

**SOCIAL INEQUALITY AND THE POLICIES OF WATER IN THE SÃO PAULO
METROPOLITAN AREA, BRAZIL**

**A study of urban environmental politics through a case study of the Guarapiranga
Reservoir Recovery Program**

by

ERIKA MARIA TERESA GIONGO DE CAMARGO E CASTRO
B.Arch. Mackenzie University, 1972

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Department of School of Community and Regional Planning
The University of British Columbia
Vancouver, Canada

Date December 23, 1998

ABSTRACT

This research examines the politics that shape the urban environment in São Paulo Metropolitan Area. In particular, it inquires into the potential of international agencies as significant players in major infrastructure projects. It discusses a World Bank project for environment recovery of the Guarapiranga Reservoir, the second largest water supplier of the metropolitan area.

This study demonstrates that social inequalities ingrained within developing societies are incorporated into urban politics, creating the physical dimension of social exclusion so prevalent in developing cities.

In São Paulo, industrialization was associated with urban growth and worsening of environmental conditions. However, all of the metropolitan population did not equally share these conditions. It is the poor who have the burden of living in the midst of pollution and in risky areas, subject to flooding and sliding. This situation is more acute around the Guarapiranga reservoir, where outdated legislation to protect water sources made the low value of land attractive to low-income populations. It was there that the poor found a place for the only housing arrangements they could afford: illegal settlements and favelas, without adequate infrastructure or basic services.

The role played by the World Bank was expected to alter this long-standing situation by addressing the roots of the physical exclusion of the urban poor. However, in spite of improvements in living conditions of some settlements around the reservoir, the World Bank Program has largely failed. The Program did not shift region's planning focus from technical

goals to a broader and holistic approach that could address social inequalities as well as the environment degradation associated with poor neighborhoods in sensitive areas.

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ACRONYMS

ABC - Santo Andre, São Bernardo e São Caetano do Sul

BA - Estado da Bahia

BNDE - Banco Nacional de Desenvolvimento

BNH - Banco Nacional de Habitação

CEF - Caixa Economica Federal

CETESB - Companhia Estadual de Tecnologia de Saneamento Basico e Poluição

CIDA - Canadian International Development Agency

CINVA - Centro Interamericano de Vivienda

CNAEE - Conselho Nacional de Agua e Energia Eletrica

CNPU - Comissão Nacional de Planejamento Urbano – Regiões Metropolitanas e Politicas Urbanas

CODEGRAN - Conselho Deliberativo da Grande São Paulo

COHAB - Companhia Estadual de Habitação

CONGAS - Companhia Estadual de Fornecimento de Gas

CONSULTI - Conselho Consultivo da Grande São Paulo

COPASA - Companhia de Agua e Saneamento S/A

DAEE - Departamento Estadual de Aguas e Esgotos

DER - Departamento Estadual de Estradas de Rodagem

EBTU - Empresa Brasileira de Transportes Urbanos

ELETROPAULO - Empresa de Energia Eletrica de São Paulo S/A

EMPLASA - Empresa Metropolitana de Planejamento de São Paulo

FEPASA - Empresa de Transportes Ferroviarios de São Paulo

FINEP - Fundo de Incentivo a Pesquisa

GEGRAN - Grupo Executivo de Planejamento do Grande São Paulo

GNP - Gross National Product

IBRD - International Bank for Reconstruction and Development

IDA - International Development Agency

IDB - Inter-American Development Bank

IMF - International Monetary Fund

MG - Estado de Minas Gerais

MRSP - Metropolitana Region of São Paulo

MSP - Metropolitan São Paulo

NE - Região Nordeste do Brasil

NGOs - Non Governmental Organizations

PLANASA - Plano Nacional de Saneamento

PMDI - Plano Metropolitano de Desenvolvimento Integrado

PMSP - Prefeitura Municipal de São Paulo

PR - Estado do Paraná

SABESP - Companhia de Saneamento Basico de São Paulo

SANEGRAN - Programa de Saneamento da Grande São Paulo

SC - Estado de Santa Catarina

SEMPA - Secretaria de Planejamento Urbano

SERFAU - Serviço Federal de Habitação e Desenvolvimento Urbano

SHDU - Secretaria de Habitação e Desenvolvimento Urbano

SNM - Secretaria dos Negócios Metropolitanos

SOMA - Secretaria de Obras e Meio Ambiente

SP - São Paulo

SPAM - Sistema de Planejamento e Administração Metropolitanos

SPMA - São Paulo Metropolitan Area

SPMR - São Paulo Metropolitan Region

UGP - Unidade Gerenciadora do Programa

UN - United Nations

US - United States

USAID - United States Agency for International Development

USP - University of São Paulo

WB - World Bank

WW II - World War II

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CHAPTER 1

INTRODUCTION

"...the maladies of politics, of which hollow and opportunist rhetoric is the main hindrance to confronting the social question..." (Paulo Prado, in The Portrait of Brazil, 1927)

PURPOSE AND RESEARCH QUESTIONS

The quality of life in cities of developing countries such as Brazil is deteriorating. Although cities play a key role in the development process and make a great contribution to national economic growth, they are becoming very unhealthy, inefficient and inequitable places to live. An increasing number of people and industries are generating ever greater amounts of liquid and solid waste, that outstrips the capacity of cities to efficiently collect and dispose of them. They exceed the capacity of regulatory authorities to control them and of nature to assimilate them. Urban drainage is compromised and flooding is a constant risk as infrastructure systems are clogged by garbage. Water contamination is serious. Also, environmental degradation is threatening the availability and quality of natural resources, particularly water resources, as a result of uncontrolled development in watershed areas.

Those most affected by deterioration of the physical environment are the urban poor. Conversely, poverty is a major factor in urban environmental degradation. It is the poor who occupy the ecologically fragile lands in exclusionary land and housing markets (Bartone, 1991). The existence of pockets of First World class neighborhoods in most larger cities is only a clear symptom of the prevalent urban inequalities. Nevertheless, these inequalities are not strictly

‘urban’, but a reflection of economic and social inequalities ingrained within developing societies, and ultimately, a projection of the policies in place.

The purpose of this thesis is to demonstrate how these inequalities are embedded in urban politics, creating the physical dimension of social exclusion so prevalent in developing cities, and focusing particularly on the policies of water in São Paulo Metropolitan Area. Thus, efforts by governments and the international financing establishment towards amelioration of the urban environment have limited success, because they do not address underlying inequalities, which are the locus of urban environmental problems. Many planning strategies are based on the assumption that urban environmental problems are a consequence of urbaneness, and even more so, of larger cities, and that they can be resolved through expensive technical solutions.

Urban policies are defined according to political interests, which are increasingly linked to processes of economic globalization. Rules respond to the new economic order. As urban problems grow, international financing is necessary to meet the huge costs of face-lifts in urban systems in order not to hinder city functions. Ultimately, urban policies are instruments in the implementation of an economic order defined by the concept of development.

São Paulo is a place where social and environmental exclusion has been linked with industrialization, urbanization, and lately with globalization. Anarchic land occupation is the physical dimension of exclusion, resulting in a promiscuous space, predatory and without sanitation, marked by individual conflicts and community exploitation. Exclusion, though, encompasses more than the physical dimension. It has social aspects (race, skin color, gender,

age, etc.); it has cultural (literacy, customs, etc.), economic (lower wages, rampant unemployment, etc.), political (no citizenship rights), and environmental (no access to urban infrastructure services) aspects which together compound an exclusionary society (Maricato, 1997).

