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## An Ethos of Sustainability: Integrated Sustainability for Urban Development

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## An Ethos of Sustainability: Integrated Sustainability for Urban Development

### Abstract

Curitiba, Brazil has become an international model for sustainable development and social regeneration. Its success has been despite a diminutive budget and rather has depended on creative, multi-dimensional solutions that solve multiple problems simultaneously. This paper analyzes Curitiba's urban parks and public transportation policies in relation to a holistic definition of sustainable development. The purpose of this article is to highlight the manner by which Curitiba has created an ethos of sustainability so that other cities might learn to emulate this model while recognizing the ways in which many of these policies are specific to the place where they are implemented. Faculty Sponsor: Dr. Laretta Frederking

# An Ethos of Sustainability: Integrated Sustainability for Urban Development

## **Peer Review**

This work has undergone a double-blind review by a minimum of two faculty members from institutions of higher learning from around the world. The faculty reviewers have expertise in disciplines closely related to those represented by this work. If possible, the work was also reviewed by undergraduates in collaboration with the faculty reviewers.

## **Abstract**

Curitiba, Brazil has become an international model for sustainable development and social regeneration. Its success has been despite a diminutive budget and rather has depended on creative, multi-dimensional solutions that solve multiple problems simultaneously. This paper analyzes Curitiba's urban parks and public transportation policies in relation to a holistic definition of sustainable development. The purpose of this article is to highlight the manner by which Curitiba has created an ethos of sustainability so that other cities might learn to emulate this model while recognizing the ways in which many of these policies are specific to the place where they are implemented.

## **Keywords**

Curitiba, Brazil, sustainability, urban planning, Jaime Lerner, culture

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## INTRODUCTION

By 2050, the global population is expected to reach 9.3 billion people. Urban centers, which already constitute over 50 percent of the global population, will be home to two-thirds of this increased population, or over 6.2 billion people (World Urbanization Prospects: The 2011 Revision 2012). Currently, urban centers contribute 80 percent of global pollution, and this amount will increase as already overburdened cities come under pressure of growing populations (World Urbanization Prospects: The 2011 Revision 2012). An initial look at these figures appears gloomy, particularly in light of already dire environmental conditions. However, increasing urbanization also offers a great opportunity for sustainable development if handled correctly, a chance to turn deficits into opportunities. Arguably it is this assets-focused mindset that has made Curitiba, Brazil globally noteworthy in matters of sustainable development. Cities have long been the focal points of social and political change, centers for the “clash of ideas” that have made possible the invention of writing, democracy, the Renaissance, and much else. Solutions to mounting environmental pressures will require similar shifts in social consciousness and political operations at the core of urban society. The sustainability renaissance that will foster these changes is gaining momentum and Curitiba is at its center.

In 1987, the World Commission on Environment and Development, or the Brundtland Commission, presented what is possibly the most widely employed definition of sustainability by describing it as development “that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Our Common Future 1987:54). In many ways this definition and the guidelines that followed it, all of which emphasized social equity and environmental stewardship,

represented a radical break from much contemporary development and economic philosophy. Since this definition, sustainability has become a central talking point on the global stage. The Brundtland Commission, and many since, have emphasized components that are essential to sustainability, an exhaustive list of which would be endless and inconclusive. However, three meta-categories routinely appear from these lists; environmental sustainability, social durability, and cultural preservation. These components are best envisioned as concentric circles, the largest of which is the environment, which surrounds the society in which culture exists. Each progressively larger circle influences all of those that lie within it and at the center of all three is the individual person, whose wellbeing depends on the health of the encompassing factors. Holistic sustainability, that which is essential for meeting both present and future human needs, is best pursued when sustainability within each of these factors is incorporated into the very framework of social policy rather than being “bolted on” as a side note in a separate department or policy statement. Chris Laszlo and Nadya Zhexembayeva describe this strategy for businesses as “embedded sustainability,” a conception of sustainability where “the goal is not green or social responsibility for its own sake,” but rather an incorporated ethos of sustainable practices (Laszlo and Zhexembayeva 2011:100). Applying this framework to development policy changes the nature of much urban planning policy, a fact that Curitiba demonstrates to great effect. This paper will look at how the environment-social-cultural model of sustainability was applied to Curitiba’s green space and transportation policies. Before analyzing those two policy areas however, it is important to look at how the stage was set for their implementation.

