LAND USE POLICIES AND URBANIZATION OF INFORMAL SETTLEMENTS: PLANNING INITIATIVES FOR ENVIRONMENTAL PROTECTION AREAS IN CURITIBA, BRAZIL

By

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Joseli Macedo
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By

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May 2000

Chair: Robert C. Stroh, Ph.D.
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The United Nations concedes that the conditions of life for the one billion urban dwellers living in developing countries today are not well known. The information available on informal settlements, the dominant form of low-income housing in developing countries, is inadequate and insufficient. The development of a solid theoretical foundation is necessary to understand the complex informal settlements formation process and to develop policy that is realistic within the social, economic, and political contexts. Successful housing programs require more than four walls and a roof. Better performances are typically accompanied by support mechanisms in terms of government policy, employability enhancement, empowerment of the people and their communities, preservation of environmental quality, and development of social and economic support services.
This dissertation analyzes the effectiveness of planning interventions in controlling and managing land invasions within the metropolitan region of Curitiba, Brazil. The philosophical, theoretical, cultural, and historical issues of informal settlements in Latin American countries in general, and in Brazil in particular, provide the research background to support a holistic approach. The analytical framework is based on development policies, including internal and external factors that have influenced and guided them. An analysis of initiatives to urbanize informal settlements determines the extent to which land use policies induce plans and support viable solutions.

A holistic approach is necessary and aims to arrive at a conclusion in the framework of social, economic, environmental, legal, and political conjunctures of the informal settlements problem. The evaluation of existing policies, plans, and programs that make housing affordable or at least provide adequate infrastructure systems to sustain human settlements, will assist in determining which policies are more appropriate in satisfying the basic needs of urban dwellers. The comprehensive approach within a planning framework should serve as a foundation upon which other disciplines can build and encourage other scientists to develop creative ways to apply knowledge to the betterment of people’s quality of life.
CHAPTER 1
INTRODUCTION

The immense growth of inadequate human settlements and substandard agglomerations all over the world, developed countries included, is alarming. The increasing number of people living in less-than-desirable conditions attests to the absence of effective solutions and the need for adequate and affordable shelter. The United Nations concedes that the conditions of life for the one billion urban dwellers living in developing countries today are not well known. The information available on informal settlements, the dominant form of low-income housing in developing countries, is inadequate. It is estimated that at least 20 percent, but maybe as much as 50 percent of urban dwellers, live in slums or squatter settlements (UNCHS/Habitat, 1996).

Policies and initiatives to control and diminish the proliferation of informal, insalubrious, and environmentally unsafe settlements have been implemented with differing degrees of success. Evaluating successful and unsuccessful policies that have made these initiatives viable is a way to determine how to repeat the successes and avoid the failures. Whether the root of the problem lies in the government policies put in place to provide low-income populations with shelter, or in the inappropriate implementation of well-intentioned programs, it becomes important—if not indispensable—to devise ways to provide access to land and the means to build housing so that the entire population is sheltered.
Scope of Work

This research project investigates the effect of land use and environmental policies on informal settlements located in the metropolitan region of Curitiba, Brazil. The area to be studied is located within the watershed that serves as the main water source for the entire city, primate in the state, and most of the metropolitan region. This area has been invaded very recently and planning interventions are currently attempting to regulate the land, urbanize the area, and provide basic infrastructure while protecting the watershed. Emphasis is placed on past and present governmental land use policies and environmental legislation, their performance as far as meeting the needs of the population, and their conformance to the existing urban and regional comprehensive plans. The recent movement towards decentralization is explored and initiatives stemming from decentralizing policies are compared with those implemented under federal plans.

The subject area of human settlements encompasses a variety of issues, among them land tenure, citizens rights, environmental conservation, social welfare, land use legislation, and economic development, to name a few. The nature of the topic at hand, as is the case with all research in urbanism, is comprehensive. Evidently, for the purposes of this dissertation, the argument needs to be limited. The study focuses on urban areas and the effectiveness of planning interventions in controlling land invasions in environmentally sensitive areas within the metropolitan region of Curitiba, Brazil. Intense migration to this primate city in the last thirty years and, more recently, settlements established in areas inappropriate for habitation from both a human and an
environmental viewpoint, concentrate in this region two of the most pressing urban problems today, namely, uncontrolled growth and environmental degradation.

Shelter scarcity is rooted in land availability and access; an analysis of land use policies to find out how they affect the development of informal settlements is needed to shed some light on the underlying problem. In analyzing an area within the watershed of a city of two million inhabitants, there is a pressing need to determine whether an environmentally sensitive area may be occupied while still maintaining the quality of its resources or the ecocentric alternative—preserving the land and not allowing its occupation under any circumstances—may be more appropriate, if not more politically wise.

The impetus for this study comes from a desire to better understand the social, cultural, and legal conditions that allow the development of informal settlements. Have land use policies and affordable housing programs promoted or hindered the development of informal settlements? What policies have allowed informal settlements to consolidate and thrive as successful developments? What policies and planning initiatives have physically and socially integrated consolidated informal settlements into the urban grid? Legislative measures are critical to this analysis. Even if sometimes, particularly in Latin American countries, enacted legislation is unenforceable, legislation provides the foundation for a concerted effort to improve the status quo. The case chosen to exemplify the issues discussed in this research project calls for an understanding of the legal processes that are available to, for instance, regulate land tenure. How can legislative measures protect the public patrimony and landowners while granting property rights to those who invade public and private lands? How can legislation aiming at
environmental conservation accommodate the occupation of environmentally protected areas?

Looking at access to land through the lens of urban planning will allow the inclusion of technical, institutional, and normative values needed to deal with the problem. A holistic approach is necessary and aims to arrive at a conclusion in the framework of social, economic, environmental, legal, and political conjunctures of the informal settlements problem.

**Methods**

The nature of urban planning research dictates that issues be approached within a broader context than that of traditional scientific research, comprising various aspects intrinsically related to the problem at hand. One could not address urban problems such as the effect of land use and environmental policies on human settlements, and housing delivery and affordability without placing them in an urbanistic framework. The nature of this interdisciplinary study is both practical and theoretical, and its foundation comprises physical, environmental, social, cultural, economic, legal, and political aspects of the informal settlements phenomenon as applied to favelas and low-income housing developments in Curitiba, Brazil.

The philosophical, theoretical, and historical issues of informal settlements in Latin American countries, more specifically Brazil, will provide the research background to support a holistic approach. The analytical framework is based on development policies, including internal and external factors that influence and guide said policies. The analysis of initiatives to urbanize informal settlements determines the extent to which land use policies induce plans and support solutions. Environmental legislation is
included in the analysis as a crucial element affecting informal settlements in the study area. Most fieldwork consisted of information gathering concerning the effects of policies and laws on planning initiatives, data collection on existing informal settlements and relocation initiatives, and site visits to favelas located in environmentally sensitive areas regardless of all restrictions and mandates intended to protect the integrity of such areas. Other information gathered includes data on development and housing programs, social initiatives, and environmental legislation, land use and housing policies specifically put in place to support recent planning initiatives.

**Methodological Justification**

Case studies were, for some time, considered to be a lesser research method in the field of social sciences. More recently, they have been identified as the most appropriate tool to understand complex social phenomena (Yin, 1994). A distinctive form of empirical inquiry, case studies rely on analytical, not statistical, generalization—the investigator generalizes a particular set of results to some broader theory. Here a case study will be used to generalize a theoretical proposition. A single-case design is appropriate when the case represents a critical test of existing theory, is an extreme or unique event, or serves a revelatory purpose (Yin, 1994). The case addressed in this research project fulfills all three criteria for single-case design:

- it challenges the premises of current planning practice;
- it is an extreme and unique event in that it is the informal settlement that has grown more rapidly in the region and it is located in the main water supply watershed for a city of 1.5 million inhabitants; and
it serves a revelatory purpose because it depicts a classic case of planning gone bad, that is, a daunting predicament taking place despite and, to a certain extent, because of all past planning initiatives.

Qualitative and quantitative research methods are not mutually exclusive (Cook, 1979; Bernard, 1994). Through an analogy between the discipline principles of social science investigators and the statistical concept of degrees of freedom, Campbell (1979) demonstrates the inherent complementarity of qualitative and quantitative methods by describing how qualitative, common-sense knowing is not replaced by quantitative knowing. He proposes a more sensible joint use of the qualitative and quantitative modes of knowing and recommends that case study researchers keep good records on the analogous aspects of their problem-solving activities as well as a record of all the theories considered in the creative solving process.

Informal settlements cannot be truthfully and correctly represented unless the social, human, political, legal, environmental, economic, and cultural aspects that intertwine in this context are taken into consideration. A comprehensive research strategy, such as case study research, is the most adequate because it allows “...an investigation to retain the holistic and meaningful characteristics of real-life events...” (Yin, 1994, p.3). Case studies have challenged established methods of social science research. It has been said that social scientists have a general tendency to “focus their investigations on pathology and disease rather than health and resilience” (Lawrence-Lightfoot and Davis, 1997, p.8). This is particularly true in prior studies of informal settlements, always presented as a social ill, an urban cancer, a result of the housing
problem. The negative connotation given to informal settlements has always placed narratives in a pathological context.

Case studies require that the investigator be recognized as an active actor of intervention (Lawrence-Lightfoot and Davis, 1997). The researcher cannot study a case without engaging in acts of social transformation, creating opportunities for dialogue, and facing ethical dilemmas in the process. As such, the narrative of a case study documents human behavior and experience within the particular context in which the phenomenon being studied is inserted.

The sources of evidence used in this case study include archival records, documentation, personal observations and interviews. Archival records and documentation corroborate evidence and augment information from other sources. The basic principles orienting the data collection process included multiple sources of evidence and the creation of a case study database. Multiple sources allow for a broad range of issues to be addressed, and the creation of a case study database aids in keeping the collected evidence separate from the case study narrative. Direct observation provides additional information and adds new dimensions for understanding the context and the phenomenon being studied. Interviews are essential sources of case study evidence because, as for most case studies, this one is about human matters.

According to Yin (1994) exemplary case studies go beyond methodological procedures and have five global characteristics: significance, completeness, alternative perspectives, evidence, and engaging composition. This case study is significant in that the subject matter is of general public interest and the underlying issues are, in theoretical as well as in practical and policy terms, globally important. Completeness is achieved by
a comprehensive collection of relevant evidence; explicit attention is paid to the
distinction between the phenomenon being studied and its context. Alternative
perspectives, including rival propositions, and adequate and compelling evidence are part
of the narrative. And finally, inspiration drawn from the portraiture method (Lawrence-
Lightfoot and Davis, 1997) makes for an engaging composition that adequately
communicates the results.

Relevance to the Field

The scientific relevance of this research project is denoted by the absence of
effective and successful solutions for the Latin American housing problem. The
increasing number of informal, insalubrious, and environmentally unsafe settlements and
substandard agglomerations throughout the developing world verifies the truthfulness of
this statement. It is necessary to study the reasons for the difference in performance of
particular initiatives and policies and the means by which success can be achieved and
duplicated in other locations.

Research conducted in the last 15 years demonstrates that the housing problem,
historically a problem of underdeveloped countries, has reached global magnitude
(UN/DPI, 1996). Inadequate, non-affordable, or non-existent shelter presents a challenge
to the scientific community who can develop technical solutions for the expeditious and
economical construction of housing units, as well as to the political community who can
create programs and opportunities for land ownership and the development of affordable
housing. However, successful housing programs require more than four walls and a roof.
Better performances are typically accompanied by support mechanisms in terms of
government policy, employability enhancement, empowerment of the people and their
communities, and development of social and economic support services, all of which call for a comprehensive approach to analyzing housing-related issues.

The development of a solid theoretical foundation is necessary to understand the complex process of informal settlements formation and to develop policy that is realistic within social, economic, and political contexts. This understanding will contribute to the elaboration of policy that is sufficiently concrete and specific for implementation at the national and local levels.

**Research Objective**

The ultimate intention of this dissertation is to propose an urbanistic philosophy for the development of human settlements, taking into account the environmental, social, economic, and political aspects that make the consolidation of these agglomerations feasible and affordable within existing land policy frameworks.

The evaluation of existing policies, plans, and programs that make land accessible, shelter affordable, and that provide adequate infrastructure systems to sustain human settlements, assists in determining which policies are more appropriate in satisfying the basic needs of urban dwellers. The characteristics of and problems generating from informal human settlements are generally common to most developing countries, so the identification of policies that foster better performance in Brazil should be applicable to other developing countries. The results of this research project should be applicable to any urbanized area where the need for affordable housing exists and where the current systems are deficient, from the physical and environmental, social, economic, legal or political points of view.
Policy recommendations to respond to basic shelter needs of people unable to gain access to land or to participate in the formal housing market are part of the concluding chapter. Planning initiatives that facilitate the integration of informal settlements to the urban area are proposed. This research shall contribute to filling the gap in our knowledge of land use and environmental policies as they apply to the housing problem, or better yet, to its solution. Although the specific case study analyzes land use and environmental policies in Brazil, the research results should be useful to a wider audience. The comprehensive approach within an urban planning framework should serve as a foundation upon which other disciplines can build, encouraging other scientists to develop creative ways to apply knowledge to the betterment of people’s quality of life.
CHAPTER 2
INFORMAL SETTLEMENTS: A GLOBAL PHENOMENON

Such settlements are known as ‘ranchos’ in Caracas, ‘callampas’ and ‘campamentos’ in Chile, ‘favelas’ in Rio de Janeiro, ‘barriadas’ and ‘pueblos jovenes’ in Lima, ‘villas miserias’ in Buenos Aires, ‘colonias proletarias’ in Mexico City, ‘barong-barongs’ in Manila, ‘kwettits’ in Rangoon, ‘gecekondu’ in Istanbul, and ‘bidonvilles’ wherever French is spoken. (Dwyer, 1975, p. 3, note)

The phrase informal settlements has been accepted as well as refuted by scholars in numerous disciplines. According to Leeds and Leeds (1978), the occupation of land that does not belong to the person settling on it is what distinguishes informal settlements from other settlements. The inappropriate invasion of land characterizes these settlements as an illegal form of land use because occupation is neither based on the ownership of such land, nor in payment of rent to its legal owners. In a study identifying the significant variables that determine the character of squatter settlements, Leeds argues that the “only uniform identifying characteristics are their illegal and unordered origins by accretive or organized invasion and, because of their origin, their continued juridically ambiguous status as settlements” (Leeds, 1969, p.44). Much controversy could be created in trying to devise a precise definition for informal settlements, but it seems reasonable to typify them as having two or more of the following characteristics: illegal occupation of land, shelter built through self-help, low-income household, and absence of infrastructure and services (Gilbert and Gugler, 1987).

For the purposes of the present argument, planned settlements are equated with formalized land rights. References to planned settlements include those that not only
were planned before implementation, in the sense of having an area geometrically subdivided and demarcated, but also those that comprise lots that, having been bought and sold within the prevailing legal system, abide by the land use and zoning regulations of their respective urban areas. Other types of occupations and arrangements are considered informal. Throughout this document, informal settlements are equated with unplanned settlements, with little or no infrastructure, spontaneously or purposefully occupied.\footnote{Some scholars assert that the majority of informal settlements are of a non-spontaneous nature; they are created illegally but in a planned and premeditated manner, by coalitions of economic and political interests (Burgess, 1981; Ward, 1983). In his essay “Junctions of Town and Country,” Spiro Kostof (1989) discusses the distinction between the processes of spontaneous and planned settlements; he argues that there is no aspect of human settlement that is not, at least in part, the result of premeditated action.} This characterization includes all settlements comprising groups of any type of shelter located on land that does not constitute formalized and regulated property according to what is recognized in the urbanized areas of the Western hemisphere to be privately owned. This land, untitled or titled to someone other than the occupant, may have been paid for by the dweller or not, but there is no formal, legal title deed documenting the transaction. This generalization is necessary because of the many types of holds on lands that exist today: some are called squats, others illegal or irregular subdivisions, yet others invasions. Since most differentiation is made based on whether the land legally belongs to its occupant and not on how it was appropriated, the statement above is pertinent. The word *favelas* will also be used throughout the document, since this is the most common term used to characterize informal settlements in Brazil, the country on which this research focuses. Without prolonging the etymological discussion too much, it is worth mentioning the other side of the spectrum. Nezar Alsayyad
(Bourdier and Alsayyad, 1989) argues that in Third World countries the overwhelming
majority of the urban poor live in “traditional settlements” and that we refer to these as
“squatter” or “informal” settlements because we fail to see that behind those structures,
deemed “inadequate” by us, are traditional modes of existence, traditional lifestyles and
traditional economies (Bourdier and Alsayyad, 1989, pp. 530-531).

The Genesis of Informal Settlements

The relationship among people, land, and shelter is complex and differs between
countries depending on their history, culture and legal system (Eliade, 1957; Doebele,
1983; Rykwert, 1988; Payne, 1997). Even though some societies still operate under
customary tenure systems, most have, for both social and economic reasons, regulated the
ways in which land may be held (Payne, 1997). Regulated systems, however, have led
people who do not conform to them to create extra-legal systems, thus abandoning the
formal approaches to settlements (UNCHS/Habitat, 1982; De Soto, 1989).²

Informal settlements are not simply a result of massive rural-to-urban migration
or the perception that urban areas offer a better quality of life, let alone the allure of the
bright lights of the city. Informal settlements are products of national and regional
inequalities due to the changing economic nature of nations and the lack of appropriate
policies to mitigate the effects of change. Modernization and industrialization act as
catalysts for the reorganization of labor and economic relationships within rural and

² The terminology distinguishing “informal” from “formal” sector was first introduced by
K. Hart’s classic paper “Informal income opportunities and urban employment in
remarkable amount of research and writing on the informal sector was produced in the
1970s. For a discussion of the reasons for the rapid diffusion and official adoption of the
formal/informal distinction, see Bromley, 1978. For a comprehensive review of research
and analytical approaches, see Moser, 1978.
urban areas. The economic push and pull associated with these processes is related to employment and is affected by geographic, infrastructure and service factors. A significant economic push from rural areas can be attributed to the exclusion of small farmers from the agricultural economy by large landholders. With massive numbers of displaced small farmers relocating to urban core areas for access to wage employment, uncontrolled and unplanned urbanization was inevitable. The housing supply in urbanized areas was inadequate, and with the low wages these workers were earning, formal housing was not affordable; their only option was squatting.

The advent of informal settlements has also been attributed to the inability of governments to provide affordable housing to low-income families, particularly in the largest urban centers of developing countries (Abrams, 1964; Turner, 1977). Payne (1997) argues that what seems to be an inability of governments to control or regulate land through direct action may be a reflection of the strong demand for land as much as a lack of government commitment or capacity to act. Rising costs and delays in executing formal land transactions have also been blamed for the proliferation of informal settlements in various countries. Under some formal systems, the cost of transferring the rights of land exceeds the market value of the land itself (Dale, 1997). For lack of a better option, these settlers, often migrants in search of employment and better living conditions, occupy vacant land, public or private, and build shelter for themselves.

Informal settlements are the alternative for those too poor to participate in the formal market of planned and serviced housing. The manner in which these settlements materialize is similar across the majority of developing countries. For instance, in Bogotá, Colombia, some settlements—Barrio of 65 and Las Colinas—started as planned
rental housing built by the property owners, but expanded into abutting municipal land where squatters built their own shacks; others—El Carmen and El Gavilán—were occupied after illegal sale of subdivisions (Dwyer, 1975). Yet others started with the opportunity to occupy publicly owned vacant land in river valleys, hills and deserts, such as the ‘barriadas’ of Lima, Peru (Turner, 1967; Turner and Mangin in Oliver, 1969; Dwyer, 1975).

The characterization of planned and informal settlements in Latin America is tied to the way they are defined. In terms of the urban built environment, perception is what determines their qualification. Informal settlements usually denote a spatial concentration of poverty. The perception that other city dwellers have of those who live in poor settlements feeds the ill will towards them. These settlements are viewed as social blight, urban cancer, a break in the cityscape, and this image is projected onto the residents regardless of their education or employment status. This view entails serious misconceptions and reinforces existing prejudices in such a way as to broaden the gap between what is perceived to be planned and legal and what is considered spontaneous, informal, and therefore, illegal.

Informal settlements are inadequate because they generally lack minimum health and safety standards. The random occupation of land by migrant and otherwise displaced families creates one of the biggest challenges to urbanization. Even when the land becomes subject to regularization, it is almost impossible to make the area comply with

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3 Ana Inês Sousa, president of the Nova Holanda Neighborhood Association, is a nurse and professor at UFRJ (Federal University of Rio de Janeiro) who was born in the favela and has no intention of leaving, even though she could afford another place to live (Pedrosa et al., 1990).
established land use and zoning standards, especially when the settlements are already consolidated. Some families occupy land in areas suitable to urbanization, but the majority invades areas that are completely unsuitable for occupation, such as riverbanks and riparian areas prone to annual floods, steep slopes prone to landslides, and landfills, because those are the only vacant areas in close proximity to urban areas and job opportunities.

To the casual observer, some planned settlements may resemble informal settlements. Developers and landowners sometimes contribute to the establishment of formal settlements that have the same characteristics of informal settlements, but that in fact were laid out, subdivided and sold, albeit through an informal document, to the dweller. These areas, lacking infrastructure and other urban services, have been defined as quasi-legal subdivisions (Harth-Deneke, 1981; Setzler, 1997). They are characterized by their peripheral location, a process of progressive or staged development, and striking variations in the quality of housing due to differences in investment. Some of the settlements labeled informal were actually planned, being irregular only in the legal sense; some consist of stable, solid dwelling structures, which are continuously improved and far from being blighted (Leeds, 1981; Ward, 1983).

Insecurity of tenure may prevent people living in informal settlements from investing in their dwellings and community amenities. If one were to define planned community as real estate built by construction professionals on serviced land and purchased by residents, the distinguishing factor between a planned and an informal community would be the illegality of possession of the land and the risk involved in investment when tenure is not yet established or guaranteed (Leeds, 1981). On the other
hand, a strong incentive to occupy land illegally is the low cost of establishment and maintenance. Housing units in this type of settlement are also exempt from property taxes, fees, and licenses to which other legal units are subject; self-help and mutual-help, the most common building methods, are more affordable than hired labor; and extra rooms may be rented out to supplement the family’s income.

Providing basic services to destitute populations illegally occupying land presents a quandary. The rate at which informal settlements receive urban services such as road grading, water, sewerage, and electricity has been considered a measure of the outcome of invasions (Roberts, 1992). Many municipal governments have not provided or improved basic services to poor communities because they did not want to encourage or legitimize extra-legal settlements. Regardless of political implications, lack of basic sanitation affects the health and welfare of both the resident population and communities around informal settlements. Protecting the health of the urban poor in informal settlements through the provision of basic services may appear to be prohibitively expensive, but the health and environmental consequences of allowing these populations to live in squalor will eventually prove even more expensive (UNCHS/Habitat, 1991).

Nowadays, with the continuous growth of most urban areas, informal settlements spring up in cities where, 30 years ago, the phenomenon was thought of as a social ill, something that only happened in the largest cities of the developing world. And despite the extensive research done on the subject, it seems better solutions have yet to be devised. The pattern of development is the opposite of a formal settlement (Figure 2-1): one, two, or a group of families occupy land not belonging to them, sometimes overnight,
and construct their dwellings. In time, additions to the original unit are made; eventually, the used wood boards and tin sheets are replaced with masonry; formalization and regularization follow the installation of infrastructure; more families move into the area, the consolidation is completed and eventually security of tenure may be obtained.

Figure 2-1: Pattern of Development for Informal and Formal Settlements
Source: Grenville Barnes, Ph.D., 1998.

**Historical Perspective**

The intense development of informal settlements in Latin American urban centers has increased steadily since the beginning of the twentieth century due to migration from rural to urban areas. Some of the larger metropolitan centers in Latin America experienced this phenomenon in more extreme patterns than others. The history of some

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4 Sometimes the number of families invading land at once is daunting: in February 2000, approximately 10 thousand families occupied a tract of land near Lima, Peru. For more information on this event, see Peruvian newspapers Diario Gestión (http://www.gestion.com.pe) and La República (http://www3.larepublica.com.pe).
invasions suggests that the form of squatter settlements depends largely on the responses of landowners and different factions of the state, especially local factions (Roberts, 1992).

Both public and private areas are invaded. In Latin American countries where governments still own large tracts of land, as urban centers expand these public lands are invaded by families that are not served by formal urban housing markets. In Brazil today, most invasions occur on private property, since publicly owned land is scarce, and new legislation has made it a punishable crime to occupy government land.5 Sometimes invasion of private land is actually promoted by landowners, particularly in cases where profit can be made; some invaded areas have low real estate value, so receipt of due compensation for what could be characterized as a taking may be advantageous to property owners who could not realize any profit if they were to place their property in the market. As for public land, invasion might not only be encouraged but also consummated by politicians attempting to expand their constituencies, particularly during election campaigns (Valladares, 1978).

There has been great variation in how governments and private owners respond to invasions on their land. Reactions range from calling in armed enforcers to protect the property, through accepting the invasions with resignation, to actually greeting the invasions as a chance for indemnification, accrual of property value, or the gaining of political mileage. The support, indifference or resistance of powerful politicians, either holding or running for office, also plays a crucial role in the response to invasions of land holdings.

5 For a comparison of invasions in public and private land, see Chapter 5 in this volume, Marginality in the Perfect City.
In the 1960s and 1970s, researchers began arguing that self-help was the most effective way to shelter low-income populations (Abrams, 1964; Turner, 1977). William Mangin (1967) and John Turner (1968, 1972, 1977) were the first to characterize squatter settlements as a solution to the housing problem. In her study of favelas in Rio de Janeiro, Brazil, Perlman (1976) concurred. This argument influenced other authors who pointed out some of the advantages of favelas as far as their dwellers are concerned: functionality, architectural creativity, location, free rent, no taxation, no license fees, low transportation costs, and sublease of extra rooms (Parisse, 1969; Perlman, 1976). Today, at least in the larger urban centers of developing countries, this has become a prima facie argument.

In the 1970s and 1980s, largely due to international pressure against dictatorships, most Latin American countries still under non-democratic regimes adopted democratic forms of government. Informal settlements were affected by the end of military rule in these countries; residents of these settlements represented a large segment of the population that suddenly became potential voters, and politicians became interested in catering to their needs and requests. In Brazil, with the support of the Catholic Church, a trend widely known as participatory planning evolved. Residents of informal settlements were to be involved in the design and development stages of projects to provide infrastructure and other social services to their communities. Some of these projects were so successful that in less than ten years the upgraded and urbanized areas could no longer be recognized as having started as favelas (Santos, 1981). The greatest hurdle for the complete consolidation of these areas was the demand by dwellers for security of land tenure.
The deterioration of living conditions of the poor, not only in Latin America, but also in virtually every developing country in the world and in some developed countries, became a great concern to the international community during the 1980s. The United Nations General Assembly designated 1987 as the International Year of Shelter for the Homeless, aiming to call attention to the plight of millions of people living in dire conditions and to obtain political commitment to improve the conditions of settlements and shelter for the homeless. The objective of this initiative was to challenge nations to devise realistic national shelter strategies and execute them, urging the participation of governments, non-governmental organizations, and the people themselves. A gradual shift in thought had already begun before this international initiative, but a new consensus has emerged since then.

Various hypotheses explaining the phenomenon of informal settlements have been developed and discussed by scholars; some have been observed in practice and evaluated while others remain conjectures:

- Informal settlements may be the solution, not the problem (Mangin, 1967). Neither governments nor the private sector have been able to duplicate the success, defined as sheltering families, of these informal arrangements. Relocating families from informal settlements to formally built housing projects has proven futile (Valladares, 1978). Understanding, instead of neglecting, these settlements would facilitate their transformation into viable, healthful environments (Peattie, 1987).

- Provision of shelter for the poor has been more effective when realized as a gradual process. Housing built incrementally instead of being provided by
governments in the form of public housing projects is a more effective means to provide shelter to low-income populations. Instead of programs to build housing, government policies should focus on building institutions and facilitating land development (Rodwin and Sanyal, 1987).

Presently, new schemes involving from land tenure and regularization to social and economic strategies are being tried in different places all over the world. Lessons gleaned from experiences in various developing countries can be tried and sometimes widely applied elsewhere; the diversity of alternatives is immense and there are as many potential solutions to the shelter problem as there are ideas of how to solve it.

The Phenomenon in Brazil

Oh São Paulo!...All dressed up in velvet and silk but with cheap stockings underneath—the favela.
(Carolina Maria de Jesus. 1962. Child of the Dark.)

The first favelas appeared in the largest Brazilian urban areas at the end of the nineteenth century, first in Rio de Janeiro then in São Paulo. By 1948, there were 105 favelas in the city of Rio de Janeiro. In percentage terms, Rio’s favela population represented 6.7 percent of the total population in 1950, 9.3 percent in 1960, and 13 percent in 1970. The estimates for 1979 suggested there were approximately 1.5 million people, or 25 percent of the city’s population, living in 375 favelas (Valladares, 1983). In 1983, Rio’s planning agency identified 377 favelas in the city; this same agency presented a study in 1993 where the total number of cadastered favelas is said to be 573, representing 17.7 percent of the population (IPLANRIO, 1993). All these estimates and counts vary with the criteria adopted, particularly the definition of favelas. A more recent
estimate states there are approximately 1,200 favelas in Rio de Janeiro (Pamuk and Cavallieri, 1998) (Figure 2-2).


In an attempt to provide shelter to the working class doomed to end up in the favelas of São Paulo, the populist government of the 1930s and 1940s adopted the policy of providing housing for the emerging workforce and building housing for factory workers known as Parques Proletários (Proletarian Parks). These were planned communities with units subsidized by the government or by the businesses employing the residents. This type of housing development has been criticized because of the potential for conflict it creates between employers and employees (Blay, 1980). Even with the provision of housing for workers by private sector firms, the accelerated growth of industrializing urban centers gave rise to informal settlements. The number of people flocking to cities combined with the inability of governments to provide affordable
housing to the masses resulted in people occupying vacant land, public and private, to build their own shelter.

In the city of São Paulo, the state capital, approximately 1.3 percent of its inhabitants lived in favelas in 1958, 1.6 percent in 1975, 2.5 percent in 1976, and 4.1 percent in 1978 (Valladares, 1983). In terms of land ownership, the data for the two largest cities in Brazil is telling. A study completed in 1964 showed that 23 percent of favelas in Rio de Janeiro were on land belonging to the Federal government, 27 percent on State government property, and 44 percent on private land (Valladares, 1978). Similarly to Rio de Janeiro, most informal settlements (55.9 percent) in São Paulo were on private land and 37.1 percent on public land, according to a 1974 study conducted by the Welfare Secretary (PMSP/Secretaria de Bem-Estar Social) (Valladares, 1983).

In the 1970s, the theory of social marginality gained prominence in Brazilian academic circles (Cardoso, 1971; Kowarick, 1975; Perlman, 1976; Santos, 1979); scholarly work was centered on the integration versus the non-integration of low-income urban population with special attention paid to unemployment and informal settlements (Valladares, 1983). Following the theory of marginality, the argument hinged around the theory of capitalist accumulation (Castells, 1977) and debate focused on the market forces that were pushing the poor towards the periphery of urban areas.

The customary approach to development then was to build planned housing on the fringes of urban areas to shelter the families being displaced by slum clearance projects. The intention was to provide people with basic infrastructure and decent housing; however, these new projects were located too far from the centers of employment, and without affordable transportation available, most families sold or “passed on” their
subsidized houses and went back to the better located informal settlements (Valladares, 1978, p.13). The fact was that, even with no or precarious sanitation services, dwellers would rather stay in their better located shacks than move to a sanitized lot in the periphery; there was a comparative advantage to having access to external economies (Azevedo, 1979).

Eventually nonetheless, urban areas of some cities grew so dense and the price of land turned so competitive, that development in the periphery became the new pattern of occupation. The first housing projects to emerge in these areas, where land was less expensive, were those built or subsidized by the government; informal settlements followed suit. The growth towards the periphery of the largest metropolitan centers reached an unprecedented scale in the 1970s, but it actually started in the 1930s. This trend toward the perimeter has also been attributed to pressures to develop the transport infrastructure and to real estate speculation (Santos, 1981).

Favelas in Brazil differ from city to city and within the same city. The topography of the occupied land offers the most striking differences. The favelas on the hillsides of Rio de Janeiro, today recognized internationally and even made into subjects of numerous works of art, are the first image conjured up in people’s minds when one mentions the phenomenon. Favelas on riverbanks and swamplands have a completely different feel to them. Nonetheless, a closer look will reveal that not only are the housing units very similar, but also the social structure, people’s demeanor, textures, smells, and sounds are remarkably alike.

Be it on a hillside, the bank of a river, or in swamplands, favelas are characterized by a seemingly lack of physical organization. Because lots are occupied at random,
therefore not demarcated, there is no alignment of houses; however, a cursory analysis of their placement might reveal some type of community organization, even a hierarchy of sorts. The dwellings sometimes are mere shacks, built of the most varied materials, from cardboard and tin to bricks and mortar (Figure 2-3). Favelas could be considered the most effective expression of construction materials recycling; the reuse of wood boards, rooftops, and any other type of material that is applied to erect the structure turns each unit into a colorful example of make-do architecture. On the whole, it is aesthetically pleasing, a beautiful testament to the creativity and resilience of human beings.

This most interesting pattern created by the seemingly casual placement of dwellings is the first hurdle to physical planning strategies. Even if housing units can co-exist in apparent disorder, supplying infrastructure to them cannot only be a challenge to public works engineers, but also prove prohibitively expensive. The current process of urbanization and regularization usually requires some sort of ordering and re-alignment of units to make installation of urban services feasible and more economical. Besides the physical challenge of reorganizing the urban pattern of favelas, there is also an institutional challenge since it is common to find more than one housing unit per lot so, even if land tenure is not regularized, the simple task of assigning an address to each unit might become a complicated matter.

Most recently, the emphasis of housing programs in Latin America has been on regularization and urbanization of existing extra-legal settlements. There are numerous reasons for this new approach. One is that resources are scarce, and the full-fledged programs delivering formally built housing to low-income families have become prohibitively expensive and thus unfeasible. Another reason is that
proved planners and architects wrong and they have come to realize that location, mainly because of transportation costs to employment centers, was more important to urban dwellers than the quality of the housing they occupied or the tenure status of the land where they built their shelter.

An example of a program to regularize and urbanize existing settlements is the Favela-Bairro Program in Rio de Janeiro, Brazil, where approximately 25 percent of the population lives in 1,200 informal settlements (Pamuk and Cavallieri, 1998). Whether upgrading existing favelas, which allows residents to maintain their social networks, is a better approach than relocating families to formal housing, thus uprooting residents from their consolidated neighborhoods, has yet to be confirmed. Theoretically, the idea of leaving the community’s social fabric intact seems sensible and more cost-effective than the relocation plans of the 1960s and 1970s.⁶ Realistically, the political and environmental feasibility of allowing these communities to remain where they are may dictate the course of action.

Instead of vanishing, informal settlements are being transformed. The Favela-Bairro program, established in 1993, set out to upgrade 90 of the more than 500 favelas housing one-third of the squatter population of the city over a five-year period (four phases between 1995-1999). The program, which reached only four percent of Rio’s favelas during its first phase, was partially financed by an Inter-American Development Bank.

⁶ In an interview published in 1997 in the supplement to The IDB, a publication of the Inter-American Development Bank, Sérgio Magalhães, Rio de Janeiro’s Housing Secretary, stated the cost of providing running water, sewer and storm drainage, of paving and lighting streets and sidewalks, stabilizing hillsides, landscaping, collecting trash, providing day-care and land titling for the dwellings in the above mentioned program is less than $3,500 US dollars per family—about one-fifth the cost of building new housing on the city’s outskirts.
Bank (IDB) loan. Funds were allocated for physical improvements, sanitary education programs, and institutional strengthening within the municipality; the amount invested in the first phase was $180 million US dollars of a total investment of $300 million US dollars (IDB supplement, 1997). What differentiates this program from others is that the goal is not to simply upgrade favelas, but to integrate them into the urban fabric. Another distinguishing factor is that the project was done in partnership with the community; the city pays for the collective services and the residents are responsible for improving their own houses. In the short four-year history of the program, there are noticeable improvements in the favelas that are being upgraded (Pamuk and Cavallieri, 1998).

Today, the first favelas can no longer be considered informal settlements. Most of the original informal settlements have gone through urbanization and regularization processes, and ownership of the land and the dwelling on it is established and secure.
CHAPTER 3
ENVIRONMENTAL PROTECTION: A GLOBAL NECESSITY

The need to protect the environment has received wide attention in the international community for the last 20 years; however, isolated initiatives have not yet produced the critical mass to generate a global impact that will effect change in longstanding development practices. The United Nations Development Program 1990 report states that the basic objective of development is to create “an enabling environment for people to live long, healthy and creative lives” (UNDP, 1990, p.9). In its 1994 report, it is stated that we should strive for sustainable development that is environmentally friendly. Some economists have become disenchanted with the view of development as an expansion in material prosperity, that is, development cannot be measured simply in terms of economic growth and per capita income.