One of the brutal faces of the exclusion that directly affects the urban scenario is the generalized illegality in housing arrangements - favelas, cortiços, subdivisions. The judicial system actions and/or absence of them do not resolve conflicts or restrain procedures, which endanger the living conditions of the destitute. The state is not simply absent, but intentionally it is present in a very ambiguous arbitrary way: repressor, paternalist, clientelist or opportunist.

It is hoped that this study will inform the discussion about the politics that shape the urban environment. Its contribution is to explore the potential of international agencies as significant players in major urban infrastructure projects associated with environment improvement. It addresses this question: to what extent are urban São Paulo's environmental policies affected by the international financing agenda?

To answer this question, this study examines a project financed by the World Bank (WB) within the São Paulo Metropolitan Area (SPMA). The inquiry considers firstly if the WB is na effective change agent in São Paulo; and secondly, in how it exerts influence or is co-opted into existing urban politics. The inquiry ponders whether the presence of a major international agency, the WB, has altered the decision-making processes, which inform urban policies related to environmental degradation.

THE CASE STUDY

The Guarapiranga Reservoir Recovery Program in São Paulo was initiated in 1992 and is now in its final stages. The Program has several sub-programs to deal with pollution of the reservoir, which supplies the water for nearly a quarter of the metropolitan population.

The metropolitan region of São Paulo has traditionally lacked natural resource policies and programs that are designed in an integrative and decentralized way. This deficiency compromises the quality of life of the city's residents. This research in part, examines the legislation governing the management of metropolitan watersheds and water supply in the region today.

The Guarapiranga Recovery Program has been acclaimed for its *holistic* approach to addressing water pollution and related issues. Because the Program is not completed, the present study discusses the results seen by local people. It identifies potential points for program improvement.

Others' research (Caulfield 1996; Escobar 1995) has recognized that the neoliberal agenda of the World Bank and other international agencies has been associated with programs of urban development and recovery that perpetuate a technical and localized approach to urban problems (*issue-specific*, according to World Bank nomenclature), reinforcing the exclusionary characteristics of developing cities. This thesis examines the potential impact of WB's approaches not only on existing political praxis, but also, more specifically on the exclusionary urban patterns in São Paulo.

In view of this, the study addresses the following case-specific questions:

- In the context of the factional political environment of São Paulo, does the WB Program privilege one faction over another?
- Are the resources brought by the WB enough of an incentive for establishing consensus?
- Has the Program directly impacted upon the urban poor in Greater São Paulo?
- Which aspects of the Program have had impact upon public policies in Greater São Paulo?

URBAN POLITICS

The complexities of rapid urbanization, industrialization, poverty and environmental degradation require extremely difficult political trade-offs to obtain a balanced approach to urban development. Identification of the mechanisms by which trade-offs are made is na objective of this study.

Trade-offs are made at several levels. For example: local authorities may be reluctant to enforce pollution control, initiate polluter-pays policies, or require industrial safety programs, for fear of driving industry and jobs elsewhere. At the national level, the government may hesitate to establish environmental protection regulations, which could make the country less competitive for international investment. Also, in most cases, absence of community awareness and sustained pressure makes inaction the simplest political course. The agenda that has sponsored the Brazilian development process still exerts a great influence upon the economic growth vision associated to these postures.

When deciding policies for urban management, politicians are well aware that environmental decisions produce winners and losers. In proposed effective environmental protection measures,

the powerful special interest groups, who have access to or were part of the political machinery are destined to become potential losers. They are used to a regulatory context that protects their interests at any cost. Authorities and politicians are extremely vulnerable to this pressure. Similarly, the urban poor, when politically organized, can represent, if not a powerful, at least a loud pressure group with increasing demands for housing (land), infrastructure and community services. In general, local authorities, when responding to these kind of pressures often prefer quick-fix projects over the maintenance or sustainability involved in long term approaches. These pressures haunt any project for urban environmental improvement.

Nevertheless, it is not only the political skills of the local authorities that are at stake. To be sustainable and equitable, an urban environment needs a regulatory context to define its spatial formation. These laws are (or should be) the fruit of continuous negotiation between all actors and agents which compose the city. However, this is seldom the case in developing countries. Laws are not negotiated, but rather are made to protect the interests of dominant groups. Pressure involved in the decision-making process has different weights.

Even if an adequate set of policies and actions to prevent or diminish damages to the environment were in place, authorities will likely face budget constraints. Authorities often must choose between investing in safe waste disposal sites or in needed education or health services programs. Decision-making requires a realistic assessment of urgency, costs and benefits of environmental interventions, as well as damage and political costs of inaction. Effective social participation is the best antidote against any unbalanced decision, but when dealing with a reality bounded by a development concept that implies *economic growth at any cost*, these

considerations do not necessarily arise. Where structural inequality is ingrained in the history of unequal relations within society, it is very difficult to overcome political and social inertia.

In São Paulo, policies governing land use and housing production for the low-income population have always been used as tools to assist the capital accumulation model. Also rent policies, lack of incentive for a larger social housing stock, and environmental policies are reflections of the same model.

Resources for urban development have been used to create basic urban infrastructure without considering economic, social and physical discrepancies among cities. The phenomenon of spatial exclusion is perpetuated, with international financing directly or indirectly endorsing the politics in place. As will be outlined specific case of São Paulo watersheds, land policies have been used to essentially 'promote' the development of informal settlements while officially hindering it. This ambiguous approach to watershed protection has led to the deterioration of water quality for the metropolitan region and of the quality of life for low income settlers in sensitive areas.

THE GOVERNANCE QUESTION

Dovetailing with urban politics, governance is a major issue in the management of cities. Although it is not a main objective of this research, it must be addressed because it is associated with the efficiency of urban policies, and in particular large infrastructure programs. International agencies have stepped in to fund such projects because national governments lack the financial

capacity to absorb the huge costs of such programs. In many cases they support growth of technical capacity not available in the affected country. The World Bank has supported environmental infrastructure programs in developing cities since the 1970s, but has recently promoted a series of broader initiatives to more comprehensively address urban environmental issues.

According to Bartone and Rodriguez (1993) *issue-specific* urban environmental management strategies should establish the framework within which coordinated short and medium term sectoral action plans and investments should take place. The development of such strategy should be based on several kinds of analyses, including assessments of health effects and environmental damage, analyses of economic efficiency and financial and institutional feasibility. Even behavioral analysis would be important to select policies and instruments needed to implement the strategy. Projects oriented within this approach focus institutional reform in order to improve the management of resources. The Guarapiranga Program, along with some other large priority infrastructure projects, emphasizes ways to protect water resources. This posture implies that having issues like quality and quantity of water taken care of represents 'good governance'. But how have these institutional reforms been 'packaged' by international agencies?

Since the 1970s, agendas of international financing institutions have been progressively molded by the free market ideology, with excessive emphasis on economic growth. From this emerged demands from lenders to liberate internal markets and eliminate barriers to the free market. This attitude generated a strong critique against old forms of management based on import-substitution strategies. The social democratic ideals were replaced by belief in the free market,

and the position that economic direction was to be defined through political negotiation processes was changed to a posture that the distortions politically induced were the cause and response of most of the economic problems of developing countries.

International institutions, believing in the prerogative of the economy, influenced recipient governments to downplay of social and political themes. However, when economic measures were implemented, it became clear that without at least some social and political legitimization, nothing would work, and no economic plan would solve the increasing decline of the economy.