## CURITIBA'S SOCIOPOLITICAL BACKGROUND

Located on Brazil's Serra do Mar Plateau in the southern state of Paraná approximately 200 miles south of Sao Paulo and 50 miles from the Atlantic coast, Curitiba, the state capital, has risen to great prominence due to its development techniques. Its rise to ecological stardom is predominantly a result of the vision of Jaime Lerner, an architect and the city's mayor for three terms beginning in 1972. The success of his policy plan was greatly influenced by social and political foundations on both the local and national stages that were laid long before Lerner set foot in office.

Nationally, the shaping of Brazil's political environment begins under Portuguese rule. As a colony, Brazil developed a primarily agricultural economy. The region around Curitiba, due to its temperate climate and rich natural resources, attracted immigrants from Germany, Poland, and Italy who formed the agricultural class (Moore 2007:75). Socially, the structure that resulted under this immigrant, agrarian economy resembled antebellum southern United States, with a strong hierarchical class structure favoring wealthy land owners. This social structure prompted a backlash led by a semi-authoritarian group of nationalists called the Tenentista that helped move Brazil into the industrial age. Though the Tenentista overthrew the agrarian class system, the political system they established, called *Estado Novo*, maintained an autocratic ruling elite, but replaced agrarian landowners with technocrats (Moore 2007:77). In spite of this swapping of one authority for another, the Tenentista were relatively popular simply because they had helped to oust the unpopular agrarian landowners.

This technocratic, semi-authoritarian model characterizes much of Brazilian political culture and set the stage for the success of Lerner's policies in Curitiba. For

instance, many of the initial policy steps of the Lerner plan that were particularly unpopular in the beginning, such as creating pedestrian only streets by closing roads in the city, depended on autocratic decision making processes (Rabinovitch and Leitman 1996:49). Though the establishment of many of these policies are hailed as urban development genius, the manner of their establishment via autocratic decision has drawn some criticism. These critiques stem from fears that holding up Curitiba as a model to other Latin American cities may only serve to perpetuate what Fernando González calls "traditional political vices of Latin America" (González 2008:149). Despite governmental transparency established by the Lerner administration to counter corruption, the degree of the centralization involved in Curitiba remains a point of controversy in western political discussions.

In addition to autocratic rule, the Tenentista revolt set the political stage by largely removing lawyers from the political scene. Due to their roles in assisting the agrarian elite with the accumulation of power, lawyers were largely discredited in the *Estado Novo*. Given the emphasis by the Tenentista on planning and technocratic rule, it is not altogether surprising that architects stepped into the political vacancy left by lawyers (Moore 2007:78). Before Lerner, who was also an architect and planner, took office, Brazil had seen city architects such as Juscelino Kubitschek, the former mayor and architect of Bello Horizonte and the president of Brazil elected in 1955, and Ney Braga, the mayor and original planner of Curitiba and later the president of the state of Paraná, rise to positions of great influence (Moore 2007:79).

Locally, the lead up to the implementation of the Lerner development plan involved rapid immigration following World War II, largely from Eastern Europe

and Japan. Curitiba consistently maintained the position of the fastest growing city in Brazil at an average rate of 5.36 percent per year from the 1950's through the 1970's (Irazábal 2005:88). These rapid growth rates put increasing pressure on city infrastructure, particularly transportation, spurring political motivation for long term planning. Ney Braga, Curitiba's mayor between 1954 and 1958, kicked off the planning process by establishing the city's first mass transit system and many of the governing agencies, including the Urban Planning and Research Institute that was later used to great effect by Lerner (Irazábal 2005:87). Additionally, Braga would become key to the Lerner plan by first arranging for Lerner to be instated as mayor in 1972 (Moore 2007:77; Brugmann 2009:226). In addition to Braga, the success of the Lerner plan also depended on another local political figure.