The recognition that the Earth’s environment is sensitive to human activity and that natural resources are not, as was once believed, infinite, was a first step in the right direction. In recent years, the concept of sustainability has pervaded professional and academic circles concerned with the fate of our planet. There are as many definitions of “sustainable development” as there are environments to be protected and preserved. Sustained development has been said to be possible only if “it is seen as a process of evolutionary change that rests on the capacity of nature and people for renewal” (Gunderson et al., 1995 p.6). Whatever is meant by sustainable development, whether it is a contradiction in terms or not, it seems it has been embraced not only as an acceptable practice, but also as something for which all should strive.
The Deterioration of the Urban Environment in Developing Countries

In many developing countries, the incipient poverty and rush to modernize in the face of continuous population increase has encouraged the adoption of the cheapest, most expedient methods of extracting minerals, raising crops, building dams and roads. Concern about environmental degradation generated by these actions has often been pushed to the background (Falkenmark and Widstrand, 1992). More recently, the effects of urbanization on the deterioration of local environments and their consequent repercussions to global environmental change have been heeded, including the socio-economic impacts of urban environmental degradation and the importance environmental issues bear on cities attempting to reach sustainable levels of development (Burgess et al., 1997).

One of the serious problems faced by developing countries with limited resources, insufficient investment in urban infrastructure, and uncontrolled urban expansion is the pollution, depletion, and sometimes destruction of water resources. National statistics usually do not reflect the stress on water resources in local areas exerted by rapid and poorly regulated urbanization and industrialization. For instance, the national averages of population pressure on water resources appear moderate in most Latin American countries, but a majority of Latin Americans lives in urban areas, which are often plagued by serious water pollution from industrial and household wastes.

By the end of the century, a majority of the Earth's inhabitants will live in urban areas, with most of the growth occurring in the developing countries. In the 1950s, just over half the people in more developed regions of the world lived in urban areas and the largest urban centers were in more developed countries (MDCs). Today that figure is 70 percent and in another 30 years it should be 80 percent (Kinnersley, 1994). During the
1990s, 18 of the world’s 21 megacities—those with more than 10 million population—were in developing countries (Burgess et al., 1997). At the onset of the 21st century, there is no doubt that not only the largest, but also the fastest growing urban centers in the world will be straining the environment of less developed countries (LDCs).

**Informal Settlements in Areas of Environmental Protection**

The development of human settlements initiated the threat to water sources. The aqueducts designed and built by the Romans made the use of marginal land possible conducting water from distant sources and allowing people to congregate in denser settlements. Urbanization, therefore, is made possible by the presence of water and, in turn, changes the hydrological cycle of urbanized areas. The byproducts of urbanization can affect entire ecosystems. Stormwater runoff from urban areas carry polluting materials such as suspended solids, oxygen-demanding organic materials, nutrients, toxic metals and refractory organic compounds (Kuhner et al., 1977). With many cities currently built out, especially overcrowded megacities of developing countries, urban expansion is now taking over natural and agricultural lands that are not suitable for urbanization in the periphery of these centers.

Today, the establishment of settlements within environmentally sensitive areas is a leading cause of watershed contamination. Increasing population concentration in urban areas has contributed to the contamination of fresh water by pathogens, as well as to the depletion of water sources. As population pressure continues to mount, health conditions are destined to deteriorate because of poor sanitation and malnutrition. New settlements in naturally hazardous areas, such as wetlands and floodplains of major rivers, create enormous potential for disaster. Informal settlements, because they have neither
sanitation nor other infrastructure services, both contribute to and suffer from the health consequences of an unsafe water supply. The United Nations has estimated that between 30 and 60 percent of urban populations in developing countries live in such informal settlements and that, if the current growth rates remain, these populations will double every 10 to 15 years (UNCHS/Habitat, 1991).

The Environment, Development, and Water

Water is one of our most valuable and precious natural resources, and as such, it needs to be conserved and have its quality preserved. Only 2.5 percent of the world’s water in not salty, and two-thirds of that is confined in icecaps and glaciers. The remaining one-third is subject to the continuous hydrological cycle (Figure 3-1), with 20 percent ending up in areas too remote for human access, and 60 percent coming at the wrong time and place in the form of monsoons and floods, and thus not being collected for use. So, of the total amount of fresh water in the planet, less than 0.08 of one percent remains to be used by people, with about 70 percent used in agriculture and 30 percent used for households and industry (World Water Council, 2000).

The depletion and contamination of water bodies is caused by an array of human activities, such as the clearing of land, withdrawal of fresh water, and disposal of wastes. These and other activities, particularly urbanization, introduce disturbances in the water cycle that resonate throughout the Earth’s environmental systems. These disturbances are accelerated by the world's continuing population growth.

The underlying issue is the shared purpose that water bodies serve. Water as a natural resource is a life-support system requiring high standards of purity, but this is the same system used for waste-disposal, and the toxicity of wastes is becoming more and
more hazardous. Water infrastructure affects human health most positively when it makes water easy to get for daily use and easy to dispose of, reliably, after use. A World Bank estimate has suggested that nearly 30 percent of the global disease burden may be caused by inadequate infrastructure, namely, poor water supply and sanitation systems (World Bank, 1993).

Levels of urban per capita water consumption vary greatly throughout the world both in developed and developing countries. However, neither personal hygiene nor public health requires water for domestic consumption to exceed 100 liters per capita per day (Kirke and Arthur, 1984). The average daily consumption in developing countries varies greatly due to not only differing behavioral and cultural practices, but also availability of potable water. Figures in liters per capita per day (lcd) range from 15 lcd to 70 lcd as a minimum and 35 lcd and 190 lcd as a maximum.\(^1\) In modern sections of metropolitan areas, rates of water-use range from about 200 lcd up to 600 lcd (UNCHS/Habitat, 1984).

Adverse impacts of land development may be minimized through structural and management techniques. However, in some cases, restricting new development in protected areas is the only means to successfully avoid pollution and contamination of water sources. Another serious problem is depletion, which sometimes may have irreversible consequences. An extreme example is Mexico City. In the early 1990s, pumping of ground water was being increased at rates 40 percent faster than that of natural recharge (Kinnersly, 1994). By adopting a new paradigm, where a user

\(^1\) The liters per capita per day figures (lcd) were obtained from World Health Organization statistics cited in Saunders and Warford, 1976, p. 43.
association manages the Hermosillo aquifer, Mexico reduced pumping by 50 percent, so that now abstractions are equal to aquifer recharge (World Water Council, 2000).

**Water and Health**

The lack of safe drinking water and adequate sanitation is one of the major health and economic consequences of surging world urbanization (UNCHS/Habitat, 1991). Public health considerations lead to public water supply and sewerage being widely regarded as a community or social service. A regular supply of potable water is essential for survival, and quantities in excess of the minimum amount to support life offer a variety of health benefits and improvements to living standards. The most widely used qualitative standards for water supply, based on a number of chemical, physical, and biological indicators, are those of the World Health Organization.

International and domestic efforts have made clean drinking water available to 1.3 billion people and sanitation services to an additional 748 million people in the 1980s; however, these efforts were successful only in rural areas (UNCHS/Habitat, 1989). In urban areas, the number of residents without access to water grew by 31 million during that decade, while those without sanitation grew by 85 million. By 1990, at least 377 million urbanites lacked basic sanitation services (UNCHS/Habitat, 1991).

The satisfaction of basic needs, including adequate shelter, water supply and sanitation is strongly linked to health. In many countries, the definition of housing services subsumes those of fresh water supply and sewerage. There may be a major divide within the same urban area between those with ready, comfortable access to safe water and sanitation and those who live without them.
The health status of the population of many developing countries today is no better than that of nineteenth-century Europe when the principal concern with water supply was the potential that existed for transmission of waterborne diseases. Human and animal wastes flowing into rivers or reservoirs introduce pathogens that cause a myriad of serious water-related diseases, including typhoid, cholera, gastroenteritis, hepatitis, tuberculosis, trachoma, amoebic infections, bacillary dysentery, diarrhea, and intestinal worms. These maladies may account for over three-quarters of all disease in developing countries, and a large share of deaths (Falkenmark and Widstrand, 1992). While poor water quality causes some diseases, others are aggravated and spread because of lack of water, of whatever quality, within reach for basic hygiene. A troublesome aspect is that having too much water nearby can propagate some of these diseases while having too little may spread others.

Precautions and remedies for diseases linked to water may be devised according to the following classification:\(^2\)

- water-borne: water carries the infection, such as typhoid and cholera;
- water-washed: lack of washing affects skin or eyes, as in scabies or trachoma;
- water-based: via parasitic worms depending on aquatic life-cycles, as in schistosomiasis and guinea worm;
- water-related insect vectors: such as malaria and yellow fever.

There are complex relationships between water and human health. Water acts simultaneously as a life-supporting system and a spreader of infection. The main purposes of networks of water pipes and sewers, water and sewage treatment plants,

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\(^2\) This classification is attributed to G. White et al., 1972 cited in Kinnersley, 1994 p.19.
reservoirs and the like are to guard against all these hazards to public health and, beyond that, to make good water and sanitation accessible to the people for their ready and comfortable use at home and at work.

On the issue of water quality, caution needs to be exercised. Water treatment, sometimes deemed more economical than the prevention of water contamination in the first place, is not the solution for clean and safe water supplies. Although water is believed to be rendered safe by appropriate treatment, there are serious problems still to be resolved, for instance the fact that some viruses (e.g. infectious hepatitis) and some trace chemicals (e.g. synthetic organic chemical compounds) cannot be removed by water treatment. The development of water treatment technology, particularly disinfection with chlorine developed at the beginning of this century, has rendered professionals and technicians too confident about using polluted sources.

**Protection and Conservation of Water Sources**

Protection of water sources by means of development management and land use control is the soundest practice in both economic and ecological terms. The fringe benefits to the environment are numerous, such as preserving the lands within aquifers and watershed areas, avoiding the use of chemicals in water treatment prior to consumption, and protecting the aquatic biota. Water conservation practices such as reducing water-use rates and system losses are also beneficial for they prevent, or at least delay, the need for new, costly water sources.

The key to understanding how population affects and is affected by the global water systems is an understanding of how the water system operates. The water cycle propagates environmental disturbances onward like a chain reaction; these disturbances
cause secondary effects on the groundwater table, the fertility of the soil, the seasonal variation of river flows, and the chemical and biological characteristics of the moving water (Figure 3-1).

Physical, chemical, and biological processes control the transport of contaminants. Pathogenic contaminants originating from sewage disposal (on-site septic systems and landfills) include protozoa, bacteria, and viruses. The movement of each contaminant will vary based on its chemical composition and its reaction to the surrounding aquifer materials. \(^3\) Pollution of rivers and other surface waters is often difficult to identify at first sight but more imperceptible threats may arise from substances leaching through the strata from a variety of activities. These polluting substances move slowly through the permeable layers and spread over a wide area, which makes the threats to ground water “assuredly invisible” (Kinnersley, 1994, p.137).

Centralized supply systems are common in almost all urban areas. Water is extracted from either surface water sources (rivers, lakes, reservoirs and springs) or underground sources (aquifers and infiltration galleries). Extracted water is usually treated, although high quality underground sources may need no treatment, and distributed to the main parts of the city by a primary network of underground pipes and to sub-areas and groups of houses by secondary and tertiary mains.

The source of all groundwater is recharge from precipitation or surface water that percolates downward into the aquifer. \(^4\) For some time there existed the notion that the

\(^3\) For a full description of physical, chemical, and biological processes see Witten and Horsley, 1995, pp. 17-21.

\(^4\) Groundwater is defined as “the water that fills, or saturates, open spaces in consolidated or unconsolidated rock formations in the subsurface environment below the water table.” (Witten and Horsley, 1995, p.5)
filtration occurring during percolation through the various layers of soil and substrata was enough to purify the water before it reached underground deposits. That notion has been disproved (Jaffe and DiNovo, 1987; Kinnersley, 1994; Witten and Horsley, 1995); it takes little to contaminate groundwater supplies. In addition, it is very difficult to remove certain contaminating substances once they reach the water table.

Preventing the contamination of water sources is a more effective way to deal with problems before they occur, especially given the slow movement and minimal reduction of contaminants in groundwater and the high cost of water treatment. Water sources must be protected for public health and welfare reasons, but also for economic reasons. The cost of remedying water contamination is higher than the cost of having its quality preserved through effective protection programs (Witten and Horsley, 1995). The benefits of water-supply networks or projects to improve sanitation do not lend themselves so readily to pricing. The value of better health or lower mortality, even if it could be assessed, may not be dependent on safer water supply alone. Although difficult to quantify, there are much greater benefits in investing in water supply and sewerage systems simultaneously than in doing so separately; so it may be more effective to look at levels of investment in all the appropriate basic needs services together than to examine them individually (Thomson, 1984).

Water quality benefits can be classified into the following major categories (Heaney and Waring, 1980):

- public health: to avoid health effects on man from water pollutants such as organic and inorganic chemicals and microbiological pathogens;
- recreation: to increase the recreational potential of outdoor environments;
- aesthetic: to reduce disutilities resulting from undesirable and unpleasant qualities; also related to recreation, property values, and social benefits;
property values: to maintain the real estate value of land;
• economic: to reduce cost of water treatment and the damages caused to downstream users in the absence of treatment;
• social: to increase humanistic pleasure, albeit not quantifiable in monetary terms.

The isolation of water sources through acquisition of surrounding land used to be the most common practice to protect watersheds. With the accelerating pressures of urbanization, it has become increasingly difficult, especially from the economic development perspective, to maintain this precept. Watershed management strategies have been devised to protect water supplies from contamination while allowing watershed development, however, precise methods of assessing land use effects on water quality and predicting the health effects of drinking treated water from a polluted source do not yet exist (Burby et al., 1983).

Much of the pollution of urban water supplies in developing countries is tied to the explosive growth of informal squatter settlements in the periphery of most cities. These settlements often spring up on low-lying lands and riparian areas; the stormwater and the human and solid wastes proceeding from them flow untreated into the urban water source (Falkenmark and Widstrand, 1992).

Based on the premise that economic efficiency is a key policy in most countries, international agencies recommend the following steps when formulating a water conservation strategy (FAO, 1995):

• assess data availability
• determine the value of water in different uses
• project water demand
• assess the economic efficiency of existing water allocation
• evaluate analytical methods used for water resource inquiries
• review and evaluate the ability of water pricing and the cost recovery policies to meet national objectives
• assess the availability and adequacy of private and public capital for investment in water systems
• review institutional, legal and regulatory systems

It is recommended that policy-makers establish a clear political mandate for environmental protection, strengthen existing legislation and agencies involved in monitoring and compliance activities, enforce penalties and regulations, examine economic incentives, mandate environmental impact assessments for major development projects, establish appropriate standards, and finance environmental programs (Witten and Horsley, 1995). In addition, producing reliable and consistent data on supply, use, and treatment of water is critical for the development and management of water resources systems and programs.

The recent impetus, notably sponsored by international and non-governmental organizations, to protect the environment in general and natural resources in particular, has generated unprecedented global interest in environmental issues. Bringing the environment to the forefront of development discussions has compelled individual countries, and their governing bodies, to heed international pressure and adopt policies and legislation that address environmental matters. To understand how these new practices are being implemented, it becomes necessary to use the context in which transformation occurs as a resource.
CHAPTER 4
CONTEXT: A RESOURCE FOR UNDERSTANDING

Any research being conducted within a phenomenological framework must address the historical, political, institutional, legal, social, cultural, and environmental contexts within which the documentation of the phenomenon is carried on. Thus, the experience is framed and shaped by the setting, allowing for the verification of the qualitative aspects of the research.

To analyze the particular case, which is the object of this research, the context in which that phenomenon is placed will be explained. The framing of the cultural environment of Brazil will establish the boundaries in contrast with other developing countries in the world where the same phenomenon has been observed. A historical perspective on the political climate that has guided policies and institutionalized the system in recent times will grant the reader a better understanding of the institutional and social contexts. Finally, the outlining of the legal framework within which this phenomenon is allowed to develop will clarify the most recent changes affecting the phenomenon of informal settlements in Brazil.

The emergence and growth of informal settlements in Brazil can only be discussed within a framework established by the political and cultural particularities of the country and the main events that dictated policy-making in the last 80 years. One of the main practices observed, regardless of the prevailing regime, is that of clientelism. It becomes important to discuss this practice prior to introducing the housing discussion.
because it is intrinsic to every institution in Brazil, and affordable housing can only be addressed within an institutional framework.

Housing research only started its consolidation as a field of study in Brazil in the 1970s, coinciding with the increasing housing crisis in the country. Although some studies were carried out during the 1950s and 1960s, only when informal settlements—known as favelas—became a scar in the urban fabric did housing become a specific area of study. Scholars from fields as diverse as sociology, anthropology, architecture, geography, economics, law and urban planning, especially some international scholars, contributed to the research impetus. As with the favelas, studies about the development of low-income housing in the periphery of urban areas, including illegal subdivisions, only began to be analyzed after they had become an irreversible problem. This suggests that not only the academy, but also policymakers are always late in dealing with urban problems.

The Cultural Context

In the context of developing countries, Brazil is listed by the World Bank among the world's upper middle-income economies. Although it has the world's eighth largest economy, Brazil presents most of the serious problems encountered in all of the developing countries. There are ten metropolitan areas with more than one million inhabitants in Brazil, but only São Paulo and Rio de Janeiro—the dominant cities—have been researched and analyzed extensively, receiving more empirical attention than any other “secondary” city (Klak, 1990).

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1 The World Bank’s main criterion for classification is gross national product (GNP) per capita. Low- and middle-income economies are referred to as developing economies, therefore, Brazil will be referred to as a developing country.
The south and southeast regions of the country have had the highest urbanization rates (Table 4-1). The southeast region has always had the highest rates of all regions while the south region crossed the 50 percent threshold during the 1970s. The 1991 Census found that 75.6 percent of the total Brazilian population lived in urban areas (IBGE, 1991). Only five years later, that number had gone up to more than 78 percent.

Table 4-1: Urbanization Rates for South and Southeast Regions of Brazil, 1960-1996

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<tr>
<td>South</td>
<td>37.10</td>
<td>44.27</td>
<td>62.41</td>
<td>74.12</td>
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<td>Southeast</td>
<td>57.00</td>
<td>72.68</td>
<td>82.81</td>
<td>88.02</td>
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<tr>
<td>Brazil</td>
<td>44.67</td>
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<td>67.59</td>
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As in most urban centers of the developing world, in Brazilian cities the levels of utilities and services available to the population decrease as distance from the center increases. A real estate market that institutes a steep land cost gradient and the virtual absence of government programs that facilitate access to affordable housing drive low-income populations toward the periphery of urban centers, where more land is available at lower costs. However, even in those cities where public transportation is available and reliable, commuting costs might make it unfeasible for families to commute from the periphery to the centers of employment most often located in the urban core. Unable to commute to the core——where they have access to employment opportunities, social services, and other urban amenities that attracted them to a metropolitan region in the first place—and unable to afford adequate housing close to or within the urban core, migrant and poor families invade land and settle in favelas. This is the preferred
alternative since basic infrastructure and other services are usually not available in the periphery; however, the competition for urban land has become so fierce that many favelas are found today in the periphery of major urban centers.

Favelas are a common sight in virtually every Brazilian city, evidence of the extreme social and regional inequalities found in the country. In a great number of Brazilian cities, these unsuitable dwellings are the only housing alternative available to low-income families. In recent years, the poorest segments of the population have not been able to afford traditional low-income housing. In order to reach the poorest groups, sites-and-services and upgrading of squatter areas have been successfully utilized.

Changes in construction standards as well as minimum lot size and other site specifications have also facilitated access to shelter. Nonetheless, the number of people migrating to Brazilian urban centers continues to grow, and with it, the housing deficit.

To understand the magnitude of this on-going problem, one must look at its roots. The nature of the Brazilian political system, the development plans implemented in the last 50 years, the housing policies devised since lack of sufficient shelter was recognized as a national concern and, more recently, environmental legislation enacted to protect natural resources now being depleted by the advancement of urbanized areas into natural areas establish the context for understanding the nature and dynamics of the problem.

The Political Context

Clientelism is an all-pervading part of a society’s political culture. It has a long tradition in many societies and is a function of the lack of impersonal rules and collective

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2Thomas Klak (1990) presents a comparative study of cities in different regions of Brazil in his article “Spatially and Socially Progressive State Policy and Programs: The Case of Brazil's National Housing Bank.”
action. Usually, clientelist patterns prevail throughout the hierarchy of social strata (Gilbert and Gugler, 1987). Brazilian society has had clientelism embedded in its political culture throughout its history, from colonial times, when the king of Portugal claimed full personal power, to recent times, when the new bureaucrats and political leaders reward personal loyalty and use their positions to further their interests (Shidlo, 1990). Today, along with populism, clientelism is one of the principal forms of political participation in Brazilian politics (Gay, 1994).

The core of the clientelist system is the exchange of economic and social favors to a poor and socially fragmented population in return for party support, characterized by unequal power and status between actors, reciprocity, and contractual informality (Gilbert and Gugler, 1987; Shidlo, 1990). There is abundant evidence that Brazilian politics, especially in regards to housing, has been and still is of a clientelist nature (Azevedo and Andrade, 1982; Chinelli, 1979; Faria, 1994; Gay, 1990, 1994; Valladares and Coelho, 1995). The literature on the subject provides historical and empirical evidence that clientelism is alive and well in Brazil; it happens both at personal and institutional levels, and it affects individuals’ lives as well as entire sectors of the population.

1920 to 1964: Populist Policies

The best-known Brazilian politician to exchange votes for service delivery to the poor was Getúlio Vargas, the populist leader of the 1930s and 1940s, who reinforced his power as President by tolerating squatter settlements and, when politically expedient, extending public services to them. During his campaign in the late 1940s, national investment in urbanization of settlements was increased, no doubt, to improve his potential electability (Miller, 1997). The Vargas regime expanded state intervention,
monopolizing all mediations between society and the political elite and mobilizing the urban population (Shidlo, 1990).

One of the novel institutional developments during these populist times was the establishment of the first national institution designated to promote the affordability of housing: the Affordable Housing Foundation (FCP—Fundação da Casa Popular). The creation of the FCP and its distribution policy were heavily influenced by political considerations and clientelism became a characteristic of the state housing market as demand exceeded supply (Shidlo, 1990). A number of housing units were set aside so they would be available to public servants and to exchange for political favors. Planning decisions, such as where to build as well as the selection of buyers, were made in a completely clientelist manner (Azevedo and Andrade, 1982). Planning policies were affected in that the decisions of where to build the housing complexes seemed to be politically motivated and not based on need. To witness, São Paulo, the most urbanized state at the time, was ranked third in number of units built by the end of 1960, none of them in the city of São Paulo, the state capital (Azevedo and Andrade, 1982).

1964 to 1984: Military Regime

The clientelist model was said to be extinct with the crisis of populism and the military coup of 1964, which was to bring an entrepreneurial, technocrat, and politically neutral solution to the housing issue (Azevedo and Andrade, 1982). Notwithstanding, data on development and housing policies corroborate the fact that certain sectors of society were still coddled during the period the country was under military rule. The military government was committed to consolidating power by exploiting the monopoly of the state in key areas, such as housing; so, political support was won through selective
and partisan distribution of public housing (Shidlo, 1990). Housing was a political resource, an instrument of power and influence.

The National Housing Bank (BNH—Banco Nacional da Habitação), created in 1964 to finance housing for low-income families, gave the government the opportunity to control from the center the allocation of a crucial resource. The Bank’s policy shifted though, and in 1967 the first programs to finance middle-income housing were implemented. One could argue this decision was an attempt to replenish their coffers and balance the defaults on loans to those who were insolvent (Azevedo, 1979); on the other hand, granting low-interest financing privileges to influential sectors of the society is not an unreasonable argument (Portes, 1979; Bolaffi, 1980; Valladares, 1983). The advantages awarded to those with higher incomes resulted in 50.2 percent of the total number of units financed by the BNH being in higher income programs by 1974 (Valladares, 1983).

The lack of subsidized and affordable housing and the soaring prices of land forced the poor to find solutions to their need for shelter outside of conventional markets (Valladares, 1978). Constructing their own homes with whatever materials were available on unoccupied public or private land was the chosen alternative. Available land was gradually invaded by individuals or a few families at a time, but many invasions were actually promoted by landowners, politicians and their local ward heelers who exchanged material benefits for support and assistance.

1984 to Present: Democratic Regime

The end of the military regime introduced electoral politics to then widespread informal settlements, and governments quickly recognized the opportunities that low-
income communities offered for social control, political manipulation and vote catching; they could no longer afford to ignore the demands from residents for services and land titles (Moser, 1982; Gilbert and Ward, 1985; Hardoy and Satterthwaite, 1989).

The return to democracy and direct elections brought on a new political reality and individual actors identified opportunities for gain. Politicians started interacting directly with the population, particularly during election campaigns, exchanging promises to extend infrastructure and transportation lines for allegiance. Elected officials consider squatters an important political constituency, attempting to comply at least in part with their demands. Entrepreneurs develop and sell lots, formally and often informally, in unauthorized subdivisions on the fringe of urban areas. They delude local planning authorities and buyers while protected by politicians and high-ranking government officials (Chinelli, 1979; Gilbert and Ward, 1985).

The settlers accepting favors are not naïve; they know perfectly well the opportunistic nature of these promises and they use the patron-client networks and the political interest groups to their maximum advantage. When demands are made on behalf of the community, they are either carried out through a community association or through a self-appointed political leader and his/her organization. These demands usually concern land tenure formalization and municipal services; ironically, as needs are being met, these brokers lose power. The existence of such agents offers evidence that the populations in self-built settlements are, contrary to prevalent belief, organized and concerned with political activity at the local level (Butterworth and Chance, 1981). It also shows that people find a way to deal with the exclusionary nature of Brazilian politics and manipulate the system, even if they cannot significantly change the status
Favela leaders have learned to manipulate their relationship with politicians and administrators to the favela’s maximum advantage (Gay, 1994).

Clientelist politics offer the urban poor an opportunity to attain the economic resources they need. Social, economic, and political inequality, which first brought up patronage politics, may be the very reason that clientelism survives in contemporary Brazil (Gay, 1990). Some scholars have argued that major political parties or governments requiring the political support of the poor is one of the factors allowing informal settlements to develop in the first place (Gilbert and Gugler, 1987; Roberts, 1992).

Clientelism influences policy in that arbitrary decisions are being made concerning matters that affect communities and citizens at all levels, from the local squatter who has befriended a party worker to an entire stratum of the population as illustrated in the BNH’s policy changes mentioned above. Even if clientelism has benefited people who would not have their basic needs tended to otherwise, it is far from qualifying as a necessary evil. The fact that it is so ingrained into the country’s political culture and social customs makes it that much harder to eliminate. Nonetheless, a system that ensures access to land and basic services, as well as the equitable allocation of scarce resources should be the goal of a serious government that is interested in protecting citizens’ rights. Clientelist practices could be reduced through the implementation of privatization policies. Increased market competition should improve economic performance of social policy agencies and reduce the patron-client character of the allocation of resources. Another way to reduce clientelism may be through increased accountability at all levels of government, including local agencies; having to justify
decisions and conducting needs assessments as part of planning projects and allocation of services and resources would curtail opportunities for favoritism. Only a “fairly dramatic shift in the distribution of economic and political power in Brazil” would eliminate the attractiveness of clientelism as a rational proposition (Gay, 1990, pp. 664-5).

The Historical Context

Brazil had three National Development Plans (PND—Plano Nacional de Desenvolvimento) introduced under the auspices of military administrations, or as they were referred to then, the Governments of the Revolution, during the 1970s and 1980s. After the end of the military regime, the First National Development Plan of the New Republic (I Plano Nacional de Desenvolvimento da Nova República) was instituted.


The first National Development Plan (I PND) in Brazil was instituted during the third Government of the Revolution, the Médici administration. The two main stated objectives of the plan were, not only to keep Brazil among the top ten nations in the world, but to increase its GDP so it would become the world’s eighth largest market economy, and to increase the per capita income to $500 US dollars by 1974. The focus of this first plan was economic development and modernization, following the first two military administrations whose focus had been economic reconstruction and accelerated economic expansion. Among the objectives, education and employment are cited as part of the social integration policy, land policy is not mentioned, and housing is included in

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3 Instituted by Law Nº 5727 of November 4th, 1971 (República Federativa do Brasil, 1971).
the intended expansion of social development programs with a promise to create a special fund for families with incomes below the levels served by the Housing Finance System (SFH—Sistema Financeiro da Habitação). The Plan cites the number of housing units built through SFH by 1970, 126 thousand, and sets the goal of 238 thousand units, an 89 percent increase, by 1974.

The bulk of investments was allocated to energy, transportation, and communications projects. Regional development projects address land redistribution programs in rural and undeveloped areas, particularly the Northeast and the Amazon, and define a growth process based on development poles intended to curtail the indices of rural-to-urban migration that had been consistently increasing since the 1950s.

The time of the first PND was later dubbed the “Brazilian miracle.” With financial resources being constantly and forcefully injected into the country, the plan’s objectives were surpassed: per capita income reached $700 US dollars by 1973 and the country went from ninth to eighth in the GDP ranking (II PND—1975/79, 1974).

1975-1979: Second National Development Plan (II PND—II Plano Nacional de Desenvolvimento)

The second National Development Plan (II PND) was instituted during the fourth Government of the Revolution, the Geisel administration.¹ The two main stated objectives of the plan were to consolidate Brazil’s position as the eighth largest economy in the world in terms of GDP, and to increase the per capita income to $1,000 US dollars by 1979. The objectives of this second plan continued to include development and accelerated growth, but focus shifted to developing its own energy resources as a matter

¹ Instituted by Law Nº 6151 of December 4th, 1974 (República Federativa do Brasil, 1974).
of national security, a repercussion of the global oil crisis. Policies for social integration and the more equitable distribution of wealth were still included, but focus was on the potential to become a new world power integrated into the industrialized world, with the recognition that the same rates of growth experienced during the first plan would be difficult to attain. Poverty was recognized as a problem that needed to be addressed, along with the precarious situation of the population in the largest urban centers.

The strategy for national integration through regional development projects continued its purpose of balancing growth in the various regions of the country, particularly the Northeast, the Amazon, and the Midwest, which detracted from the Southeast and South Regions where the largest urban centers and percentages of population were concentrating. To this purpose, the plan’s demographic policy proposed to foster but re-direct population growth, decentralizing investment and allocating funds for urban improvements in medium-sized cities and secondary poles. The basic goal of the proposed urban policy was to distribute settlements in the interior of the country, defining the social and economic functions of each city subject to the overriding national and regional development objectives. The stated intention was to impose a rational model, rather than allow planning to be guided by evolution trends; functionality, efficiency, and orderly and disciplined growth were the prevailing aim. General priorities of the urban development policy were: mass transit, land use, zoning, sanitation, and social facilities. Specific priorities for each region included slum clearance and crime prevention for Rio de Janeiro and São Paulo.

The social development strategy included improving the distribution of wealth, not only by means of continuous accelerated growth, but also redistributive policies, such
as an employment policy to curtail underemployment and a salary policy to ensure salary
parity. Land policy is not mentioned, and housing policy is a general objective within
the social development strategy to conceive programs that will benefit the lower-income
brackets of the population through improvement of basic urban services.

Reducing pollution and preserving the environment and natural resources, especially in the largest urban centers, were recognized as important aspects of urban development in view of increasing and unbalanced urbanization rates. A basic premise stated in the plan was that restricting the access of underdeveloped countries to the stage of industrialized societies under the pretext of reducing the worldwide pollution problem was not acceptable and that the burden should fall on industrialized nations, the ones primarily responsible for the increasing worldwide pollution. Preservation of natural resources included soil, vegetation, and wildlife. Water conservation was mentioned as part of the necessity to control the “pollution of poverty,” that is, requiring basic sanitation infrastructure to prevent “the endemic diseases which go with poverty” (II PND, 1974, p. 36); and industrial effluents in urban centers.

The second PND cites the number of housing units built through the Housing Finance System (SFH—Sistema Financeiro da Habitação) by 1974, 209 thousand (the goal set by the first plan was 238 thousand units), and estimates 383 thousand units, an 83 percent increase, by 1979. The investment allocated by the 1975/79 budget for urban social development, including all housing and urban development funds, is about 15

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5 Interestingly enough, the indicator used by demographic agencies to determine the welfare of working families is the number of durable goods in the household. Whether these durable goods are in a “durable” shelter is not of concern.

6 Paraphrased from original text in Portuguese (II PND—1975/79, 1974).
million dollars ($15,270,000 US dollars) while the allocation for energy, transport, and communications is above 60 million dollars ($61,020,000 US dollars) (II PND—1975/79, 1974).


The third National Development Plan (III PND) was instituted during the fifth and last Government of the Revolution, the Figueiredo administration. The main stated objective of the plan was to create a developed and free society, benefiting all Brazilians, within the shortest period of time. This plan recognizes that the enormous economic expansion of the last ten years had not benefited all social classes equally, and that the average income of low-income populations had not risen as rapidly as that of other strata. The focus was on democratizing work opportunities and improving the standard of living of the poor through redistribution of wealth and control of inflation. Among the development policy objectives, access to education, employment, housing, food, transport, and health, sanitation and welfare services are the highest priority. Emphasis is given to the development of agriculture and cattle raising, and the expansion of the social infrastructure aimed at creating more jobs and reducing the rate of urban growth.

The III PND’s macroeconomic policies included anti-inflationary, financial, and foreign trade policies aiming at eliminating the instability caused by the oil crisis and its repercussions, and stabilizing the balance of trade. The sectorial policies established hierarchical priority sectors: agriculture and supply, energy, and social services, the latter including education and culture, health and sanitation, social welfare, and affordable

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7 Instituted by Resolution Nº 01, of May 20th, 1980 (República Federativa do Brasil, 1980).
housing and community development. The stated priority for basic and environmental sanitation was to provide a stable water supply to Brazilian cities, to implement flood prevention projects, to complete or expand drainage systems, and to execute projects to prevent or resolve present and imminent water and air pollution problems, particularly in more densely populated urban areas and their outskirts.

Concerning affordable housing, the III PND aimed at reducing the housing shortage to a minimum, and adjusting standards and financing requirements to the serviced population by reducing construction and financial costs through government subsidies. The regional and urban policies emphasized national integration and reduction of economic and standards of living inequalities among regions. These two objectives were to be achieved through development of rural areas and small and medium-sized cities, and control of the rapid growth of metropolitan areas by means of decentralization policies that promoted geoeconomic and geopolitical stability.

Other policies included priority measures to protect the environment and natural resources, emphasizing preventative action both in unexplored and densely populated areas, improving and enforcing legislation, and educating the population. The plan also asserted that the responsibility for policy-making belongs to the Federal government, but that states and municipalities are ultimately responsible for the monitoring and execution of policies.

The III PND differed fundamentally from the first two National Development Plans in its qualitative character. No quantitative measures or indicators were included in this plan.

The first National Development Plan of the New Republic (I PND-NR) was promulgated as part of the new democratic process initiated in 1984 with the end of the military regime that had directed the country for 20 years. The three strategic goals of the plan were political and institutional reform, economic growth, and eradication of poverty. At the dawn of the New Republic, 68 million Brazilians lived in households with incomes up to three times the minimum wage, and more than 18 million workers earned less than minimum wage. The plan recognized that economic growth did not “automatically” produce social development as past plans had stated, and that a concerted effort was necessary to change the social structure so it would parallel the levels of industrial maturity the country had recently reached. Three steps were suggested to recapture economic development, including the reorganization and probable privatization of public companies, the renegotiation of the foreign debt, and the reduction of inflation.

The stated intention of this plan was to define the participation of the State in the newly instated democracy, to devolve economic development to the private sector, and to concentrate efforts and resources on social programs dedicated to reducing the health, nutrition, and housing problems of the poorest Brazilians. These social priorities included provision of health care and basic sanitation services (four million new water

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9 The “minimum wage” is an officially established unit of monthly salary. It is widely used in Brazil as a basic parameter and will be mentioned throughout this document. This salary unit is adjusted periodically according to inflation and cost of living indices. A dollar amount is not provided because the purchasing power of a Brazilian minimum wage is not equivalent to US standards and would not serve as a good basis for comparison.
and sewerage connections in urban areas), distribution of free food to undernourished children (44 million between the ages of zero and 14), and building two million new housing units (42 percent for families earning up to three minimum wages). Other social priorities included provision of education to 25 million children between seven and fourteen years of age, and creation of 1.3 million new jobs per year, assuming a six percent minimum growth of the annual GDP.

