Mobility Sectoral Study, completed in 2002, has identified the directions government and businesses should take as new mobility develops over the next 20 years. The study has explored how Toronto and other cities can benefit from this trend.

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In the 1970s and 1980s, physical, economic and demographic growth was rapid and the city became an important industrial and commercial center. Urban planning focused on building the city and decentralizing it. From the 1990s until today, the city's main planning focus has been on sustainable development and integration of Curitiba's metropolitan region.

### *Urban Planning in Curitiba*

Curitiba is more than a city that has a number of outstanding projects: in fact, the key to its success is the underlying, cohesive strategy—with a focus on improving life for residents and on integrated planning—that underpins all of its projects.

The strategic vision that informs all aspects of Curitiba is articulated by its visionary former mayor, Jaime Lerner, who led the city's transformation: "There is no endeavour more noble than the attempt to achieve a collective dream. When a city accepts as its mandate its quality of life; when it respects the people who live in it; when it respects the environment; when it prepares for future generations, the people share responsibility for that mandate, and this shared cause is the only way to achieve that collective dream."

Strong political leadership and continuity has been essential to long-term implementation of the city's plan. Lerner, now governor of the State of Paraná, was involved in the city's 1965 Master Plan as an architect; helped found and worked for the Urban Planning Institute of Curitiba (IPPUC); served as the city's mayor three times; and was president of IPPUC for many years. Similarly, the city's current mayor, Cassio Taniguchi, was a senior IPPUC official for seven years.

IPPUC's creation is a second key element that ensured long-term implementation of city plans. In 1965, Lerner and his colleagues realized that continuity would be a problem and established IPPUC as an independent agency to supervise and implement planning.

The combination of core values expressed in the city plan and IPPUC's creation allowed planning for efficiency and sustainability even in difficult

circumstances (i.e., during the military dictatorship, times of economic crisis in Brazil, despite high numbers of poor migrants flowing into the city).

A clear strategy and vision of the future in Curitiba and creation of an agency to make sure it was implemented has meant that smaller decisions made over the course of years and in many individual programs have added up to a city that's a model of ecological, people-centered urbanism.

Although Curitiba is known internationally as a sustainable, ecological city, it calls itself "the city of all of us." In almost any area of Curitiba's urban planning over the years, it is possible to see how consideration has been given to people in the big picture—and also to see the associated, system-wide sustainability benefits of integrated planning.

This is what's most unique about the city's strategy: it maximizes the efficiency and productivity of transportation, land-use planning and housing development by integrating them so they support one another to improve the quality of life in the city.

The following individual examples all reflect the city's people-first strategy, and the benefits of integrated urban planning and sustainability system-wide.

Integration of traffic management, transportation and land-use planning in the 1970s allowed the city to meet strategic objectives which sought to minimize downtown traffic, encourage social interaction by providing more leisure areas and pedestrian zones in the center of the city, and encourage the use of public transport and cycling in order to achieve an environmentally healthy city.

The urban transportation system is one of Curitiba's best-known planning successes, a model for cities around the world that want to implement eco-efficient transportation networks that are well-integrated with urban form and produce environmental benefits.

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Curitiba's eco-efficient, bus-only transportation system is a model for cities around the world. The "speedy bus" runs along a direct line and stops only at tubular stations specially designed to move passengers quickly.

*(photo courtesy of Ricardo Almeida, Municipal Secretariat of Social Communications).*

The city pioneered the idea of an all-bus transit network with special bus-only avenues created along well-defined structural axes that were also used to channel the city's growth. The transit system is rapid and cheap, and is currently being integrated with the metropolitan region.

Its efficiency encourages people to leave their cars at home. Curitiba has one of highest rates of car ownership in Brazil, and high population growth. Yet auto traffic has dropped substantially; Curitiba has the highest public ridership of any Brazilian city (about 2.14 million passengers a day), and it registers the country's lowest rates of ambient pollution and per capita gas consumption.

In addition, an inexpensive "social fare" promotes equality, benefiting poorer residents settled on the city's periphery. A standard fare is charged for all trips, meaning shorter rides subsidize longer ones. One fare can take a passenger 70 kilometers.

Curitiba is referred to as the ecological capital of Brazil, with a network of 28 parks and wooded areas. In 1970, there was less than 1 square meter of green space per person; now there are 52 square meters for each person. Residents planted 1.5 million trees along city streets. Builders get



tax breaks if their projects include green space. Flood waters diverted into new lakes in parks solved the problem of dangerous flooding, while also protecting valley floors and riverbanks, acting as a barrier to illegal occupation, and providing aesthetic and recreational value to the thousands of people who use city parks.