The concept of 'good governance' permits international institutions (and the banking community in general) to abandon reliance on the economy as the only salvation, and to return to social and political questions related to economic restructuring. This change in concept has been possible because it addresses the need of the international agencies to be not involved directly in internal political and administrative affairs of the recipient countries. Nevertheless, it is evident that political implications of economic restructuring affect the approval of financing programs, and that restructuring is used to efficiently establish the so-called modern markets.

Under the inoffensive label 'governance', international institutions are able to deal with sensitive questions by disguise those in technical terms. Adherence to free market ideology does not waver. The same demands are maintained (weakening of norms, liberalization of markets, opening to foreign capital and companies, reduction of salaries, etc.). 'Good governance' and institutional reforms are overlaid on existing neoliberal programs. The objective is not to

integrate 'governance' and institutional reforms into a new synthesis in which an economy depends on political and social considerations.

Because 'governance' implies creation of different levels of authority in a society, within and outside the State, over and under the State, the term has become indispensable in framing creative institutional responses to transnational processes. With rapid liberalization of economies and global commerce, with technological changes to communications, a global society is being born. But who will participate in this governance? And how will it be executed and put in place at the local level? Government actions can be limited by markets functioning for great corporations, industrial and private economic interests, which exert an enormous power. In order to assure that social needs will be addressed it is necessary to foster new combinations of actors from different political ideologies, social and cultural, who will need to work together.

There is an increasing need in São Paulo for administrative and political reforms. In the last two decades, economic crises have aggravated poverty conditions in many sectors of society, standards of living have dropped considerably. Thus, the request for 'governance' implies demands for effective political participation, reactivation of local economies and protection of disadvantaged sectors.

The incapacity of most major international agencies to deal with the contradictions in the concept of what represents 'good governance' caused them concentrate in the limited objective of reforms in the public sector. Because of this, bureaucracies have been undergoing restructuring and de-structuring processes (especially health programs, economic initiatives, and public

services). Although there have been gains in some places, restructuring has had negative consequences that have weakened efficiency and morale.

The need goes far beyond the institutional reforms that have accompanied the 'governance' discourse. The economic crisis has brought disruptive social tendencies: increased urban violence, persistent high unemployment, diminishing school assistance, etc. Therefore, governance, to be effective, must involve change in the dominant approach to social actions that directly or indirectly, affect the urban environment. Efficient systems of authority, equitable regulation, as well as new stimuli to depressed sectors which are potentially job generators, are needed in order to reinforce the civil society position in the decision making processes.

Because they are some of the most powerful players in the game, international institutions and banks must share power to define a socially just, technically sound and economically feasible 'governance' to attend urban management priorities. A broader vision of the complexity inherent in effective governance is fundamental in bringing about change in the urban environment. From this arises one more question to be answered by this research: was this intention present in the Guarapiranga Program?

CONSEQUENCES OF URBAN GROWTH

The developing world has been concerned with well-publicized issues like deforestation and protection of biological diversity, relegating to the shadows the fact that the most dramatically life-threatening forms of environment degradation are occurring in cities.

Since the 1980s, the urban population in the developing world has exceeded the urban population of developed countries and it continues to grow (UN Reports, World Bank Reports, 1984-1996).

Limitations in real income have caused urban population growth in developing cities to impact seriously on infrastructure and urban services provision. The lives of the urban poor, who represent the fastest growing urban population in the Third World are the most affected (McCarney, 1992). Environmental degradation is assuming a particularly dramatic dimension. Typical First World urban and industrial environmental problems emerge in Third World cities, on a much larger scale. With colonial structural and historical deep-seated conflicts, they are associated with appalling social poverty.

The threat to the environment is magnified because, on a *per capita* basis, the amount of energy and materials used in cities, and therefore the amount of waste and pollution generated, is several times greater than it is in rural areas.

In the urban centers of the Third World, air and water contamination, and accumulation of toxic material in soils are extremely concentrated. Basic urban infrastructure is absent in most parts of the cities. In the urban periphery, household and industrial solid waste collection and sewage systems do not work. Garbage, including industrial waste, is discarded on idle land, thrown into streams and rivers, or left along the edges of roads in the suburbs. The destruction of green areas and areas designated for watershed protection around urban centers is apparently uncontrollable. In most developing countries, accelerated industrial growth in recent decades has accelerated

pollution. Increasing foreign debt has combined with structural adjustment policies to systematically cut financial resources available to deal with growing pollution (Mueller 1996).

Restricting the rate of urban growth is not accepted as a viable solution by most countries. The international funding agencies and governments have perceived urbanization as an inevitable and generally positive accompaniment to economic growth over the past decades. Attempts to curtail urbanization would likely constrain economic development and hinder anti-poverty efforts. There is a relentless tendency to foster the growth of cities and to concentrate the productive base in them. International financial cooperation, in the first 40 years of their existence emphasized rural development, trying to root the population within agricultural activities and restrain the exaggerated growth of cities. Since then this position has changed. The city is seen as the locus of social and economic progress, where the largest part of the wealth is generated. The emphasis has shifted towards the analyses of urban systems, and of how to use them to improve city life.

WATER MANAGEMENT

Water and sanitation services, in most cases, have the technological and management capacity to deliver services to what is known as the formal city. In other words, the parts of the city that correspond to urban formal standards, defined by laws, and with origins in classic urbanism, have more or less good services. But the formal city of the Third World is fragmented and represents, in many cases, as little as 40 percent or less of the city. Much larger is the 'clandestine' or informal part of the city. The term 'periphery' is appropriate in more than the geographic sense: residents lead a 'peripheral' life to the formal city. Each city has its own peculiarities. São Paulo,

for example, has most of its informal city in the 'periphery', but almost 3 million people live in squalid housing throughout the city, the "*cortiços*." (PMSP, 1992). Cities like Rio de Janeiro and Bogota have "*favelas*" within their central part. How can the water and sanitation demands of these cities within cities be addressed with quality and in a sustained form, in a way that guarantees changes, maintenance and adequate financing of these services over the long term?

Since the 1990s, loans from the World Bank - approximately 5 percent of its total financing - have been spent on cities, with the greatest part used to finance water and sanitation systems. But this has not brought these services to the low-income population. The funds are spent on urban infrastructure, usually water production and large water main works (catchment and supply). Most surface waters are polluted, within a large radius around the city. Sometimes, underground waters, too are compromised. Concomitantly water distribution networks lack maintenance, and leaking and illegal tapping cause huge losses of drinkable water. In Europe, an estimated 30 percent is lost between production and consumption; in developing cities this loss can reach an astonishing 60 percent of treated water (SABESP Report, 1996).

Collected taxes are considered a primary source of funds for infrastructure maintenance. But generally the tax structure does not correspond to the cost's reality and the public corporations do not have decision-making power. They work within a political framework not necessarily conducive to improved services. Sometimes, even the extent of subsidies is not known, because the real cost has not been accurately determined. Usually, water and sanitation corporations are unable to raise the resources needed to expand service networks and recover costs. Consequently,

these corporations have great difficulty extending services to the poorer strata and maintaining high quality standards within a just tax structure.

In some countries, water cannot be assessed on a cost recovery basis by law. The rationale is simple: as a basic commodity, water cannot be expensive. This means that the water in already established neighborhoods - the formal city - is highly subsidized, the poor do not get the services, and public corporations remain in deficit. Governments see these corporations as a bottomless drain on financial resources, and show no interest in strengthening them. For the last decade, however, there has been a recognized need for service corporations with dynamic profiles, able to extend services to the poorer strata in the informal city.