The plan’s focus was on reform: administrative, agrarian, budget and financing, tax, and the Housing Finance System. The plan recognized the fact that said system had become unfeasible in recent years and was no longer serving low-income populations, nor middle-income populations, efficiently. The Government of the New Republic declared housing to be a “fundamental social right” to be granted to the population and established a housing policy to increase services rendered to low-income families living in substandard conditions through serviced lots, self-help, house improvements, and infrastructure programs in an attempt to reduce intra-urban inequities. The sanitation policy also pledged to reduce inequities and offer better infrastructure to low-income families through the implementation of basic sanitation projects in urban areas including four million new water and sewerage network connections.

The environmental policy outlined in the IPND-NR heeds citizens’ pressure to preserve the nation’s natural patrimony and includes maintaining essential ecological systems, preserving biodiversity, utilizing species and ecosystems in a non-predatory manner, and offering adequate environmental quality to urban populations. These goals should be achieved by means of research programs to define areas to be protected, environmental impact assessments, preservation of headwaters and water supply recharge
areas, reduced use of chemical fertilizers, educational programs, and energy conservation programs, to name a few. In terms of legislation, the plan proposed to institute specific legislation to protect the two largest rainforests—Amazon and Atlantic—including designation of some areas for preservation, and to revise the legislation concerning protection of headwaters and watersheds so that the governments would have the means to control effluents.

The regional development component of the plan gave priority to the Northeast region. Provisions were made for the Amazon and the Midwestern wetlands, the least populated regions. For the Southeast and South regions, the most urbanized, the goal was to improve quality of life by containing the growth of metropolitan areas, revitalizing declining or stagnant areas, eradicating poverty, promoting improvement and conservation of the environment, increasing agricultural output and integrating agribusinesses to urban centers, and preserving water sources through watershed management.

For the first time in the history of National Development Plans, specific objectives targeting urban development were outlined. The growing speed and intensity of urbanization was recognized and the plan set out to improve the quality of life of urban populations, establish mechanisms to control urban land values, increase community participation, and balance urbanized areas by promoting investment in small- and medium-sized cities. Policies targeted investments in housing, basic sanitation, transportation, education, health, nutrition, and safety. Decentralization was the basic strategy, and the success of an urban development policy was understood to be dependent on the success of a rural development policy that included agrarian reform. Priority
programs included integrated planning within metropolitan regions, improvement of small- and medium-sized cities, and urban development research.

The Institutional Context

Housing is but one component of a large and complex system, and must be approached as such. Separating the topic of housing from its context of community development has not yielded good results. The physical circumstances of how people live gives a rather immediate and pervasive insight into both the prevailing culture and cultural politics that shape our cities and other patterns of settlement (Rowe, 1999).

In Brazil, as in most countries in Latin America, urban populations started to increase geometrically in the 1960s. Rates of urbanization went from 56 percent in 1970, to 68 percent in 1980, 75 percent in 1991, and 78 percent in 1996 (Figure 4-1).

![Figure 4-1: Urbanization in Brazil, 1960-1996. Source: IBGE, 1997a (graph by author).]
The demand for housing, especially low-income housing, could not be met, and favelas began to form in urban areas. The debate concerning favelas was the catalyst for addressing the housing issue in a systematic manner, and most discussions were about integrating the poor into urban areas. The first studies about favelas appeared at the time when the theory of marginality was in vogue in Latin America. This discussion permeated social science circles in the 1970s and hinged on urban unemployment and favelas as the marginalizing forces preventing the incorporation of low-income populations into the housing market. The theory of capitalist accumulation was substituted for this trend when the discussion shifted to the problem of labor exploitation and research focused on low-income housing built in the periphery of urban areas and on self-help housing (Valladares, 1983).

The relocation of favela dwellers to low-income housing projects was the first policy adopted. The intense growth in the periphery of major urban centers started in the 1930s, intensified in the 1950s, but it was only in the 1970s that the scale and speed of the phenomenon became obvious. The Proletarian Parks (Parques Proletários) built in the early 1940s, during the populist Vargas administration, were the first mass attempt to eradicate favelas from urban areas.

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10 A pioneering study about favelas was commissioned by the Brazilian newspaper O Estado de São Paulo to SAGMACS (Sociedade de Análises Gráficas e Mecanográficas Aplicadas aos Complexos Sociais), in 1960 (Barbot, 1960). This study, entitled “Aspectos Humanos da Favela Carioca,” (Human Aspects of Rio de Janeiro’s Favela) was published as a two-part supplement to the newspaper O Estado de São Paulo on April 13th and 15th, 1960. Other studies are described in Pearse, 1962; Medina, 1964; Machado da Silva, 1967; Parisse, 1969; Leeds, 1969; Salmen, 1969 and 1970; Valladares, 1976 and 1978; Perlman, 1976; and Santos, 1977 and 1980 (Valladares, 1983).

11 The proliferation of low-income housing projects in the periphery of urban centers is discussed by Maricato, 1976; Santos, 1977 and 1980; and Bondukí and Rolnik, 1979.
Until 1946, when the Affordable Housing Foundation (FCP—Fundação da Casa Popular) was established, there had been no governmental intervention in the housing market. In the 1960s, with the installation of a military regime, a National Housing Bank (BNH—Banco Nacional da Habitação) was created to, first and foremost, increase the number of affordable housing units available to low-income families.

The Catholic Church was the first to suggest urbanization of favelas instead of relocation through its Favelas Pastorate (Pastoral das Favelas). Dom Helder Câmara, one of the founders of the National Conference of Brazilian Bishops, suggested the process of urbanization was in fact the “humanization” of favelas. With the end of the military dictatorship in 1984, favela dwellers become once again important political and electoral tools, thus influencing housing policy decisions.

The changes in the Brazilian Housing Financing System (SFH—Sistema Financeiro da Habitação) generated a halt in the production of housing in general. This financing system used to be run by the National Housing Bank (BNH—Banco Nacional da Habitação), responsible for the financing of housing for all income levels of the population. The modifications affected particularly low-income housing. Without financing for construction, and with the decrease in purchasing power resulting from the high inflation and recession in the country, low-income households have been denied access to adequate housing.

New programs emphasizing basic needs and infrastructure rather than formally built housing were established as part of a strategy by government housing institutions seeking endorsement from the populations of low-income settlements. Today, after the extinction of the BNH and, no doubt, due to the country’s economic situation, emphasis
is being placed on basic sanitation and infrastructure, and urbanization of substandard residential areas.

Fundação da Casa Popular (FCP): the Affordable Housing Foundation

The first national institution charged with providing affordable housing to low-income populations in Brazil, the Affordable Housing Foundation (FCP—Fundação da Casa Popular), was established during the populist regime, in 1946, by Federal Decree.\(^{12}\) The Populist Republic was sensitive to the housing problem faced by low-income families, but failed to give high priority to social issues, including affordable housing, because the distribution of housing funds among regions and municipalities and housing units among applicants was dominated by clientelist practices (Azevedo and Andrade, 1982).

Only a few months after its creation, the FCP had the scope of its activities expanded to include public works, social services, financing, and research. These changes turned out to be too ambitious and were corrected by additional legislation in 1952. The requisites to apply for FCP financing included professional activity, and family income and size. No minimum limits were established, so the poor were not excluded, however, no maximum limits were imposed either, so middle- and upper class families could benefit from the system, even if they had other means to acquire housing. Limits were imposed by restricting information, limiting the number of applications and housing units offered, and shortening deadlines. Favoritism started to pervade the system and clientelist practices set in, making it impossible for FCP to establish itself as a mature

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\(^{12}\) Decreto-lei Nº 9218, signed on May 1\(^{st}\), 1946.
institution with declared objectives, an organizational purpose, and a comprehensive vision of the housing issue.

A proposal to turn FCP into a mortgage bank, which would have instituted a new housing policy paradigm, was discussed in 1953 but not approved for lack of political support. The last attempt to reform the FCP was made during the short-lived Quadros Presidency in 1961 when a new housing plan would have changed the prevailing housing policy and the Brazilian Housing Institute (IBH—Instituto Brasileiro de Habitação) would have been created. By then, the country was in turmoil and a crisis was imminent. President Quadros resigned, the plan was never implemented, but many of the directives outlined in the IBH’s plan were used for the creation of the future National Housing Bank.

The Affordable Housing Foundation was not the only institution involved in the provision of housing. Retirement institutes (Institutos de Aposentadoria), employees’ associations, and state and local institutions were also building and financing new housing to various levels of household income. In fact, despite being the national institution responsible for providing affordable housing, FCP was responsible for only ten percent of the total number of housing units built during the populist period, an average of less than one thousand units per year (Azevedo and Andrade, 1982). Even in the face of this bleak scenario, the FCP was the only institution at the national level responsible for facilitating access to housing for low-income families until the establishment of the military dictatorship in 1964 when the National Housing Bank was created. The housing deficit then was estimated to be seven million units (Otero and Amaral, 1971).
Banco Nacional da Habitação (BNH): the National Housing Bank

The creation of the National Housing Bank (BNH—Banco Nacional da Habitação) marked the beginning of a new housing policy. The Bank, a central source of capital for low-income housing, was the chief institution within the Housing Finance System (SFH—Sistema Financeiro da Habitação), giving the government the opportunity to control from the center the allocation of a crucial resource. It was conceived as an independent entity within the Ministry of Interior, while working closely with the Ministry of Planning. Operating in tandem with the Federal Service of Housing and Urbanization (SERFHAU—Serviço Federal de Habitação e Urbanismo), it allocated investments on a national scale. The BNH was the institutional leader; therefore urban policies became subordinate to housing policies. The BNH’s intent was to fulfill the growing need for affordable housing in the country through a technical—as opposed to institutional—approach, but also as a way to demonstrate concern on the part of the Federal government. What was unique about the BNH was the fact that, as a bank, it linked the public sector, the financing agent, with the private sector, the housing policy executor.

Historical summary

The original idea for a Bank to help solve the housing problem was developed in 1953, during the second Vargas presidency (1951-1954). The monetary correction

13 The National Housing Plan (Plano Nacional de Habitação) was instituted by Law Nº 4380, dated August 21st, 1964, which created the National Housing Bank (BNH—Banco Nacional da Habitação) and the Federal Service of Housing and Urbanization (SERFHAU—Serviço Federal de Habitação e Urbanismo).
component was added to it during the Quadros Presidency (1961). Shortly after the 1964 military coup, Sandra Cavalcanti, the future first president of BNH, justified to President Castelo Branco the creation of a Bank to address the housing problem in a letter accompanying a draft of new legislation that instituted the Bank and outlined its objectives. The political argument hinged on the increasing social tensions in the favelas and the ease with which this despondent population could swing to the left. The volatile situation represented a potential conflict for the newly instituted military regime, which needed to prove it could deal with pressing social issues. Home ownership was a critical component of the plan, for the architects of this intricate system believed ownership made a better contribution to social stability than rental properties. As a result, virtually all housing financed by the BNH was intended for owner occupancy. This held true whether the dwelling was a single-family house or a unit in a multi-family structure, whether the housing was built by a public, non-profit company or by a private company. Since then, home ownership has remained a major tenet of Brazilian housing policy.

The BNH’s initial objective was to build housing for families with incomes between one and three minimum wages. Meeting the growing demand for affordable housing would in turn create new construction jobs and improve the economic situation.

14 Monetary correction (correção monetária) was an indexing device used to compensate for the high rates of inflation.

15 The text of this letter, including the President’s markings, was released by Sandra Cavalcanti, BNH’s president, in March of 1974 (Batley, 1983).

16 BNH’s stated objective was of “orienting, disciplining and controlling the housing finance system” to “promote the construction and acquisition of houses, especially for low-income groups” (Federal Law Nº 4380 of August 21, 1964).
The resources during the first two years of operation, an initial capital of less than one hundred thousand dollars and a one percent payroll deduction from workers’ wages, were scarce (Azevedo and Andrade, 1982). In 1966, a new source of income was established, also based on payroll deductions, and it became the principal means of financing the fledgling housing policy. From 1964 to 1969, about 600 thousand new housing units were financed by BNH (Otero and Amaral, 1971).

Between 1967 and 1971, the BNH expanded its scope and created programs to finance urban infrastructure and construction materials, programs to finance housing for families in higher-income brackets, and the mortgage market to transfer resources to the private sector (Valladares, 1983). The creation of these programs caused BNH investment in housing to decrease by 17.6 percent in only two years, from 93.2 percent in 1969 to 75.6 percent in 1971, while investment in supplementary programs increased by 16.9 percent in the same period (Azevedo and Andrade, 1982).

The high incidence of payment defaults during the first five years of the Bank’s operations caused investments to diminish for families in the one-to-three minimum wage income bracket after 1970. The Bank gradually shifted the bulk of its activity to middle-

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17 The Guarantee Fund for Time in Service (FGTS—Fundo de Garantia por Tempo de Serviço), a compulsory savings fund, was created through Federal Law Nº 5107 of September 14th, 1966. Under the FGTS, employers are required to deposit eight percent of the employee’s earnings in the Fund. Money can only be drawn from an FGTS account under specific circumstances, such as purchase of a new home or upon termination of employment. FGTS funds started being deposited in the National Housing Bank in April of 1967.

18 Some of the programs created were Fimaco—Programa de Financiamento de Material de Construção (Construction Materials Financing Program), 1967; Finansa—Programa de Financiamento para o Saneamento (Sanitation Finance Program), 1968; and Planasa—Plano Nacional de Saneamento (National Sanitation Plan), 1970. Each had subprograms with specific characteristics and conditions.
income families with the first programs to finance middle-income housing implemented in 1967. One could argue the objective of this change in policy was an attempt to balance the defaults on loans to those who were insolvent and to receive the returns on capital invested, thereby reinstating the Bank’s institutional credibility by meeting the expectations of the federal government (Azevedo, 1979). On the other hand, it could also be argued that granting low-interest financing privileges to influential sectors of the society was exclusively a political decision (Portes, 1979; Bolaffi, 1980; Valladares, 1983). In 1972-1973 the Bank serviced loans for approximately 360,000 dwelling units (US Dept. of Housing and Urban Development, 1977). The advantages awarded to those with higher incomes resulted in 50.2 percent of the total number of units financed by the BNH being in higher income programs by 1974 (Valladares, 1983).

Affordable housing became a low priority during General Médici’s administration (1970-1974) and in 1974 the BNH reached its lowest record in number of units financed: a total of only 7,263 units (Azevedo, 1979). The high rate of default in the lower income levels and the higher interest rates allowed for the middle-income market—10 percent a year against one to three percent a year for the low-income market—redirected the Bank’s investment to middle-class financing. Between 1970 and 1974, more than 560 thousand middle-income households received BNH financing while only 76,746 low-income housing units were financed (Azevedo and Andrade, 1982). In effect, the BNH was evolving into a national urban development bank: the entire urban infrastructure, including streets, schools, stores, and community centers had become eligible for BNH financing. Urban development programs intensified in 1972 with the creation of three
The percentage of BNH resources invested in housing fell from 93.2 percent in 1969 to 59.8 percent in 1974 while investments in urban development went from 4.1 percent in 1969 to 25.2 percent in 1974 (Azevedo and Andrade, 1982; Valladares, 1983).

A new initiative to swing the pendulum back was the establishment of the National Affordable Housing Plan (Planhap—Plano Nacional de Habitação Popular) with the objective to eliminate the housing deficit for families with household incomes between one and three minimum wages in 10 years. To offer an alternative to these low-income families and to expand the number of families served by Planhap, a program to finance serviced lots (Profilurb—Programa de Financiamento de Lotes Urbanizados) was created in 1975. One of the basic intents of the Profilurb was to prevent squatting in areas with no infrastructure, a rapidly growing process in medium- and metropolitan-sized Brazilian cities. Only when programs based on self-help construction were established, did the access to housing improve for low-income families (Azevedo, 1979).

By the end of 1975 the BNH affirmed that 34.5 percent of the more than 10 billion dollars it had invested in its programs had gone to affordable housing. Portes

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19 The programs to spur urban development included three regional Urban Development Funds, one for the Northeastern region, one for the combined East, West Central, and South regions, and one for the Amazon; and the Urban Community for Accelerated Recovery Project (CURA—Comunidade Urbana para Recuperação Acelerada).

20 The Profilurb program financed the lot serviced with power, water, sewerage, and a wet core for families with incomes between zero and three minimum wages. This initiative was intended to supply basic sanitation infrastructure, making the homeowner responsible for the construction of the housing unit itself based on individual priorities and financial resources. Profilurb’s creation may be attributed to BNH’s recognition that households with a monthly income below 1.5 minimum wage cannot afford to buy a house (Valladares, 1983), and the necessity to offer an alternative within the Housing Finance System (SFH—Sistema Financeiro da Habitação) to those populations who could not afford projects facilitated by the Housing Companies (Cohabs).
argues, however, that affordable was a euphemism used by the Bank to group low- and middle-income households: only nine percent of total investments went to families earning between one and five minimum wages (80 percent of the population), and 68 percent of BNH’s budget was spent financing middle-income housing to private cooperatives and pension funds, and military credit funds (Portes, 1979). Between 1975 and 1978, the number of “affordable” housing units financed by the Bank corresponded to 67 percent of the Bank’s production during its entire existence, a total of 469,599 units (Azevedo, 1979). By 1980, that number almost reached 750 thousand units, corresponding to 74.6 percent of the total number of units financed (Azevedo and Andrade, 1982). Also during this period, BNH investment in housing programs increased, but only from 57.2 percent in 1975 to 66.9 percent in 1978, while investment in urban development remained constant, on average, around 30 percent (Azevedo and Andrade, 1982; Valladares, 1983).

An evaluation of BNH’s performance based on number of financed units reveals that its social objective to increase the supply of affordable housing was not met; of the total number of housing units financed by the Housing Finance System (SFH—Sistema Financeiro da Habitação) until 1980, 65 percent served middle- and high-income families. Between 1964 and 1980, almost three million housing units were financed, but only one million of them were for low-income families (Azevedo and Andrade, 1982). The discrepancy is even worse, if percentage of investment for each income bracket is considered: low-income households received only 25 percent of the total resources allocated by BNH, and the lower range of this bracket, those earning between one and three minimum wages, only 10 percent. From 1964 to May of 1985, 4.4 million
mortgages were signed through SFH, two-thirds of them for households with incomes above five minimum wages, representing 33 percent of the urban population, and only one-third for lower income households, representing 67 percent of the urban population (IPND-NR, 1986).

After 1983, high rates of inflation, economic recession, rising unemployment and falling wages negatively impacted the main sources of SFH funds, namely, the deposits in the Guarantee Fund for Time in Service (FGTS—Fundo de Garantia por Tempo de Serviço) and voluntary savings accounts, and also considerably increased the rate of default, affecting the financing institutions belonging to the Savings and Loans system.\(^\text{21}\)

The BNH was abolished in November of 1986.

**The Housing Companies**

The Housing Companies (Cohabs—Companhias Habitacionais) were created to execute BNH’s stated objective to meet the housing needs of low-income populations. BNH was the policy and financial arm of this program and the Cohabs the executors. Housing programs for low- to middle-income households were administered by cooperative housing companies, often sponsored by labor unions and other associations. Privately owned entrepreneurial companies built housing to be sold to upper-income individuals.

The Cohabs were constituted as public-private partnerships; state and municipal governments retain control of their stocks but private companies may participate in their

\(^{21}\) The voluntary savings accounts were deposited in institutions belonging to the Brazilian Savings and Loans System (SBPE—Sistema Brasileiro de Poupança e Empréstimo). The participating organizations invested the funds and were expected to produce good returns on investment to their depositors.
initiatives. Although Cohabs were specifically created to serve low-income families, this segment of the population could not realistically participate in their traditional programs. All programs and projects executed by Cohabs with FGTS funds had to be approved by BNH, the fund’s administrator. Those elements not financed by the Bank became the responsibility of the state or municipality. Cohabs supervise, manage, and commercialize the units among the registered low-income families. They are not-for-profit organizations; their support comes from fees charged for technical and supervision services.

During the 20 years of BNH’s operation, Cohabs were fully financed by the Bank, followed the same policies and thus, the same patterns of expansion and crises. From their conception in 1964 to 1969, Cohabs experienced moderate expansion, but from 1970 to 1974 the rates of default increased enormously, as did the number of units built. The recovery which occurred after 1975 seems to coincide with Cohabs’ new preference for financing the higher income brackets within the low-income classification, that is, households with incomes between three and five minimum wages rather than those earning from one to three minimum wages, and also with real estate speculation which made rents paid for subsidized housing higher than their monthly mortgage payments (Azevedo and Andrade, 1982). After the Bank’s extinction in 1989, Cohabs continued operating and are still thriving. Their structure remains basically the same, and the funds

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22 The BNH initially defined as low-income those families with household income between one and three minimum wages; later that range was extended to include families with monthly incomes of up to five minimum wages.
come from various financing agencies, alternative financing mechanisms, private sponsorship, and creative new programs such as the Solo Criado program.  

**Perspective**

To put BNH’s operations in perspective, one must be reminded that during the military regime (1964-1984) all systems were heavily centralized in Brazil (Table 4-2). Investment of the banking system’s assets was planned by the BNH in cooperation with other central planning agencies of the Brazilian government. Major development decisions were made by the BNH itself, specific investment decisions were made in accord with the general allocation and policies of the National Housing Plan, and some minor decisions were made locally. Savings accounts were maintained in savings banks, a traditional public institution in Brazil, and in mutual savings and loan associations.

<table>
<thead>
<tr>
<th>Period</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964 to 1967</td>
<td>creation, organization, and development of basic structure</td>
</tr>
<tr>
<td>1967 to 1971</td>
<td>operational changes, direct financing bank, infrastructure programs</td>
</tr>
<tr>
<td>1971 to 1979</td>
<td>indirect financing bank, restructuring, focus on urban development</td>
</tr>
<tr>
<td>after 1979</td>
<td>attempt to democratize, focus on squatter settlements</td>
</tr>
</tbody>
</table>

The BNH guaranteed the savings, supervised and controlled these agencies, redistributed savings to them for their general mortgage loan applications, guaranteed their liquidity, and generally operated as the central bank of the system; rather than creating a large, centralized bureaucracy, the BNH operated its programs through local

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23 A complete explanation of Solo Criado is included in Chapter 7 of this volume, Land Use Policies and Legislation.
public and private institutions. These savings banks and associations provided mortgage
financing for individual homeowners to purchase or build a house. Planning and overall
supervision of the housing financing system rested with the BNH; however, execution of
the Bank’s activities was decentralized to states and cities.

The expansion of BNH’s investments to include infrastructure as well as housing
was possible due to the growth of savings in the banking system. During its initial phase,
the new banking system was heavily dependent on involuntary savings generated by the
Brazilian employment security savings. The scarcity of resources available to the Bank
necessitated voluntary savings, which later became an almost equal source of capital,
accounting for $2.4 billion US dollars as compared to $2.9 billion US dollars from the

The BNH loaned its money at interest rates which varied according to the price of
the dwelling being financed, ranging from one to ten percent. Thus the loans granted to
upper-income families offset the low-interest rates at the other end of the economic scale.
In Brazil, it is generally accepted that a family can spend up to twenty percent of the
household income on mortgage payments. At the time BNH was in control of housing
finance, loan payments, like interest-bearing deposits, were subject to monetary
correction, an indexing device used to compensate for the high rates of inflation. The
monetary correction system was the main innovation introduced by the BNH to housing

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24 These were deposited in a national savings network, the Brazilian Savings and Loans
System (SBPE—Sistema Brasileiro de Poupança e Empréstimos), created in 1967 as a
way to supplement funds available to the BNH and help it overcome its initial financial
difficulties. Through institutions such as SBPE and programs such as Recon, BNH funds
were allocated to the most privileged families reaching 50.2 percent of the total number
of units financed by 1974 (Valladares, 1983).
finance; it helped the capital market because it stimulated savings, causing a substantial increase in financial investment and limiting price increases.

A reasonable argument justifying the periods of growth, stagnation, and decline of BNH can be built based exclusively on economic reasons. However, it would not be unreasonable to hypothesize that political interests dictated the path housing policies were following and the unsatisfactory results of housing programs geared to low-income households were a consequence of equating policy to politics (Azevedo and Andrade, 1982). Thus, increased investment in the low-income housing sector may have come at a time when the country was prosperous, but the reason investment was increased was, in fact, that populist or authoritarian regimes were attempting to gain popular support.

After the BNH disintegrated in 1986, monies available for housing programs plunged to approximately one-third their former levels. Funding then became the direct responsibility of the Guarantee Fund for Time in Service (FGTS), the national retirement fund that was created in part to fund the original BNH. Administration of housing programs now falls to municipal administrators. State and local housing organizations—the affordable housing companies (Cohabs)—share some responsibilities with the funding agency that prepared them for these tasks from the initial phases of the BNH. States and municipalities are obliged to contribute to the funding of local projects by providing land and infrastructure and choosing private companies to fill federal contracts. After notification of funding approval, the national office of the Federal Savings Bank (CEF—Caixa Econômica Federal), now in charge of the Housing Finance System

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25 The CEF is one of the institutions participating in the Brazilian Savings and Loans System (SBPE—Sistema Brasileiro de Poupança e Empréstimo), along with Real Estate
(SFH—Sistema Financeiro da Habitação), delivers the approved funding for the housing proposal to its local office. Here, agents are responsible for the administration of projects, including the distribution of aid. This increase in responsibilities is paralleled by the development of a local bureaucracy that has been prepared to assume administrative duties.

**Caixa Econômica Federal (CEF): the Federal Savings Bank**

The Federal Savings Bank (CEF—Caixa Econômica Federal) is a public financial institution subordinated to the Finance Ministry. During the Housing Finance System’s tenure, CEF was one of the institutions comprising the SFH, along with the National Housing Bank (BNH—Banco Nacional da Habitação), the Savings and Real Estate Credit Societies (SCI—Sociedades de Crédito Imobiliário e Poupança), the Savings and Loan Associations (APE—Associações de Poupança e Empréstimo) and the Housing Companies (Cohab—Companhia de Habitação). The extinction of the BNH in 1986 caused the SFH structure to collapse and all assets and liabilities were transferred to CEF. The National Monetary Council (Conselho Monetário Nacional) took on the responsibilities and obligations of the extinct BNH as the main component of the SFH.

The years following the extinction of BNH saw a succession of institutional reforms which created and extinguished task forces and Ministries and caused policies and projects related to housing and basic sanitation to be passed from new Ministry to

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26 The CEF was created by Decree Nº 759/69.
extinct commission to reinstated Ministry.\textsuperscript{27} In 1990, the Social Development Fund (FDS—Fundo de Desenvolvimento Social) was created and a new housing plan was launched: the Immediate Action Housing Plan (PAIH—Plano de Ação Imediata para a Habitação). The Affordable Housing Special Fund (FEHAP—Fundo Especial de Habitação Popular) was formed in 1993. Numerous housing and basic sanitation programs have been established since then and the CEF continues to be the system’s financing arm operating with funds from the FGTS.

The total FGTS reserve is R$50 billion. In September of 1997, FGTS withdrawals surpassed deposits and the fund has had a negative monthly balance since.\textsuperscript{28} By May of 1998, the net difference between deposits and withdrawals reached the one billion Reais mark for the previous 12 months. This drop in deposit amounts is due to not only higher unemployment rates in the country, but also an increase in informal employment. The net deficit is attributed to declining deposits as well as an increase in the number of retirees and households withdrawing funds to purchase a house. In 1995, 10.6 percent of withdrawals were for acquisition of homes; in 1997, that amount was 16.9 percent.

\textsuperscript{27} The Housing, Urbanism, and Urban Development Ministry (MHU—Ministério da Habitação, Urbanismo e Desenvolvimento Urbano) is created to substitute the Urban Development and Environment Ministry (MDU—Ministério do Desenvolvimento Urbano e Meio Ambiente) in 1987. In 1988, the MHU is converted into the Housing and Social Welfare Ministry (MBES—Ministério da Habitação e Bem-Estar Social), and extinct in 1989 when housing goes under the auspices of the Interior Ministry. In 1990, as a result of administrative reform instituted by the Federal government (Collor administration) the Social Action Ministry (MAS—Ministério de Ação Social) is created and in 1993 it is renamed Social Welfare Ministry (MBES—Ministério do Bem-Estar Social) (MPO/SPU, 1996).

\textsuperscript{28} The facts presented here were gleaned from CEF data included in an article published in the Gazeta do Povo, Paraná’s leading newspaper, on June 28\textsuperscript{th}, 1998, p. 39.
The Legal Context

The necessity to protect and preserve the environment had never been acknowledged by a Brazilian Constitution until 1988. The inclusion of a chapter exclusively dedicated to the environment was both a result of international influence and the need to more amply ratify the concepts of environmental protection first spelled out in the National Environmental Policy enacted in 1981.²⁹

Numerous international treaties and principles documented in conferences sponsored by the United Nations had, since the early 1970s, motivated nations to address environmental protection and conservation issues. The impetus created within the international community brought about initiatives and agreements that resulted in enactment of unprecedented legislation. Even though Brazil was not on the forefront of these international initiatives, Brazilian legislation eventually caught up with the new paradigm being adopted around the world. These changes culminated and were solidified by the 1992 Earth Summit in Rio de Janeiro.

Brazilian Environmental Legislation

Before the 1988 Constitution only isolated measures and resolutions that affected specific natural resources had been enacted. The Constitutions of 1946 and 1967 simply designated responsibilities and realms of authority to Federal, State, and Municipal governments accordingly. There were additional pieces of legislation that addressed individual problems such as the 1961 National Health Code, the 1965 Forest Code, and

²⁹ Federal Law Nº 6938 of August 31st, 1981, known as National Environmental Policy (Política Nacional do Meio Ambiente). Legislation enabling this law was passed through Federal Decree Nº 88351 of June 1st, 1983.
the 1967 National Sanitation Policy. Environmental issues were only addressed within a more comprehensive framework by the 1981 National Environmental Policy.

Since then, Federal legislation addressing specific natural resources has continued to focus on the protection, preservation, and conservation of the environment. Parallel resolutions and decrees have addressed monitoring, accountability, and enforcement by means of local authorities, environmental groups, and citizens associations and organizations. A number of non-governmental organizations (NGOs) have also been involved in initiating legislation and holding government authorities responsible for enforcing and expanding the scope of initiatives. In addition, State and Municipal legislation has supplemented national policies and increased the number of protected areas and natural resources.

Evidently, Brazil has not had a long history of environmental legislation. The 1981 National Environmental Policy and the provisions in the 1988 Constitution were only the first steps towards a more comprehensive approach to environmental issues in a legal context. It took 10 years to enact legislation that in fact protects the environment and natural resources, including provisions for prosecution of crimes against the environment. Known as the Environmental Law (Lei Ambiental), this statute was approved in February of 1998. Since then, States and Municipalities have enacted local legislation addressing specific environmental issues.30

30 These most recent initiatives are discussed in depth in Chapter 6 of this volume, Environmental Policies and Legislation.
CHAPTER 5
MARGINALITY IN THE PERFECT CITY

Brazil is the eighth largest economy in the world today, classified by the World Bank among the upper middle-income economies, but 17.4 percent of its total population and 13.1 percent of its urban population live below the national poverty line. If international poverty lines are considered, world development indicators place between 23.6 and 43.5 percent of the Brazilian population below the line (World Bank, 2000).

Brazil’s wealth is concentrated in the Southeast and South regions, where the largest cities are located and where the rates of urbanization are higher (Tables 5-1 and 5-2).

Table 5-1: Resident Population in the South and Southeast Regions of Brazil, 1960-1996

<table>
<thead>
<tr>
<th>Regions</th>
<th>Resident Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>South</td>
<td>11,753,075</td>
</tr>
<tr>
<td>Southeast</td>
<td>30,630,728</td>
</tr>
<tr>
<td>Brazil</td>
<td>70,070,457</td>
</tr>
</tbody>
</table>

Sources: IBGE. 1960 to 1991 Census (Censo Demográfico) and 1996 Population Count (Contagem da População) (tabulation by author).

Table 5-2: Urbanization in the South and Southeast Regions of Brazil, 1960-1996

<table>
<thead>
<tr>
<th>Regions</th>
<th>Percentage of Population in Urban Areas (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South</td>
<td>37.10</td>
</tr>
<tr>
<td>Southeast</td>
<td>57.00</td>
</tr>
<tr>
<td>Brazil</td>
<td>44.67</td>
</tr>
</tbody>
</table>

Sources: IBGE. 1960 to 1991 Census (Censo Demográfico) and 1996 Population Count (Contagem da População) (tabulation by author).
The 1996 Population Count found São Paulo, Minas Gerais, Rio de Janeiro, Bahia, Rio Grande do Sul and Paraná to be the six largest Brazilian states (Figure 5-1). Altogether, these six states comprised more than 60 percent of the country’s total population. In fact, the state of Paraná joined the top-six group for the first time, while the top five have occupied that ranking since 1940. Growth rates decreased for all states in the South and Southeast regions between 1991 and 1996, except for Paraná.

Rural exodus deeply affected the state of Paraná in the 1970s. The substitution of agriculture by livestock, the advancement into capital-intensive crops for export, and the eradication of coffee plantations by the “black frost”\(^1\) of 1975 caused the displaced labor force to move en masse to urban centers. During the 1970s, the urban population of Paraná’s capital, Curitiba, doubled, going from 550 thousand to 1.1 million. In that decade, Curitiba had the highest growth rate of all Brazilian capitals—5.34 percent per year, while the state of Paraná had the lowest rate of all states—0.97 percent per year (Figures 5-2 and 5-3). By 1980, migrants constituted 30 percent of the total population of Curitiba.\(^2\) The growth rates for both the state of Paraná and the city of Curitiba declined even further between 1980 and 1991; however, this was a result of a national trend since, relative to other states, rates have remained constant. Between 1986 and 1996, the largest number of migrants entering the South region came from the Southeast Region: nine percent of the total number of internal migrants in the country (IBGE, 1997b).

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1 The black frost, as it became historically known, was a spell of intense, bitter cold and consequent frost that destroyed most crops in the state of Paraná during the winter of 1975.

2 The Brazilian Institute of Geography and Statistics (IBGE—Instituto Brasileiro de Geografia e Estatística) classifies as migrants people living in the city for less than ten years (IBGE, 1991).
Figure 5-2: Growth Rates for the Municipality of Curitiba, 1970 to 1996
Sources: IBGE, 1970 to 1991 Census (Censo Demográfico) and 1996 Population Count (Contagem da População) (graph by author).

Figure 5-3: Population Growth Rates, Total, Urban and Rural, for Brazil and the State of Paraná, 1940 to 1996
Not unlike other countries in the world at the same stage of development, Brazil has seen a constant increase in urban population and consequent decrease in rural population. The prevailing global trend is increased urbanization, however Brazil’s urbanization rates are some of the highest among developing countries, approaching and sometimes surpassing rates in developed countries. For instance, Australia and New Zealand are 85 percent urbanized, the United States is 78 percent urbanized, and Japan and Taiwan are 77 percent urbanized. The percentage of population living in urban areas in the Philippines, Pakistan, India, and China is 42, 35, 26, and 22 percent respectively (World Bank, 2000). Today, almost 80 percent of the Brazilian population lives in urban areas. The urbanization rates for the South region and for the state of Paraná parallel the national rates, fact that has only been observed after 1980 indicating a more intense urbanization process in the past 20 years (Table 5-3).

Table 5-3: Percentage of Urban and Rural Population for Brazil, the South Region and the State of Paraná, 1940-1996

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<tbody>
<tr>
<td>Brazil</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>urban</td>
<td>31</td>
<td>36</td>
<td>45</td>
<td>56</td>
<td>68</td>
<td>75</td>
<td>78</td>
</tr>
<tr>
<td>rural</td>
<td>69</td>
<td>64</td>
<td>55</td>
<td>44</td>
<td>32</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>South Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>urban</td>
<td>28</td>
<td>29</td>
<td>38</td>
<td>45</td>
<td>63</td>
<td>74</td>
<td>77</td>
</tr>
<tr>
<td>rural</td>
<td>72</td>
<td>71</td>
<td>62</td>
<td>55</td>
<td>37</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Paraná</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>urban</td>
<td>24</td>
<td>25</td>
<td>31</td>
<td>36</td>
<td>59</td>
<td>73</td>
<td>78</td>
</tr>
<tr>
<td>rural</td>
<td>76</td>
<td>75</td>
<td>69</td>
<td>64</td>
<td>41</td>
<td>27</td>
<td>22</td>
</tr>
</tbody>
</table>

In 1996, the Metropolitan Region of Curitiba concentrated 27 percent of Paraná’s total population and 32 percent of the state’s urban population (IBGE, 1997a).