The "green exchange" employment program focuses on social inclusion, benefiting both those in need and the environment. Low-income families living in shantytowns unreachable by truck bring their trash bags to neighborhood centers, where they exchange them for bus tickets and food. This means less city litter and less disease, less garbage dumped in sensitive areas such as rivers and a better life for the undernourished poor. There's also a program for children where they can exchange recyclable garbage for school supplies, chocolate, toys and tickets for shows.

Under the "garbage that's not garbage" program, 70% of the city's trash is recycled by its residents. Once a week, a truck collects paper, cardboard, metal, plastic and glass that has been sorted in the city's homes. The city's paper recycling alone saves the equivalent of 1,200 trees a day. As well as the environmental benefits, money raised from selling materials goes into social programs, and the city employs the homeless and recovering alcoholics in its garbage separation plant.

Open University, created by the city, lets residents take courses in many subjects such as mechanics, hair styling and environmental protection for a small fee. Retired city buses are often used as mobile schools or offices.

Downtown areas were transformed into pedestrian streets, including a 24-hour mall with shops, restaurants and cafes, and a street of flowers with gardens tended by street kids.

The "capacity building job line" was created to generate a better quality of life for people in the region surrounding a new economic development axis of Curitiba. Key initiatives include the South-Circular bus line, which links the southern and eastern regions of town; Entrepreneurial Sheds, business incubators designed to help small companies get established and prosper; and the Crafts Lycée, which trains people for professions such as marketing and finance so that they can find employment in new companies that emerge from the business incubator.

## Barcelona, Spain

In 1994, the City of Barcelona, Spain, signed the Heidelberg 'Declaration for Climate Protection' and set a goal of reducing carbon dioxide emissions by 20% of 1987 levels. A key aspect of the city's plan is the exploitation of solar energy. In 1999, the city passed a municipal solar ordinance calling for the installation of solar panels on new developments. In addition, the largest photovoltaic plant in the world is being planned for operation in 2004.

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 (Sources: Autament de Barcelona. (n.d.) Barcelona (the Local Agenda 21). and Barcelona City Council. April 2001. Barcelona Bulletin, no.187.)

Specifically, the goal is to provide jobs and income for the unemployed among 400,000 people living in 15 peripheral towns, and to structure and develop the region according to integrated planning principles. About 15,000 new jobs have been generated so far, and 15,000 more are expected.

## RESULTS

The result of the strategy—which put people at the center and emphasized integrated planning—is that the city has become a showcase of ecological and humane urbanism, with ongoing improvements over the past 38 years to social, economic and environmental conditions for its residents.

Curitiba has become the most sustainable of cities, in the process proving that applying a city-strategy with strong values and a focus on integrated systems can harness the actions of planning departments to meet common strategic objectives.

Seventy percent of the city's trash is recycled. Residents who live in shantytowns get free groceries and bus tickets in exchange for their bags of garbage, and have access to social programs and health services funded by recycling programs. Nearly one-fifth of the city is parkland, and volunteers have planted 1.5 million trees along the streets. The city has 200 kilometers of bike paths, and 52 square meters of green space per person.

There's a model, inexpensive, speedy transit service used by more than 2 million people a day. There are more car owners per capita than anywhere in Brazil, and the population has doubled since 1974, yet auto traffic has declined by 30%, and atmospheric pollution is the lowest in Brazil.

Much of downtown is a vibrant pedestrian zone. Tourism generated US\$280 million in 1994, 4% of the city's net income. Per capita income is 66% higher than the Brazilian average. The city's 30-year economic growth rate is 7.1%, higher than the national average of 4.2%.

Future expectations relate to Curitiba's metropolitan area, where the city's strategy is being applied to improve the lives of people in the surrounding region.

## LESSONS LEARNED

Curitiba's officials found that the application of a city-strategy with strong, coherent governing/design values and a focus on integrated systems can be used successfully to align the actions of planning departments to meet strategic objectives. Following are specific lessons learned while undertaking this process.

IPPUC was effective in ensuring planning continuity and success regardless of political, economic and social challenges, and made substantial contributions as a laboratory for finding creative, integrated solutions to urban planning problems.

Commitment to local values such as accessibility, transparency, social justice and poverty reduction and efficient resource management are what resulted in Curitiba's sustainable development, which is more than simply "environmental."