Urban recovery projects in developing cities are today an essential component of most local and regional government programs. However, the costs of recovery of destroyed or contaminated natural ecosystems are far higher than the cost of prevention measures. Therefore, it is essential that all the institutional levels be involved in implementing policies for pollution prevention and enforcement of controls, and in public and civic programs to increase awareness of the need to care for the environment.

Consequently, to strengthen developing cities' urban growth management capacity and concentrate more resources on the problems of urban environment are the most feasible and logical approaches to solve this difficult and endemic problem.

As the principal focus of efforts to tackle increasing urban environmental problems, water pollution has been gaining more and more space in discussions about urban management. The

focus is on recovery of already polluted resources and/or preventative measures to preserve this basic and essential natural resource.

Water, in spite of being a renewable resource is becoming a scarcer commodity. Projections show alarming scenarios. Low availability of clean water in the face of increasing demand in several places around the world could provoke territorial conflicts in the next century. According to experts at the Habitat II Conference, population growth, waste and contamination cause water scarcity (SMA, Report, 1997). In global terms, drinking water is abundant, but it is not always available where it is needed. According to a World Bank Report on Development and Environment (1992), there are already 22 countries whose renewable water resources are considered scarce, a situation that affects not only household supply, but also economic activities.

The water availability problem becomes more dramatic in the face of demographic transformations. In 1980, a one in three inhabitants of developing countries was living in a city. It is estimated that by 2025, at least 60 percent of the population will be urban; from this total, 80 percent will be concentrated in precarious housing in big cities. In countries with a high urban concentrations, such as Brazil, disregard of the environment and of basic sanitation is directly affecting the quality of life of millions. Degradation of water sources is occurring because of pollution and non-planned appropriation of the available resources. (SMA, Report 1997).

Water maintenance and preservation depend fundamentally on the quality of other natural resources and on how people use them. To preserve water quality and quantity requires actions to

control the whole ecosystem. Although three quarters of the planet's surface are covered by water, only 3 percent of this water are suitable for human consumption. Also, distribution of water over the planet's surface is very uneven, and frequently the locations with abundant supplies are not near larger areas of urban and agricultural activity.

This is a complex situation. Preventative and corrective measures are needed to create development strategies that are balanced socially, economically and environmentally. Agenda 21 in its discussion of urban poverty recommends sustainable demographic dynamics, the promotion of sustainable human settlements and the elaboration of policies for sustainable economic development.

In spite of the calls expressed in Agenda 21, which defines sustainable management of water resources as essential for economic and human development, we see continuing degradation of water and a real risk of irreversible depletion.

Various factors contribute to this progressive degradation. The Brazilian Institute of Geography and Statistics states that 92 percent of the 5,400 Brazilian municipalities do not treat sewage before releasing it into rivers, thus contaminating water that will be collected later for consumption. United Nations reports show that only 83 percent of Brazilians have access to potable water.

In addition to problems associated with destructive occupation of areas within hydrographic basins of supply watersheds, which causes de-forestation, soil movements, erosions, predatory

occupations, etc., lack of basic sanitation causes the water supply for urban agglomerations to be seriously compromised.

SÃO PAULO

In São Paulo State, the strengthening of urban agglomeration is happening in medium-size cities such as Sorocaba, Campinas, Piracicaba, Ribeirão Preto, São Jose dos Campos, Santos, Aracatuba, Presidente Prudente and São Jose do Rio Preto, where water management problems similar to SPMA are registered. Some of these cities belong to the same hydrographic basin as SPMA, which makes issues of pollution and water quality control ones to be tackled on a larger scale than city-by-city.

In general, water pollution has four main causes: domestic sewage, the principal source of organic biodegradable composts in the water system; industrial effluent, varying in volume and composition; farming and cattle raising run-off contamination (fertilizers, pesticides, herbicides, etc.), carried out by rain into rivers and lakes; and urban waters generated by city surface run-off.

In the metropolitan region of São Paulo, the surface waters are very polluted and difficult to purify. Subterranean water also presents high degrees of pollution, due to infiltration of heavy metals, synthetic chemical products and other toxic wastes, with serious impacts on population health.

The growing demand for water, with the increased deterioration of sources due to the inertia and lack of integrated governmental programs, is causing several conflicts. The fragility and novelty

of the environmental planning tools and the isolated application of normative instruments are preventing implementation of a comprehensive management system of water resources. It is a matter of great complexity, which goes beyond specific issues, to involve questions of land use, sociopolitical and institutional determinants, and economic agents that have contradictory interests. Management of water resources should be supported by four basic elements: a territorial administrative base; community organization; disciplinary (ordering, normative) tools; and technical instrumentation.

Management of water resources calls for radical changes to enforce economic efficiency and environmental sustainability, control of industrial pollution, and massive investments for sanitary drainage and decontamination of water sources. Projects necessary to recover and preserve water resources in developing cities require not only huge amounts of financial resources for the physical work of updating infrastructure, but also institutional/policy changes in resources management to implement efficient monitoring and pollution control measures. In development jargon, *good governance* is required.

CASE STUDY METHODOLOGY

Specific data about the Guarapiranga Recovery Program was obtained through interviews with people involved from its conception through to implementation, development and administration. This includes state and municipal officials, residents, NGO representatives, plus technical staff from public corporations and companies (complete list of interviewees in Appendix 3), during the period between June and September 1997, in São Paulo. Publications and newspapers were

extensively reviewed, as was the Program's documentation. Visits to and photo documentation of the areas where the program is being implemented were significant for understanding the issues involved.

There were also opportunities to participate in several workshops with scholars and professionals, plus technical personnel involved in the Program,. These seminars were organized with the support of the Program Management Unit (UGP) as a venue for discussion of the Guarapiranga Program objectives and achievements to date, and for planning. Management of the watershed areas is part of a comprehensive approach that considers the whole water sources system for the State of São Paulo.

ORGANIZATION OF THE THESIS

Chapter two examines the role of International Institutions in financing the development process, with particular emphasis on Latin American and Brazil. A special section will deal with the World Bank in particular, in order to set the framework for the Guarapiranga Recovery Program analysis. The objective is to clarify the role and importance of these agencies in the definition of the urban scenario, as well as identifying their eventual connivance towards the city status quo.

Chapter Three discusses Brazil and São Paulo metropolis (SPM), to set the context where urban environmental politics are happening and help us to understand the impact of the Guarapiranga Program. Social, economic and other specific features (geographic location, watershed

legislation, etc.) presented as part of the contextual framework affecting the political actions related to the water supply for the metropolitan region.

Chapter Four examines the water supply of the metropolitan region as well as the legislation affecting water sources. The chapter discusses particular laws and regulations that contribute to pollution of the reservoir and problems associated with the increasing deterioration of the urban environment.

Chapter Five deals with urban land issues and the several aspects of watershed protection. This chapter examines some of the historical roots of the current situation of land and housing provision for the lower income population in São Paulo. Approaches dealing with informal settlements are discussed, as well as the influence of the discourse of watershed protection upon the SPM urbanization process.

Chapter Six gives a brief and focused account of the metropolitan water supply today. Rather than sieving through technical reports of the matter, it examines the aspects which have influenced (and still influence, in some cases) water policies and water management in the region. Particular attention is paid to the Guarapiranga waterbasin to clarify the context for the effects of urbanization and policies identified in the research.