Ivo Arzua, the mayor of Curitiba directly preceding Lerner, primed the pump for development by introducing the issue to the public via a competition involving the best city development plan (Moore 2007:78). Though the initial plans severely underestimated future growth rates and were largely unsuccessful in mitigating its negative impacts, their implementation by Arzua developed a public awareness concerning development that set the stage for future development by Lerner that has earned Curitiba such credit for sustainable design.

## **CURITIBA'S DEVELOPMENT POLICIES AND SUSTAINABILITY**

The increasing severity of global climate change has brought the need for environmental sustainability to the forefront of many political discussions. While climate change is perhaps one of the most notable issues, it is by no means alone. As the encompassing sphere in which society and culture exist, environmental sustainability is

pursued in order to provide a "sufficiency," in the words of Wendell Berry, of resources necessary to a healthy existence (Berry 2010:10). Making "sufficiency" of resources the goal of sustainability differentiates that movement from stereotypical "environmentalist" movements. Sufficiency does not ascribe a greater value to the natural environment than to humans, nor vice-versa. The goal is to ensure that environmental conditions are sufficient to ensure the wellbeing of the environment, society and culture on which the individual depends.

Though Curitiba is regarded as a model of an ecologically sustainable city, few of its original policies are explicitly environmental in their purpose, but rather were results of creative cost-cutting measures. The city's parks are a great example of this. Initially the parks were responses to the issue of flooding in the city and were constructed in lieu of concrete channels, which are the predominant urban planning method of dealing with such problems (Brugmann 2009:217). Because the city could not afford mechanical mowers to maintain these parks, shepherds were hired to bring their sheep into the city to cut the grass thereby reducing emissions from gas powered mowers and providing natural fertilizer for the parks (Kroll 1999:95). These parks continue to provide ecological habitat within the city, reduce the urban heat island effect by increasing green space, and reduce pollution both by serving as ecological "sinks" and by cutting the need for mechanical mowing equipment. All of these aspects improve the environmental quality and sustainability of the city by working with ecological cycles.

Curitiba's transportation policy functions in a similarly unintended environmental manner. Its creative high speed bus system, in addition to costing a fraction of traditional metro systems

(Rabinovitch and Leitman 1996:49), has increased ridership from a mere 25,000 riders per day to over two million per day, constituting 72 percent of all commuter travel. This results in less fuel use than any other Brazilian city despite the highest rate of car ownership of any city in Brazil (Frausto 1999:45; Kroll 1999:95). This contributes to improved air quality and reduced pollution, making Curitiba's air among the best of any city in Brazil (Frausto 1999:43). Additionally, both the parks and the transport policy have significant social benefits.

Social durability refers to the ability of a society to respond to imbalances between groups caused by economic, social, and political forces by limiting those inequalities and improving quality of life for all people, not just a privileged few. Brazil's Tenentista revolution is a good example of how unequal societies fuel social unrest. A sustainable society cannot hope to exist under such socially destructive conditions because social and economic stress increases the likelihood of violence (Zinn 2003:39). Therefore, in order to be sustainable, a society must endeavor to reduce the inequality among its citizens by working to improve quality of life across the board, but particularly for the poor and minority groups. Curitiba's park system improves the social quality of life in several ways.