The integration of different elements of urban development avoided problems associated with piecemeal development such as pollution, traffic congestion and unsustainable fuel consumption rates. For example, integrated transportation and land-use was key to the city's development, controlling growth, cutting pollution and enhancing the life of residents.

Creative, cheap solutions that fit the city provided better solutions to Curitiba's urban problems than more expensive approaches (e.g., the bus system's low infrastructure investment versus a more expensive subway; having residents recycle at home versus operating an expensive separation plant; using old buses as offices in areas with no infrastructure instead of building).

## KEY REPLICATION FACTORS

- Articulation of strong, local core values in a city plan.
- Creation of an independent municipal authority such as IPPUC to provide continuity and implementation plans, as well as to monitor planning and research to improve future efforts.
- Integrated planning processes structured to assure that planners in all areas know the strat-

## Portland, USA

By integrating land-use and transportation policies, the City of Portland, USA, is developing a more compact, energy-efficient urban form that reduces automobile dependency. An urban growth boundary guides development, and Portland's regional 2040 Growth Concept protects natural areas and farmland while improving infrastructure. The concept integrates transportation strategies and land-use policies that strongly support strategic growth management while allowing each regional community to develop its business center and neighborhoods with their own characteristics. Public transit, foot traffic, bicycle use, roadways and freight movement are addressed with a strong emphasis on locating jobs and housing near existing multi-modal transportation infrastructure. As a result, during the 1990s bicycle commuting almost tripled, transit rider-

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egy and are working with a shared vision and developing their plans together. This way, many problems of unlinked development (e.g., not enough provision for green space) can be avoided.

- Establish a close relationship between public transportation and land-use legislation as a guidance and development tool. Cities' environmental quality and economic efficiency are highly dependent on transportation systems that are well-integrated with urban form because this lets them avoid weak transportation systems and unsustainable dependencies on private cars.
- Developing new models that provide inexpensive, creative urban solutions and reflect local values are an alternative to standard, often-higher-cost approaches.

## BUDGET AND FINANCING

Over the past 38 years, a web of partners and funders has contributed, working with local government in the creation of the "social capital," as Curitiba calls itself. City staff, IPPUC, government agencies, research institutions, community organizations, residents, non-governmental organizations and international agencies have all been involved in Curitiba's ongoing development.

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## REFERENCES

- City of Curitiba. 1992. Curitiba, *A revolução ecológica*.
- International Council for Local Environmental Initiatives. 1995. "Curitiba, Brazil: using existing infrastructure keeps fares low in successful transit system," *Economic Instruments to Improve Environmental Performance, a Guide for Local Governments*.
- International Council for Local Environmental Initiatives. 1991. *Case Study, Land use/transport, Curitiba, Brazil*.
- Municipal Secretariat for the Environment. [no year given in publication]. *Curitiba: Toward and Environmentally Correct City*.
- Rabinovich, Jonas. October 1992. "Curitiba: Toward Sustainable Development," *Environment and Urbanization*, International Institute for Environment and Development.
- Robins, Nick and Sarah Roberts. 1998. "Planning developments to minimize car use, Curitiba, Brazil," *THE WORKBOOK. Consumption in a Sustainable World Workshop*, June 2-3, 1998, Kabelvaag, Norway International Institute for Environment and Development [www.iied.org].
- Walljasper, Jay. 2001. "Seven Urban Wonders: Enlightened Cities Around the World," *Utne Reader*, Nov.—Dec. 2001.
- Electronic sources:
- City of Curitiba: [www.curitiba.pr.gov.br](http://www.curitiba.pr.gov.br)
  - Global Ideas Bank: [www.globalideasbank.org](http://www.globalideasbank.org) ["Curitiba's visionary mayor," Donella Meadows, 1995 AND "Curitiba—recycling as a popular and heroic activity," Thomas Kamm, 1995.]
  - Horizon Solutions: [www.solutions-site.org](http://www.solutions-site.org) ["Efficient transportation for successful urban planning in Curitiba," Vidisha Parasram, 2000.]
  - Institute of National, Regional and Local Planning: [www.orl.arch.ethz.ch](http://www.orl.arch.ethz.ch) ["Transport and Urban Planning in Curitiba," Cassio Taniguchi, 2001.]
  - People & the Planet: [www.peopleandplanet.net](http://www.peopleandplanet.net) ["Brazil's urban laboratory takes the strain," Christina Cavalcanti, 1996.]
  - Research and Urban Planning Institute of Curitiba (IPPUC): [www.ippuc.org.br](http://www.ippuc.org.br)

ship increased by 65% and per capita gasoline consumption fell by 9%.

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