A comprehensive exposition of the Program's history, design, aims, principal players and their respective roles is provided in Chapter Seven. The actual stages of implementation of the various sub-programs are also considered. Information is been added about the evolution of Program implementation after the fieldwork was completed.

The conclusion points out as the main problems of the Guarapiranga Program: focus mainly on technical approach; complexity of issues; poor institutional coordination and addressing of local goals; poor public participation; lack of public knowledge and awareness; lack of maintenance procedures; no effective environmental education programs; and no impact on land use policies. The positive steps of the Program so far are: watershed protection legislation changes; recovery of several degraded areas; improved local knowledge in watershed issues; reinforced watershed basin councils; and information system (data collection and system assembly). Also, the conclusion considers the effect of urban politics on the urban scenario and degradation of the environment, especially as these concern watershed protection areas. Participation, citizenship rights, land issues, water resources management, and institutional policies are discussed.

The questions changed during the process of the research, not only in response to the material and information gathered, but also as a result of increased knowledge of the complexities that link poverty and pollution in developing countries.

CHAPTER 2

INTERNATIONAL INSTITUTIONS AND THIRD WORLD DEVELOPMENT

"Dios nos libre de los expertos internacionales" (Ricardo Alegria, during the BID-MEC Seminar for
University Planning, Brasilia, 1975)*

INTRODUCTION

This chapter discusses the role played by International Institutions in the development process in Third World countries since the Second World War (WW II). It was thought that once minimum conditions of wealth (within a capitalist concept) were obtained by all nations, political balance would follow, and the threat of another world conflict would be avoided.

When the Communist threat arose in the 1950s and 1960s, political change within the institutions brought about a shift of this initial objective. The modified approach affected international involvement in Latin America, where political changes were noticeable, and marked profoundly the interventions of international financing in social and economic aspects. The agreements became politically swayed by the right wing thought prevalent in USA. The new approach was reflected especially in the built environment, the urban context, and the infrastructure network (roads, dams, etc.). Also, policies inspired by international money changed forever the demographic make-up of developing countries. Altering the rural

environment and stimulating industrialization, they cast cities as major attraction, stimulating the exodus of rural populations towards cities in most developing countries, particularly in Latin America.

Questions can be raised about how international financing agencies and in particular the World Bank have performed in helping developing countries for the last 50 years. What has been the significance of their eventual attitude change? Does the Bank commit itself to emphasizing local knowledge in their projects, incorporating perspectives of local communities about the meaning of *development*? Why have the Bank's policies for urban poverty consisted, in most cases, of lending money for large infrastructure projects, with very little recognized impact directly upon the urban poor? Ultimately, has the Bank had an important role in shaping the urban environment of developing cities in the last decades? If so, in which way?

Searching for answers, we must first acknowledge the World Bank as a major engine in the conceptual understanding of *development*. The Bank is a relatively independent institution that wields considerable influence within the development agenda. Each dollar the Bank lends may typically raise two or three more from other aid agencies, private banks and recipient country governments (Kardam, 1994). The World Bank also influences the planning of other aid agencies and borrower countries through its country-lending and sector-strategy reports. Developing countries are required to modify domestic policies, profoundly affecting their economies, to

* "God help us against the international expertise". Ricardo Alegria is a Chilean architect who worked with USAID financial aid for universities in the 1960 and 1970s (the word *expertos* in Spanish and Portuguese has the same sound as *esperto*, which means cunning)

qualify for structural adjustment loans. Also, it is important to note that the Bank's generally conservative approach to policies affecting Third World countries has not changed significantly. Adjustments have been geared to improve Program effectiveness in terms of the Bank's own definition of development, rather than towards incorporating new paradigms or indigenous perspectives (Escobar, 1996). A general disregard for local knowledge, distance of Bank staff from local communities, and a marked preference for top-down approaches, seems to still prevail in most Bank programs. This is not necessarily built into project design (in fact, most recent projects emphasize public consultation/participation, especially in environment-related programs), but it is clearly shown through pragmatic actions as dealing only with the technical elite of the countries, and not questioning their management and decisions.

The Bank has been a significant source of authoritative knowledge about economic development. It plays a key role in the international intellectual debate about development and its relation to economic growth. Its research and policy-formulation capacity carries more authority than those of any other institution dedicated to development issues. The Bank also commands great media exposure internationally through reports and documents, which allows it to promote its view. Perception of the Bank's value as economic leverage for developing countries represents another equally strong reason for its recognized importance within the field.

The analytic conclusion is that international institutions have exerted a strong and undeniable influence upon the transformation of developing cities. The World Bank, in particular, is part of the network of agents whose actions have shaped and continue to transform urban space in developing cities.

THE CONCEPT OF INTERNATIONAL AID

International institutions, like the World Bank (WB) and the Inter-American Development Bank (IDB), are well known in their role of lending for diversified sectors within developing countries' economies. Since the end of WW II, they have been offering sometimes-subsidized loans to developing countries.¹

They cite the need to promote economic growth, fight poverty and improve the quality of life within these societies as their major objective for countersigning the transactions between themselves and developing governments. Therefore, even being financing agencies primarily, they define themselves and are called financial aid agencies (Clichevsky, 1990). But an objective analysis of the history of these agencies and their financial policies shows that political variables - as the ideological alignment with the United States (US) and geopolitical importance of

¹ The World Bank group comprises specific organizations. The International Bank for Reconstruction and Development (IBRD); the International Development Agency (IDA); the International Finance Corporation (IFC); the Multilateral Investment Guarantee Agency (MIGA); and the International Centre for the Settlement of Investment Disputes (ICSID). The IBRD frequently called the "World Bank" has a goal to reduce poverty and improve living standards by promoting sustainable growth and investment in people. The Bank provides loans, technical assistance and policy guidance to developing country members to achieve this objective. Under formal guidelines, very poor countries, which average annual per capita income are US\$1,505 or less, are eligible for IDA credits. Creditworthy countries below this average could be given a blend of IBRD loans and IDA credits. Generally, countries with annual average income per capita less than US\$5,435 are eligible for IBRD loans. When a country's average annual income per capita exceeds US\$5,435 the process of 'graduating' from IBRD is triggered. In its analytical and operational work, the Bank characterizes economies as low-income, middle-income and higher-income. Low-income and middle-income economies are sometimes referred to as developing economies. Low-income countries are those with annual average per capita income of US\$785 or less; middle-income between US\$785 to US\$9,635 and high-income US\$9,635 or more. (Q&A, 1998). IDA works with subsidized loans, with smaller interest than the commercial ones and with very long amortization periods. Its users are countries with backward economies and recognized levels of dependency and poverty. IBRD, whose actions are on loans that should return totally, helps countries with debt capacity for insuring part of the total costs of some projects, with interest and amortization period dealt case by case. IFC works with the private sector.

beneficiary countries were major determinants for the direction of their aid. To develop capitalism within "underdeveloped societies" was also a major aim (Escobar, 1996).

There is not always a clear and direct relation between a country's need to receive *aid* (evaluated through poverty indicators like per capita income, GNP per capita, etc.) and targeting of loans by the international agencies.

The agencies are banking and financial institutions and as such, they privilege partners that guarantee a return of invested resources. Naturally, they privilege policies where they (developed countries) are likely to become major beneficiaries.

Clichevsky's study about Latin America offers evidence of this. Analyzing the influx of resources from all international financing agencies between 1977 and 1986, she found that Brazil, the country with the highest GNP per capita in Latin America, was most favored in the total resources². Haiti, with the lowest GNP per capita of the continent, is not among the 15 higher resource volume recipients. On the other hand, Guyana, Honduras, Nicaragua and El Salvador, countries with strong bilateral relationship and included among the poorest in Latin America, are among the 15 higher receivers (Clichevsky, 1990).