The Urban Poor

One of the most telling indicators of urban poverty is the number of homeless people and the number of families living in substandard conditions in urban areas. The housing deficit estimates in Brazil vary widely depending on the criteria used for the calculations. While one study conducted by the João Pinheiro Foundation indicates the deficit to be over four million housing units, the United Nations calculates it to be above 15 million (Ribeiro and Azevedo, 1996). Once substandard housing units are included in the calculations, the numbers are staggering. In 1994, a study determined the housing deficit to be 14.1 million, estimating the number of people in need to be over 50 million—three of the country’s population. The number of substandard housing units was estimated to be 4.3 million, plus 12.4 million overcrowded units. This research project also determined that 77 percent of the housing deficit affected families earning less than three minimum wages, and the totality of families affected were in income

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3 The results of a research project commissioned by the Development and Support to Construction Industry Institute (IDACION—Instituto de Desenvolvimento e Apoio à Construção) conducted by economist Antônio Evaristo Teixeira Lanzana were reported in an article published in the Folha de São Paulo on November 13th, 1994, p.1-6, entitled “Brasil vai precisar de 18,4 milhões de habitações até o ano 2000” (Brazil will need 18.4 million housing units by the year 2000).
brackets below five minimum wages, which is a reflection of the distribution of wealth in Brazil (Figure 5-4).\textsuperscript{4}

![Number of Monthly Minimum Wages (m.w.)](image)

**Figure 5-4:** Number of Brazilian Households by Income Level  
**Source:** IBGE. 1991 Census (Censo Demográfico) (graph by author).

This appalling situation is no longer the privilege of large metropolitan centers. In the state of Paraná—the sixth most populous state of the Union—not only the metropolitan region of its capital, Curitiba, but also medium-sized cities throughout the state are experiencing a growing number of informal settlements in the periphery of their urban centers. The income distribution in the State of Paraná is worse than the country as

\textsuperscript{4} The “minimum wage” is an officially established unit of monthly salary that will be mentioned throughout this chapter. Because of the high inflation rates, which prevailed in Brazil until 1994, a fixed currency value would not be appropriate. Minimum wages are adjusted periodically according to inflation and cost of living indices. A dollar amount is not provided because the purchasing power of a Brazilian minimum wage is not equivalent to US standards and would not serve as a good basis for comparison.
a whole: while 57 percent of all Brazilian households earn less than one minimum wage, in Paraná that number is 62 percent. Most housing assistance programs target households making up to three minimum wages. Again, Paraná does not fare well compared to the nation: 87 percent of households in the state would qualify for assistance programs, compared to 83 percent in Brazil (Figure 5-5).

Figure 5-5: Number of Households in the State of Paraná by Income Level
Source: IBGE. 1991 Census (Censo Demográfico).

Curitiba and Its Metropolitan Region

Curitiba, founded in 1693, is Brazil's eighth-largest city (IBGE, 1997a). The capital of the state of Paraná—one of Brazil's wealthiest states—since 1854, Curitiba is its primate city, concentrating 16 percent of the state’s population. The municipality of Curitiba has a total area of 430 square kilometers, and almost 1.5 million inhabitants (IBGE, 1997a). The metropolitan region of Curitiba, with a total population of 2.4 million (IBGE, 1997a), was one of nine metropolitan regions implemented by the second
National Development Plan (II PND).\(^5\) Today, it comprises 25 municipalities (Figure 5-6). Curitiba alone concentrates 61 percent of the total urban population in the metropolitan area and together with 10 other municipalities, namely, Almirante Tamandaré, Araucária, Campina Grande do Sul, Campo Largo, Colombo, Fazenda Rio Grande, Pinhais, Piraquara, Quatro Barras, and São José dos Pinhais, clusters 93.7 percent of the total RMC population (Table 5-4).

The population of Curitiba doubled between 1970 and 1991 (Figure 5-7). Demand for the growing labor pool was created through massive incentives given to industries to locate in Curitiba. Nonetheless, as with so many other fast-growing cities in developing countries, Curitiba became haunted by poverty. Recent estimates of the number of people living in substandard housing fluctuate between 10 and 15 percent of the total population in this model city (IPPUC, 1991).

\[\begin{array}{c}
\text{Year} & \text{Population} \\
1970 & 609,026 \\
1980 & 1,024,975 \\
1991 & 1,315,035 \\
1996 & 1,476,253 \\
\end{array}\]

Figure 5-7: Resident Population for the Municipality of Curitiba, 1970 to 1996

Sources: IBGE. 1970 to 1991 Census (Censo Demográfico) and 1996 Population Count (Contagem da População) (graph by author).

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\(^5\) The first nine metropolitan regions to be created and implemented in Brazil were: São Paulo, Rio de Janeiro, Belo Horizonte, Fortaleza, Porto Alegre, Recife, Salvador, Belém, and Curitiba. All of these major cities are also the capital of their respective states and, in most cases, the primate city in the state.
Table 5-4: Resident Population, by municipality and location of household, 1996

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrianópolis</td>
<td>1,691</td>
<td>5,648</td>
<td>7,339</td>
</tr>
<tr>
<td>Agudos do Sul</td>
<td>919</td>
<td>5,524</td>
<td>6,443</td>
</tr>
<tr>
<td>Almirante Tamandaré</td>
<td>80,058</td>
<td>9,352</td>
<td>89,410</td>
</tr>
<tr>
<td>Araucária</td>
<td>68,648</td>
<td>8,036</td>
<td>76,684</td>
</tr>
<tr>
<td>Balsa Nova</td>
<td>2,829</td>
<td>5,916</td>
<td>8,745</td>
</tr>
<tr>
<td>Bocaiúva do Sul</td>
<td>3,061</td>
<td>5,522</td>
<td>8,583</td>
</tr>
<tr>
<td>Campina Grande do Sul</td>
<td>22,984</td>
<td>8,460</td>
<td>31,444</td>
</tr>
<tr>
<td>Campo Largo</td>
<td>63,747</td>
<td>19,225</td>
<td>82,972</td>
</tr>
<tr>
<td>Campo Magro</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Cerro Azul</td>
<td>4,089</td>
<td>13,018</td>
<td>17,107</td>
</tr>
<tr>
<td>Colombo</td>
<td>145,988</td>
<td>7,710</td>
<td>153,698</td>
</tr>
<tr>
<td>Contenda</td>
<td>5,469</td>
<td>6,863</td>
<td>12,332</td>
</tr>
<tr>
<td>Curitiba</td>
<td>1,476,253</td>
<td>--</td>
<td>1,476,253</td>
</tr>
<tr>
<td>Doutor Ulysses</td>
<td>523</td>
<td>5,139</td>
<td>5,662</td>
</tr>
<tr>
<td>Fazenda Rio Grande</td>
<td>40,499</td>
<td>4,800</td>
<td>45,299</td>
</tr>
<tr>
<td>Itaperuçu</td>
<td>9,008</td>
<td>8,595</td>
<td>17,603</td>
</tr>
<tr>
<td>Mandirituba</td>
<td>5,324</td>
<td>9,894</td>
<td>15,218</td>
</tr>
<tr>
<td>Pinhais</td>
<td>82,787</td>
<td>6,548</td>
<td>89,335</td>
</tr>
<tr>
<td>Piraquara</td>
<td>28,109</td>
<td>24,377</td>
<td>52,486</td>
</tr>
<tr>
<td>Quatro Barras</td>
<td>12,272</td>
<td>1,629</td>
<td>13,901</td>
</tr>
<tr>
<td>Quitandinha</td>
<td>2,932</td>
<td>11,126</td>
<td>14,058</td>
</tr>
<tr>
<td>Rio Branco do Sul</td>
<td>15,401</td>
<td>7,811</td>
<td>23,212</td>
</tr>
<tr>
<td>São José dos Pinhais</td>
<td>151,209</td>
<td>17,826</td>
<td>169,035</td>
</tr>
<tr>
<td>Tijuca dos Sul</td>
<td>1,703</td>
<td>9,856</td>
<td>11,559</td>
</tr>
<tr>
<td>Tunas do Paraná</td>
<td>1,057</td>
<td>2,369</td>
<td>3,426</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2,226,560</td>
<td>205,244</td>
<td>2,431,804</td>
</tr>
</tbody>
</table>

Note: The Municipality of Campo Magro seceded from Almirante Tamandaré in 1995. No statistical information was available for Campo Magro as a separate entity at the time of this printing, but the numbers for Almirante Tamandaré represent the total for both municipalities in 1996.
As in all other metropolitan regions of Brazil, the RMC has experienced higher growth rates in the periphery than the core. The RMC has had the highest growth rate of all metropolitan regions in Brazil, 3.4 percent, and most of the recent growth has occurred in the outskirts of the city. Curitiba today is 100 percent urban, and the municipalities surrounding it are the ones absorbing new population. Thus, the periphery, which comprises the other 24 municipalities in the Metropolitan Region of Curitiba, has had the highest growth rates ever: 5.12 percent (Table 5-5).

The Metropolitan Region of Curitiba (RMC) contained 11.85 percent of the state’s population in 1970 and 23.48 percent in 1991 (IBGE, 1991). In absolute numbers, that is an increase of 1,225,598 inhabitants in the region’s urban areas in that period. With the average family being 3.25 persons, this increase in population means a demand for 377,107 houses.

Table 5-5: Resident Population, Average Annual Rate of Increase, and Percentage of Population for the Metropolitan Region of Curitiba (RMC) and the Aggregate Total of all Brazilian Metropolitan Regions, 1991 and 1996

<table>
<thead>
<tr>
<th>Region</th>
<th>Total</th>
<th>Rate</th>
<th>Percentage of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1991</td>
<td>1996</td>
<td>(%)</td>
</tr>
<tr>
<td>Curitiba (RMC)</td>
<td>2,057,578</td>
<td>2,425,361</td>
<td>3.40</td>
</tr>
<tr>
<td>Core</td>
<td>1,315,035</td>
<td>1,476,253</td>
<td>2.38</td>
</tr>
<tr>
<td>Periphery</td>
<td>742,543</td>
<td>949,108</td>
<td>5.12</td>
</tr>
<tr>
<td>Metro Regions</td>
<td>45,503,464</td>
<td>49,117,413</td>
<td>1.57</td>
</tr>
<tr>
<td>Core</td>
<td>27,796,736</td>
<td>29,002,336</td>
<td>0.87</td>
</tr>
<tr>
<td>Periphery</td>
<td>17,706,728</td>
<td>20,115,077</td>
<td>2.63</td>
</tr>
</tbody>
</table>

Curitiba fares well in terms of average monthly income if compared to national rates; nonetheless, 65 percent of the population still earns less than five minimum wages, which would be considered low to moderate income (Table 5-6). According to the 1991 Census, the average income for the Metropolitan Region was five minimum monthly wages, while the average income for the city of Curitiba was 6.1 minimum monthly wages.6

Table 5-6: Household Income in the Municipality of Curitiba and the Metropolitan Region of Curitiba, 1991

<table>
<thead>
<tr>
<th>Average Income (in minimum wages)</th>
<th>Curitiba</th>
<th>Metropolitan Region of Curitiba</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Households</td>
<td>Percentage of Households</td>
</tr>
<tr>
<td>no claimed income</td>
<td>13,658</td>
<td>3.90</td>
</tr>
<tr>
<td>0 to 1 m.w.</td>
<td>33,147</td>
<td>9.45</td>
</tr>
<tr>
<td>1 to 2 m.w.</td>
<td>65,305</td>
<td>18.63</td>
</tr>
<tr>
<td>2 to 3 m.w.</td>
<td>53,156</td>
<td>15.16</td>
</tr>
<tr>
<td>3 to 5 m.w.</td>
<td>63,467</td>
<td>18.10</td>
</tr>
<tr>
<td>5 to 10 m.w.</td>
<td>66,140</td>
<td>18.86</td>
</tr>
<tr>
<td>10 to 15 m.w.</td>
<td>25,928</td>
<td>7.40</td>
</tr>
<tr>
<td>15 to 20 m.w.</td>
<td>11,436</td>
<td>3.26</td>
</tr>
<tr>
<td>more than 20 m.w.</td>
<td>18,367</td>
<td>5.24</td>
</tr>
<tr>
<td>Total</td>
<td>350,604</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: IBGE. 1991 Census (Censo Demográfico).

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6 In 1991, the Metropolitan Region of Curitiba still comprised only 14 municipalities, namely, Almirante Tamandaré, Araucária, Balsa Nova, Bocaiúva do Sul, Campina Grande do Sul, Campo Largo, Colombo, Contenda, Curitiba, Mandirituba, Piraquara, Quatro Barras, Rio Branco do Sul, and São José dos Pinhais.
Planning the Perfect City

Curitiba, as most cities developed during colonial times in Brazil, has its planning rooted in the French tradition. In 1855, the French engineer Pierre Taulois was hired as chief surveyor of public lands and in 1857 he suggested the first changes to Curitiba’s urban space. These comprised mostly the imposition of an orthogonal grid that obliterated the original circular pattern and dictated the quadrangular pattern to be followed hence. The first large sanitation project executed in Curitiba was the channeling of the Belém River, the culprit of every flood in the city. An added benefit of this project, completed in 1886, was the implementation of the city’s first public park, which transformed a swampy, flood-prone area into a recreational area. The first basic sanitation infrastructure standards were established in the Municipal Code of 1895.

The French influence returned during the 1940s. Alfredo Agache, a renowned urbanist and architect, founder of the French Society of Urbanism, arrived in Curitiba with the charge to devise an urban plan such as the ones he had developed for two other Brazilian cities, Rio de Janeiro and São Paulo. The plan for Curitiba took two years (1941-1943) to be developed. It suggested a radial road system departing from downtown and leading social and commercial activities to structured secondary centers, defining the orientation of the city’s internal connections as well as its linkages with other important centers in the State, along the coast, and to neighboring States. Economic problems and the intense and rapid growth of the city prevented the plan from being implemented exactly as conceived; however, some of its major elements still remain, such as boulevards, stormwater systems, minimum setbacks for new construction, and the location of future landmarks, namely the campus for the Federal University of Paraná.
The Agache Plan oriented development until the early 1960s, when a revision was proposed by the municipal administration to manage the growth resulting from intense migration and a fledgling process of industrialization. This plan was initiated by a group of architects and urbanists from the Federal University of Paraná who wanted to contribute to the reformulation of the city since urban development had not evolved much in Curitiba, nor in any other Brazilian city for that matter. A public competition was held in 1964 and the proposals for a Preliminary Plan were submitted to public debate during the month of July, 1965. The plan’s author, architect Jorge Wilhelm from São Paulo, proposed transport-based axes, concentrating along the northeast-southwest axis, along which there would be dense development thus directing the future physical growth of the city (Figure 5-8). The Master Plan was unanimously approved by the City Council in June of 1966.

Figure 5-8: Schematic Plan for Transportation Axes, Curitiba
Incorporating the commission originally created to assist in the selection and approval of the Master Plan for Curitiba, the Urban Research and Planning Institute of Curitiba (IPPUC—Instituto de Pesquisa e Planejamento Urbano de Curitiba) was created in 1965 to become the chief planning institution in the municipality of Curitiba. Its charter was to control the implementation of the Master Plan; to detail and, in some cases, implement projects; and to coordinate a comprehensive development plan. Between 1967 and 1971, the municipal administration executed many public works projects, but most did not follow the Master Plan’s guidelines. A series of plans originated from revisions in 1969 and 1972, and for the last 30 years Curitiba has been continually and effectively planned. Between 1971 and 1975, under the mayor nominated by the State Governor—former IPPUC’s director—the Plan received renewed impetus and most projects were finally implemented. The development policy during this administration was industrialization of the State capital.

The following administration, between 1975 and 1979, made significant changes through Zoning and Land Use legislation, limiting the occupation and densification of residential areas in the periphery of the urban core (suburbs) and encouraging higher densities and mixed-use in areas along major transportation axes. From 1979 to 1983, special attention was given to transportation planning, which, together with environmental initiatives, has given the city international renown. The recreational parks, begun as a flood mitigation strategy, today add up to 26 (21 million square meters of open green space) and constitute the main tactic to prevent flooding in urbanized areas during rainy seasons, as well as protecting riparian areas.
Unfortunately, early plans addressed only the municipality of Curitiba, that is, all the planning was confined to its municipal boundaries. Planners did not envision what the unparalleled growth within these political borders would do to the surrounding—unplanned—area. Rapid growth in the city’s periphery resulted in a scattered pattern of land use and conurbation with the surrounding municipalities. Hence, the Plan for Integrated Development (Plano de Desenvolvimento Integrado), a comprehensive development plan, was adopted in 1978 (IPPUC, 1985). This new plan was the first to include the 14 municipalities that then comprised the metropolitan region. In 1985, a new Municipal Development Plan (PMDU—Plano Municipal de Desenvolvimento Urbano) was adopted. A new model of development was put forth, focusing on decentralization and establishing secondary centers within the municipality.

Curitiba’s urban plans have always integrated land use patterns and their corresponding zoning regulations to road systems and mass transportation networks. Thus, with higher densities and mixed uses being allowed along these transportation corridors, land value follows a very similar pattern and land prices are, for the most part, determined by the location of any given property in relationship to said systems. Despite all the planning efforts, the intense and accelerated growth of Curitiba and its metropolitan region in most recent years has negatively impacted the quality of life of its citizens. Between 1991 and 1996, Curitiba grew more than the largest Brazilian cities, namely, São Paulo and Rio de Janeiro. While São Paulo’s and Rio’s growth rates did not reach one percent per year, Curitiba’s growth rate was 3.4 percent (Table 5-7).

This demographic explosion brought to this once provincial city the problems of large urban centers, such as unemployment, homelessness, crime, violence, and traffic
congestion, leading residents to doubt the belief that this was the most livable city in the world. Unemployment rates fluctuate around the 10 percent mark, the housing deficit is estimated to be 80 thousand units, the police force would have to be tripled to adequately serve the population and lower the statistics of an average 2.5 homicides and 20 car thefts per day.  

Table 5-7: Resident Population and Growth Rates for Brazilian Metropolitan Regions, 1991 and 1996

<table>
<thead>
<tr>
<th>Metropolitan Regions</th>
<th>Resident Population</th>
<th>Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belém</td>
<td>1,332,840</td>
<td>1,485,569</td>
</tr>
<tr>
<td>Fortaleza</td>
<td>2,307,017</td>
<td>2,582,820</td>
</tr>
<tr>
<td>Recife</td>
<td>2,919,979</td>
<td>3,087,967</td>
</tr>
<tr>
<td>Salvador</td>
<td>2,496,521</td>
<td>2,709,084</td>
</tr>
<tr>
<td>Belo Horizonte</td>
<td>3,436,060</td>
<td>3,803,249</td>
</tr>
<tr>
<td>Vitória</td>
<td>1,064,919</td>
<td>1,182,354</td>
</tr>
<tr>
<td>Rio de Janeiro</td>
<td>9,814,574</td>
<td>10,192,097</td>
</tr>
<tr>
<td>São Paulo</td>
<td>15,444,941</td>
<td>16,583,234</td>
</tr>
<tr>
<td>Curitiba</td>
<td>2,057,578</td>
<td>2,425,361</td>
</tr>
<tr>
<td>Porto Alegre</td>
<td>3,027,941</td>
<td>3,246,869</td>
</tr>
<tr>
<td>Total</td>
<td>43,902,370</td>
<td>47,298,604</td>
</tr>
</tbody>
</table>

Sources: IBGE. 1991 Census (Censo Demográfico) and 1996 Population Count (Contagem da População).

Affordable Housing

The intense process of migration from rural areas brought hordes of displaced agricultural workers to the capital and the municipal government had to address this sudden and increased demand for housing. The development plan for Curitiba demanded that housing issues be addressed within a comprehensive framework, that all housing be

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7 These numbers were cited in an article by Fábio Campana, “Eles estão voltando” (They are coming back), published in Paraná&Cia. magazine on September 22nd, 1997.
integrated to the urban infrastructure network, that it be diversified in form and type, and that it agree with the local landscape to harmonize with the environment (IPPUC, 1996).

Virtually all low-income housing in the Metropolitan Region of Curitiba is initiated by Cohab-CT, a public-private company, linked to the federally funded Housing Financing System (SFH). Cohab-CT, created on April 29\textsuperscript{th}, 1965, is one of 40 housing companies in Brazil and one of three in Paraná, that serve as the intermediaries between applicant families and the Federal Savings Bank (CEF—Caixa Econômica Federal), the financing agency. In addition to operating in the 25 municipalities of the Metropolitan Region of Curitiba (RMC), Cohab-CT also operates in the municipality of Paranaguá, the main port city of the state. The total area of operations covers 7.5 percent of the state area (Cohab-CT, 1991).

Cohab-CT built its first affordable housing project, Vila Nossa Senhora da Luz, in 1967. The complex had 2,100 houses, some of them destined for families relocated from favelas. In 1969, four more projects were built in the periphery with the purpose of eradicating favelas in the urban area by relocating them to the outskirts of the city. The stated objective of these projects, comprised of small houses with no infrastructure, was that they be a stepping-stone for favela populations. The intention was that these families be integrated into the urban fabric within six months to two years.

The 1980s were particularly difficult for people in need of housing because scarce resources limited the ability of agencies to start new investments, and the demand continued increasing despite growing construction costs and diminishing purchasing power. The economic situation deteriorated further, and in the late 1980s, in view of total absence of financing from the federal housing system (SFH), Cohab-CT used its own
resources and created alternative financing mechanisms to continue working. Since the
beginning of its operations in 1965 until 1988, Cohab-CT had counted on the National
Housing Bank (BNH—Banco Nacional da Habitação) to finance all its projects. From
1989 on, after the extinction of the BNH, new financing programs were introduced,
including private sponsorship; nonetheless, by the end of 1988, the housing deficit in
Curitiba was estimated to be 61 thousand units (IPPUC, 1989).

The housing situation in Brazil and, consequently, that of Cohab-CT may be
better understood if one looks at the context in which low-income housing programs were
implemented during BNH times. In the late 1970s, when Brazil was still reaping the
benefits of the “Brazilian miracle,” a low-income housing unit cost 12 percent of a
monthly minimum wage. By 1990, the price of such unit had quadrupled and only
households earning seven monthly minimum wages could qualify to get financing
through Cohab-CT’s conventional programs (Cohab-CT, 1991). The economic crisis of
the 1980s along with the changes in the Housing Finance System (SFH—Sistema
Financeiro da Habitação) halted federal funding, housing production diminished, the
supply of houses for sale and of rental units decreased, rents increased, inflation raised
the cost of construction and reduced the purchasing power of salaried families. At the
end of the 1980s, Brazil had an estimated housing deficit of more than 10 million units.
The deficit in Curitiba was estimated to be more than 60 thousand units while there were
almost 44 thousand households registered with Cohab-CT (Cohab-CT, 1991). Of the
families waiting in Cohab-CT’s line, 58 percent earned less than three minimum wages,
26 percent earned between three and five minimum wages, and only 16 percent,
conceivably the only ones to qualify for financing a conventionally built housing unit, earned more than five minimum wages.

As of December, 1990, there were 43,700 households registered with Cohab-CT, 39 percent of which had a monthly income of up to three minimum wages, 29 percent between three and five minimum wages, and 32 percent more than five minimum wages. There were 35,041 families registered in Curitiba, while 8,659 were residents of other municipalities in the Metropolitan Region and Paranaguá (Cohab-CT, 1991). Even if the demand seems like an unreachable target, Cohab-CT continues to devise alternatives to meet it; by the end of 1991, Cohab-CT had reached the mark of 49,523 units, including houses, apartments, and serviced lots. More recent data reveals a slight change in the profile of families registered with Cohab-CT. At the beginning of 1998, 26 percent of the households were in the lowest income bracket while the percentage of registered families earning between three and five minimum wages increased to almost 40 percent. The percentage the higher income levels remained fairly stable, increasing only two percentage points to 34 percent. (Table 5-8).

Table 5-8: Profile of Households Registered with Cohab-CT, March 1998

<table>
<thead>
<tr>
<th>Household Income (in minimum wages)</th>
<th>Number of Households</th>
<th>Percentage of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 1 m.w.</td>
<td>169</td>
<td>0.24</td>
</tr>
<tr>
<td>from 1 to 2 m.w.</td>
<td>3,965</td>
<td>5.63</td>
</tr>
<tr>
<td>from 2 to 3 m.w.</td>
<td>14,271</td>
<td>20.27</td>
</tr>
<tr>
<td>from 3 to 5 m.w.</td>
<td>27,973</td>
<td>39.74</td>
</tr>
<tr>
<td>from 5 to 10 m.w.</td>
<td>20,518</td>
<td>29.15</td>
</tr>
<tr>
<td>more than 10 m.w.</td>
<td>3,493</td>
<td>4.96</td>
</tr>
<tr>
<td>Total</td>
<td>70,389</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Cohab-CT, July 1998 (tabulation by author).
During its 35-year history, Cohab-CT has implemented numerous programs. The changes in existing programs and the creation of new programs conform to the economic situation of the country and the needs of the population. Income level is the primary determinant of which program is suitable for any given household. Opportunities to register for housing programs are the same for all households within the Metropolitan Region of Curitiba; incentives and subsidized loans apply to all municipalities and most loans can be paid off in up to 25 years. The system used by all housing companies, Cohab-CT included, during BNH times, did not allow families to choose the location of their house; it could be defined as a first-come, first-served system. A peculiar phenomenon was observed then: after acquiring their property, families would publish adds in the Cohab-CT newsletter inquiring about possible exchanges in different neighborhoods of the city. This was the only means to having a slightly wider array of choices as far as location was concerned.

All Cohab-CT programs afford recipients security of tenure; upon completion of loan payment, owners receive a title deed to their property. Some of the most significant programs are summarized in the following diagram:

<table>
<thead>
<tr>
<th>Name of Program</th>
<th>Construction</th>
<th>Loan Term</th>
<th>Household Income</th>
<th>Benefit Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>conventional</td>
<td>by contractor</td>
<td>25 years</td>
<td>4 to 8 m.w.</td>
<td>completed house</td>
</tr>
<tr>
<td>self-help</td>
<td>by owner or hired hand</td>
<td>25 years</td>
<td>up to 5 m.w.</td>
<td>serviced lot, cash to pay for materials &amp; labor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 years</td>
<td>up to 3 m.w.</td>
<td></td>
</tr>
<tr>
<td>sites-and-services</td>
<td>by owner or hired hand</td>
<td>8 years</td>
<td>up to 3 m.w.</td>
<td>serviced lot, 125 m$^2$ minimum</td>
</tr>
</tbody>
</table>

Note: m.w. stands for minimum wages, explained earlier in this chapter.
Registration in Cohab-CT programs must be renewed or updated by the prospective owners every year. The old criteria for service included variables such as the applicant’s age and number of children; a uniform criteria has substituted that system for a first-come first-served system. Those who have been waiting the longest are the first to be assigned units as they become available; however, the minimum waiting period is three years. Houses built or financed by Cohab-CT have an average area of 30 square meters, multi-family units have 50 square meters, and serviced lots 150 square meters. In the biennial 1989/90, the conventional program delivered 270 houses and 1,738 units in multi-family structures. Most recently, the conventional program has not been offered.

Approximately 70 percent of the families registered with Cohab-CT earn less than three minimum wages, and thus can rarely afford conventionally built units. About half of the families enrolled come from rural areas (Cohab-CT, 1991).

Self-help programs have been among the most successful housing programs in Curitiba since 1980; it is estimated that there are more than 10 thousand dwellings in the municipality that have been built by their owners. The initial impetus for these programs was strictly economic; the combination of lack of federal funds, rampant inflation and consequent decrease in purchasing power had made it impossible for low-income families to acquire housing. The first experiences with self-help in Curitiba were in favela relocation projects. The average savings for families choosing self-help is 40 percent over the cost of a traditionally built home. The self-help approach not only makes home ownership possible for those people who could not afford a formally built unit, but also creates jobs and spurs sales of construction materials. There is also an

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8 This estimate was published in a local newspaper, Jornal do Estado, on June 28, 1998.
aesthetic advantage to houses built through self-help programs; rather than row upon row of look-alike units, people are encouraged to build their homes as they wish and they may count with the technical assistance and advice of staff architects. The self-help program includes assistance from Cohab-CT staff; homeowners build the house following instructions from architects and engineers who also supervise the construction.

Other innovative programs are:

- ownership validation and slum upgrading program: brings basic services to areas informally or extra-legally occupied and promotes the relocation of families if they are settled on noxious or environmentally unsound areas. Through this program, Cohab-CT provides technical, social, legal, and financial assistance to settlers and their communities. The oldest and long consolidated areas, 444 in all, had been regularized by 1991 and 266 had been registered for potential regularization and titling.

- popular lots program: offers incentives to the private sector to participate in the delivery of low-income housing and develop sites per Cohab-CT standards in exchange for paying for the infrastructure and making at least 50 percent of the units in each development available to low-income families registered with Cohab-CT, who have been waiting in line, at a pre-determined sites-and-services price. From the launching of the program in 1989 to 1991, four private subdivisions were completed totaling 785 lots.

The sites-and-services and self-help programs developed by Cohab-CT since 1980 have been very successful. These programs relied on BNH financing; however, the re-structuring of the financing system, including the extinction of the BNH, jeopardized
their continuity. One of the strategies used by Cohab-CT to make housing more affordable, and therefore accessible, to low-income families was to reduce the size of the lots. The reduction in lot size, coupled with a more rudimentary infrastructure along narrower roads and larger blocks reduced the price of individual lots, allowing families earning as little as one minimum wage to purchase them.

In addition to these programs, there are other initiatives intended to facilitate the construction of shelter for and by low-income families, such as the Construction Materials Market which, through a private/public partnership, provides building materials at lower costs to those who have opted for self-help units; Cohab-CT coordinates and supervises private vendors committed to offer materials for up to 30 percent less than the average retail price (Cohab-CT, 1991). These specific programs and other new and innovative housing policies have been implemented in the municipality in an attempt to increase the opportunities for low-income families to acquire a house and to improve their living conditions. Cohab-CT itself does not have enough available funds to finance houses for longer than five years, and one of the consequences of not meeting this enormous demand for affordable housing is an unprecedented increase in the number of informal settlements, especially in areas that would be appropriate for in-fill development, closer to the center and serviced by utilities.

One of the most recent and successful mechanisms is the Municipal Housing Fund (FMH— Fundo Municipal de Habitação), created in 1990 and managed by Cohab-

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9 Federal Law Nº 6766 of December 19th, 1979, concerning land use and parceling of urban land, established the minimum square area of urban lots to be 125 square meters with a minimum frontage of five meters.
CT, through which the construction of housing is financed with municipal resources.\textsuperscript{10} The FMH is one of the most innovative housing initiatives, created out of necessity since municipalities could no longer depend on federal funding after the extinction of the BNH. By means of financing and planning tools, the municipality procures additional financial resources within the private sector and transfers them to the fund (FMH). One of these tools, and conceivably the most effective program linked to the FMH is the Solo Criado (literally translated, Created Land). Similar to Transfer of Development Rights (TDR) in the United States, it grants special approvals and variances to developers, allowing them to build more than what the current zoning prescribes and thus, increasing the built area of a development project.\textsuperscript{11} This added area may be in the form of additional stories or square footage and, in exchange for this privilege, developers pay 75 percent of the market price of the added area. This revenue goes into the FMH to finance low-income housing programs. The Solo Criado mechanism has become FMH’s main revenue resource; since its inception FMH’s revenues increased by 261 percent.\textsuperscript{12}

\textsuperscript{10} The Municipal Housing Fund (FMH—Fundo Municipal de Habitação) was created by Municipal Law Nº 7412 of February 15\textsuperscript{th}, 1990. Decree 150 was the enabling legislation. In 1992, Municipal Law Nº 7997 authorized the municipal government to donate FMH real estate to Cohab-CT for use in affordable housing programs.

\textsuperscript{11} A complete explanation of Solo Criado is included in Chapter 7 of this volume, Land Use Policies and Legislation. In Curitiba, it was created by Municipal Law Nº 7420 of March 20\textsuperscript{th}, 1990, which does not call the mechanism “Solo Criado” per se, but concedes “incentives to implement housing programs of social interest, namely, an increase in building potential, understood as an increase in floor area ratio or the height of buildings.” (Translated by the author from the original law.) This statute also established the Housing Policy Commission (Comissão de Política Habitacional). Enabling legislation, Decree Nº 151, also establishes land use and zoning parameters.

\textsuperscript{12} Reported in article published in the local newspaper Indústria & Comércio on July 31\textsuperscript{st}, 1991.
Despite successful programs and efforts on the part of Cohab-CT, the demand for housing in the Metropolitan Region of Curitiba still is much higher than the supply and the number of applicants waiting in line has never subsided (Table 5-9).

Consequently, while some low-income families wait in line for a subsidized housing unit, others occupy land illegally and build shacks out of discarded materials forming new favelas or enlarging and densifying existing ones. Recognizing this phenomenon, Cohab-CT has attempted to integrate informal settlements into the urban context, using appropriate health and safety standards, and allowing access to public services and infrastructure.

Table 5-9: Number of Cohab-CT Applicants for Curitiba and the Metropolitan Region (RMC), from 1993 to 1998

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Applicants</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curitiba</td>
<td>RMC</td>
</tr>
<tr>
<td>1993</td>
<td>35,217</td>
<td>4,839</td>
</tr>
<tr>
<td>1994</td>
<td>36,332</td>
<td>5,184</td>
</tr>
<tr>
<td>1995</td>
<td>43,173</td>
<td>6,513</td>
</tr>
<tr>
<td>1996</td>
<td>55,968</td>
<td>7,011</td>
</tr>
<tr>
<td>1997</td>
<td>61,128</td>
<td>7,213</td>
</tr>
<tr>
<td>1998</td>
<td>62,440</td>
<td>7,949</td>
</tr>
</tbody>
</table>

Source:  Cohab-CT, 1999. (tabulation by author)

Although Cohab-CT is responsible for the 25 municipalities in the metropolitan region (RMC), it has concentrated its efforts in the municipality of Curitiba. Between 1985 and 1991, Curitiba received 87 percent of the total number of units subsidized by Cohab-CT: of the 19,067 units delivered in the RMC, only 2,502 were in municipalities other than Curitiba. A total of 43,534 units, including houses, apartments, mixed-use
units, and new and regularized lots, were delivered by Cohab-CT in the RMC between 1991 and 1996. Curitiba received 94 percent of the total (Table 5-10).