In addition to providing urban habitat for various species, Curitiba's parks also provide more urban green space per capita than any other city in the world (Brugmann 2009:217). The expansion of public places such as parks increases the public activity of Curitiba's populace, a trend noted by Jaime Lerner in the years following the city's rebuilding (Lerner 2005). Jane Jacobs argues that such increases in public activity serve a dual purpose. First, greater public activity fosters a sense of community ownership of parts of the city as residents of those areas more routinely walk through them. This

sense of ownership contributes to the second benefit of crime reduction. More routine activity in public spaces has the potential to reduce crime rates by increasing the number of "eyes on the street" that can see and possibly prevent crimes. Such "eyes" depend on routine activity in public spaces in order to spot and stop crimes that might otherwise take place (Jacobs 2011:38). Curitiba's parks foster just such activity. Additionally, numerous psychological studies have indicated that the presence of green space improves mental health and reduces stress levels (Louv 2008; Stigsdotter et al. 2010). These factors contribute to improved social durability by improving quality of life for all citizens. Similarly, the city's transportation policy contributes to improved social equality in several ways.

First, the ubiquitous availability of public transportation, which covers 435 miles out of 682 total miles of roads in the region, offers much greater mobility for low income residents thereby improving their access to economic needs (Frausto 1999:45). Moreover, this transportation is available a lower cost than in many other cities. Even for low income Curitibaanos, transportation constitutes only about 10 percent of the average family budget (Pearce 1992:52). Furthermore, decommissioned buses were repurposed as mobile schools in order to improve access to education (Kroll 1999:93). Finally, in order to increase ridership, the city offered residents bus tickets in exchange for recovered waste, a program that helped to clean up the city, improve social ownership of neighborhoods and provided free transportation for low income citizens (Rabinovitch and Leitman 1996:49). All of these factors, which were embedded components of Curitiba's green space and transportation policy, worked to improve the social durability of the city, thereby improving its sustainability. The final aspect

to be discussed is the role of cultural preservation in Curitiba's urban policy.

Cultural preservation is a key component of sustainability. It is central to both instilling values of self-restraint and respect that are critical to sustainability, and to passing those values down through generations thereby helping to perpetuate a sustainable society. On the individual level, connection to these unique cultural characteristics is often critical to the psychological and social well being of individuals (Hensley 2009:218). The degradation of cultural identity is often the first step towards the destruction of personal identity, the pervasive lack of which can contribute to social instability.

Secondly, preserving cultural diversity is important to developing a sustainable society because, while no single culture may epitomize ideal environmental, social, or political values, each may contain pieces of wisdom that together can help produce a sustainable society. In the global pursuit of a sustainable human existence, the loss of cultural diversity is analogous to the loss of possible cures for cancer as world rainforests are destroyed. Thus maintaining cultural diversity stands to benefit not only the well-being of individuals in those threatened cultures, but also the continued survival of humanity through the sharing of information. An important factor to recognize is that cultures are not static, nor should they be. Slavery, oppression of minority groups, and the subjugation of women have been characteristics of many cultures throughout history. Making those cultural traits less prevalent is a great benefit of globalization as exposure to different values and perspectives prompts internal reflection and change. However, change within a culture, even one that is profoundly oppressive in certain ways, is not analogous to the abandonment or destruction of that culture. Globalization, that great conqueror

of cultures that is spurred on largely by western values, must not make the mistake of thinking that an affront to its values constitutes grounds for dismissing a culture entirely. The continued engagement of cultures in a globalized world, a scenario that is aptly described by what John Stuart Mill referred to as the "clash of ideas," serves to benefit all through the sharing of generations of accumulated knowledge. Preserving and protecting cultural diversity in the world is, thus, not simply a matter of moral concern, but also one of self-preservation.

Curitiba engages this effort to preserve cultures by employing parks as a means of cultural expression. In an effort to reduce design costs, the Lerner administration involved cultural groups from the cities large immigrant population producing numerous different styles including the Japanese gardens, the Ukrainian park, and the German wood among others (Lerner 2005). Besides incorporating community involvement and producing a sense of resident ownership, these cultural parks likely foster a kind of cultural dialogue that implicitly sets many, though perhaps not all, of the represented cultural groups on an equal playing field, a significant step towards reducing the marginalization that leads to a socially unsustainable society.