Considering only the two agencies, WB and IDB within the same period (Table 2.1), one can see that Brazil and Mexico, countries with strategic geopolitical importance and greater economic

² The author also cites Cuba as an example of a country with higher income that has received international aid, in this case due to its special relation with the Soviet Union at the time. Calculating total resources received, the author considers all the agencies operating within Latin America, including the bilateral ones, such as American USAID,

growth potential received forty-three percent of all loans directed towards Latin America for the 1977-86 period. This is a decisive factor in understanding the formation of the highest international Latin American debts.

Table 2.1 — WB and IDB in Latin America — Percentage of Non-subsidized Resources between 1976-86 in decreasing order of receiving countries

Country	W B	IDB	Average
Brazil	33.9	17.0	25.45
Mexico	21.2	13.9	17.55
Colombia	14.5	9.7	12.10
Argentina	7.4	13.4	10.40
Chile	2.3	10.2	6.25
Peru	4.1	5.0	4.55
Ecuador	2.6	10.2	6.40
Others	14.0	25.8	19.90
TOTAL	100.0	100.0	

Source: Clichevsky, 1990

Poverty and economic condition determine, at least formally, a country's possibility of receiving subsidized resources. But as was already noted, economic situation is not the only consideration. Several of the factors influence the decision of which country receives aid. In general, these arise from external policies of loaner governments, strategic considerations and concern for development of the global market capitalism.

Canadian CIDA, Japanese JICA, German KFW. She has also taken into account private volunteer agencies like MISEREOR, OXFAM, CARE, etc.

Other conditioning factors include the country's credit rating, the private foreign investment situation and import/export markets. Subordinate to these, other motives pointed out by Caufield (1996), Clichevsky (1990) and Hayter (1972) explain why resources flow to a determinate country and not to another. A large part of allocated resources have privileged the production sector and large infrastructure works necessary to its development.

Political Contexts and International Loans

Historically, as cited by Hayter (1972) and Caufield (1996), major political circumstances that favored interest in resources' application by international financing agencies are:

1. When the political context is unsatisfactory, resources are withheld or loans in progress are paralyzed. (Ex: the absence of any relationship with Cuba, the paralysis of the loans for Brazil during Goulart's government and for Argentina during Illia's government)
2. When international institutions agree with the orientation of a specific government, resources flow to make their policies viable, with minimal alterations (Ex: the strong relationship between the World Bank and General Castelo Branco, the first general dictator of Brazil after the 64 coup-d'etat).
3. International institutions use their resources and power to re-structure government policies (as happened in Chile, during the Frei's government first years).

The term aid in the development context is related to the concept of lever. Application of resources to pre-determined economic sectors can stimulate development and unleash positive reactions in other sectors. This assumes that in activating an economy and potentially becoming a development generator pole, other countries in similar situation will be stimulated to adopt the same measures. Privileging application in the productive sectors will create a driving force (propelling spring) for economic growth and, consequently, the living conditions of the population. This is the 'growing pie' theory, which conditioned Brazilian economic growth post 1964.

Since the 1970s, resources have been generally harnessed to projects in (so-called) 'national interest'. Thus, agencies allocated resources according to strategies and priorities designed by the country's policies, but applied their own conditions and criteria for the loans. Generally, these conditions were established in negotiation and approval stages of the loan, making the needs of the country conform to agencies' priorities.

These institutions have always dressed up in technical logic their aims and policies. They did studies and specialized analyses *in loco*, which would permit them to suggest decisions, indicate ways and propose policies to the government without the appearance of external political meddling³. Under the heading of *technical expertise*, agencies have published studies and documentation that follows their official position on macro-economic, sector and regional issues, such as housing, public health and transportation.

Nevertheless, it would be naive to believe that international institutions were not created to also hinder the spread of revolutionary ideologies and to foster, disseminate and consolidate market capitalism. International institutions have been an important tool in the Western and American Cold War strategy to detain the Soviet advance and to consolidate a strong development ethic based fundamentally on economic growth.

³ In a seminar for Brazilian economists, Mr. Irving Friedman declared that... "the WB and the IMF are based on specific aims and defined objectives. To operate properly, these institutions must make correct economic judgments within the international contexts, and this judgment must be based on objective and sound economic analyses. Since their origin, these institutions were not molded as political institutions. They were created as technical institutions; and so from their inception emphasis was put on scientific work to frame their decisions (as cited in Hayter, 1972). This posture, although it has changed in recent decades, still pervades the Bank's conceptual framework. This is shown by Berger's 1998 analysis of the impact of the Bank in the East Asian trajectory.

THE WORLD BANK AND DEVELOPMENT CONCEPTS

The World Bank was, and is one of the most prestigious and powerful producers of international development knowledge, and it has played an important role in shaping perceptions of developmental processes in Third World countries. In discussing briefly changes in the World Bank's understanding of development during the past four decades, it is possible to evaluate how crucial and unquestionable was its intellectual role in shaping the dominant liberal narrative of progress, and equally in fostering postwar-war liberalism.

Over time, the concept of development defended by the Bank has changed, reflecting wider trends in the international political economy. The Bank was contrived as part of the overall Bretton Woods system which emerged from the capitalist crisis, global war and reconstruction effort in the 1930s and 1940s. The Bank and the IMF were created by the victorious allied powers as instruments, which could be used to consolidate and manage the postwar international political economy. The Bank was charged with providing capital and expertise with which to start the postwar reconstruction. But it was also a way to link countries into a US-dominated economic order, in the face of emerging rivalry between US and the Soviet Union. Since its inception, the wider power relations of the Cold War have plagued the Bank. This period saw the establishment of a liberal consensus about the appropriate model of economic development and the best approach to the management of international economic relations. Keynesian- inspired liberalism shifted to the neoliberal order of the 70s (Ruggie, 1982).

Before the 1970s, the Bank viewed development within the framework of Keynes' doctrine and Cold War liberalism (liberal developmentalism or modernization theory). The overall strategy of

the U.S. for what came to be known as developing countries was based on the experience of anti-communism reconstruction in Europe in the late 1940s and 1950s. Effort for development should be supported by military and economic aid, and was reinforced by the launching of the Marshall Plan in 1948, which aimed to rebuild Western Europe. The seeming success of the anti-communism reconstruction in Europe, and later in Northern Asia, contributed to increased belief in the adequacy of liberal developmentalism in the 1960s.

While McNamara was president of the Bank (1968-81), it addressed the political view that poverty and revolution were linked and that the communist threat could be eliminated by the emulation of an 'economic modernization' approach, believed to be responsible for American and European successes. Bank programs promoted poverty alleviation as their major goal. This became the core of developmental discourse at that time (Horowitz, 1982).

This somewhat optimistic view of Cold War liberalism, the trickle-down approach, was reinforced by a document, the Morawetz Report (Morawetz, 1977), concluded that while on a global scale, economic growth since the 1950s had been rapid and dramatic, it continued to be very poorly distributed. Therefore, once ways to redistribute, or trickle-down, the wealth were established, the development problem would be solved.