Table 5-10: Number of Units Delivered by Cohab-CT in the Metropolitan Region of Curitiba (RMC), 1991 to 1996

<table>
<thead>
<tr>
<th>Year</th>
<th>Municipality</th>
<th>Houses</th>
<th>Apts.</th>
<th>Mixed-Use</th>
<th>Lots</th>
<th>Titling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Curitiba</td>
<td>251</td>
<td>566</td>
<td>0</td>
<td>982</td>
<td>446</td>
<td>2,245</td>
</tr>
<tr>
<td></td>
<td>Araucária</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>307</td>
<td>0</td>
<td>307</td>
</tr>
<tr>
<td></td>
<td>Piraquara</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>1992</td>
<td>Curitiba</td>
<td>1,589</td>
<td>1,292</td>
<td>0</td>
<td>7,150</td>
<td>1,110</td>
<td>11,141</td>
</tr>
<tr>
<td></td>
<td>Araucária</td>
<td>222</td>
<td>0</td>
<td>0</td>
<td>267</td>
<td>0</td>
<td>489</td>
</tr>
<tr>
<td></td>
<td>Campo Largo</td>
<td>202</td>
<td>0</td>
<td>0</td>
<td>102</td>
<td>0</td>
<td>304</td>
</tr>
<tr>
<td></td>
<td>Quatro Barras</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1993</td>
<td>Curitiba</td>
<td>1,209</td>
<td>310</td>
<td>0</td>
<td>4,346</td>
<td>2,790</td>
<td>8,655</td>
</tr>
<tr>
<td></td>
<td>Araucária</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>1994</td>
<td>Curitiba</td>
<td>121</td>
<td>670</td>
<td>0</td>
<td>4,158</td>
<td>7,391</td>
<td>12,340</td>
</tr>
<tr>
<td></td>
<td>Araucária</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>53</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>1995</td>
<td>Curitiba</td>
<td>46</td>
<td>0</td>
<td>128</td>
<td>3,712</td>
<td>455</td>
<td>4,341</td>
</tr>
<tr>
<td></td>
<td>São José dos Pinhais</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>379</td>
<td>0</td>
<td>379</td>
</tr>
<tr>
<td>1996</td>
<td>Curitiba</td>
<td>0</td>
<td>0</td>
<td>49</td>
<td>2,010</td>
<td>43</td>
<td>2,102</td>
</tr>
<tr>
<td></td>
<td>Campina Grande do Sul</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>189</td>
<td>0</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>Pinhais</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>637</td>
<td>0</td>
<td>637</td>
</tr>
<tr>
<td></td>
<td>Piraquara</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>167</td>
<td>0</td>
<td>167</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3,765</td>
<td>2,838</td>
<td>177</td>
<td>24,519</td>
<td>12,235</td>
<td>43,534</td>
</tr>
</tbody>
</table>


A cursory look at Cohab-CT’s performance and types of housing units produced in 30 years reveals not only the hard times, but also important trends (Table 5-11). In the beginning, the paradigm was traditional, single-family detached houses, built through conventional programs.
Table 5-11: Number of Families Served by Cohab-CT, by type of housing unit, from 1967 to 1997

<table>
<thead>
<tr>
<th>Year</th>
<th>Multi-Family Units</th>
<th>Houses</th>
<th>Lots</th>
<th>Regularizations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>0</td>
<td>2,256</td>
<td>0</td>
<td>0</td>
<td>2,256</td>
</tr>
<tr>
<td>1968</td>
<td>0</td>
<td>208</td>
<td>0</td>
<td>0</td>
<td>208</td>
</tr>
<tr>
<td>1969</td>
<td>0</td>
<td>830</td>
<td>0</td>
<td>0</td>
<td>830</td>
</tr>
<tr>
<td>1970</td>
<td>0</td>
<td>1,089</td>
<td>0</td>
<td>0</td>
<td>1,089</td>
</tr>
<tr>
<td>1971</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>1972</td>
<td>80</td>
<td>312</td>
<td>0</td>
<td>0</td>
<td>392</td>
</tr>
<tr>
<td>1976</td>
<td>560</td>
<td>341</td>
<td>0</td>
<td>0</td>
<td>901</td>
</tr>
<tr>
<td>1977</td>
<td>0</td>
<td>1,248</td>
<td>58</td>
<td>0</td>
<td>1,306</td>
</tr>
<tr>
<td>1978</td>
<td>0</td>
<td>362</td>
<td>0</td>
<td>0</td>
<td>362</td>
</tr>
<tr>
<td>1979</td>
<td>672</td>
<td>4,183</td>
<td>0</td>
<td>0</td>
<td>4,855</td>
</tr>
<tr>
<td>1980</td>
<td>3,200</td>
<td>1,969</td>
<td>0</td>
<td>0</td>
<td>5,169</td>
</tr>
<tr>
<td>1981</td>
<td>1,192</td>
<td>1,364</td>
<td>533</td>
<td>419</td>
<td>3,508</td>
</tr>
<tr>
<td>1982</td>
<td>1,342</td>
<td>1,055</td>
<td>891</td>
<td>0</td>
<td>3,288</td>
</tr>
<tr>
<td>1983</td>
<td>3,814</td>
<td>902</td>
<td>1,171</td>
<td>0</td>
<td>5,887</td>
</tr>
<tr>
<td>1984</td>
<td>0</td>
<td>112</td>
<td>66</td>
<td>0</td>
<td>178</td>
</tr>
<tr>
<td>1985</td>
<td>1,442</td>
<td>166</td>
<td>248</td>
<td>50</td>
<td>1,906</td>
</tr>
<tr>
<td>1986</td>
<td>397</td>
<td>38</td>
<td>355</td>
<td>0</td>
<td>790</td>
</tr>
<tr>
<td>1987</td>
<td>1,136</td>
<td>602</td>
<td>1,578</td>
<td>131</td>
<td>3,447</td>
</tr>
<tr>
<td>1988</td>
<td>72</td>
<td>92</td>
<td>1,705</td>
<td>22</td>
<td>1,891</td>
</tr>
<tr>
<td>1989</td>
<td>1,006</td>
<td>169</td>
<td>1,829</td>
<td>1,245</td>
<td>4,249</td>
</tr>
<tr>
<td>1990</td>
<td>732</td>
<td>101</td>
<td>692</td>
<td>2,371</td>
<td>3,896</td>
</tr>
<tr>
<td>1991</td>
<td>614</td>
<td>484</td>
<td>1,349</td>
<td>446</td>
<td>2,893</td>
</tr>
<tr>
<td>1992</td>
<td>1,292</td>
<td>2,113</td>
<td>7,519</td>
<td>1,110</td>
<td>12,034</td>
</tr>
<tr>
<td>1993</td>
<td>310</td>
<td>1,234</td>
<td>4,346</td>
<td>2,790</td>
<td>8,680</td>
</tr>
<tr>
<td>1994</td>
<td>670</td>
<td>121</td>
<td>4,477</td>
<td>7,391</td>
<td>12,659</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>174</td>
<td>4,091</td>
<td>455</td>
<td>4,720</td>
</tr>
<tr>
<td>1996</td>
<td>0</td>
<td>61</td>
<td>3,003</td>
<td>63</td>
<td>3,127</td>
</tr>
<tr>
<td>1997</td>
<td>0</td>
<td>0</td>
<td>2,183</td>
<td>927</td>
<td>3,110</td>
</tr>
<tr>
<td>Total</td>
<td>18,531</td>
<td>21,706</td>
<td>36,094</td>
<td>17,420</td>
<td>93,751</td>
</tr>
</tbody>
</table>

Source: Cohab-CT. 1998. (tabulated by the author from multiple mimeos).
Note: Data for the years 1973, 1974, and 1975 were not available.

The few units produced in the late 1970s and critical years during the 1980s are evidence of difficult economic times. The decreasing number of houses and multi-family
units and the increasing number of lots demonstrate the trend towards self-help and gradual building due to the fact that low-income families cannot afford to buy conventionally built housing. Finally, the increasing number of regularizations is evidence of policy shifts, establishing the acceptance of failed relocations and the fact that informal but consolidated areas may be made viable and may be a solution for the affordable housing problem.

**Informal Settlements**

Curitiba, despite its “First World” city label, has favelas scattered all across its landscape. The Research and Planning Institute of Curitiba (IPPUC—Instituto de Pesquisa e Planejamento Urbano de Curitiba) conducted a study in 1989 to find out the number of families living in substandard conditions. This count included not only those units identified as land invasions, but also substandard units built on legal lots, and was intended to verify the estimates that had been made since the early 1970s. The study concluded there were 24,578 housing units in the municipality that could be characterized as substandard housing (IPPUC, 1989). IPPUC has continued this exercise, attempting to keep a tally of favelas and other substandard residential areas, and has found that by 1997 there were 245 such areas with an estimated 52,716 families living in them (Table 5-12).

Favela residents in Curitiba are mostly of rural origin. This migrant population is not skilled in any form of work demanded in urban areas and the city attracts more than it can absorb so, their integration to the urban structure is haphazard. A favorite target for displaced families and squatters from rural areas, other urban centers, and even neighborhoods in the city proper is the undervalued land in the southeast of the municipality. Most of this land has no infrastructure and no urban services so the
property values are low. Also, as a result of the preferential treatment given to
development initiatives along the northeast-southwest axis, the value of real estate in the
southeast plummeted, landowners lost interest in protecting their patrimony, and the
number of favelas in the area increased. The first favelas in Curitiba date back to 1970:
Favela do Valetão and Vila Pinto.

Table 5-12: Count of Substandard Areas and Housing Units in Curitiba, 1971 to 1997

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Substandard Areas</th>
<th>Number of Substandard Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>21</td>
<td>2,213</td>
</tr>
<tr>
<td>1974</td>
<td>35</td>
<td>4,083</td>
</tr>
<tr>
<td>1978</td>
<td>43</td>
<td>5,068</td>
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</tr>
<tr>
<td>1982</td>
<td>52</td>
<td>7,716</td>
</tr>
<tr>
<td>1983</td>
<td>62</td>
<td>8,299</td>
</tr>
<tr>
<td>1984</td>
<td>66</td>
<td>11,388</td>
</tr>
<tr>
<td>1985</td>
<td>115</td>
<td>12,675</td>
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<tr>
<td>1987</td>
<td>162</td>
<td>18,442</td>
</tr>
<tr>
<td>1989</td>
<td>209</td>
<td>22,068</td>
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<tr>
<td>1990</td>
<td>209</td>
<td>24,570</td>
</tr>
<tr>
<td>1992</td>
<td>236</td>
<td>44,713</td>
</tr>
<tr>
<td>1994</td>
<td>244</td>
<td>50,663</td>
</tr>
<tr>
<td>1997</td>
<td>245</td>
<td>52,716</td>
</tr>
</tbody>
</table>


Some of the policies adopted in the early 1970s focusing on the housing problem
have, more often than not, hindered the integration of this population into the urban way
of life. Arriving in the city with no shelter and no job, rural families temporarily rely on
relatives, and eventually attempt to acquire subsidized housing. Urban lots are already
smaller than the areas these families used to occupy in rural areas. The municipal
housing agency (Cohab-CT), responsible for most affordable housing programs, reduced the size of their urban lots further to be able to serve more families. This new standard, however, became another hindrance to the integration and adaptation of families of rural origin. They are used to having their own subsistence agriculture in the back yard, which is hardly possible on urban lots with an average size of 100 square meters.

Unable to gain access to formal housing opportunities in the city, many of these families invade land and gradually build their dwellings thus forming favelas. Early policies established that squatters be removed from invaded areas and relocated to public projects, most of them in the periphery of cities, remote from job opportunities. The relocation to sites removed from the city core, where virtually all job opportunities are, and the consequent increase in cost and time spent in commuting, made some workers sell their subsidized house and go back to the favelas in which they had originally settled. A gradual process of organization in these communities allow families to secure the right to occupy some areas although they have no legal right or proof of ownership. Residents’ movements sometimes resist the pressures for relocation, sometimes take the initiative to improve their living conditions and defend their rights to ownership. One of the ways in which these invasions come to pass is by collective invasion. Families get organized and invade large tracts of unoccupied land. In Curitiba, the largest invaded area in the municipality, located in the Industrial District (CIC—Cidade Industrial de Curitiba), was taken in just a few days. More than 800 families occupied the banks of the Barigui river, an area of approximately 190 thousand square meters, or 47 acres (IPPUC, 1983).
The first relocation experience in Curitiba was the Plan to Eradicate Favelas (Plano de Desfavelamento). This plan was spurred by the staggering increase in numbers of families living in substandard housing: from 2,207 dwelling units in 1971 to 4,083 in 1975 (IPPUC, 1976). The plan proposed to implement 80 projects of 50 units each to accommodate the estimated 21 thousand people. Between 1975 and 1979 approximately 1,000 families were relocated to housing projects. Families living in Curitiba’s favelas, not unlike other cities in Brazil, were consistently relocated to affordable housing projects throughout the 1970s. Between 1974 and 1979, approximately two thousand families were relocated, about 20 percent of the population living in favelas. Nonetheless, during this period, new shacks sprung up in existing favelas and new favelas were established in vacant areas. A new policy, enacted in 1979, advocated the urbanization of favelas instead of relocation. It allowed 600 families to upgrade their dwellings and regularize the ownership of the land they were occupying. The population got more directly involved, improvement to the dwellings was not only allowed, but encouraged, and diverse alternatives were offered to families that needed housing. Despite all these efforts, the number of substandard dwelling units was 7,716 in 1982 (IPPUC, 1983). New policies and alternative initiatives by municipal authorities

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13This plan was conceived in 1975, developed by IPPUC in association with Cohab-CT and the Municipal Welfare Department (Departamento de Bem-Estar Social, PMC—Prefeitura Municipal de Curitiba), and adopted by municipal authorities in 1976. It included a pilot project, which showed that 47 percent of the heads-of-household of three abutting favelas worked in the same neighborhood where their house was located. The second largest group, 27 percent, worked downtown, where 70 percent of the total population in the municipality worked at the time. Based on this analysis, the city decided to relocate those families whose main breadwinner had a job close by within the same neighborhood. The other families, who were already incurring an expense with transportation going downtown or to other localities, were to be relocated to other areas of the municipality equally served by mass transportation (IPPUC, 1976).
have not been enough to meet the demand for affordable housing in Curitiba and the number of slum-dwellers has continued to increase. While the current policy is to recuperate, urbanize, and regularize where possible, it states that, if necessary, families will be relocated.

One of the programs dedicated to regularizing the invaders’ situation so that informal settlements will become legal and titles will be issued for each property, is called the Legal Lot (Lote Legal). It was created by Cohab-CT to give families in informal settlements an opportunity to regularize the occupation of the area and to obtain a deed that will characterize legal ownership. The target of the program is to regularize 179 informal settlements, giving legal ownership to approximately 41 thousand families (Cohab-CT, 1991). The primary objective of the program is to keep families in the settlement they occupied informally, while providing the technical and legal support necessary for its regularization. Other goals of the program are to consolidate and urbanize the area according to current land use regulations, to give families the security of ownership thus eliminating fear of eviction, to provide basic infrastructure, and to facilitate the regularization process. The Legal Lot program comprises two phases: first dwellers gain temporary ownership of the occupied lot and financing to permanently acquire the lot; full ownership is only granted after the area has been urbanized according to municipal standards and the mortgage loan has been paid in full. This program may be implemented in public areas, usually belonging to Cohab-CT or the Municipal Housing Fund (FMH—Fundo Municipal de Habitação), or in private areas, if proprietors request the participation of Cohab-CT.
In urban areas, the trend to urbanize favelas has prevailed over relocation of households. Presently however, there is very little vacant land within the limits of the city of Curitiba so, recently, invasions have taken place in the other municipalities that comprise the Metropolitan Region of Curitiba (RMC—Região Metropolitana de Curitiba). Some of these newly invaded areas are part of sensitive ecosystems, thus invasions not only present an immediate risk to the squatters, but also threaten the quality of life of the entire population of the metropolitan region. In 1992, the metropolitan planning agency, COMEC (Coordenação da Região Metropolitana de Curitiba), conducted a study to evaluate the magnitude of the invasion problem in the municipalities surrounding Curitiba. The field count including the 17 municipalities which then made up the RMC found that more than five percent of the population in the periphery, excluding Curitiba, was living in areas that had been invaded. For one municipality that percentage was almost 12 percent and only three municipalities did not have any informal settlements (Table 5-13).

The count was repeated in 1997, this time including all 25 municipalities presently comprising the RMC, to estimate the added complications of invasions in environmentally sensitive areas (Tables 5-14 and 5-15).

At the time of this second count, COMEC was particularly interested in the municipalities included in the water supply watersheds in the RMC (Figure 5-9). This concern was rooted in the fact that not only had the number of invaded areas and the percentage of population living in them grown exponentially, but also the areas presenting the largest numbers were those critical to the quality of the region’s water supply. The municipality with the highest percentage of its population living in informal
settlements was Piraquara with 30 percent. Only five of the 25 municipalities do not have any areas that have been invaded, and Curitiba has eight percent of its population living in informal settlements.

Table 5-13: Resident Population in Informal Settlements in the Metropolitan Region of Curitiba (RMC), 1992

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Informal Dwellings</th>
<th>Persons per Dwelling</th>
<th>Population in Informal Settlements</th>
<th>Total Population</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almirante Tamandaré</td>
<td>1,536</td>
<td>4.20</td>
<td>6,451</td>
<td>66,090</td>
<td>9.76</td>
</tr>
<tr>
<td>Araucária</td>
<td>509</td>
<td>4.13</td>
<td>2,102</td>
<td>61,767</td>
<td>3.40</td>
</tr>
<tr>
<td>Balsa Nova</td>
<td>0</td>
<td>4.02</td>
<td>0</td>
<td>7,519</td>
<td>0.00</td>
</tr>
<tr>
<td>Bocaiúva do Sul</td>
<td>27</td>
<td>3.97</td>
<td>107</td>
<td>8,686</td>
<td>1.23</td>
</tr>
<tr>
<td>Campina Grande do Sul</td>
<td>188</td>
<td>4.19</td>
<td>788</td>
<td>19,337</td>
<td>4.07</td>
</tr>
<tr>
<td>Campo Largo</td>
<td>423</td>
<td>4.04</td>
<td>1,709</td>
<td>72,347</td>
<td>2.36</td>
</tr>
<tr>
<td>Colombo</td>
<td>3,303</td>
<td>4.16</td>
<td>13,740</td>
<td>117,658</td>
<td>11.68</td>
</tr>
<tr>
<td>Contenda</td>
<td>49</td>
<td>4.26</td>
<td>209</td>
<td>8,928</td>
<td>2.34</td>
</tr>
<tr>
<td>Fazenda Rio Grande</td>
<td>440</td>
<td>4.26</td>
<td>1,874</td>
<td>25,061</td>
<td>7.48</td>
</tr>
<tr>
<td>Itaperuçu</td>
<td>155</td>
<td>4.26</td>
<td>660</td>
<td>10,735</td>
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<td>Mandirituba</td>
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<td>89</td>
<td>13,246</td>
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</tr>
<tr>
<td>Pinhais</td>
<td>1,556</td>
<td>4.05</td>
<td>6,302</td>
<td>75,433</td>
<td>8.35</td>
</tr>
<tr>
<td>Piraquara</td>
<td>197</td>
<td>3.29</td>
<td>648</td>
<td>31,331</td>
<td>2.07</td>
</tr>
<tr>
<td>Quatro Barras</td>
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<td>0</td>
<td>9,997</td>
<td>0.00</td>
</tr>
<tr>
<td>Rio Branco do Sul</td>
<td>463</td>
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<td>1,972</td>
<td>27,490</td>
<td>7.17</td>
</tr>
<tr>
<td>São José dos Pinhais</td>
<td>581</td>
<td>4.05</td>
<td>2,353</td>
<td>128,170</td>
<td>1.84</td>
</tr>
<tr>
<td>Tunas do Paraná</td>
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<td>3.82</td>
<td>0</td>
<td>1,918</td>
<td>0.00</td>
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<td>TOTAL</td>
<td>9,448</td>
<td>3.78</td>
<td>39,005</td>
<td>685,713</td>
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</table>

Table 5-14: Resident Population in Informal Settlements in the Metropolitan Region of Curitiba (RMC) and Percentage of Total Population Living in Informal Settlements, 1998

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Informal Dwellings</th>
<th>Persons per Dwelling</th>
<th>Population in Informal Settlements</th>
<th>Total Population</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrianópolis</td>
<td>93</td>
<td>3.93</td>
<td>365</td>
<td>7,056</td>
<td>5.18</td>
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<tr>
<td>Agudos do Sul</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Almirante Tamandaré</td>
<td>4,785</td>
<td>4.27</td>
<td>20,432</td>
<td>77,333</td>
<td>26.42</td>
</tr>
<tr>
<td>Araucária</td>
<td>1,552</td>
<td>4.23</td>
<td>6,565</td>
<td>80,035</td>
<td>8.20</td>
</tr>
<tr>
<td>Balsa Nova</td>
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<td>0</td>
<td>9,014</td>
<td>0.00</td>
</tr>
<tr>
<td>Bocaiúva do Sul</td>
<td>127</td>
<td>4.10</td>
<td>521</td>
<td>8,850</td>
<td>5.88</td>
</tr>
<tr>
<td>Campina Grande do Sul</td>
<td>584</td>
<td>4.24</td>
<td>2,476</td>
<td>34,654</td>
<td>7.15</td>
</tr>
<tr>
<td>Campo Largo</td>
<td>1,723</td>
<td>4.06</td>
<td>6,995</td>
<td>85,237</td>
<td>8.21</td>
</tr>
<tr>
<td>Campo Magro</td>
<td>730</td>
<td>4.27</td>
<td>3,117</td>
<td>17,568</td>
<td>17.74</td>
</tr>
<tr>
<td>Cerro Azul</td>
<td>42</td>
<td>3.89</td>
<td>163</td>
<td>17,319</td>
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</tr>
<tr>
<td>Colombo</td>
<td>6,253</td>
<td>4.19</td>
<td>26,200</td>
<td>162,105</td>
<td>16.16</td>
</tr>
<tr>
<td>Contenda</td>
<td>66</td>
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<td>269</td>
<td>13,151</td>
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</tr>
<tr>
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<td>0</td>
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</tr>
<tr>
<td>Fazenda Rio Grande</td>
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<td>6,680</td>
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<tr>
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<tr>
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<tr>
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<td>92,390</td>
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<tr>
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<td>243,997</td>
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Sources: COMEC, 1997; IBGE, 1997a; fieldwork, 1998 (tabulation by author).
Table 5-15: Resident Population in Informal Settlements in the Metropolitan Region of Curitiba (RMC), and Percentage of Urban Population Living in Informal Settlements, 1998

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Informal Dwellings</th>
<th>Persons per Dwelling</th>
<th>Population in Informal Settlements</th>
<th>Urban Population</th>
<th>Percentage of Urban</th>
</tr>
</thead>
<tbody>
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<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Almirante Tamandaré</td>
<td>4,785</td>
<td>4.27</td>
<td>20,432</td>
<td>72,768</td>
<td>28.08</td>
</tr>
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<td>2,916</td>
<td>0.00</td>
</tr>
<tr>
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<td>16.50</td>
</tr>
<tr>
<td>Campina Grande do Sul</td>
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<td>25,331</td>
<td>9.78</td>
</tr>
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<td>Campo Largo</td>
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<td>4.27</td>
<td>6,995</td>
<td>65,487</td>
<td>10.68</td>
</tr>
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</tr>
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<td>2,917</td>
<td>0.00</td>
</tr>
<tr>
<td>Quitandinha</td>
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<td>n.a.</td>
<td>13,113</td>
<td>n.a.</td>
</tr>
<tr>
<td>Rio Branco do Sul</td>
<td>817</td>
<td>4.26</td>
<td>3,480</td>
<td>14,971</td>
<td>23.25</td>
</tr>
<tr>
<td>São José dos Pinhais</td>
<td>3,838</td>
<td>4.09</td>
<td>15,697</td>
<td>159,994</td>
<td>9.18</td>
</tr>
<tr>
<td>Tijucas do Sul</td>
<td>0</td>
<td>3.89</td>
<td>n.a.</td>
<td>1,746</td>
<td>n.a.</td>
</tr>
<tr>
<td>Tunas do Paraná</td>
<td>22</td>
<td>4.10</td>
<td>90</td>
<td>1,065</td>
<td>8.47</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29,284</td>
<td>4.19</td>
<td>122,692</td>
<td>790,674</td>
<td>15.52</td>
</tr>
<tr>
<td>Curitiba</td>
<td>32,346</td>
<td>3.75</td>
<td>121,298</td>
<td>1,515,797</td>
<td>8.03</td>
</tr>
<tr>
<td>REGION TOTAL</td>
<td>61,630</td>
<td>3.96</td>
<td>243,997</td>
<td>2,301,471</td>
<td>10.60</td>
</tr>
</tbody>
</table>

Sources: COMEC, 1997; IBGE, 1997a; fieldwork, 1998 (tabulation by author).
An indication that most informal settlements in the periphery are located in the urbanized areas of each municipality, is the higher ratio of population in informal settlements to urban population. The municipality with the highest percentage of population living in informal settlements still is Piraquara, but a staggering 56 percent of people occupy dwellings in invaded areas. Including all municipalities in the RMC, except Curitiba, over 15 percent of the population lives in informal settlements. As a percentage of the urban population, the ratio is also higher for the metropolitan region as a whole: 10.6 percent.

Census data indicates that the extra-legal occupation of areas where the largest informal settlements are today started in 1990, contrary to the belief that this process had accelerated in the 1970s with the industrialization of the region. These settlements are: Zumbi dos Palmares in the municipality of Colombo established in 1990, Jardim Alegria in the municipality of São José dos Pinhais established in 1992, and Guarituba in the municipality of Piraquara established in 1994. Today, it is estimated that 17 thousand people live in these three informal settlements.\textsuperscript{14} Some of this growth occurred within water supply watersheds, despite land use restrictions imposed by local and state legislation. The protection of water supply watersheds in the State of Paraná was first established in 1989 by State Law Nº 8935, after certain areas had been zoned medium- or high-density. Thus today, there are urban lots that cannot obtain approval for development or construction for they are trapped in a contradiction between state legislation and local ordinances.

\textsuperscript{14} This estimate was published in a Gazeta Mercantil article on July 22\textsuperscript{nd}, 1998.
**Water Supply Watersheds**

The watersheds that supply water to the RMC cover an area of approximately 1,000 square kilometers. Ten of the 25 municipalities that comprise the RMC contain water supply watersheds within their boundaries. In recent years, the constant urbanization pressure and the increase in population suggest the demand for potable water will necessitate an increase of the water supply watershed area to over 2,000 square kilometers.

The Alto Iguaçu watershed alone met the total water demand in the municipality of Curitiba from the beginning of the century until 1980.\(^{15}\) The total water consumption in Curitiba alone (Table 5-16) reached levels that required additional water sources, provided today by the reservoir located in the Passaúna watershed.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Consumption in cubic meters (m(^3))</th>
<th>Percentage of Total Usage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>4,758,546</td>
<td>77.3</td>
</tr>
<tr>
<td>Commercial</td>
<td>692,751</td>
<td>11.3</td>
</tr>
<tr>
<td>Industrial</td>
<td>354,366</td>
<td>5.8</td>
</tr>
<tr>
<td>Public Sector</td>
<td>273,599</td>
<td>4.4</td>
</tr>
<tr>
<td>Public Services</td>
<td>74,525</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,153,787</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>


The Alto Iguaçu watershed still produces 85 percent of the total water supply in the Metropolitan Region of Curitiba (RMC) and could have its capacity doubled, were it according to technicians from Sanepar, the water and sanitation company, the demand was 3,000 l/sec. (three thousand liters per second) until 1980. Rapid growth and intensified urbanization increased the demand to almost 8,000 l/sec in 1998. The estimated demand for the year 2015 is of 15,000 l/sec. (interview with author, July 1998).
not for the environmental threats caused by the intense and disordered urbanization within the watershed, particularly to surface waters. The urbanization of agricultural land imposes a strain on this delicate ecosystem and threatens the quality of surface waters because of the increase in the amount of impervious surface and the residential effluents.

The potential threat comes from the fact that inappropriate or inexistent legislation permitted the subdivision of large rural tracts into urban lots, especially during the 1950s and 1960s, in various municipalities of the RMC contained in water supply watersheds. By 1991, the five municipalities comprising the Alto Iguaçu watershed contained more than 40 thousand approved urban lots, with an average size of 360 square meters, mostly in wetlands; about eight thousand of those were permanently occupied (Sanepar, 1992). The remaining 32 thousand lots represent a potential addition of 153 thousand people to the current 37 thousand population.

The most serious problem, not only in municipalities within the water supply watersheds but in the entire metropolitan region, is the absence of sewerage systems. Public works projects have historically concentrated on water supply, sewerage systems were relegated and sewage ended up being disposed into stormwater ditches. In 1990, according to Sanepar, 35 percent of the population in the metropolitan area had its sewage collected, but only 18 had it treated. Those numbers were improved and by 1998 56 percent of the population was connected to the sewerage network but still only 35 percent had the collected sewage treated. With PROSAM and PARANÁ-SAN, the largest sanitation programs in the area to date, the prospect is to have 80 percent collected and treated by the year 2004.
In addition to the infrastructure problem, or lack thereof as it were, floods during the rainy season have been costly. The Water Resources Plan estimates the floods of 1983, 1993, and 1995 cost $32.9, $19.6, and $43.7 million US dollars respectively. The new canal, parallel to the Iguaçu river, will mitigate the flood problem.

**Portrait of an Informal Settlement**

The informal settlement chosen to exemplify the phenomenon explained herein is located in the municipality of Piraquara, in the Metropolitan Region of Curitiba (RMC), Brazil. More specifically, it is located in an area known as Guarituba (Figure 5-10). This choice is justified not only by the unique characteristics of this settlement, but also by the context in which it is inserted. Of the 25 municipalities in the RMC, the municipality of Piraquara had the highest increase in number of invasions since 1992 when only two percent of the total population of the municipality lived in informal settlements (Table 5-13). By 1998, 30 percent of the total population in the municipality lived in informal settlements (Table 5-14). If only the urban population is taken into account, that percentage goes up to 56 percent (Table 5-15).

The settlement studied is located in an environmentally sensitive area within the watershed and upstream from one of the catchment areas that supplies water to the main municipality in the region, Curitiba (Figure 5-11). The major problem with the occupation of this area is that, not only is it inappropriate for high-density development, but also the fact that most of the occupation is being done informally, precludes any installation of appropriate infrastructure that would protect surface waters from urban wastes. In addition, some families have settled in flood-prone areas, and given their
socio-economic profile, the construction quality of their dwellings is such that a heavier rain can seriously damage them.

The municipal boundary, marked by the river Iraí, bears a sign welcoming visitors that reads “Piraquara, Berço das Águas” (Piraquara, Cradle of Waters) (Figure 5-12). Looking down from the bridge that spans the narrow river, I expect to see clear and pristine water as that of a spring; but the river running under the bridge is murky and there is floating debris. Along the riverbanks, there is more garbage, ready to fall into the stream. Continuing east along this beautiful wetlands landscape, reminiscent of the Florida Everglades, I observe cranes and egrets flying from the south side of the road to the troughs, result of sand mining, on the north side. Farther down, with the mountain range that separates this plateau from the coast as a backdrop, a relatively dense agglomeration of dwellings streaks the otherwise green landscape (Figure 5-13). There is a collective uniformity to the clustered dwellings, which creates the expectation of homogeneity (Figure 5-14).

From the edge of the settlement, I cannot fathom there are over 3,300 families here, settled on land that belongs to someone else, but which most of them have actually paid to occupy. These families moved to this area and started building their houses only four years ago. Before then, the area was completely vacant (Figure 5-15), and for good reason: the geology and soil characteristics are not conducive to development, even if low-density developments were approved to be built in the 1950s. The black soil is mostly peat, and some dwellers tell stories of self-ignition because of the extremely high content of organic matter. The proximity to the river puts the population at risk during
rainy seasons, especially those dwellings within the five-year flood plain. The shallowness of the water table causes water to surface in various places.

Entering the settlement, I realize the houses, seemingly homogeneous from afar, have many differentiating characteristics and are in fact distinct individual units. Some are colorful, built with wood scraps and an array of other materials, obviously being reused (Figure 5-16). Some are in transition between a rough structure and one with one or two masonry walls (Figure 5-17). Some are in a state of disrepair while others are immaculately kept. Some have a flower or a vegetable garden. Washed clothes hang from taut clotheslines. Boardwalks or makeshift bridges span the distance from the fence to the front door when puddles or large patches of mud cover the entire front area. There is no infrastructure, effluents from individual houses go directly into open-air ditches in the back of the units (Figure 5-18). Outhouses stand just a few feet from wells. A front porch doubles as convenience store.

The first time I visited the settlement I was accompanied by one of the local community leaders, the president of one of the neighborhood associations. He was one of the first people to invade this area in 1996 and fiercely defends invasions arguing “all people want is a place to live.” When the first families arrived, he related to me during our first conversation, they occupied the area adjacent to the intermunicipal road that links Curitiba to Piraquara (Figure 5-19). In January of 1997, the local government, particularly the Mayor and the Environment Secretary, convinced the community leader that the area the families were occupying was contaminated and that it was dangerous for them to remain there for environmental reasons. He then organized all the families and they moved to the area just south of the original settlement, which was then demarcated
and fenced off. Families that had come from other neighborhoods in Curitiba were moved back with the assistance of Piraquara’s authorities. The military police was called to observe the relocation, in case violence erupted, but did not get involved. Those who stayed in Guarituba were reassured by the local government that was a better area for them to occupy because their health would not be threatened there.

Of course, this assurance was completely unfounded as far as environmental differences between the two areas, but at least the informal settlement was removed from the main entry to the municipality and tucked away where it could not be immediately seen by visitors, particularly prospective businesses wanting to locate in Piraquara. The community leader was eventually hired by the local government to organize the community and “keep things under control.” Nonetheless, on February 20th, 1997, the Military Police, with a warrant, expelled about 600 families. On April 23rd, 1997, 50 new families moved into the area at once.16

Within two years, more than three thousand families had invaded the area, new communities were formed, new leaders emerged, and at the time I visited the settlement there were three neighborhood associations. The presence of religious organizations is noticeable, not only by the new churches being built in the settlement, but also by the organization of different community groups based on their religious affiliation. The number of construction materials retailers hark back to good economic times (Figure 5-20). Most families have paid for the land they occupy, but those who “sold” them the land are long gone. The current residents have no title deed, nor any legally valid document that proves they have “purchased” their property. Still, “for sale” signs can be
found in virtually every block and it seems the commercialization of real estate here mirrors that of formal settlements (Figure 5-21).

During one of my visits to the Guarituba settlement, the subject of conversation among dwellers was the eviction of about 200 families from a settlement in São Bernardo do Campo, São Paulo. They were tuned into the story not only because about 300 armed military police had moved into the Jardim Falcão settlement and forced the families to leave, but also because the motive for eviction was the fact that the settlement was in a water supply watershed area, just like their settlement. The Jardim Falcão families had been occupying the area for two years and the decision to evict them was the result of an injunction filed by the municipal prosecutor for environmental, housing and urban affairs. The violent eviction, completed in about 11 hours, occurred after peaceful negotiations failed. Just like in the Guarituba area, most settlers in Jardim Falcão had paid for their properties and were under the impression they were legally residing there. They had “proof of purchase” documentation, but none of them had title deeds. One of the dwellers told a reporter that the mayor had encouraged the occupation of Jardim Falcão, saying that if they built at least 100 houses in 45 days there would be no way to evict them. The municipal press secretary denied the accusation.

The residents of Guarituba, particularly those involved in neighborhood associations, actively participate in the political processes that are currently changing and regularizing their neighborhoods. They followed the approval of the new watershed

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16 These facts were related to the author by one of the residents during visit in July-August of 1998.

17 This statement was published in O Estado de São Paulo, one of the major newspapers in the State of São Paulo, on July 23rd, 1998, Section C, p. 1.
legislation very closely because of the potential impact it might have in all watershed areas of the metropolitan region, Guarituba in particular. Through participation in meetings with local authorities and regional planners, as well as legislators, they have kept themselves apprised of the potential changes in plans and regulations and consequent changes in land use and development approaches. Community leaders are politically savvy and constantly remind local politicians of the residents’ voting power when bargaining and negotiating their position. In fact, one community leader is planning to run for office.

The Municipality of Piraquara

Piraquara has the eighth largest population of all municipalities in the Metropolitan Region of Curitiba (RMC), 58 thousand inhabitants, but it is the sixth smallest in land area, 220 square kilometers (COMECC, 1997). The 1991 Census found the municipality of Piraquara had a total population of 106,882. Piraquara’s annual growth rate between 1991 and 1996 was 10.86 percent (IBGE, 1997a).

In 1992, the district of Pinhais seceded from Piraquara. Pinhais, with only 66 square kilometers of area, kept the bulk of the population—almost 90 thousand according to the 1996 Population Count. Consequently, the demographic density is much higher for Pinhais—1,352.61 inhabitants per square kilometer, than for Piraquara—238.46 inhabitants per square kilometer. The urbanization rate for Pinhais was 92.67 percent in 1996, while Piraquara’s was 53.56 percent (IBGE, 1997a).

The percentage of total population living in informal settlements in Piraquara at the time of the secession was lower than in Pinhais, two and eight percent respectively. However, by 1997, Piraquara had more than 30 percent of its total population living in
informal settlements, while Pinhais had 10 percent. In both municipalities most of the land is privately owned; the public sector owns less than one square kilometer in each municipality. Consequently, most invasions occur on privately owned land (Figure 5-22).

Figure 5-22: Number of Housing Units in Invaded Areas of the Municipality of Piraquara, by location, 1998

Approximately 60 percent of development approvals for parcels in Piraquara were granted in the 1950s, more than half in the Guarituba area (Figure 5-23). The growth and expansion of the municipality of Curitiba and the industrialization of adjacent municipalities intensified urbanization during the 1980s. Piraquara attracted a considerable amount of new residents, most of them from low-income households. Authorities enacted legislation to restrict development within the watershed; however, during the 1990s, legislation did not suffice to impede invasions.

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18 These numbers were extracted from working spreadsheets supplied to the author by COMEC during field research, July-August 1998.
The Area Known as Guarituba

Guarituba is an area in the municipality of Piraquara originally zoned as agricultural and named Fazenda Guarituba. Rivers Iraí, Piraquara, and Itaqui bind the Guarituba area (Figure 5-24). The Iraí is part of the Alto Iguaçu catchment system and its waters supply the RMC. Guarituba’s environmental sensitivity, due to its location in the watershed and soil characteristics, made the area inadequate for dense development; thus, it was initially intended to be developed as a low-density area and occupied by large landowners and their country homes. The land was parceled and lots sold, but the intended development did not come to pass and development trends in the metropolitan region as a whole caused the land prices in Guarituba to plummet. Most landowners lost interest in their properties in that area and today, it is estimated that it contains almost half of the municipality’s population, mostly in informal settlements (COMECE, 1999).

Informal settlements were established in Guarituba in 1996. Today, 79 percent of the invasions in the municipality of Piraquara are in the Guarituba area, which corresponds to less than six percent of the municipality’s total area (COMECE, 1999). The families invading private land and settling in Guarituba have, for the most part, come from rural areas in the interior of the State. Some of them have come to Piraquara by way of Curitiba, where they also lived in informal settlements. In search of more land and a possibility of eventually securing tenure, they ended up in Guarituba. Most of these invasions occurred on parcels approved for development, but not according to the respective land use and zoning regulations.