Though more tangential, Curitiba's public transportation system also promotes culture, albeit in a different way. While Curitiba's parks help preserve historic cultures, the public transit system, among other characteristics, has become part of what might be called a culture of sustainability in Curitiba. In addition to simply being popular, with a consistent approval rating of 89 percent (Brugmann 2009:214), the fact that Curitibaanos drive less than in other cities despite having more cars per capita than any other city in Brazil suggests that Curitiba is developing a unique culture based on the



environment provided by the city. Alone this is not surprising, nearly every city has what could be called a culture. What is unique about Curitiba is that its culture revolves around the factors that make it environmentally and socially sustainable, such as its parks, its transit system and socially diverse atmosphere. In many respects, the transit system lies at the heart of this new culture based on ecologically and socially sustainable values and traditions.

## **CONCLUSION**

The past 40 years of development in Curitiba include many lessons that will be critical if the rest of the world's cities are to begin more sustainable development. However, it is important to recognize some obstacles to applying these lessons abroad. Firstly, while the general lessons may be globally applicable, the individual policies are not. This is because those individual policies were tailored to meet the needs of Curitibaanos, which is why they were effective, but they would not be as effective, or effective in the same way, anywhere else. This is in large part because Curitiba's sociopolitical background is unique, at least compared to the rest of the world. While Curitibaanos have been accustomed to the degree of authoritarianism that made Jaimer Lerner's policies effective, other countries are not necessarily so inclined. Thus, implementation must match the political culture of a city seeking to apply these lessons. Finally, Curitiba found ways to employ its lack of capital in order to spur creativity and encourage public involvement. While money is often important in development, excessive dependence on it has the potential to stifle creativity in policy writing and may actually make encouraging social involvement more difficult. This is particularly pertinent in the United States where greater societal wealth, combined with a tradition of individualism, discourages

significant levels of civic involvement, which were essential to Curitiba's success.

Despite these obstacles, Curitiba's example points to several key lessons for effective urban sustainability. Firstly, Curitiba's development has seen such success in part because the Lerner administration sought solutions to problems that fit the needs of the city's inhabitants. This sounds excessively simplistic, but a fatal flaw of much contemporary city planning policy since Ebenezer Howard's "garden city" and Le Corbusier's "radiant city" design has been the assumption that if only the ideal infrastructure could be created, then the operations within the city will operate perfectly. The problem with this assumption is that city's include people and people are different, not only from each other, but from other groups of people around the world. Curitiba wasn't successful simply because it built a public transit system and large parks that fit its infrastructural needs, Curitiba was successful because it built transit systems and parks that fit the needs of its inhabitants.

Secondly, even within the limited discussion of Curitiba's development policies it is evident that single policies solve multiple problems. In every scenario, from offering bus tickets to promote the new bus system in exchange for collected trash to involving community groups to design parks, Curitiba's policies never approached a singular problem with a singular solution as is common among many conventional urban policies. This tactic was motivated by a diminutive budget, but it yielded impressive results because it prompted creative solutions rather than conventional ones.

Finally, Curitiba is notable for its sustainability because, either intentionally or unintentionally, the Lerner administration recognized that in order to improve the well being of the individuals within the city, development policies had to improve their

ecological, social, and cultural environments. Conventionally, environmental policy is in a separate category than social policy and cultural preservation policy rarely appears at all. Yet all three are essential to human wellness. Curitiba has gained notoriety because its development demonstrates a recognition of these needs. By approaching sustainability from multiple levels, Curitiba's development has embedded a unique city culture in its residents built on the values – including environmental, social, and cultural awareness as well as thrift and creativity – communicated through these policies. This ethos of sustainability is what will continue to make Curitiba a sustainable city long after individual policy plans have run their course.

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