According to Moura and Mello, when the Bank began financing sanitation and housing projects, the beginning of the 1970s, it represented a shift toward projects with a re-distributive aspect, and sought to demonstrate the feasibility of promoting social change without disrupting the existing social order. To existing macro-economic logic that related loans to the international flux of

financial and production capital, it added acknowledgement that the development model adopted by the industrialized periphery was provoking serious inter-sector imbalances and was excluding a significant portion of the population. Poverty thus became an obstruction to development.

In this sense, diagnosis of the reality in developing countries suggested a need to identify and establish action lines to attack some of the problems reflected spatially in urban areas. Labeled as poverty inductors they include uncontrolled urbanization, unequal distribution of services and equipment, lack of housing for the lower income strata, non-existent public transportation, etc.

Initially, the option was to invest in the basic needs of the urban population, privileging the "increase of social services and commodities' offered under entrepreneurship basis" (Moura and Mello). In other words, investments were directed to the expansion of services, mainly energy, water and sewer, but also transportation, telephone and housing. Investment in these areas brings noticeable improvement in the quality of urban life, extended also to lower income population. As well as beneficial to the population in general, it brought benefits to the production sector, since limited infrastructure in the cities "was a restrictive factor for increased productivity of private investments" (World Bank, 1991).

The directives of the Bank were transformed in documentation (policy papers) and other conditions were added to those with economic/technical character, in order for the loans to be approved. In the 1980s, it became important that the program to be funded would be

reproducible, that it would target a specific lower income population, whose access to the service would be certain, and that it would avoid environment devastation⁴.

However, it should be noted that this diversification towards the area of social consumerism did not represent a strong change of direction from the production areas, nor did it represent a great shift in the internal policy of the Bank. Loans directed towards the social sector used resources from the IBRD, without subsidies, instead of drawing on the International Aid Agency (IDA) long term, low interest and with an extended amortization period (Clichevsky, 1990).

After the second oil crisis (1979-80) the Bank became concerned about economic performance in most countries. Economic stability and the maintenance of growth were showing visible dependence on the international financial system's ability to recycle enough funds. The perception that the world economy had changed finally affected Bank policies. The Bank started to use structural adjustment loans to lock recipient governments into a specific politico-economic order, which mirrored the interests and assumptions of its major sponsors (Berger, 1998).

Faced with the increase of foreign debts in the 1980s, the World Bank turned to structural adjustment of debtor economies. It directed its action towards sectors that could have macro-economic development impact, and policies that would affect the structure of the State apparatus, for example, housing financial systems.

⁴ There was a preoccupation of the Bank with international repercussions of certain measures and with targeting resources to projects that would impact negatively on the environment. Caufield describes extensively the negative impacts of WB loans of large dams and irrigation projects in many developing countries that had a damaging effect on the Bank's public image.

The emergence of neoliberalism as the dominant discourse on development can be traced to changes in the overall character of the international political economy in the 1980s. It offered simple solutions to the economic problems of the developed world, dealing in a more comprehensive way with the aims and assumptions of a complex array of transnational forces. After all, they were the main beneficiaries of the emergent globalization and of *the neoliberal project* (Leys, 1996).

In 1981, the Bank's new president, Alden Clausen introduced a totally different approach to the concept of *development*. During his tenure (1981-86) the shift from poverty alleviation to structural adjustment policies was clearly established. As a former head of the Bank of America, the largest commercial bank in the world, Clausen was an advocate of a greatly reduced role for the state in the economy and much greater reliance on the market as a means of accelerating economic activity.

Despite being one among several views sponsored by the Bank at that time, structural adjustment was undoubtedly the predominant policy direction. It is interesting to note, however that for each research report advocating a neoliberal position, there would be another that took into consideration social and technological constraint. Nevertheless, as far as 1991, the neoliberal vision still pervaded the conceptual stance of the Bank's staff: the Bank's document "The Challenge of Development" still emphasized market-induced policies as the ideal path towards growth and income distribution (Caufield, 1996).

When Barber Conable assumed presidency in 1986, the Bank was reorganized for increased efficiency with a smaller staff, seemingly to help the organization's public image. The development vision continued to be influenced by rational choice theory (the new institutionalism and the new political economy), which represented a mechanistic approach to the dynamics of political and economic change in developing countries (Mosley, 1991).

The disintegration of state-socialism by the end of the 1980s was seen as an evidence that the capitalist model endorsed by most Western countries was superior, thus reinforcing the process of neoliberal consolidation (Keegan, 1993). This situation converged with the existing international consensus about development, since the post-cold war period stimulated policies that favored more inclusive planning and strong governments' role, as well as concern for sustainable development and the environment. In fact, in his inaugural discourse in 1991, World Bank president Lewis Preston expressed the new consensus based on the free-market and a balance between the private sector and governments, and emphasized sustained economic growth as the Bank's objective.

In the 1990s, the Bank's tendency to macro-scale interventions is accentuated, and urban agglomerations are seen as essential pieces of national productivity. The Bank's view of the relationship between macroeconomics and urban economics leaves out the notion of the spatial dimension of the economy. Many actions in macro-scale reverberate in urban life and vice-versa constraints to urban scale limit productivity and eventually have macro-scale impacts (World Bank, 1991). The action turns, then, towards larger projects that include institutional reforms and have reflected at municipal and national levels.

In terms of international influence, the USA continues to be the Bank's most powerful member. It chooses the Bank's head, has veto power over amendments to its Article of Agreement, and officials of the Treasury Department perform regular audits. However, USA power emanates principally from the Bank's dependence on world financial markets, where USA has a central position, and from the Bank's need to be in consonance with key financial actors aligned with USA foreign policy.

The vast majority of the Bank's staff share a strong Anglo-American liberal outlook and neoclassical thinking (Mosley, 1991). According to Berger and Benson (1998), the internal review process supports the current prevalence of neoclassical economy approaches within the upper echelons of the Bank. Policy documents follow a review and evaluation process within the organization, which is concerned with the maintenance of the overall neoclassical perspective. Staff makes decisions quickly, using facts selectively to sustain certain favored patterns and convictions. Also, "the conformist culture in which the Bank's prevailing editorial line is rigidly followed", impedes or restricts non-conformist approaches (Berger and Benson, 1998).

More recent statements by individuals, for example president James Wolfensohn's rhetoric that 'people come first', criticize the Bank for its alienation from those it is supposed to help, but it is difficult to regard these as signaling a sharp change of direction in the Bank's policies. As clearly noted by Berger, the Bank is an organization profoundly implicated in the technocratic and elitist vision of *development* that stems from the dominant international view of the global political economy environment and remains the dominant international approach (Berger, 1998).

INTERNATIONAL POLICIES FOR SECTOR DISTRIBUTION OF RESOURCES

The World Bank and the Inter-American Development Bank work within a sector-action oriented perspective. Their loans are aggregated in agriculture, industry and mining, export, transportation, communication, sanitation, urban development, and education. In the following table, the resources applied in each of these sectors were re-classified in two larger categories: sectors benefiting directly from loans; and sectors where the loans made social and collective consumption feasible (see Table 2.2). This clarifies an analytical division making visible the social distribution of the loans and the general goals of the institutions.

Resources allocated directly to the production sector (industry, agriculture, mining) and to basic infrastructure for production (mainly energy, transportation and communication) fall into the first category. In Latin America, they represent, on average, eighty percent of all resources allocated within the last two decades. Agriculture and energy received the highest percentage of these investments, followed by transportation, communication and, lastly, industry and mining. The IDB has a slightly high percentage of this type of loan (82,4 percent), but both the agencies have attached high priority to this sector.