The invasions that originated the Guarituba settlement gave rise to new legislation, which in turn galvanized support for national and state policies.
Land Use and Invasion

The Guarituba area presently comprises various types of land use (Figure 5-25). In addition to informal settlements, there are large estates and small properties, agricultural areas, open green space, sand mining areas, and vacant lots. Mixed-use prevails in both legally and extra-legally occupied areas; there are commercial and light industrial establishments throughout the mostly residential area. The pressure to occupy the remaining vacant, low-density, and agricultural areas is ever increasing. Also of concern is the recovery of the environmental quality of areas from where sand has been mined.

A study conducted by the metropolitan planning agency, COMEC (Coordenação da Região Metropolitana de Curitiba) in 1998, found that in a sample of 137 dwelling units within the Guarituba area, 95 percent were invasions. Of these invasions, 89 percent had occurred since 1996; 13 percent of the households came from the RMC, 66 percent from rural areas in the State of Paraná, and 18 percent from other states. The study also found that 35 percent of the heads of household were unemployed and of the 55 percent employed (10 percent supplied no employment information), 44 percent made less than one minimum wage and 85 percent made less than three minimum wages. Surveyed families had an average of 2.45 children and 77 percent of the women had no income (COMEC, 1999).

Another part of this study was a diagnostic for the entire area using information from the municipality of Piraquara’s database and readings from 1997 aerial photography. This exercise concluded that there are 3,313 dwelling units built on 2,354 invaded lots in
the Guarituba area. The remainder of the area is either legally occupied or vacant: 31 percent of the lots were legally occupied and 36 percent were vacant at the time.

Guarituba residents have formed neighborhood associations with the purpose of defending the residents’ rights, demanding delivery of services, and negotiating claims with public authorities. Most of the families living in Guarituba today do not consider themselves invaders because they have purchased their lot. However, the documents they have are not legal documents, and even if they have paid for the land they occupy, they have no formally accepted document that guarantees their property rights. They were trusting and uniformed as far as legal property rights are concerned, and now they risk losing everything.

**The Urbanization Process**

There are 14 thousand parcels approved for development in the Guarituba area; most of them were approved in the 1950s, but were never occupied (Figure 5-23). The total parceled area is 12.8 square kilometers, subdivided as follows:

<table>
<thead>
<tr>
<th>Type of Parcel</th>
<th>Total Area (square meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>colonial or rural lots</td>
<td>12,279,750</td>
</tr>
<tr>
<td>urban lots</td>
<td>140,430</td>
</tr>
<tr>
<td>area reserved for public buildings</td>
<td>9,440</td>
</tr>
<tr>
<td>roads, streets and public squares</td>
<td>370,380</td>
</tr>
</tbody>
</table>


Of the total 14 thousand approved parcels, only 1,500 had its occupation consolidated and have received water and basic sanitation infrastructure as part of the

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19 These facts were related to the author by one of the residents during visit in July-August of 1998.
PROSAM project. A well system supplies water to another 212 dwellings that are not part of the water infrastructure network, and thus have no sewerage (COMECE, 1999). Also included in the PROSAM is a drainage project for the Iguaçu river, including a system of canals, to lower the water table and to improve the superficial drainage in the Guarituba area.

The insurgent occupation of this area urged authorities to address potential consequences and to start a process of recovery of spoiled areas and contention of future development. The process, currently underway, includes the enactment of State Legislation, a regional affordable housing plan, a land use and zoning plan for the Guarituba area (Figure 5-26) including a drainage plan and additional legislation, and a monitoring and enforcement plan.

The conflict involves, on the one hand, the social issues of over five thousand families settled within the watershed and, on the other, the preservation of the environmental quality of the recharge area of one of the watersheds that supplies water to a region with 2.5 million people. On the social side, it is known that there are legal measures to regularize the tenure rights of families occupying the area, but whether or not it would be economically feasible for families with such low incomes to do so is unknown. Thus, affordability needs to be determined according to the capacity of

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20 For an explanation of PROSAM, see Chapter 6 of this volume, Environmental Policies and Legislation.


22 Municipal legislation has been proposed to create an Area of Occupation for Social Interest (AISO—Área de Interesse Social de Ocupação) in the Guarituba area of the municipality of Piraquara.
households to acquire the property they currently occupy. On the environmental side, it is known that the area can withstand low-density development, but the maximum amount of residential sewerage that can be absorbed by the hydrological system is unknown. Thus, low-density needs to be quantified according to the capacity of absorption of wastes. To find a balance, various social, economic, and technical requisites need to be satisfied.

There have been attempts to regularize the situation of these extra-legal occupants. The criteria used to sanitize and urbanize the area were based on both environmental and property rights issues. First, the decision of whether to relocate families or allow them to remain in their houses was made based on the location of the house in relation to the flood plains. Those located within the 5-year flood plain were relocated. A consortium of the metropolitan planning agency (COMEC) and the housing authority (Cohab-CT) was responsible for planning the relocation. Land belonging to private owners was acquired, families were cadastered, registered with Cohab-CT and approved for housing financing. Most families chose to remain in the Guarituba area, some opted to go to other low-income housing developments in the region.

The estimated costs to relocate dwelling units as part of PROSAM’s Project for Environmental Improvement (PMA-03—Projeto de Melhoria Ambiental) ranged between six hundred US dollars for an entire wooden house with an average size of 30 square meters to over one hundred US dollars per square meter for a masonry house.
Development units

Territorial Planning Units (UTP—Unidade Territorial de Planejamento) were established by state legislation in 1998. They were first identified as areas that had been permanently, albeit inappropriately, occupied or where there was a high potential or pressure for further occupation, usually in agglomerations denser than the area’s carrying capacity was capable of sustaining. The UTP designation allows installation of basic sanitation and drainage infrastructure in the areas already established, which was not permitted under the provision of the previous, more restrictive law.

The delimitation of UTPs attempts to follow the areas’ physical characteristics determining permissible land uses based on the feasibility of simultaneous economic development and sustainability of environmental conditions. This stipulation is founded on the premise that certain activities that spur economic development are compatible with land use restrictions concerning the protection of water supplies; thus, landowners will have interest in developing their properties. A basic argument of the legislation that allows the creation of UTPs is that economic incentives have to be part of the scheme so the enforcement of the new law becomes viable. The UTPs, may be located within water supply watersheds, but not within environmental protection areas (APA—Área de Proteção Ambiental). The legislation that rules APAs is more restrictive than the UTP provisions, but since the previous prevailing legislation was more restrictive, it behooved legislators to support the approval of the new law.

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23 State Law Nº 12248 of July 31st, 1998, is known as Special Law to Protect Water Supply Watersheds in the Metropolitan Region of Curitiba (Lei Especial de Proteção dos Mananciais da Região Metropolitana de Curitiba).
The Guarituba UTP, the first one to be implemented after the legislation passed, has a total area of 29.56 square kilometers (Figure 5-27). Within it, the establishment of areas of intervention has the purpose of ensuring the protection of water supply watersheds, recovering and preserving the natural environment and controlling degradation and polluting processes. This is done by limiting the population density in the area as a whole to levels proportionate to the carrying capacity of drainage and sewerage systems; the occupation of sub-areas within the UTP are determined by the specific characteristics of each parcel, such as soils, slope, and geological substrate.

Six more UTPs are planned for the RMC; they will be located within the watersheds of rivers Verde, Iraí, Palmital, Itaqui, Pequeno, and Despique and Cotia. Most of these watersheds comprise multiple municipalities as follows:

<table>
<thead>
<tr>
<th>WATERSHED</th>
<th>MUNICIPALITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rio Verde</td>
<td>Campo Magro, Campo Largo, Araucária</td>
</tr>
<tr>
<td>Rio Iraí</td>
<td>Quatro Barras, Campina Grande do Sul, Piraquara</td>
</tr>
<tr>
<td>Rio Palmital</td>
<td>Colombo, Pinhais</td>
</tr>
<tr>
<td>Rio Itaqui</td>
<td>São José dos Pinhais</td>
</tr>
<tr>
<td>Rio Pequeno</td>
<td>São José dos Pinhais</td>
</tr>
<tr>
<td>Rios Despique and Cotia</td>
<td>Fazenda Rio Grande, São José dos Pinhais</td>
</tr>
</tbody>
</table>

The implementation of these UTPs is only possible because the legal and administrative planning unit for watershed management since the 1988 Constitution is the hydrological basin, that is, the watershed. The land use plan for all UTPs, as established by state law, follows a basic model, exemplified here by the Guarituba UTP. The UTP model adopted in the State of Paraná has been criticized for not allowing adaptations for
different watersheds, as opposed to the model adopted in the State of São Paulo (Guarapiranga), which replicates the planning system for each individual basin through land use analyses for each area of intervention. This flexibility allows for more efficient environmental control mechanisms because of the correlation of land use and water quality.

For the Guarituba UTP, three areas of intervention are instituted to implement the plan as follows (Figure 5-26):

- Areas of Restricted Occupation (Áreas de Restrição à Ocupação): those needed to be preserved to recover or conserve natural resources, biodiversity, and ecosystems. Included in this category are riparian areas, slopes with gradients higher than 30 percent, flood-prone and other preservation areas defined by state or federal legislation. The Watershed Management Council reserves the right to include other areas in this category.24

- Areas of Guided Occupation (Áreas de Ocupação Orientada): those already compromised by subdivision and urban occupation, including transition areas between urban and rural tracts, particularly those subject to densification processes. Low- and medium-density development is allowed in these areas, including special provisions established in the Solo Criado legislation,25 as long as development does not pollute surface or ground waters. Land use and densities in these areas are determined by zoning regulations, including five different general...

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24 For an explanation of the Watershed Management Council (CGM—Conselho Gestor dos Mananciais da Região Metropolitana de Curitiba), see Chapter 6 in this volume, Environmental Policies and Legislation.
classifications, called Guided Occupation Zones (Zona de Ocupação Orientada), some of which have sub-categories detailing permissible uses.

- Areas of Consolidated Urban Occupation (Áreas de Urbanização Consolidada): those already consolidated that need basic sanitation to recover environmental health. Higher densities are allowed in these areas as long as appropriate infrastructure is in place. These areas may include developments classified under provisions established by new legislation that creates Areas of Occupation for Social Interest (AISO—Área de Interesse Social de Ocupação), particularly as receiving areas for families relocated from Areas of Restricted Occupation.

The three types of areas of intervention listed above coincide with the zoning plan, which further subdivides each main area type according to residential, commercial, industrial and service uses (Table 5-17).

The Guarituba Area of Occupation for Social Interest (AISO—Área de Interesse Social de Ocupação) comprises areas belonging to two main watersheds: Iraí and Piraquara. The uneven flow of the Iraí and the need to control floods in times of heavy rain has prompted the construction of a dam and reservoir. The second dam and reservoir to be built in the area will be along another river surrounding the Guarituba area, the Piraquara. The Guarituba AISO also comprises smaller areas belonging to Iraizinho and Itaqui watersheds, all belonging to the Alto Iguaçu system of rivers and

25 For an explanation of Solo Criado, see Chapter 7 in this volume, Land Use Policies and Legislation.

26 The area flooded by the reservoir covers 14 square kilometers; including the surrounding buffer, the total area is 31 square kilometers in the municipalities of Quatro Barras, Pinhais and Piraquara. Forty percent of the total area belonged to the State, the remainder has been incorporated through an expropriation process. The total cost of the project is estimated to be $27 million US dollars.
watersheds, from where the entire water supply for the metropolitan region comes. These rivers have low drainage due to even topography and increasing siltation. In addition to poor drainage, the water table in this area is very high, surfacing in some places. As a result, the entire area, characterized as wetlands, is subject to frequent floods.

Table 5-17: Guarituba UTP Land Use and Zoning

<table>
<thead>
<tr>
<th>Zone</th>
<th>Minimum Size Lot (m²)</th>
<th>Development Coefficient</th>
<th>Floor Area Ratio</th>
<th>Maximum Number of Floors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Allowed</td>
<td>Maximum&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>ZOO I Residential</td>
<td>5,000</td>
<td>-</td>
<td>0.20</td>
<td>2</td>
</tr>
<tr>
<td>ZOO II Residential</td>
<td>600</td>
<td>-</td>
<td>0.30</td>
<td>2</td>
</tr>
<tr>
<td>ZOO III Residential</td>
<td>2,000</td>
<td>0.2</td>
<td>-</td>
<td>0.20</td>
</tr>
<tr>
<td>ZOO III Commercial</td>
<td>2,000</td>
<td>0.2</td>
<td>-</td>
<td>0.30</td>
</tr>
<tr>
<td>ZOO III Special Services</td>
<td>2,000</td>
<td>0.1</td>
<td>0.3</td>
<td>0.25</td>
</tr>
<tr>
<td>ZOO III Service &amp; Industry</td>
<td>5,000</td>
<td>0.1</td>
<td>0.5</td>
<td>0.30</td>
</tr>
<tr>
<td>ZOO IV Service &amp; Industry</td>
<td>5,000</td>
<td>0.1</td>
<td>0.5</td>
<td>0.30</td>
</tr>
<tr>
<td>ZOO V Residential</td>
<td>2,000</td>
<td>0.2</td>
<td>0.7</td>
<td>0.30</td>
</tr>
<tr>
<td>ZOO V Commercial</td>
<td>2,000</td>
<td>0.2</td>
<td>0.7</td>
<td>0.30</td>
</tr>
<tr>
<td>Zone of Consolidated Urban Occupation</td>
<td>600</td>
<td>-</td>
<td>-</td>
<td>0.40</td>
</tr>
<tr>
<td>Zone of Restricted Occupation</td>
<td>20,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>


Note: (<sup>a</sup>) The Maximum Development Coefficient includes the purchase of building potential based on Solo Criado legislation. For an explanation of Solo Criado, see Chapter 7 of this volume, Land Use Policies and Legislation.

The slopes in this area vary between zero and five percent and the depth of the water table between 0.20 and 1.00 meters. The area is subject to floods every two to ten years. These physical characteristics greatly limit the type of development possible in the
area, precluding high densities, heavy-traffic roads, and waste disposal; the area would be better suited for parks and open green space, recreational fishing, and organic agriculture.

Within the Guarituba area, there is one section that lends itself to higher densities and low-impact development. The slopes in this area vary between zero and 30 percent, and the water table is three meters deep on average; thus, this section, appropriate for residential zoning, was chosen to be developed according to the precepts established by law and UTP criteria.

**Land Use and Legal Occupation**

One of four developments that were included in the PROSAM project, are in the Guarituba area: Jardim Âncora. Different from the other three (Bonilauri in Pinhais, Timbu in Campina Grande do Sul, and Trevisan in São José dos Pinhais), Âncora dwellers were not supplied with a house, not even a wet core. The lots were assigned both to families relocating from riparian areas along the river Atuba, which marks the border between Curitiba and Pinhais, and others registered with Cohab-CT. Families being relocated had preference; a separate registry was done based on field count and a cadastre of dwelling units along the river, where the new Iguaçu canal will be built. Those families wanting to relocate to other municipalities were allowed to do so, without losing their preferential status. Those wanting to stay in the Pinhais/Piraquara area

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27 For an explanation of the Environmental Sanitation Program (PROSAM—Programa de Saneamento Ambiental), see Chapter 6 in this volume, Environmental Policies and Legislation.

28 The total number of families being relocated from the river banks of rivers Palmital, Iraí, and Atuba is 625. According to article published in the newspaper Gazeta do Povo on August 2nd, 1998, p. 11, a total of 1,300 families are being relocated to regularized areas in the metropolitan region.
received lots in Jardim Âncora whence they could move their existing dwelling, or build a new one through self- or mutual-help.

Jardim Âncora was developed on land taken from owners, with compensation, according to provisions in the current law. The criteria used to choose the development’s location was based on geological characteristics, flood plain, tenure, and proximity to infrastructure. This is the only area within Guarituba with a geological base that can sustain denser occupation; most of the Guarituba area is alluvial, covered by peat. The area to receive the relocated families had to be on higher ground, not subject to floods. Only legal parcels were considered; those in areas that had been approved for development but were still vacant and that, consequently, had access to water and sewerage infrastructure as well as electricity and garbage collection.

The layout approved for the original parceling in the 1950s was utilized to avoid a new permitting process, including environmental impact assessments required to comply with new legislation; thus, the lots, with an average size of 450 square meters, are larger than the usual low-income housing lot. An artifice similar to Planned Unit Development (PUD) was used to allow the construction of more units in these oversized lots. This tactic allowed an increase of about 50 percent in the number of units permissible according to the original zoning; the original layout allowed only 140 lots and there are, in effect, more than two hundred dwellings in the area. The land became public property through a takings process; landowners were compensated. COMEC was in charge of administering the development and Cohab-CT was responsible for commercializing the housing units, financed for up to 25 years.
This project, as well as the entire initiative to regularize the Guarituba area, is politically controversial. For local elected officials, regularizing the properties in the area means an increase in revenue for the municipality, since presently invaders do not pay property taxes and neither do the owners of invaded properties. While local authorities want to regularize informal settlements, environmentalists want all watershed areas to be preserved. Thus, all urbanization and regularization plans face intense political opposition, particularly from the Workers’ Party (PT—Partido dos Trabalhadores), which has assumed an extreme position. The PT constituency is for complete and unequivocal protection of the environment, thus, the majority is against any initiative to urbanize the water supply watershed areas. While the party assumes a populist discourse and advocates a fair housing policy and “adequate shelter for all,” it does not offer a solution to the informal settlements problem in environmental protection areas.

Only a balanced approach, taking into consideration the various facets of the informal settlements issue, can be effective. The PROSAM projects represent one of the possible alternatives to square off environmental and social policies. The search for alternatives that will be realistic enough to allow enforcement but restrictive enough to, in fact, protect the environment might be the only means to find potential solutions to the problem of informal settlements in environmental protection areas.
CHAPTER 6
ENVIRONMENTAL POLICIES AND LEGISLATION

Recognition that preservation of the environmental base is an important component in the general welfare of a nation initiated worldwide discussions around environmental policy. The prevailing assumption, contested by only a few, that the environment could withstand human intervention and adapt or recuperate from it naturally has finally been debunked (Marsh, 1864; Dobson, 1995; Gunderson et al., 1995). Research, science, and technology have given humans a better understanding of the nature of human-environment relationships and have shown us there are limitations to the adaptive and recuperative powers of nature. Once these relationships are understood, it becomes evident that those natural resources for which there are no substitutes need to be protected by means of policies and legislation.

Environmental degradation is not a privilege of developed, industrialized countries; in fact, newly-industrialized countries joining into the globalization process have environmental problems as serious, if not more so, as the countries whose industries they are so eager to host. In addition, most developing countries, for the very reason they are still developing, have not yet depleted the natural resources that now have become important for the entire planet. But industrialization is not the only process that has fostered the discussion around environmental preservation; urbanization, particularly the rapid urbanization of developing countries, is the culprit of most recent degradation. Ironically, most people migrate to urban centers in search of a better quality of life and
this intense process compromises not only the quality, but also the quantity of vital natural resources, such as air and water.

**International Influence**

The origins of the world-wide impetus to protect the earth’s environment can be traced back to the 1968 European Council meeting in Strasbourg, France, when novel ideas concerning natural resources were brought to light. The resulting document, containing twelve principles to guide legislation in European countries, stated that water resources are not infinite, and it established the natural watershed as the management unit for water resources as opposed to administrative and political boundaries. But it was in 1972 that the global community was urged to address environmental problems. The United Nations Conference on the Human Environment in Stockholm, Sweden, called attention to issues that, until then, had been secondary and even ignored. It stated in its principles the need to preserve and control natural ecosystems through planning and management of natural resources, including air, water, land, flora, and fauna. It further affirmed that people must improve and protect the environment for present and future generations.

A resolution aiming at providing all the world’s population with clean water was passed during the First United Nations Conference on Human Settlements—Habitat I, in Vancouver, Canada, in 1976. This resolution was ratified in Mar del Plata, Argentina, in 1977, during the United Nations Water Conference. The resolution emphasized water supplies, waste disposal, and agricultural uses; the details were worked out under the guise of an interdisciplinary approach so that the global impact could be evaluated. In 1981, the United Nations launched the International Drinking Water Supply and
Sanitation Decade with the main objective of providing clean drinking water and sanitation facilities for everyone by the year 1990. By December 1986, the World Health Organization estimated that some 1.2 billion people did not have access to adequate water supplies and sanitation yet, and another 500 million were without adequate sanitation (UNCHS/Habitat 1989). Current calculations estimate that over the past 20 years, more than 2.4 billion people have gained access to water supply and 600 million to sanitation (World Water Council, 2000). The numbers are optimistic, however, with continuous population growth, there still are millions of people with no access to potable water and billions without basic sanitation. The World Water Council estimates that more than a billion people do have access to water supply and three billion do not have adequate sanitation.

Since the establishment of the International Drinking Water Supply and Sanitation Decade, international organizations have targeted their programs on the conservation of existing water supplies, as opposed to investing in expansion of water supply systems, as a way to improve the quality and increase the quantity of water available, particularly to low-income urban populations. This premise was reinforced in 1992 by the Dublin Declaration, which deemed water a finite, vulnerable resource, essential to life, development, and the environment. Also known as the Dublin Statement on Water and Sustainable Development, this product of the International Conference on Water and the Environment in Dublin, Ireland, linked social and economic development to protection of natural ecosystems and stated that, because water sustains life, effective management of water resources demands a holistic approach. For the first time, access to water was deemed a basic human right. That same year, the Amsterdam Declaration, drawn up at
the Second International Water Tribunal in Amsterdam, The Netherlands, declared that present and future generations had a fundamental right to sustainable survival, including the availability of water in sufficient quantities and of good quality.

Only at the United Nations Conference on Environment and Development—the Earth Summit—held in Rio de Janeiro, Brazil, also in 1992, did world leaders come together to discuss future challenges related to global development in light of environmental conservation. Since then, environmental policy and resource management have been recognized as pertinent aspects of international relations within the global context. Although this conference did not bring about the radical policy changes it had been expected to produce, the resulting program, Agenda 21, prescribed the guidelines for future coordination and cooperation within the international community. This document also provides guidelines for sustainable urban development, among them the integrated provision of environmental infrastructure, including water, sanitation, drainage and solid waste management. In 1996, at the Second United Nations Conference on Human Settlements—Habitat II, in Istanbul, Turkey, the concept of sustainable development adopted by the Habitat Agenda continues to call for a holistic approach, combining economic and social development with environmental protection.

The second World Water Commission met in The Hague in March 2000 and renewed the commitment to promote:

- Holistic, systemic approaches based on integrated water resource management;
- Participatory institutional mechanisms;
- Full-cost pricing of water services, with targeted subsidies for the poor;
- Institutional, technological, and financial innovation;
Governments as enablers, providing effective and transparent regulatory frameworks for private action.

These objectives were summarized in the transmission letter accompanying the report from the commission’s chairman to the council’s president. He added that mobilization of political will and behavioral change by all were critical, and that, at the country and basin level, it would be necessary to acquire better data for water quality and quantity, to identify financial resources and investment needs, and to provide adequate incentives for investment (http://www.watervision.org).

**Environmental Policy and Basic Sanitation**

The condition of urban environments and the quality of life had by people living in them are closely related to the effectiveness of public policies and legislation regulating these environments. The internationalization of environmental issues has given rise to a global momentum that provoked individual countries to enact policies and legislation concerning the environment for the first time in their histories. However, the depth of public commitment to environmental policy in general, and to environmental conservation action in particular, is difficult to assess. Environmental issues are not of concern to most people until they are personally threatened by negative impacts from environmental action, or lack thereof (Caldwell, 1995).

The 1988 Constitution was the first Brazilian constitution to dedicate a chapter to the environment.\(^1\) For the first time, an ecologically balanced environment was acknowledged as a right; the text states that this right can only be attained through the

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\(^1\) From 1889, the year of the proclamation of the Republic, until today, Brazil has had six Constitutions. The first Republican Constitution was promulgated in 1891. Subsequent Constitutions came in 1934, 1937, 1946, 1967, and, the current, 1988.
preservation and restoration of ecosystems (Article 225, first paragraph). This new insertion may be attributed to a growing preoccupation with the earth’s environment in international circles, particularly in countries where urbanization rates were reaching astonishing levels and the effects of urban development on the natural environment needed to be assessed. Before the 1988 Constitution, there had been some preoccupation on the part of policy-makers and legislators concerning the protection of natural resources, but mostly for their potential economic value. The first national environmental policy was only conceived in 1981.²

A prevalent environmental concern, particularly in urban environments, is the quality of water resources and, thus, the quality of water supplied to urban populations. Legislation establishing the first national policy to address the preservation of water resources in Brazil was only passed in 1997.³ Laws and regulations enacted before then were isolated efforts to preserve certain natural features, but no specific, systematized strategy had been devised yet. Therefore, the protection of natural resources in general, and water resources in particular, had been achieved haphazardly, sometimes as part of national development plans, sometimes as a consequence of other initiatives of national scope.

A Brief History of Sanitation in Brazil

The public sector is mostly responsible for the implementation and management of sanitation systems in Brazil. In the past, there have been times when private foreign

² Federal Law № 6938 of August 31st, 1981. Legislation enabling this law was passed through Federal Decree № 88351 of June 1st, 1983.

³ Federal Law № 9433 of January 8th, 1997, known as the Waters Law (Lei das Águas).
companies had the concession for providing these services and times when, be it through Federal, State, or local agencies, the government was solely responsible for this function. In the 1960s, less than 50 percent of the urban population had access to drinking water and about 25 percent to sewerage systems (Bier et al., 1988). Following reforms implemented by the military government instituted in 1964, a National Sanitation Planning model (PLANASA—Plano Nacional de Saneamento) was created, based on State basic sanitation companies (CESB—Companhia Estadual de Saneamento Básico) and financed by a national Sanitation Financing System (SFS—Sistema Financeiro de Saneamento).

The SFS was created when the resources of the Fund for Financing Sanitation (FISANE) were transferred to the National Housing Bank (BNH—Banco Nacional da Habitação). The CESBs were the recipients of these funds and were responsible for the implementation, extension, improvement, and operation of water supply and sewerage systems. Based on this structure, the PLANASA, whose main objective was to eliminate the sanitation deficit in the country, was established in 1971. The management of water supply and sewerage systems was transferred to the CESBs, and the municipalities, which were then in charge of said systems, lost their control. These actions were all befitting the centralization process for decision-making at the federal level. This centralization facilitated the integration of systems, especially those in conurbations covering more than one municipality, and standardized their technical specifications.

Nonetheless, disfunctions caused by the lack of monitoring and control of the CESBs originated. The ambiguous character of CESBs as provider of a public service

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4 The SFS was instituted by Regulation Nº 273/68 of the Ministry of Interior.
while having to perform economically as a profitable enterprise made them inefficient as both. The municipalities did not participate in the decisions and prioritization of public works in their jurisdictions, there were no explicit criteria to regulate the interaction of municipalities and CESBs, and there was no control of social priorities concerning water supply and sanitation since neither local governments nor communities had access to the decision-making process. In addition, technical standards did not take advantage of local potential and there was no integration with other areas closely related to sanitation, such as health, water resources, and environment.

By 1984, 80 percent of the urban population had access to potable water but only 32 percent were served by sewerage (Bier et al., 1988). These results do not deviate greatly from other developing nations. Water supply is usually given the highest priority; sewerage is sometimes provided by using stormwater drains to carry sewage flows (Kinnersley, 1994). A larger percentage of the population in Brazil, as in most developing countries, has access to drinking water supplies than to means of disposal and treatment of sewage. The economic incentives to invest in the supply of water are more advantageous; not only is the per capita cost of sewerage systems double the per capita cost of water supply systems, but also the return on investment in water is faster than that in sewerage systems (Bier et al., 1988).

The National Agenda

The institutionalization of water resources management in Brazil dates back to 1920, when the Water Service (Serviço de Águas) was created. This commission was incorporated by various departments and ministries through the years until the establishment of the National Department of Waters and Power (DNAEE—Departamento
Nacional de Águas e Energia Elétrica) in 1977. The programs developed by DNAEE
served as foundation for the water management system established by the National Water
Resources Policy (Política Nacional de Recursos Hídricos) of 1997.

The basic sanitation program structure was compromised in the early 1980s when
foreign funds supporting the Brazilian public sector started to dwindle and an
unprecedented crisis began. Water supply and sanitation, as well as all other public
utility services, were deeply affected. The second half of the 1990s saw a general
withdrawal of public commitment to development work in general, and to development
assistance in particular (Bryant, 1996). Today, the idea of decentralization is favored,
especially by those who believe that efficient solutions for local problems are best
devised at the local level. Nonetheless, local efforts are still counting on international
agencies to finance projects and programs as well as bring in their expertise in clean up
and sanitation projects implemented elsewhere in the world.

A recent example in Brazil is the Clean-up Program for the Guanabara Bay
having its implementation started until 1994, the project for the 380-square kilometer
Guanabara Bay Basin in Rio de Janeiro aims to reduce the volume of sewage discharged
without treatment into the Bay by 30 percent. The Japanese, who had 30 years’
experience cleaning up the Bay of Tokyo (four times the size of Guanabara Bay), offered
to help. The initial project’s dilemma was whether to use the resources to extend sewage-
collection systems to more of the population living around the Bay, or to provide more
treatment for the volumes of sewage already being collected but far from adequately
treated. The total estimated cost was 793 million US dollars, comprising local funds and
co-financing from the Inter-American Development Bank (IDB) and the Overseas
Economic Cooperation Fund (OECF) of Japan. This project has improved the quality of
life of the 7.3 million residents of the basin.\(^5\)

The most active basic sanitation program in Brazil today is the PROSANEAR,
with numerous projects financed by the Federal Savings Bank (CEF—Caixa Econômica
Federal) and various international development organizations, such as the Inter-American
Development Bank (IDB) and the World Bank. In São Paulo for instance, State
Governor Mário Covas signed a contract with the CEF worth $241.8 million Reais
(approximately $200 million US dollars) for the PROSANEAR program in December of
1997. These resources were to be used in 22 enterprises to be developed by the São
Paulo basic sanitation company, Sabesp. The sanitation works were carried out in five
established neighborhoods and in 15 slum areas of the metropolitan region of São Paulo’s
capital city. Also included was the expansion of water supply to the north coast of the
state.\(^6\) In Rio de Janeiro, the PROSANEAR project is estimated at $83 million Reais
(approximately $70 million US dollars). It is financed by IDB, whose goal is to reach 53
slums benefiting about 5,000 people.\(^7\)

The Local Agenda

In the Metropolitan Region of Curitiba (RMC—Região Metropolitana de
Curitiba), which comprises 23 percent of the population of the state of Paraná, the

\(^5\) Cost information from IDB’s web site (http://www.iadb.org), IDB Project Summary.

\(^6\) For a detailed account of these projects, see article published in The New York Times,
on December 16\(^{th}\), 1997.

\(^7\) For more information on this and other projects financed by IDB, see article published
in the Brazilian newspaper Gazeta Mercantil on March 12\(^{th}\), 1998.
Environmental Sanitation Program (PROSAM—Programa de Saneamento Ambiental) is the most significant and innovative action ever planned for this area. The program addressed problems threatening the main headwaters in this metropolitan region, whose deterioration is in fact threatening the public water supply of more than two million people. The RMC is comprised of 25 municipalities, 10 of which are in water recharging areas. The environmental directives for the region were established by the comprehensive plan of 1982 (PDI—Plano de Desenvolvimento Integrado). The resources amount to $246 million US dollars, of which $117 million are financed by the World Bank and the remainder are matching funds from the State Government through state planning and implementing agencies (COMEC, IAP, SUDERHSA), the Municipal Government through municipal agencies (UGP/SEPL), and the State’s water and sanitation company (Sanepar). The agreements for the loans were settled in May of 1992 and contracts were signed in December of the same year. The program, to be implemented within a 5-year span, was delayed by the Brazilian institutional crisis and only began later in 1993. The last installments were allocated in December of 1998.

International lending institutions have changed their project-oriented philosophy to include quality of life issues in their objectives. For this reason, part of the resources of the PROSAM has been allocated to educational and other social programs, and not only to capital improvements, engineering and infrastructure projects. The objectives of the program, which combine environmental and institutional efforts, are evidence of this change in philosophy.  

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8 The information concerning the PROSAM program contained herein has been compiled by the author from a series of interviews conducted during field research in July of 1998 and from a few PROSAM pamphlets and other printed material.
The PROSAM comprises a total of 23 projects with three main objectives:

- to recover the environmental quality of the Metropolitan Region of Curitiba (RMC) and to preserve the headwaters by changing inadequate uses, recovering deteriorated areas, channeling and treating the sewage system, collecting the garbage, and coordinating rural and urban occupation;
- to provide for development and urbanization suitable for the environment, integrating environmental planning and economic development, and creating mechanisms to attract non-polluting economic activities;
- to develop institutional and social mobilization mechanisms to ensure the improvement of the environment, involving the community and municipal institutions in environmental management.

PROSAM’s major task is to ensure sanitation improvement and environmental protection for a region where only 25 percent of the population is serviced by the sewerage network, where only 40 percent of the garbage produced daily is collected and treated, and where thousands of families are inappropriately settled on marshy, flood-prone land. The two main targets of the program are the catchment areas from where the water that supplies the two million inhabitants of the region comes:

- Alto Iguaçu: encompassing the northern/northeastern municipalities—Pinhais, Piraquara, São José dos Pinhais, Quatro Barras, Campina Grande do Sul and Colombo;
- Passaúna: encompassing the western/southwestern municipalities—Almirante Tamandaré, Campo Magro, Campo Largo, and Araucária.
The areas of intervention include resource management, improvement of environmental quality, and recovery of the already deteriorated environment, which has resulted in three groups of projects:

- Projects for Structuring a Management Basis—PEB: intended to enable the institutions involved in the program, educate the population on how to live in harmony with the natural resources in the headwaters areas, implement a management system, and provide planning actions;

- Projects for Environmental Improvement—PMA: intended to review land use and occupation of the headwaters region, create new reservoirs, and recover deteriorated areas;

- Projects for Environmental Recovery—PRA: intended to coordinate a wide range of actions such as the expansion of the sewerage network, the building of the Iguaçu park and river flow-out channel, and the extension of the solid waste collection service to all the municipalities encompassed in the program.

The ultimate intention of PROSAM, grounded on the necessity to reorganize land use given their current pollution potential, is to reverse the process of inadequate land use in water supply watersheds with the least social impact possible.

**National Environmental Legislation**

Protection of the environment and conservation of natural resources had not been part of Brazilian legislation as an overriding concern until 1988.\(^9\) Before then, there were only isolated measures and resolutions that affected specific resources, usually analogous to the nation’s development policies. Previous constitutions in particular dealt with

\(^9\) For a critique of the 1988 Brazilian Constitution see Dolinger, 1992.
jurisdictions and realms, designating responsibilities to Federal, State, and Municipal governments accordingly. In addition to the 1988 Constitution, the Water Code (Código de Águas) of 1934, the National Irrigation Policy (Política Nacional de Irrigação) of 1979, and the National Environmental Policy (Política Nacional do Meio Ambiente) of 1981 formed the institutional and legal foundation for water management in Brazil and, ultimately, for the National Water Resources Policy (Política Nacional de Recursos Hídricos) of 1997.

1934-1981: Isolated Efforts

In terms of water resources, the first national piece of legislation was the Water Code (Código de Águas), marking the legal inception of water management in Brazil. At that time the two overriding concerns were the supply of water to communities in the arid Northeast and the use of water for hydroelectric power in the rest of the country. This decree stated that water from springs and streams used to fulfill the basic necessities of life should be free (Article 34), and that it was illicit to contaminate waters, making the polluter’s responsibility to pay for corrective measures and additional fines (Articles 109 and 110).

The 1946 Brazilian Constitution regulated the use of natural resources from an economic exploitation viewpoint. Emphasis was given to free enterprise and private property. The legislative power over natural riches was given to the Federal government and the states were only allowed complementary legislation over water resources (Granziera, 1993). In 1961 the National Health Code established that sanitation services,

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10 The Water Code was established according to the terms defined by the First International Law Conference in The Hague by Decree Nº 24643 of July 10th, 1934 and altered by Decree Nº 852 of November 11th, 1938.
water supply and solid waste removal were to be regulated and enforced by qualified sanitation authorities.\textsuperscript{11} The Forestry Code of 1965 ascertained that forests and all natural vegetation along rivers or any body of water, natural or man-made, springs, lakes, lagoons, and reservoirs, were to be permanently preserved.\textsuperscript{12}

The 1967 Constitution, and its first 1969 amendment (Emenda Constitucional nº1/69) still considered natural resources as having potential exploitative purposes. The National Sanitation Policy established basic sanitation guidelines, including water supplies and their chemical treatment, storm water systems and drainage, and pollution, flood and erosion control.\textsuperscript{13} The protection of recharge areas designated as water supplies was first attempted by a Health Ministry resolution passed in 1978 to be fully enforced after October 6\textsuperscript{th} 1980.\textsuperscript{14}

Sanitation issues were addressed together with housing and health issues, and not only policy decisions, but also the allocation of resources for sanitation were the responsibility of three different institutions, the Health Ministry, the Regional Integration Ministry, and the Housing and Social Welfare Ministry. There was no unifying policy that defined objectives, strategies and procedures. There were no guidelines for

\textsuperscript{11} Federal Law Nº 2312 of September 3\textsuperscript{rd}, 1954 established general guidelines for the defense and protection of health (Normas Gerais sobre a Defesa e Proteção da Saúde) and enabling legislation, named National Health Code (Código Nacional de Saúde), was passed by Decree Nº 49974-A of January 21\textsuperscript{st}, 1961.

\textsuperscript{12} Federal Law Nº 4771 of September 15\textsuperscript{th}, 1965, also known as Forestry Code (Código Florestal).

\textsuperscript{13} Federal Law Nº 5318 of September 26\textsuperscript{th}, 1967, also known as National Sanitation Policy (Política Nacional de Saneamento), and Enabling Legislation by Decree Nº 248/67.

\textsuperscript{14} Portaria 442-Bsb-78 of October 3\textsuperscript{rd}, 1978.
allocation of funds and investment in sanitation; decisions were made in the ambit of each Ministry, based on political commitments and not on systematic criteria that would allow the establishment of priorities.

1981-2000: Concerted Efforts

Environmental issues were directly addressed in Brazil for the first time with the adoption of the National Environmental Policy in 1981.\textsuperscript{15} This document recognizes water as a natural resource, part of the country’s environmental patrimony, which needs to be protected because of its collective utility (Article 2, I and 3, V). It defines “environment” as “the set of conditions, laws, influences and interactions of physical, chemical and biological order which enables, shelters and rules all forms of life.”\textsuperscript{16} For the first time in Brazilian legislation, a polluter, regardless of culpability, is obligated to indemnify or repair damage to the environment (Article 14). The additional legislation that better defined this latter article, governing the forms of civil action and jurisdictions in which to prosecute and judge causes, was passed in 1985.\textsuperscript{17} Deserving of note, especially for future reference in this document, is the law that created conservation units,

\textsuperscript{15} Federal Law No 6938 of August 31\textsuperscript{st}, 1981, also known as National Environmental Policy (Política Nacional do Meio Ambiente). Legislation enabling this law was passed through Federal Decree No 88351 of June 1\textsuperscript{st}, 1983, Federal Decree No 97632 of April 10\textsuperscript{th}, 1989, and Federal Decree No 99274 of June 6\textsuperscript{th}, 1990. Further changes were sanctioned through Federal Law No 7804 of July 18\textsuperscript{th}, 1989, and Federal Law No 8028 of April 12\textsuperscript{th}, 1990.

\textsuperscript{16} translated by the author from Article 3, I.

\textsuperscript{17} Federal Law No 7347 of July 24\textsuperscript{th}, 1985.
namely, Ecological Stations (Estações Ecológicas) and Environmental Protection Areas (APA—Áreas de Proteção Ambiental).\(^{18}\)

The institutional structure put in place to implement and enforce the provisions of the National Environmental Policy comprises the Ministry of the Environment, Water Resources, and Legal Amazon and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA—Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis).

The inclusion of the environment, which has an exclusive chapter, in the 1988 Constitution is commendable, however this Magna Carta failed in a few instances. It does not define “environment,” a fact that has been noticed in other constitutions in the world.\(^{19}\) It does not particularly emphasize water resources, although it determines that bodies of water and potential energy sources are in the Union’s realm. It further determines that bodies of water that cross State boundaries or designate borders with other countries are also subject to Federal control; under the control of individual States of the Union are bodies of water internal to State borders and surface and underground waters. Many of the items under the environment chapter of this Constitution are ratifications of items included in the National Environmental Policy of 1981. In October of 1992, in the wake of the Earth Summit in Rio de Janeiro, the Ministry of the

\(^{18}\) Federal Law № 6902 of April 27\(^{th}\), 1981. Legislation enabling this law in conjunction with the National Environmental Policy was passed through Federal Decree № 88351 of June 1\(^{st}\), 1983. Additional provisions were made through Federal Decree № 99274 of June 6\(^{th}\), 1990.

\(^{19}\) The Venezuelan Constitution of 1961, the Portuguese Constitution of 1976, and the Spanish Constitution of 1978 mention the duty to protect the environment for the greater good but do not define environment per se.
Environment was created, acknowledging the importance of environmental issues and the need to pull together independent institutions.

The National Water Resources Policy of 1997 constitutes the most important national legislation addressing the quality, preservation, and conservation of water resources.\textsuperscript{20} This law enabled the National System of Water Resources Management (Sistema Nacional de Gerenciamento de Recursos Hídricos) instituted by the 1988 Constitution, Article 21, XIX. The basic principles of this law are the adoption of the watershed as the planning unit, the recognition of the economic value of water, and decentralized and participatory management of water resources. The implementation mechanisms are the National Water Resources Plan, enactment of water resources utilization rights, charging for the use of water, classification of bodies of water by use, and a national water resources information system.

The National Water Resources Policy also set an institutional framework for the shared management of water use. The entities created by this system comprise a National Water Resources Council, Watershed Committees, Water Agencies, and Water Resources Civil Organizations. The National Water Resources Council (Conselho Nacional de Recursos Hídricos) is the highest in the administrative hierarchy of the National Water Resources System; it is responsible for sector-wide decisions and dispute resolution. The Watershed Committees, an administrative innovation, count on the participation of users, organized groups, and local, state and federal administrations to serve as the “Watershed

\textsuperscript{20} Federal Law Nº 9433 of January 8\textsuperscript{th}, 1997, instituted the National Water Resources Policy (Política Nacional de Recursos Hídricos) and enabled the National Water Resources Management System (Sistema Nacional de Gerenciamento de Recursos Hídricos) instituted by Article 21, XIX of the 1988 Constitution.
Parliament,” the decision forum of each watershed. The Water Agencies, also an innovation in organizational terms, are the technical arm of their corresponding Watershed Committees, responsible for managing the funds from charges now applied to the use of water. And, finally, the Water Resources Civil Organizations are the planning and management arm of water resources use, participating in the decision-making process and the monitoring of implementation actions. Another important mandate of this new policy was the requirement of environmental impact assessments prior to issuing permits.

An unwavering compromise was not attained until the passage of the most recent federal statute devoted to protecting the environment and natural resources: the Environmental Law. This legislation has made environmental degradation a punishable crime. The penalties against fauna and flora include detention and fines. Destruction of or damage caused to the cultural patrimony and violation of land use and zoning regulations that have repercussions for the soundness of the natural environment are ordained in the law as crimes subject to detention and fines. Crimes against environmental management are also punishable. This new law, reflecting recent global trends, also makes provisions for international cooperation involving environmental issues, pledging to produce evidence, offer information, and assist in accordance with national legislation and international treaties.

In addition to the above-mentioned legislation, it would be worth mentioning some of the resolutions passed by the National Environmental Council (CONAMA—Conselho Nacional do Meio Ambiente), an advisory and decision-making institution created to devise environmental and natural resources policy. The first resolution listed

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the activities that would require environmental impact assessments (EIA—Estudo de Impacto Ambiental) and its respective environmental impact reports (RIMA—Relatório de Impacto Ambiental), and established the content and procedures to produce them.\textsuperscript{22}

The tenth resolution regulates the Environmental Protection Areas (Áreas de Proteção Ambiental) and the Ecological-Economic Zoning (Zoneamento Ecológico-Econômico).\textsuperscript{23}

The twentieth resolution classified all bodies of water within the national territory according to their primary use and regulated their quality standards to serve the needs of the community.\textsuperscript{24}

\textbf{Regional Environmental Legislation}

The State of Paraná had its most recent Constitution enacted on the 5\textsuperscript{th} of October, 1989. The principles and objectives of the State are listed in the document’s opening, including “to protect the environment and the quality of life” (Article 1, IX).\textsuperscript{25} This new constitution recognizes as responsibilities of the State, shared with the Union and Municipalities, to protect notable natural landscapes, to protect the environment and combat pollution of any kind, to preserve forests, flora, and fauna, and to document and monitor the research and exploitation rights of water and mineral resources within its borders (Article 12, III, VI, VII, IX). Some of these responsibilities are reiterated in Article 13 as joint responsibilities of the State and the Union. The 1989 Constitution also

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\textsuperscript{22} Resolução Nº 001 of January 23\textsuperscript{rd}, 1986.

\textsuperscript{23} Resolução Nº 10 of December 14\textsuperscript{th}, 1988.

\textsuperscript{24} Resolução Nº 20 of June 18\textsuperscript{th}, 1986.

\textsuperscript{25} The contents of the State of Paraná’s Constitution included in this section were translated by the author and are paraphrased, unless otherwise indicated. The original document, enacted in 1989, is entitled Constituição do Estado do Paraná.
requires individual municipalities to promote appropriate land use practices through land use planning and controls and to enforce environmental protection and quality of life (Article 17, VIII, X).

Other items correlated with environmental issues in urban areas and their peripheries are:

- Article 31: The State cannot sign contracts with firms that violate environmental preservation rules;
- Article 132: Tax credits will be issued by the State to those Municipalities that have environmental conservation areas within their limits or those within which there are watersheds dedicated to water supply systems;
- Article 151, IV: Urban development policies will safeguard the preservation, protection, and recuperation of the environment;
- Article 152, IV: Local comprehensive plans will take environmental preservation into account;
- Article 161: The State will heed environmental policies and institute and maintain a management system for its environmental resources, and register, monitor, and enforce the use of environmental resources.

The fifth chapter within the Social Order section (Title VI) addresses the environment in particular. Article 207 prefaces the chapter stating that all citizens have the right to an ecologically balanced environment, essential to a healthy quality of life, and it is the duty of the State, the Municipalities, and community to defend and preserve it for the present and future generations, warranting the protection of ecosystems and the rational use of environmental resources. The first paragraph and the articles included therein state that to secure this right, it becomes the responsibility of the State to: establish the State’s environmental policy; delegate to the competent agencies the responsibility to execute said policy and manage the State’s environmental fund; determine the areas to be included in the ecological zoning, anticipating the uses of environmental resources, and the function of environmental preservation areas and
essential ecosystems; demand environmental impact and risk assessments for activities that may potentially damage the environment; demand environmental restoration from those exploiting mineral resources; regulate and control the use of substances that may potentially damage the environment; inform the population of pollution levels and situations of hazardous ecological imbalances; promote environmental education; promote preventative measures to mitigate the effects of environmental degradation; encourage private activities that will conserve the environment; and declare as area of permanent preservation riparian areas in watersheds that supply water to urban centers.

The second paragraph establishes that polluting activities will subject their perpetrators to the duty of repairing any damage and any residual consequence caused by their conduct, complying with the directives of the agency in charge. The third paragraph specifies the restoration of riparian areas.

It is important to mention the constitutional provisions related to basic sanitation. Article 210 institutes an urban and rural sanitation program, joining State and Municipal authorities and assigning to both the responsibility for program implementation, with the objective to preserve public health respecting the environmental capacity given the infrastructure impacts. The program, to be detailed by enabling legislation, will guarantee priority to residential supply of potable water; collection, treatment, and disposal of sewerage and solid waste; stormwater drainage and infrastructure; and protection of potable watersheds and headwaters.
The first State Law to include provisions to preserve the natural environment was the Forest Code of 1907.\textsuperscript{26} In 1953, legislation was introduced describing the instances in which property could be taken based on historic, artistic, or natural attributes that would be of common interest to the State and its citizens.\textsuperscript{27} Not until 1973 was specific legislation introduced to protect water resources against polluting agents.\textsuperscript{28} The Environmental Protection System, defining what constitutes damage to the environment and to what penalties violators will be subject, was instituted in 1979.\textsuperscript{29} In 1984, the State’s Environmental Defense Council, whose main attribution was to formulate the State’s Environmental Policy, was created.\textsuperscript{30} This law specifies the Council’s tasks as well as the members who will constitute it, including their manner of appointment and term limits. The minimum requirements for water coming from watersheds and destined to supply the population in urban areas down river from those watersheds were determined in 1989.\textsuperscript{31}

In addition to the State Laws listed above, there have been Decrees and Complementary Laws that supplemented the environmental legislation in the State of Paraná. In 1991, legislation creating the Ecological Tax (Imposto Ecológico) was

\begin{footnotesize}
\begin{enumerate}
\item[26] State Law Nº 706 of January 4\textsuperscript{th}, 1907, known as Forestry Code for the State of Paraná (Código Florestal do Estado do Paraná).
\item[27] State Law Nº 1211 of September 16\textsuperscript{th}, 1953.
\item[28] State Law Nº 6513 of December 18\textsuperscript{th}, 1973. The enabling legislation for this law was passed on April 17\textsuperscript{th}, 1974, Decree Nº 5316.
\item[29] State Law Nº 7109 of January 17\textsuperscript{th}, 1979. The enabling legislation for this law was passed on July 18\textsuperscript{th}, 1979, Decree Nº 857.
\item[30] State Law Nº 7978 of November 30\textsuperscript{th}, 1984.
\item[31] State Law Nº 8935 of March 7\textsuperscript{th}, 1989.
\end{enumerate}
\end{footnotesize}
This law determined that five percent of the tax charged for goods and services (ICMS—Imposto de Circulação de Mercadorias e Serviços) would be distributed among the municipalities comprising water supply watersheds and environmental conservation units. This tax has become an important income for municipalities within watersheds and, in the case of Piraquara, an incentive to curb invasions in certain areas so the municipality would not lose this source of revenue.

In 1992, as part of the PROSAM initiative, critical areas within watersheds of the metropolitan region were impounded by State legislation, and a total of 153 parcels in the municipalities of Piraquara (95 parcels), São José dos Pinhais (48 parcels), Campina Grande do Sul (5 parcels), Quatro Barras (4 parcels), and Almirante Tamandaré (1 parcel) were expropriated. The takings were justified as necessary for the protection of water supply watersheds and landowners were compensated according to provisions of the Federal Constitution.

In 1996, all watersheds deemed as water resources for the Metropolitan Region of Curitiba, capital of the State, were declared areas of special interest and protection. Subsequent Decrees established individual watersheds as Environmental Protection Areas (APA—Áreas de Proteção Ambiental) and established the parameters for their use and

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34 Decree Nº 1751 of May 6th, 1996. This decree revoked and substituted Decree Nº 2964 of September 19th, 1980, which listed the specific river basins to be protected and required special approval of agencies that no longer existed in 1996.
occupation, as well as permissible activities within them, according to the needs and characteristics of each.  

The most significant piece of legislation affecting the watersheds in and around the Metropolitan Region of Curitiba (RMC—Região Metropolitana de Curitiba) was passed in 1998. At the time the bill was being analyzed, it was estimated that there were 10 thousand families living in watershed areas in the RMC. This law, henceforth referred to as the Watersheds Law, created the Integrated System for Management and Protection of Water Supply Watersheds of the RMC. The importance of this legislation in the context of the State is that, at the time of its approval, the State of Paraná still had not approved legislation regarding the protection of water resources. Most states of the Union had already done so—São Paulo approved its water resources protection legislation in 1991—but the State of Paraná was lagging behind. The intense urbanization in the RMC in recent years had caused the pollution of water resources to reach hazardous levels. With the highest urbanization rates among all metropolitan regions in Brazil, the RMC was also a potential candidate for unsustainable levels of depletion of its water resources. The intended objectives of the Watersheds Law are to guarantee the recuperation and preservation of water supply watersheds; to coordinate the actions necessary for the protection of these watersheds with land use policies and 

35 The following Decrees were all signed on May 6th, 1996: Decrees Nº 1752, 1753, and 1754 created the Environmental Protection Areas (APAs) for the rivers Pequeno, Iraí, and Piraquara, respectively. The first APA, comprising the area of the Passaúna River, had been created in 1991, by Decree Nº 458 of June 5th, 1991. APAs for the remaining watersheds are currently being created by legislation not signed at the time of this printing. 

36 State Law Nº 12248 of July 31st, 1998, known as Special Law to Protect Water Supply Watersheds in the Metropolitan Region of Curitiba (Lei Especial de Proteção dos Mananciais da Região Metropolitana de Curitiba).
economic development initiatives, without loss of permissible uses; and to implement the
directives of the National Water Resources Policy. 37

The fact that the State of Paraná had not yet passed legislation concerning water
resources occasioned a number of proposals to regulate environmentally sensitive areas;
some were not in accord with federal policies, others addressed the management of water
resources in isolation with no reference to land use, sanitation, housing, or infrastructure
systems. The Watersheds Law anticipated the coordination of all the factors along with
the protection of common interests and established standards of occupation for the
environmentally sensitive areas. The integrated system created by this law comprises a
Watershed Management Council, Territorial Planning Units, a Plan for Environmental
Protection and Territorial Reorganization in Watershed Protection Areas, and an
Environmental Preservation Fund for the RMC.

The Watershed Management Council (CGM—Conselho Gestor dos Mananciais
da Região Metropolitan da Curitiba) counts with the participation of both public and
private representatives. The public sector has four representatives from municipal
agencies and four from state agencies; the community, represented by non-governmental
organizations (NGOs), has three seats in the council. The Territorial Planning Units
(UTP—Unidade Territorial de Planejamento) establish areas for development so it will
not interfere with the protection of watersheds. The Plan for Environmental Protection
and Territorial Reorganization in Watershed Protection Areas (PPART—Plano de
Proteção Ambiental e Reordenamento Territorial em Áreas de Proteção de Mananciais)
determines permissible land uses based on the protection of the environment, including

37 The National Water Resources Policy is explained earlier in this chapter.
necessary relocation of activities. Lastly, the Environmental Preservation Fund for the RMC (FPA-RMC—Fundo de Preservação Ambiental da Região Metropolitana de Curitiba) is the financial tool that allows the legislation’s implementation, providing municipalities within critical watersheds the resources to adequately protect them.

In addition to the Alto Iguaçu and Alto Ribeira basins in the Metropolitan Region of Curitiba, the most critical of all regions in the state, this legislation addresses other critical areas, namely, all coastal watersheds, the river basins Tibagi and Pirapó in the north region of the state, and the sub-basins in the west region including the municipalities of Foz do Iguaçu, Cascavel, Toledo and Guaíra. Iguaçu is the most important river in the state of Paraná; its basin, stretching from Pinhais to Foz do Iguaçu, covers an area of 55 thousand square kilometers in Paraná and an additional 15 thousand square kilometers in the state of Santa Catarina, south of Paraná.
CHAPTER 7
LAND USE POLICIES AND LEGISLATION

The individual’s desire to be secure on his own little strip of the earth’s
surface continues to be one of the great vortices around which public

Issues of urban land use are fundamental to the understanding and formulation of
urban policies in general and housing policies in particular. The concept of property is
central to the discussion of land use policy. Most countries in the world have accepted
and declared, by means of either their constitutions or international treaties, that the right
to property is a basic right.¹ Land policy issues, particularly in urban areas, have been
relatively absent from policy agendas in developing countries until recently. Land tenure
problems stem from inequitable resource distribution and, along with property rights,
exert a significant influence over land values. Resolution of some of these problems is
dependent on the distinction among the various categories of land tenure issues, such as
ownership and possession of property.

The accelerated rates of urbanization in developing countries have intensified in
the past 60 years and unyielding public institutions have not kept pace. Ultimately, it is
the responsibility of governments and the institutions that execute their policies to
formulate and enforce rules for the tenure and use of land and ownership of property
(Payne, 1997). If governments are legally committed to protecting private property
rights, the occupation of and construction on lands which residents do not own requires a

¹ In the case of Brazil, the 1988 Constitution declares the right to property in Article 5,
XXII.
policy response (Miller, 1997). However, even in traditionally centralized regimes, local
governments have had to create their own policy initiatives due to the absence of federal
action. Some of these policy initiatives have given rise to regularization programs and
financial support of local extra-governmental actors, such as non-governmental
organizations (NGOs). The emphasis of programs depends on the relative strengths of
the actors, organizations and politics on the one hand, and on the way the regularization
problem is conceived by federal and local authorities on the other (Ward, 1998). The
recent trend towards grassroots action has produced alternative land policy options, such
as allowing and eventually regulating informal settlements and providing basic urban
amenities. In the absence of pro-active policies, the public sector reacts to problems
caused in and by informal settlements, such as contamination of water resources, often
because of sanitary risks.

**Land Use Policy and Land Tenure**

Policies that result in the majority of the population suffering from insecurity of
tenure are deemed inefficient and unfair (De Soto, 1989). Land tenure, defined “as the
mode by which land is held or owned,” and property rights, defined as “a recognized
interest in land or property” are concepts that adapt as societies change (Payne, 1997,
p.3). 2 At different stages of development, societies need to contrive a different land
tenure paradigm optimizing efficiency and fostering equity so that stability is maintained
(Doebele, 1987). Policy makers face a difficult decision when dealing with land tenure
issues in informal settlements. The contradictions of whether to provide services to and

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2 Payne catalogues the main tenure types emphasizing significant distinctions within a
wide spectrum and offering an assessment criteria.
subsidize construction on land the ownership of which is dubious are aggravated by the quasi- and extra-legal status of appropriated land (De Soto, 1989; Garr, 1996). A tacit policy of not providing basic infrastructure services or any type of amenity to informal settlements has discouraged further and long-term occupation in some areas. In those instances where this artifice proved unsuccessful, local administrators concluded that a way to make their point more forcefully was to tear down the settlements (Leeds, 1981).

The individuals and families living on informal settlements affect policy in that they bargain with politicians (i.e. legislators) and exchange favors for votes. These favors eventually translate into economic benefit for the invaded land and amenities built on it gain in value. Some politicians, regardless of ideology, not only cater to the demands of this constituency, but also encourage the occupation of public land (Chinelli, 1979).

**Land Tenure and Self-Help**

The prevailing belief that a household would not invest in improvements of its dwelling unit unless it had proof of land ownership has been debunked. Ownership, the proof of which is known as ‘title,’ is essentially a legal concept (Dale, 1997) and a review of the conventional wisdom about land tenure is needed (Doebele, 1987). Empirical evidence leads us to believe that the main issue in land tenure is security (Gilbert and Ward, 1985; Varley, 1987).

Research into low-income groups and settlements revealed the ability and potential for self-help, inducing shifts in policy emphasis from conventional housing projects towards support for gradual improvement of squatter areas (Abrams, 1964; Mangin, 1967; Turner, 1977). As a result, self-help became an attractive alternative to traditional policies and has won influential support from international funding agencies.
In most Latin American countries, during the 1970s and 1980s, policy changes that provided more assurance that residents would not be forcibly removed, produced a response from residents who replaced their wooden shacks with sturdier brick or concrete structures.

All systems of land tenure involve tradeoffs, none is ideal, none is universally advantageous (Doebele, 1983). Attempting to solve the land tenure problem requires attracting the attention of governments and generating political willingness to induce more efficient and equitable patterns of land use.

**Land Markets, Legal Solutions**

The uniqueness of land as a resource makes it difficult to compare with other market commodities. Formal systems provide private housing, public housing, and titled land for those who can afford to pay the market price on the legal market. Bypassing the cost of acquiring land makes housing more affordable to those left out of the formal housing market. Garr argues that “lands lacking formal titles constitute an indispensable resource for the urban lower classes” (1996, p. 1931). Properties not protected by formal titles are considered ‘informal.’ In developing countries, informality is widespread, especially among the poor, and is at times misconstrued as marginality. The fact that these informal properties may not be used as collateral means the poor are relegated to an informal economy and cannot become part of a market economy. Without formal property, a modern market economy cannot exist; the absence of formal titles leaves the assets of many people outside the market economy.

Markets are mechanisms for exchange of property. In the case of land, which represents a large portion of people’s wealth, property rights are formalized through title
deeds or other formal, registered documents. Formal titles give the occupant of a parcel legal control over it, which translates into security of tenure. When there is security of tenure, there is an incentive to invest in the property and to protect land, water, and other resources attributed to it. Property is not simply a piece of land, it is an institutional construct. If the ownership of a parcel of land cannot be verified, enforcement of regulations becomes difficult. In the case of environmental regulations, if authorities cannot identify those responsible for non-compliance, nobody is accountable and laws cannot be enforced.

Regularization of land tenure and the servicing of low-income settlements might have a beneficial or a negative impact on the residents. Planning interventions such as titling and servicing usually increase the value of land, therefore spurring speculation. Investment by higher-income groups raises land values even further and places self-help housing beyond the reach of the poor (Ward, 1983; Angel et al., 1983). In Latin America, two approaches to regularization of low-income settlements have been mostly used: juridical regularization and physical regularization. The former entails converting land tenure from de facto to de jure through legal land entitlement procedures (Peru, Ecuador, Mexico); the latter includes the extension of infrastructure into irregular settlements (Colombia, Venezuela, Brazil) (Ward, 1998). These processes are not mutually exclusive; in fact, they may take place in tandem or concomitantly.

Urban dwellers need to have either a legal title to their land or an assurance that eviction is not imminent. “Legal title does not necessarily mean an individual property. It can be any juridical form that legitimizes the presence of a person and his family in the urban area; that gives him enough security to eliminate the fear of eviction and that
allows him to utilize his savings—even if small, it usually exists—to improve his quality of life. … [R]egularizing tenure [allows] the squatter to transcend this condition and transform himself in a citizen.”

Legal Problems, Illegal Solutions

Land tenure legislation reflects the way a society is organized, its nature, and its level of development (UNCHS/Habitat, 1982; Payne, 1997). Legal land tenure was once said to be *sine qua non* for housing consolidation (Turner, 1967), and the granting of security of tenure used to be considered the key to successfully upgrading housing projects (UNCHS/Habitat, 1982). Although there seems to be a positive relationship between security of tenure and levels of investment on housing improvements, research suggests granting legal tenure to the urban poor may be neither a necessary nor a sufficient condition for such improvements (Angel et al., 1983). In fact, some studies affirm that the perception of security of tenure is more important than the actual title and that formal legal tenure is not a precondition for housing improvement (Varley, 1987; De Soto, 1989). From a housing point of view, legalization is said to be important only as a means to an end: better housing conditions, security and access to urban services (Varley, 1987). De Soto (1989) has articulated the concept of perception of tenure security as “expectative property rights.” He explains that these rights, which have no equivalent in the legal world, have the effect of establishing a right to the land even though they do not “confer on its holders all the benefits offered by the formal legal system.” These rights

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3 Translation of excerpt from interview with Roberto Ottolenghi, Habitat’s Director for Latin America, published in the magazine Ecologia e Desenvolvimento, in the May/June-1997 issue, p. 64.
are executed through an “invasion contract,” part of a system of extra-legal norms that govern informal settlements.

Granting security of tenure to residents of informal settlements has been avoided because of the consequences of such practice. What might at first seem like the best solution for eliminating the fear of eviction and hence encouraging people to contribute with upgrading efforts, may, in the long term, entice the original occupants of the settlements to sell their “legal” property to higher income families and invade land somewhere else, creating more potential for further extra-legal occupations (UNCHS/Habitat, 1982; Payne, 1997). There are many potential consequences that must be taken into account, not the least of which are unwillingness or inability to pay what is owed once security has been achieved, not to mention stimulus for further squatting. New legal frameworks for land tenure policies and practices are being devised and implemented today; some are still contradictory and confusion has existed between rights of ownership and rights of use of the land, but alternative arrangements are being contemplated.

A type of extra-legal land occupation, common in Brazil and in other Latin American countries, is known as invasions. Land invasions, classified by De Soto (1989) as gradual or violent, may be carried out by individuals, families, or groups of people who identify an unoccupied area and take possession of it without the permission of the owner. The invaders do not hold title or any other informal document to the parcel, nonetheless, they build some type of shelter on it and sometimes go so far as installing basic infrastructure. Another type of irregular land occupation in Brazil is known as clandestine lots. These lots are not illegal because the occupant does not own the land,
since dwellers pay for the property they are occupying and hold legal title to it; they are illegal in the sense that the developer of the subdivision either has failed to register the property with the municipality or is in non-compliance with any of a variety of municipal laws governing lot size and provision of basic services. Sometimes these clandestine subdivisions are endorsed by the very authorities who should be enforcing land use and zoning laws (Santos, 1979). The occupants of clandestine lots have generally paid for the land they occupy, although they often lack legal titles for the property as a consequence of the land’s less-than-legal situation. The semi-legal status of the so-called clandestine subdivisions often results in the refusal on the part of the local authorities to extend basic services, even while the local government continues to collect property taxes and/or to levy fines for building code violations against the residents (Setzler, 1997).

**Land Policy in Brazil**

Most land policy in Brazil, always enacted at the national level, has been set as part of the Constitution. The right to property has always been guaranteed by Brazilian law with the exception of necessary takings for reasons related to public need and social purposes, but always with just compensation. The Constitution of 1967 delegated much of the power to municipalities, still, local authorities deferred to the Federal government, who encouraged grandiose plans and retained most of the control over long-term planning. The expansion and organization structure of Brazilian cities from the 1960s to the 1980s was largely defined by speculation. Land parcels within the urban fabric remained unoccupied while their price rose, and the periphery of urban centers was

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4 The right to property and correlated exceptions are described in Article 5, XXIII and XXIV of the 1988 Constitution, the most recent and currently in effect.
occupied in an unorganized manner resulting in higher public investment in costly infrastructure. In 1979, legislation concerning the parceling of urban land was passed.\textsuperscript{5}

The Constitution of 1988 was more explicit in terms of urban policy, delegating to municipalities the implementation of the national urban development policy with the objective of organizing the full development of the social functions of the city and guaranteeing the welfare of its citizens. One of its planning-related innovations was to mandate that cities of more than 20 thousand inhabitants have comprehensive plans, “the basic instrument of development policy and urban expansion” (Article 182, paragraph 1). This Constitution also reiterated the “social purpose” of urban property (Article 182, paragraph 2) and the right of property owners to receive fair compensation for urban real estate taken from them (Article 182, paragraph 3).

Another provision of the urban policy set out in this Constitution is that municipalities have the right to demand, within the limits of Federal legislation and local comprehensive plans, that the owner of vacant or underutilized urban land promote its use. The possible penalties for not complying with this mandate include mandatory subdivision or construction, progressive property taxes, and taking with compensation by public bonds (Article 182, paragraph 4, I, II, III). Article 183 reinforces the right of possession after five unopposed and uninterrupted years of occupation to those who do not own another property.\textsuperscript{6}

The provisions of the urban policy chapter of this Constitution marked a turning point in land policy, with significant consequences to low-income housing and informal

\textsuperscript{5} Federal Law N° 6766 of December 19\textsuperscript{th}, 1979.

\textsuperscript{6} The constitutional text included in this section has been translated by the author from the original text (Title VII, Chapter II).
settlements. *** make stronger argument for turning point here (previous constitutions…)

**Solo Criado (Transfer of Development Rights)**

This innovative land use instrument, Solo Criado, was first conceived of in the 1970s. Its origins can be traced back to France and Italy as a device to correct urban segregation resulting from high urban land prices, and to the United States as a mechanism to adapt zoning to the logic of the real estate market. This development tool is similar to Transfer of Development Rights (TDR) in the United States, except that, in the US, TDR has been used to compensate the owner who has had his/her development rights severed in one parcel of land to another. That is, if a property owner cannot fully benefit from the development of his/her property afforded by current land use and zoning regulations because there is, for instance, a historic interest to preserve a structure on it, the right he/she would have to develop that property to its full economic use are transferred to another property.

In Brazil, Solo Criado has been used to grant additional development rights to one parcel of land in exchange for parcels of land or urban improvements that are of social interest to the community. The basic difference between TDRs and Solo Criado is that TDRs are used as a compensatory measure, while Solo Criado offers land owners and developers an incentive. The Solo Criado scheme separates property rights from development rights establishing that additional floor area ratio on a given piece of

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TDR has been used in the United States to protect historic landmarks, floodplains and swamps, farmlands, pine barrens, and even mountain vistas. For an explanation of how TDR is used in the United States in historic and open space preservation, and as a basic land use control mechanism within comprehensive plans, see ASPO, 1975.
property may be conceded to a developer in exchange for land elsewhere, urban amenities, or the market value of the added area in kind. The outcome is the appropriation by the municipal authority of some of the additional land and real estate value of a privately developed property, which is, in fact, a result of public investment.

In Brazil, the first municipality to incorporate this instrument to its Comprehensive Development Plan was the city of São Bernardo do Campo, in the State of São Paulo, in 1977, with the objective of creating a “Green Areas Fund.” Nationally, in 1978, the bill of urban development proposed Solo Criado as a legal tool to control land speculation. In this instance, the resulting funds would be utilized to increase housing opportunities for low-income populations, urbanizing favelas, improving access to land, and subsidizing housing for the poor.

The advantages of the Solo Criado scheme are that the access to urban, serviced land is no longer restricted to the higher income strata of the population. Solo Criado is a means of mitigating the social inequities resulting from the strong link between access to land and purchasing power. Thus, adopting it as part of the housing policy will eliminate social exclusion resulting from land speculation (Ribeiro and Cardoso, 1996). This instrument has the potential to intensify the use of urbanized land while creating open space, reducing land speculation, and generating additional funds to benefit

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8 The Solo Criado legislation contradicts some provisions of Federal Law Nº 6766, which regulates the parceling of urban land, if strictly interpreted; however, there has been no inquest into this matter to date.

9 For a discussion of Solo Criado and how it is being applied in Brazil, including case studies in the three major states, see Section III—Habitação e reforma urbana: o solo criado como proposta de reestruturação do mercado imobiliário (Housing and urban reform: transfer of development rights as a restructuring proposal for the real estate market) in Ribeiro and Azevedo, 1996.
disadvantaged urban populations. It is also seen as a tool to realize the social function of property because of its potential for redistribution of urban land. Solo Criado has been touted as a solid source of funds for low-income housing and urban development.

**Favela Urbanization**

The first favela urbanization program under the auspices of the National Housing Bank (BNH—Banco Nacional da Habitação), was called Promorar. Its proposal was orientated towards a nationwide effort to urbanize favelas through participatory planning. As it would be expected, the first Promorar project was in Rio de Janeiro. Another Federal program to relocate favelas in Rio was the Affordable Housing Program for the Greater Rio Metropolitan Area (CHISAM—Coordenação de Habitação de Interesse Social da Área Metropolitana do Grande Rio). This program offered occupants the opportunity to continue occupying the same lots and to finance the purchase of building materials through the municipal affordable housing company (Cohab—Companhia Habitacional) while the public sector would pay for basic infrastructure services. The success rate was so great that some dwellers sold their property rights to others, suggesting that urbanization of favelas may in fact remove the original occupants in the end (Santos, 1981). The cost of financing the materials, hiring labor to build (or help build) the house, and the taxes and fares related to legal land ownership proved too high for some families who either left or had to find employment for other family members (including children) and sublease rooms to make ends meet.

Another attempt to serve the lower income sectors was made during the last years of BNH’s existence. This was also a reflection of the impending democratization of the political system that finally put an end to the 20-year military dictatorship. Some of the
programs created after 1979 were the Program to Eradicate Sub-Standard Housing (Promorar—Programa de Erradicação da Sub-Habitação), dedicated to low-income families and those in slum areas; and the Housing Program for Businesses (Prohemp—Programa Habitacional Empresa), through which firms would finance their employees’ housing; and the National Rural Housing Plan (Plano Nacional de Habitação Rural), which subsidized the construction of housing in rural areas.
Housing policies in developing countries have been gradually transformed since the realization that the rapid urban growth experienced in the 1960s and 1970s was not going to decline. Governments throughout Latin America recognized that informal settlements were likely to become a permanent feature of the urban landscape; this realization redirected urban policy from slum clearance to slum upgrading.

Changes in government attitude toward housing problems and respective policy responses vary widely according to numerous factors, such as the prevailing regime, urbanization rates, real estate value, and constitutional provisions, to name a few. In countries where rapid urban growth is accompanied by intense economic development, as was the case in Brazil during the “Brazilian miracle,”1 governments may at first take a complacent stance under the premise that housing and all other problems will be solved as the economy grows. However, when lack of action in the housing sector starts breeding social and political problems, policy initiatives based on principles and guidelines tend to be replaced by emergency corrective measures.

Recognition that housing policy encompasses much more than programs to finance bricks and mortar has extended policy responses into other realms, such as basic infrastructure, building and planning codes, human rights, and community participation.

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1 The period referred to as the Brazilian miracle was one of unsurpassed growth in Brazil, mostly due to foreign investment and facilitated loans from foreign banks, between 1968 and 1973.
and organization. In addition, every country has its policies influenced by the institutional and legal frameworks within which it operates, thus it becomes fundamental to analyze policies according to the particular context in which they were implemented. Undoubtedly, housing policy in developing countries today is inextricably related to land policy. The key issue determining access to housing is the availability of land and the right to occupy it.

During the 1950s and 1960s, there was a great influx of international aid into Latin America, and some housing projects were being financed with funds from the Inter-American Development Bank (IDB) and the United States government under the Alliance for Progress initiative (Hardoy and Satterthwaite, 1989). In Brazil, as in most Latin American countries faced with growing housing problems, the first major government initiative was to launch a national public housing program targeted to low-income households.

**Housing Policy in Brazil**

The National Housing Plan (Plano Nacional de Habitação) of 1964, the first national housing policy instituted in Brazil, was devised within the context of the post-revolution military regime. This plan was based on an economic development model intent on leaving the delivery of housing up to the private sector and reflected the primary organizing principles of military rule. The policies therein were highly centralized and technocratic, implemented to stimulate the construction industry and eliminate the
perceived anarchy inherited from previous populist administrations.\textsuperscript{2} The social function of housing was forsaken once the economic feasibility of the housing finance system mandated that good intentions be abandoned in favor of economic survival.

Hard economic times also shifted development trends from planning an entire settlement and building the dwelling units to simply providing the basic infrastructure so that people have minimum sanitary services and conditions to build their own homes. This shift was largely due to diminishing resources and the realization by urban planners that they not always know what is best for urban dwellers, particularly those outside of formal economic and social systems. Clear evidence of this shifting trend can be observed through the evolution of housing programs implemented by the National Housing Bank (BNH—Banco Nacional de Habitação). The BNH, the institutional pillar of the National Housing Plan of 1964, was responsible for most of the planned low-income housing of the 1960s and 1970s. It transformed itself and its policies and programs along the years of its existence, going from financing low-income housing built by the private sector to creating urban development programs with emphasis on sanitation and basic infrastructure.

After the demise of the system set up by the National Housing Plan, federal housing policy remained largely absent from the national policy agenda, contributing to a much more decentralized housing policy formulation. This federal policy vacuum forced state and municipal governments to find new ways to increase the rates of return on

\textsuperscript{2} Bolaffi (1980) argues that an affordable housing policy has never been defined in Brazil. He contends that the creation of the BNH, the main institution in charge of implementing the National Housing Plan, served political, economic and monetary requisites rather than deal with the housing problem.
limited housing investments and to create their own policy initiatives until the proposal of a new policy at the national level.

In July of 1996, the Brazilian Federal government promulgated the National Housing Policy (Política Nacional de Habitação), incorporating elements expressed through public opinion as well as those presented during discussions in preparation for Habitat II.\(^3\) The Brazilian government pledged to heed the basic objectives of Habitat II, namely, adequate shelter for all and the sustainable development of human settlements, and to implement policies that would address the profound changes within the housing sector. The necessity to adhere to open market strategies, encouraging the private sector to participate in the delivery of low-income housing through individual bids or partnerships, was recognized. Some of these changes involved accepting the fact that certain settlement issues can only be resolved within the ambit of a national urban development policy. However, a bill designed to establish the National Urban Development Policy (Política Nacional de Desenvolvimento Urbano), introduced in June of 1995, has been trapped in Congress since then. Because the entire system could not be halted while waiting for a resolution of the urban development issue, the new housing policy provides for the continuation of current programs but recommends taking the necessary steps to improve them and adapt them to the new provisions.

The agency at the Federal level responsible for the implementation of the National Housing Policy and the coordination of state and local housing plans is the Urban Policy Secretary (SEPURB—Secretaria de Política Urbana), which is affiliated to

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\(^3\) The United Nations Conferences on Human Settlements are commonly referred to as Habitat. The second conference of its kind, Habitat II, took place in Istanbul in June of 1996.
the Planning and Budgeting Ministry (MPO—Ministério do Planejamento e Orçamento).

One of the immediate actions under the new National Housing Policy was to reinstate the National Housing Committee (Comitê Nacional de Habitação) as an interim body until the establishment of the final organization, the Technical Housing Chamber (CTH—Câmara Técnica da Habitação) to be linked to the National Urban Policy Council (CNPU—Conselho Nacional de Política Urbana). The intent of this joint group was to proceed immediately with the institutionalization of partnerships between public and private actors and the revision of applicable legislation.

Brazil’s housing system was in the midst of a financial and institutional crisis at the time it was decided a new national housing policy needed to be devised to address the formidable housing problem in the country. The Federal government commissioned a study to assess housing needs.\(^4\) The study’s criteria determined that urban housing needs would comprise the housing deficit, defined as the number of new housing units needed, plus the number of substandard housing units. The results estimated the housing deficit in 1995 to be almost four million units in urban areas, the majority of them needed by households earning less than two minimum wages\(^5\) a month (Table 8-1).

The number of units needed to replace substandard units or mitigate overcrowding was determined to be over 13 million (Table 8-2), thus the total urban

\(^4\) This study, titled Déficit Habitacional no Brasil (The Housing Deficit in Brazil), was conducted by the Fundação João Pinheiro (João Pinheiro Foundation) in 1995. It was based on 1991 census data.

\(^5\) The “minimum wage” is an officially established unit of monthly salary, widely used in Brazil as a basic parameter. It is adjusted periodically according to inflation and cost of living indices. A dollar amount is not provided because the purchasing power of a Brazilian minimum wage is not equivalent to US standards and would not serve as a good basis for comparison.
The housing need was estimated in 17 million housing units. The three million housing units that were vacant at the time the study was conducted were not included in the equation because only households making more than ten minimum monthly wages could afford them (MPO/SPU, 1996).

<table>
<thead>
<tr>
<th>Household Income (in minimum wages—m.w.)</th>
<th>Deficit (number of households)</th>
<th>Deficit (percentage of households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2 m.w.</td>
<td>2,192,327</td>
<td>55</td>
</tr>
<tr>
<td>between 2 and 5 m.w.</td>
<td>1,156,948</td>
<td>29</td>
</tr>
<tr>
<td>more than 5 m.w.</td>
<td>623,497</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,972,772</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: MPO/SPU, 1996.

<table>
<thead>
<tr>
<th>Type of Inadequacy</th>
<th>Number of Households</th>
<th>Percentage of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcrowding</td>
<td>2,448,266</td>
<td>18.7</td>
</tr>
<tr>
<td>lacking infrastructure</td>
<td>5,583,133</td>
<td>42.7</td>
</tr>
<tr>
<td>inadequate infrastructure</td>
<td>5,057,515</td>
<td>38.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,088,914</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: MPO/SPU, 1996.

The criteria used in the study for substandard housing determined that housing units with more than three dwellers per bedroom would be considered overcrowded; households lacking one or more basic services (water supply, sewerage, electric power, and garbage collection) would be counted as lacking infrastructure; and households that had access to basic services that were deemed to be below acceptable sanitary and safety standards would be considered as having inadequate infrastructure. One could argue that infrastructure problems are external to the problem of providing housing, but the National Housing Policy recognizes basic services as an intrinsic part of the human habitat and its
conditions. In addition, the housing policy recommends a close association with the Basic Sanitation Policy.

Given the excessive financial burden of supplying the 17 million new housing units needed according to the study’s estimates, the Housing Policy stresses the need to coordinate federal, state and local policies and to make it possible for the private sector and needy households to participate in meeting housing needs. The preamble to the document recognizes that available resources had been poorly utilized in the past and that more families could have benefited from the Housing Finance System (SFH—Sistema Financeiro da Habitação) if at least part of those resources had been used to support private initiatives to improve the quality of existing housing. The SFH’s inadequacy is attributed to the old institutional model, highly centralized at the Federal level, and disengaged from other public agencies and the private sector; therefore, the new policy suggests that, in the spirit of the 1988 Constitution, the housing problem cannot be solved without a significant change of institutional, financial, and political structures, to include all levels of government and community participation. It is important to acknowledge that, since the success of any new policy is inextricably linked to the health and stability of the economy, some of the failures, as well as successes, experienced during the time housing was the responsibility of the National Housing Bank (BNH—Banco Nacional da Habitação) were not accountable to the housing policy nor the housing finance system alone.

From the time the BNH was extinguished until 1994, more than 70 bills proposing modifications to SFH were introduced in the Brazilian Congress (MPO/SPU, 1996). The discussion process made it evident that no housing policy could be devised in
disassociation from urban development policies and that, given the magnitude of the problem, a new housing policy could only be effective if constituted as national policy, including management and control tools that would not be subject to changes in power and politics.

**The National Housing Policy**

A new concept of housing, originating from and promulgated by international organizations concerned with the poor and the quality of urban life, has been adopted by the National Housing Policy: the notion of house as *habitat*. This new concept broadens the definition of *housing* to incorporate habitability, sanitation, safety, and access to opportunities and services. This new approach represents a drastic departure from the traditional Brazilian approach, which considered building and financing a house the only appropriate option to meet housing needs.

One of the premises of the National Housing Policy is that the solutions offered spontaneously by urban dwellers should serve as models of adequate answers to solving the housing problem. It recognizes the dichotomy of the “real city” and the “legal city” and states that the goal must be to improve the living conditions of human settlements, adapting to the existing reality, even if somewhat contradictory (MPO/SPU, 1996).

Another premise of this new policy is that a housing finance system cannot be grounded

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6 Mangin (1967) and Turner (1968, 1972, 1977) were the first to suggest that informal settlements were the solution to the housing problem. See Chapter 2, Informal Settlements: A Global Phenomenon, for an expanded discussion of this issue.

7 The National Housing Policy principles and objectives transcribed herein were gleaned from the policy document National Housing Policy, published by the Planning and Budgeting Ministry, Urban Policy Secretary (MPO/SPU—Ministério do Planejamento e Orçamento, Secretaria de Política Urbana) in 1996.
solely on formal approaches. Resources available are not sufficient to meet the demand through formal real estate production, so they should be used as instruments to support private enterprise.

The stated objectives of the National Housing Policy are:

- universal access to housing, utilizing solutions appropriate to need, regional differences, and socio-economic level;
- articulation of governmental action with community participation;
- democratization of housing programs management, including the institutionalization of community participation and social control; and
- promotion of institutional development of organizations and agencies linked to the housing sector.

The National Housing Policy suggested a revision of the National Urban Policy, incorporating national housing, sanitation, and transportation policies, which were all being implemented at the same time. It also suggested that the institutionalization of management and control instruments could be the most effective way to guarantee the policy’s stability, as well as community participation, insuring transparency, adequate dissemination of information, and objective criteria.

The National Housing Policy recognizes the value of the experience attained by state and local governments in recent years, when they undertook the responsibility of providing housing to their citizens, and asserts that the acquired knowledge should be valued and utilized in devising new national approaches. It also establishes that the basic principles to be followed concerning urban development policies are those stated in the 1988 Constitution, the State Constitutions, and municipal laws and ordinances. The legal provisions of this policy include the adaptation of current legislation to the reality of Brazilian cities, so that housing provision may be facilitated, housing supply may be
increased, and urban in-fill areas may be better utilized. Changes in current legislation concerning titling, real estate transfer fees, and housing insurance would lower financing costs and facilitate access for low-income families.

Following the postulates set out by the Habitat Conference of 1996, the National Housing Policy establishes that human rights be observed and families not be penalized for their destitute condition in cases where relocation becomes necessary. According to this precept, appropriate relocation alternatives would be made available so families were relocated to areas in close proximity to the settlement they occupy at the time of relocation, protection against unlawful eviction would be guaranteed and compensated, and in cases where removal may be unavoidable, it would be non-violent and adequate shelter alternatives would be offered to evicted families. The policy also stresses the importance of community participation, partnerships, and decentralization and assignment of responsibilities to each level of government accordingly.

Concerning housing programs, an innovation is the introduction of choice. In the past, subsidized housing was assigned to families waiting in line without regard to location preference. This method created potential for undue hardship, especially considering employment location and opportunities. Some families resorted to informal swapping mechanisms or sold their long awaited home and stayed in better-located substandard housing. The new policy proposes that programs give beneficiaries the freedom to choose among available alternatives.

The Federal Savings Bank (CEF—Caixa Econômica Federal) remains the agency responsible for managing the Guarantee Fund for Time in Service (FGTS—Fundo de
Garantia por Tempo de Serviço) and other funds. The National Urban Policy Council (CNPU) enables other financing agents to participate in the system. Funding sources comprise FGTS funds, funds from voluntary savings and investment accounts in institutions associated with the Brazilian Savings and Loans System (SBPE—Sistema Brasileiro de Poupança e Empréstimo), Federal budget allocations, loans from domestic and international development banks, returns on investment, donations, and also funds originating from compensation and other local planning mechanisms. Subsidies continue to be part of the housing finance system, for without them a significant number of families could not gain access to shelter; these subsidies are personal, temporary and non-transferable so it is feasible to periodically re-evaluate mortgagees’ socio-economic level. Subsidies are granted separately from production and investment funds so it is possible to partially recoup them during the life of the loan, or totally recoup them in case of resale. Loan programs will be configured around three basic types: loans to the public sector to support housing initiatives; personal loans, be it to one single individual or groups of individuals; and loans for housing production by the private sector, to stimulate the supply of affordable, good quality housing units.

Finally, programs to be implemented as part of the National Housing Policy include, but are not limited to: urbanization of favelas and degraded areas; land regularization; construction of formal housing; relocation from areas inadequate for

8 See Chapter 4 in this volume, Context: A Resource for Understanding, for an explanation of how FGTS funds are used to finance low-income housing in Brazil.

9 See Chapter 7 in this volume, Land Use Policies and Legislation, for an explanation of Solo Criado (TDR) and how the funds amassed from this and other urban planning instruments are being utilized to fulfill the social purpose of property mandated by the 1988 Constitution.
human occupation; provision of serviced lots; expansion of land area for housing; downtown revitalization for residential use to make better use of existing infrastructure and underutilized urban amenities; infrastructure improvement; personal loans for acquisition of not only property, but also construction materials; loans to state and local governments for use in low-income areas; incentives for affordable housing technological development; and implementation of a housing indicators system.

The legislation enabling the National Housing Policy should eventually be enacted as the Urban Policy Law, though it is still a bill at the time of this printing. The adoption of this law and the institution of the National Urban Policy Council (CNPU) are the most significant measures concerning housing policy in Brazil since the creation of the SFH in 1964.

**Local Policies and Programs**

After the extinction of the BNH, local authorities became responsible for the implementation of housing programs, and in some cases, for funding such programs and other ancillary urban services to support new housing developments. Nonetheless, the State of Paraná and the Municipality of Curitiba follow policies and guidelines set by the Federal Government, since all housing financing and redirecting of resources is processed through the Federal Savings Bank (CEF). In projects implemented by the Housing Company (Cohab-CT—Companhia de Habitação de Curitiba), the municipality is usually responsible for installing the necessary infrastructure. In some cases, the state supplies the land for development, in others, Cohab-CT pays market price. Most of the time, private developers bid the construction projects, even though profit margins are lower than the current market.
The Solo Criado program has allowed the development of most recent housing initiatives in Curitiba. Some other programs, directly related to the prevailing politics of the time they were implemented, have had mixed results. During the Roberto Requião administration, for instance, the PROLOCAR program parceled public land, including environmentally sensitive areas, and distributed more than two thousand parcels among homeless families. In essence, it was an invasion organized by the government. The areas had no infrastructure and the implementation was carried out by the municipal department for social development (DDS—Departamento de Desenvolvimento Social).

Programs under the responsibility of local authorities have the potential to reach the needy population more quickly and effectively, given their flexibility and opportunity for community participation. The difficulty presented by transferring all the control to the local level is the increased opportunity for, not only clientelist practices, but also corruption. By the same token, the BNH experience has proved that centralized control at the national level does not yield good results for the majority living in poverty and substandard conditions. A more equitable and transparent system could bridge the gap between the various levels of authorities and politics involved in the delivery of affordable housing, ensuring a better distribution of available resources and making sure the bulk of these resources benefit the users themselves.

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10 For an explanation of Solo Criado, see Chapter 7 in this volume, Land Use Policies and Legislation.
CHAPTER 9
A NEW PHILOSOPHY OF DEVELOPMENT

A comprehensive approach is fundamental to mitigate urban problems caused by informal settlements in cities of developing countries. Regardless of the consequences to the land markets or to the urban areas within which informal settlements are being established, the fact remains that as urban populations continue to grow, so will the need for shelter. To manage these ever-growing urban areas, land use and zoning regulations need to be addressed.

The complexity of urban issues, involving so many actors and conflicts of interest, may make the process unsolvable or at least difficult to implement. What is the probability that low-income populations will obtain legal access to serviced urban land and subsequently the means to build shelter? What is the probability that land use and environmental legislation will succeed in controlling the development of informal settlements? Different scenarios can be hypothesized based on the most obvious variables and current conditions (Figure 9-1), but it is also necessary to analyze the potential impact any action will have in the city as a whole and, beyond that, in the larger metropolitan region.
Figure 9-1: Development of Informal Settlements According to Landowner and State Responses

A major problem, in the case of informal settlements in environmental protection areas, is how to balance basic and social needs of the population with environmental protection. Another level of complexity is added when these two issues, social and environmental, are equated with economic development. The goal is to maintain the integrity of the environment while prospering economically and safeguarding social equity. The problem in achieving this goal is how to find the right equilibrium among these three variables. The United Nations has been discussing this issue since its first international conference on human settlements. The UN model proposed as the ideal concept for sustainability of urban areas in general, and human settlements in particular, is diagrammed below (Figure 9-2):
Challenging questions remain: How to weigh the need to provide affordable housing with the need to conserve environmental quality? How to maintain the integrity of the environment, so the quality of life of urban dwellers is not jeopardized, while achieving satisfactory levels of economic growth? How to prosper and create jobs to increase the purchasing power of poor families while protecting the welfare of all members of society?

**Integrated Policies**

The dual question of housing the urban poor and resolving tenure-related issues in informal settlements of developing countries poses a troublesome problem to policy makers. The provision of basic urban services by the public sector on land whose ownership is characterized by ambiguity and by the potential for conflict that can arise
out of such circumstances has given rise to many an argument, particularly during
election campaigns. The prevailing contention is that more families would have access to
not only land, but also affordable housing, if the distribution of wealth in developing
countries were more equitable. Policies that aim at a better distribution of resources can
provide for the minimum and immediate needs of the entire population before satisfying
the demands of middle- and high-income areas.

Political and legal issues need to be addressed first, particularly in those countries
where political and legal processes do not keep pace with occupations. The technical
aspects of property formalization, such as surveying and mapping, are indispensable to
defining the physical aspects of informal parcels, but do not determine who has rights to
control over the land. Adapting legal systems to recognize informal property rights is
necessary but not sufficient for the incorporation of informal property arrangements into
said systems. Even where the systems to formalize property rights are in place and do
not threaten the normative fabric that protects formal property, the process is often
expensive, burdensome, and time-consuming. In most developing countries, titling and
registration systems are usually centralized, making them inaccessible to some segments
of the population, particularly the poor.

The underlying reason for urbanizing and regularizing informal settlements is the
recognition that it is impossible to improve urban areas without addressing land use
issues. Land has a complex role as a strategic factor in development, especially in Latin
America. In addition to land use policy, fiscal and taxation policies are needed, for they
also affect land values; most importantly, these policies need to be proposed together with
the means to execute them.
Security, perceived or factual, is what policy makers need to have in mind when devising land policy. A more flexible approach to legislation and adoption of new types of tenure could bring about the necessary change; adopted measures need to offer enough security for people not to fear eviction, while not allowing the onset of displacement by market forces. Yet, land ownership might not be enough to stimulate housing improvements; if incomes remain low, individuals will not be able to take advantage of the benefits accruing from security of tenure. Legalization policies have ramifications that extend beyond the housing improvements argument; additional incentives, such as loans, technical assistance, and community organization for self-help and mutual-help construction are needed. Irregular or illegal occupations, which may assume numerous forms, will continue if access to legal land is not attainable. If property formalization became part of government policy it would be feasible to reach the entire population.

Encouraging environmental conservation through policy is also important. Land policy needs to be coupled with environmental policy to protect natural resources. A new approach to planning in developing nations needs to recognize that a regional, and in some instances global, focus is more appropriate than a local one, particularly when the environment is at stake. Development with no concern for the environment prevailed for too long; a commitment to environmental stewardship needs to be made at the policy level so communities are enabled and empowered to protect their surroundings and hence, their quality of life.

Policies to avoid or, at a minimum, mitigate human interventions that harm the environment, are the first step towards sustainability. While some manipulation of the environment is unavoidable to meet residential, industrial, and agricultural needs, certain
disturbances are technologically driven and can be avoided. Land use policies may designate protected areas, but areas set aside for environmental conservation reasons and thus, excluded from land markets, may be occupied by informal settlements anyway. Planning mechanisms may intend to preserve the environment and to protect natural resources; however, squatters rarely abide by plans and policies. The more restrictive the measures, the more unenforceable they become, and the harder it is for landowners and developers to find a profitable use for the land. Since most governments do not have the financial resources to acquire all land that needs to remain intact to protect the environment, policies need to strive for environmental protection while permitting some economic use of the land, making ventures appealing to private actors.

Existing legislation and land use controls were not sufficient to deter environmental degradation in the metropolitan region of Curitiba. In this case, the main institutional factors allowing environmental degradation were lack of coordination among the different levels of government and administration, absence of financial and operational means to enforce prevailing legislation, and disengagement between population dynamics and land use policy and legislation.

Land policies, environmental legislation, and planning regulations that are too restrictive and preclude most development in areas where there is intense urbanization pressure are doomed. The best course of action is to identify a reasonable and appropriate use for vacant land in environmentally sensitive areas, e.g. recreational; alternative uses that maintain the integrity of the environment while giving purpose to an area can ward off inappropriate uses while fostering economic development. Economic
incentives, such as tax and pollution credits and transfer of development rights, afford an economic use to land that needs to be preserved.

The environmental issue more closely examined by this research project is the protection of water resources, particularly those dedicated to water supply. The first line of defense in safeguarding drinking water quality is to protect water sources, be they surficial or underground aquifers. The Guarituba experience proves that extremely restrictive land use controls within watersheds are no guarantee of water source protection. The focus of sensible policies needs to go beyond environmental protection; social, political, economic, and legal aspects need to be part of the equation if the problem is to be solved and the solution is to have some degree of feasibility.

Legislation has a significant role to play in the feasibility of urban environments. Land and environmental policies are legitimized and made enforceable through appropriate legislative measures. Integrating these policies and engaging the different actors involved in their implementation requires collaboration not only among disciplines, but also across the various levels of operation. Legislation that is too restrictive may not be enforceable, and instead of preventing the degradation of the environment, it ends up fostering illegal occupation. In the case of Guarituba, the prevailing state law approved in 1989 only allowed low-density use of the area, one dwelling per five thousand square meters. This restriction made development of the area economically unfeasible; landowners were not able to generate real estate interest, the land lost commercial appeal, and thus was not developed but invaded. The result was not only a dense development, but also one that did not include any infrastructure, damaging the environment in a way that formal development would not have.
Achieving an equitable balance between different, and often conflicting, interests has to be the central objective of any land use policy. The benefits which legalization and regularization of land and property rights may bring cannot exclude consideration of other negative aspects of government intervention. Effective policies on property rights and land tenure require considerable political will and a perspective that embraces long as well as short-term considerations. Insofar as land policy affects housing policy in urban areas, the efficiency of legalization needs to be assessed; there might be instances where legalization is the best course of action in absolute terms, but it might not be so in relative terms. Housing affordability remains the ultimate goal; if legalization and regularization of tenure render housing unaffordable to families occupying land extra-legally, and families are forced to move elsewhere—most likely another informal settlement—the effectiveness is null. Policies addressing land tenure issues in isolation are unlikely to have a positive impact; if land policy and land tenure become part of comprehensive planning and development initiatives, they can more positively affect informal settlements. Only coordinated action of individual cases can result in integrated development solutions.

**Integrated Planning**

The physical aspects of land use policy cannot be disregarded. An important component concerning the management of urban areas in Brazil is the integration of favelas into the urban fabric. While these areas are seen as sores in the urban space, often physically separated from the rest of the city, there can be no hope for social and economic integration unless they become part of the larger structure and are incorporated into the existing urban pattern. Physical planning strategies may effect changes in their
pattern of development, assisting in bringing the city into the favela and taking the favela into the city, not only facilitating but also fostering social and economic interaction between the two. This interaction can be beneficial to both the city and the favela. The favela can attract people from the city who so far may have felt threatened and afraid to venture there.¹ The city can employ the abundant labor available in the favela and supply goods and services to the residents of the favela.

Certainly, the exclusion of the favela population has not been a factor of the physical environment alone, so physical integration is not enough. The status of favela dwellers as occupants or invaders of land has contributed to their being shunned by the rest of society; legitimizing their tenure standing can foster their integration into society and allow them to assume the status of citizens. In addition, there are serious social problems that, at first sight, are not directly related to housing itself but affect the way in which housing is delivered. Such problems include urban violence and crime, closely related to drug traffic and addiction, promiscuity and the resulting street-children, not to mention unemployment, racism, and mal-nutrition.² These social problems need to be addressed so that favelas are open towards the city and may in fact become part of it.

Most recent experiences with development programs in Latin America have counted with the participation of the resident population. The practice of participatory

¹ According to an article by Manoel Ribeiro, architect-in-charge for the Serrinha favela project, published in 1997 in the IDB Supplement (pp. 6-7) to The IDB, a publication of the Inter-American Development Bank, some favelas in Rio de Janeiro, as a result of urbanization programs, have planned tourist attractions. These include cultural centers and arenas for *samba* instruction and presentations, workshops for artisans, and even *macumba* (white voodoo) areas.

planning adopted by grassroots organizations and non-governmental organizations (NGOs), initiated in the early 1980s, has proven effective in some initiatives. Citizen participation and coordination among agencies involved in redevelopment are crucial elements of a comprehensive approach to urbanization of informal settlements. But citizen participation includes not only the people who live in the area being redeveloped and regularized; it includes all citizens, even those who are oblivious to the favela on a day-to-day basis. A participatory approach to project development and implementation can tap into community resources that would not otherwise be able to contribute their creativity; information available from planners and other technical staff serves as a springboard for citizens to engage in the decision-making process. This participation can be achieved in various ways, from design competitions to business associations to networks that can benefit all participants in the short- and long-term.

The more people participate in the process, the more individualized the project becomes; when governmental agencies were solely responsible for housing and public works projects, and every project was based on the same blueprint; there was no room for adaptations. The old paradigm of total government responsibility needs to shift towards an enabling paradigm, one that makes governments’ responsibility to provide the legislative and regulatory tools that will serve as the basic framework for development. This construct allows people to create their own built environment while the government participates with support that can only be afforded by spheres beyond community level reach. Community participation allows residents to employ their creativity, make a contribution to the planning process, and incorporate their preferences into plans. Residents can also be of assistance during surveying and mapping, imparting valuable
information that could not be captured by technical staff that are not as familiar with the settlement as its dwellers. Solutions devised by favela dwellers, who are the most familiar with their daily plight, are often simpler and more affordable than the grandiose plans of the past, which were sometimes detached from the reality of the people directly affected by them.

The problem of informal settlements, while prevalent in every developing country in the world, assumes different characteristics when placed into the context of each nation. Most cities in the developing world have had experiences with quasi- or extra-legal adaptations utilized to appropriate land on which basic housing can be built. The economic and legal problems created by land invasions can be dealt with through sound planning, but generalization needs to be exercised with caution. Even if at first sight all informal settlements seem the same, one must be aware that there are profound differences among them. These differences may come from the context in which they exist or from the consequences of their existence to the surrounding environment. Customization becomes necessary, and the basic principles of comprehensiveness, participation and coordination should steer communities interested in sustainable and sustained development towards successful alternatives.

In the case of informal settlements in environmental protection areas, not only the integration into the urban fabric is necessary, but also the prevention of problems whose magnitude may overwhelm urban planners and other problem-solvers if not addressed in a timely manner. Because the repercussions of environmental problems may extend farther than the immediate and physically appreciable scenario, and because time is of the essence where the environment is concerned, favelas can go from being an eye sore or
social ill to becoming a problem that potentially affects populations which are not even aware of their existence.

In the environmental realm, most recent trends involve the subject of sustainable development. The contradictions and conflicts caused by competing interests in environmental protection, economic development, and social equity have been explored in the planning context (Campbell, 1996). The inherent discrepancy in the term sustainable development makes it a difficult concept to grasp. Sustainable development means that more economic opportunities for society must take place while there is diminished growth so the environment may be protected. It requires that businesses resist exploiting nature and conserve resources to secure the livelihood of present and future generations. Holling (1995), who does not believe sustainable development is an oxymoron, states that sustainable development is possible, but only “if it is seen as a process of evolutionary change that rests on the capacity of nature and people for renewal” (p. 6).

Still, when the natural environment is of concern, the evolutionary changes in addressing the settlement problem may not reach as far as would be necessary. Some environmentally sensitive areas cannot withstand any human intervention, while others can be partially occupied and developed. In the latter case, the level of potential development needs to be determined based on careful studies of the area in question. To date, there are no broad-based, general standards. All available studies have been conducted for and within particular areas so, in the absence of parameters that would allow generalizations, each area would have to be analyzed on a case by case basis. Conceivably, through managed occupation, at least part of most areas could be utilized;
clustered development allows the smart use of land given the appropriate geomorphic characteristics for occupation and development of denser areas within a larger, more vulnerable region while preserving open space.

The way national and local leaders and policy makers think about development has gradually changed with continued pressure from international organizations. Most countries in Latin America today count with the financial and expert assistance of international aid and development organizations that impose holistic practices. These agencies have adapted their approach to development based on the experiences of the past fifty years and today, they include provisions in their contracts that range from welfare community programs to environmental requisites. A recent example of the influence exercised by international organizations on specific projects, and evidence that loan recipients heed international pressure for environmental protection, occurred in close proximity to the Guarituba area discussed in this project: clearing of land around the construction site of the Iraí dam, being built with World Bank financing, was temporarily suspended by recommendation of World Bank staff in August of 1998 when local biologists claimed they had identified a new bird species (macuquinho-da-várzea) in the project’s area and the construction of the reservoir would compromise its only habitat.³

Urbanization of favelas does not consist of simply installing infrastructure; basic services are an urgent component of favela upgrading projects, but there are many other factors that need to be taken into consideration and included in any urbanization plan. Effective urbanization of favelas and their consequent integration into the urban fabric can only be achieved through a comprehensive urban redevelopment program.
In the realm of land for housing, a potentially successful housing supply program in Latin America can only be conceived of as part of a larger planning initiative involving security of tenure. Housing is not an issue with which one can deal in isolation; it is related to land, to national and local economies, to society and community, and to politics, to name just a few relevant areas. Interlinked problems need to be addressed simultaneously to achieve more plausible solutions. It is essential that participants in development initiatives come to appreciate the importance of long-term strategic planning in charting general directions for policy changes; a clear understanding of the effects of particular kinds of development on the social and physical environment is paramount. A participatory planning process, as opposed to the traditional top-down public works projects of the past, can contribute to a unified vision of development, inspiring sustainable levels of welfare and quality of life. The ultimate purpose of this process is to create an enabling environment so that development may take its course.

The recommendation for a collaborative approach is based on the observation that isolated initiatives, such as programs that focus on financing the housing unit alone for instance, have failed. The relocation and slum clearing initiatives of the 1970s have been, even if for the wrong reasons, replaced by favela urbanization programs. When there existed a National Housing Bank (BNH) in Brazil, with the specific objective of providing affordable housing to low-income households, the majority of the population in need was not served by the system. In the absence of national- and state-wide programs, local initiatives, albeit with assistance from international or non-governmental

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3 For a detailed account of this incident, see Paraná’s newspaper Gazeta do Povo, issues published between August 24th and 30th, 1998.
organizations, or occasional, isolated initiatives in the national and state realms are the most direct avenue to reach the target population. As isolated initiatives, they can assume whatever form might be more appropriate at the time of implementation, namely, self-help, relocation, urbanization, or tenure regularization, or even a combination of these, as might be the case. Within this scenario, it might be easier to affect the target population because other strata of society will not be able to take advantage of a national system designed to serve the less fortunate as was done during BNH times. A caveat, given the topical nature of local or isolated initiatives, is the creation of opportunities for clientelist practices.

A paradigm that supports more effective private-public collaborations and better analytical and planning techniques fosters integration, interaction, and coordination. Comprehensive programs that promote government, business and community interaction for joint management and financing of urban development have greater potential of being successful. The seamless integration of metropolitan areas has been hindered by partisan mishaps and corporate favoritism for too long.

The impact of human settlements within environmentally sensitive or protected areas needs to be further studied. It is necessary to devise precise methods for assessing the effects of land use on the quality of water sources, evaluating the consequences to water supply from inappropriate waste and sewage disposal near the source, and predicting the health effects of drinking treated water from a polluted source. The long-term consequences of inappropriate land use, especially those associated with the permanence and upgrading of informal human settlements, need to be better understood.
At the national level, constitutional and legal reforms can facilitate the processes of commercializing, regularizing, and titling land, while macroeconomic reforms aimed at facilitating operations at lower institutional levels can lend local agencies more discretion thus optimizing their plans. The Brazilian Constitution of 1988, which transferred to municipalities the control over their urban affairs and initiatives, may serve as an example. Property tax structure can be reformulated and fiscal power can be transferred down to the lower levels of government. State and local governments can provide the interface between national institutions and local NGOs, grassroots organizations, neighborhood associations, and private sector companies and entrepreneurs. State- and regional-level agencies and legislators can coordinate land and fiscal policies and instruments between the federal government and the municipalities, as well as serve as mediators if multiparty administrations are in place and political coalitions need to be formed. Local governments can serve as liaison between the public and private sectors, assessing costs and benefits of urban planning projects to more effectively deal with developers and other private actors involved in the process. If the idea of upgrading informal settlements passes the test of time, local programs might consider delivering basic sanitation services to new settlements that may spring up despite their best efforts, striving to integrate these settlements into the urban fabric, providing social services, and devising land tenure agreements that lend more security to the occupant but do not encourage further squatting or displacement due to higher property values.

A solid base on which to found the structure of any holistic plan is critical; only a sound national economy, without rampant inflation, fiscal crises, and high unemployment
rates can be the foundation for vigorous progress. The Brazilian Real Plan of July 1994, which stabilized the country’s economy for almost five years, was conceived to create such a base. The continuity and sustenance of economic plans such as the Real Plan are critical to the improvement of the quality of life of the population in general, and the lower economic strata in particular. The stabilization of the national economy and consequent lower rates of unemployment can lend low-income populations the opportunity to take the first step into the formal workforce and, therefore, the society.

The private sector, especially financial and real estate organizations, can reformulate its rules so that the stringent and inflexible practices that induced the formation of informal markets are replaced by more malleable arrangements with lower transaction costs. Developers and builders can enter the sphere of low-income housing through public-private arrangements and tap into a new source of profit, albeit not as high as other types of developments, but with more potential for growth.

No comprehensive strategy would be complete without feedback. Evaluation and follow-up programs to assist policy-makers and developers (both in formal and informal markets) in better understanding the functioning of urban land markets and the consequences of policy changes for urban development need to be incorporated as an integral part of any development strategy.

Finally, because of the intense urbanization rates observed in Latin America, no plan may disregard the social and environmental costs of development. Therefore, guidelines for balanced growth, employment (e.g. income-generating activities in and around settlements), community assistance, and environmental protection need to be established. Focus on regional and watershed planning, including the prioritization of
land to be urbanized, infrastructure, and housing for low-income populations renders better results than planning constrained by political boundaries.

The Curitiba experience suggests that when a political decision to plan is made and urban planning becomes a political objective, planning initiatives can gain the necessary community support to advance and succeed. The planning initiatives implemented in Curitiba in the last forty years show that attainable goals are more easily carried out when municipal administrators are simultaneously planning professionals and politicians and there is consensus between technical solutions and the political will to implement them. Thus, urban planning becomes the political system’s intervention in the urban environment, striving to solve not only the physical problems of the city, but also collective social issues resulting from urban amenities, or disamenities, as may be the case. Curitiba’s urbanism is, in part, a result of political measures taken to resolve collective social problems.

This research project has mainly dealt with three issues in the policy realm: land for housing, environmental protection, and the legislative means needed to ensure both. Urban planning is the discipline that can integrate these areas to foster the coordination needed to turn ideas and intentions into action. Coordination among the various agencies involved in a project prevents problems and unnecessary expenses in the implementation phase. Open lines of communication promote fellowship among stakeholders; agreement of all parties with vested interest in a project facilitates its advancement. Coordination is particularly important if different levels of government are involved, especially if they represent opposing parties, which is frequently the case in Brazil. Also, the now ubiquitous participation of international aid agencies requires alignment of the agency
directly linked to the project and the various local players. Urban planners who adopt a
holistic approach to their science, when involved in the process of making cities more
livable and development more sustainable, can catalyze the best contributions of each
participant to effect synergy and to produce a stronger final result.
CITED REFERENCES


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