In Brazil, there has been great transformation in these areas in the last decades. The biggest borrower was the public sector, bringing foreign money for large construction works, such as hydroelectric dams, transmission lines, satellites, etc. Since the 1950s, other strategic areas have been targeted for public investment, to create the necessary base for industry and regional development poles.

Table 2.2 — WB and IDB in Latin America — Loans between 1967-85 per Investing Sector
(million US\$)

Area	Type	Sector	WB		Total	%	IDB	%	Gen. Total	%	
			IDA	IBDR							
Production Sector	Production	Agriculture	1549.2	6914.3	8463.5	22.3	6697.4	21.3	15 160.9	21.8	
		Industry & Mining	178.5	5438.0	5616.5	14.8	5815.4	18.5	11 431.9	2.6	
		Export	32.5	1085.9	118.4	3.0	701.0	2.2	1 819.4	2.6	
	Subtotal				40.1			41.9			
	Energy	151.3	7287.6	7438.9	19.6	8526.5	27.1	15 965.4	23.0		
	Economic infrastruc.	Transp. & Comm.	192.9	6656.6	6849.5	18.1	4208.8	13.4	11 058.3	15.9	
		Subtotal				37.7			40.4		
										79.9	
Consumer Sector	Infrastruc.	Sanitation	307.2	2605.5	2912.7	7.7	2544.8	8.1	5 457.5	7.9	
		Urban Developm.	201.2	1314.9	1516.0	4.0	920.6	2.9	2 436.6	3.5	
		Education	410.2	857.3	1267.5	3.3	1477.0	4.7	2 744.5	4.0	
						15.0			15.7		
										15.3	
		Others	1634.7	1064.9	2699.6	7.1	614.0	1.9	3 313.6	4.8	
						7.1			1.9		
										4.8	
TOTAL			4657.6	33225.0	37882.6	100.0	31505.5	100.0	69 388.1	100.0	

Source : IDB - Financiamiento Externo de Los Paises de la America Latina- Depart. Desarrollo Economico y Social. Washington.

The transportation sector has received particular emphasis, first with the generation of a national road network, and secondly through encouragement of the automotive industry (the related production sector) strongly centered in multinational resources.

The agricultural sector, as it happens, diversified and remained a significant of export trade.. Through the federal government, a significant part of the resources obtained from the

International Institutions were transformed into rural lending and directed to large and medium producers (Fundap 1990).

A key instrument in Brazilian development and modernization, industry has grown substantially since the 1950s. Between 1950 and 1960, areas where foreign capital was a major player, such as transportation and electric materials increased the most, with annual production growing at 27 percent, a rate much superior to the national average of 11.9 percent (Singer, 1982).

As Table 2.2 shows, the second category absorbed 15 percent of international institutions' resources destined to Latin America (approximately US\$ 10.6 billion in a total of US\$ 69.4 billion). The funds were applied in sectors such as housing, urban development⁵, sanitation and education. The use of resources in these areas clearly implies an intention to foster basic conditions for labor reproduction, by intervening directly in living conditions. Sanitation, understood as expansion of water and sewage networks in urban areas, received the largest percentage of resources, with 8 percent of the total investments and 50,6 percent of the total applied in social areas.

A chronological analysis of percentage of loans to social areas in relation to the total, (Tables 2.3 and 2.4), shows a strong yearly variation between 11 and 25 percent of the total investment.

Table 2.3 — IDB — Latin America — Annual Resources destined to Social Sector in relation to Financed Resources (in million US\$)

⁵ Urban development is understood here as including the projects for institutional modernization, urban planning, housing and public transportation.

Year	Total Fin.Res.	Social Area				
	(1)	Urban Development (2)	Sanitation/ Education (3)	Total Soc.A. (4)	% (4/1)	% (2/4)
1967	469,5	13,8	80,9	94,7	19,1	14,6
1968	430,9	26,0	36,2	62,2	14,4	41,8
1969	631,5	11,3	63,5	74,8	11,8	15,1
1970	644,8	47,4	39,3	86,7	13,4	54,7
1971	651,8	7,5	119,5	127,0	19,5	5,9
1972	806,7	44,0	89,9	133,9	16,6	32,9
1973	884,0	14,3	138,2	152,5	17,3	9,4
1974	110,7	-	129,3	129,3	11,6	0,0
1975	1375,0	38,2	179,1	217,3	15,8	17,6
1976	1527,8	41,5	203,8	245,3	16,1	16,9
1977	1808,9	43,1	306,0	349,1	19,3	12,3
1978	1870,2	-	241,1	241,1	12,9	0,0
1979	2015,0	1,5	248,0	249,5	12,2	0,6
1980	2308,9	40,0	310,3	350,3	15,2	11,4
1981	2493,0	11,0	273,0	284,0	11,4	3,9
1982	2744,3	190,3	505,8	696,1	25,4	27,3
1983	3045,0	39,2	460,1	499,3	16,4	7,9
1984	3566,6	297,3	290,0	587,3	16,5	50,6
1985	3061,2	54,2	307,8	362,0	11,8	15,0
TOTAL	31508,8	920,6	4021,8	4942,4	15,7	18,6

Source: Ibid.

Table 2.4 — WB (IBRD AID) — Latin America — Annual Resources destined to Social Areas in relation to total financing (in million US\$)

Year	Total	Social Area				
		Urban Development	Sanitation/ Education	Total	% (4/1)	% (2/4)
	(1)	(2)	(3)	(4)		
1967	616.4	3.5	28.7	32.2	5.2	10.9
1968	1016.1	3.0	158.1	161.1	15.9	1.9
1969	515.6	-	32.9	32.9	6.4	0.0
1970	888.2	-	140.4	140.4	15.8	0.0
1971	982.2	39.1	164.8	203.9	20.8	19.9
1972	1184.2	78.0	48.1	126.1	10.6	61.9
1973	1071.7	15.0	216.0	231.0	21.6	6.5
1974	917.8	56.5	124.6	181.1	19.7	31.2
1975	1541.7	10.0	139.2	149.2	9.7	6.7
1976	1940.9	56.1	165.8	221.9	11.4	25.3
1977	1348.9	23.7	129.8	153.5	11.4	15.4
1978	2442.2	70.5	189.7	260.2	10.7	27.1
1979	2634.2	207.5	211.9	419.4	15.9	49.5
1980	3321.0	35.0	563.0	589.0	18.0	5.9
1981	3472.7	164.0	334.7	498.7	14.4	32.9
1982	3170.9	216.0	224.0	440.0	13.9	49.1
1983	4049.1	117.9	483.1	601.0	14.8	19.6
1984	2566.3	162.5	212.6	375.1	14.6	43.3
1985	4202.3	281.4	612.8	894.2	21.3	31.5
TOTAL	37882.4	1539.7	4180.2	5719.9	15.1	26.9

Source: Ibid.

**Table 2.5 — WB — IBRD, Brazil Resources destined to Social Sector in relation to total financing
(in million US\$)**

Year	Total (1)	Social Area (2)	% (2/1)	Area/Agency Distribution (in US\$ million)
1971	160,4	45,4	28,3	Education 8,4; water 22,0; sanitation SP 15,0
1972	437,0	-	0,0	
1973	187,7	-	0,0	
1974	242,0	36,0	14,9	BNH -Water MG 36,0
1975	426,5	23,5	5,5	Education 23,5
1976	498,0	19,0	3,8	Nutrition 19,0
1977	425,0	72,0	16,9	Education (profess.train.) 32,0; water/sewage COPASA MG 40,0
1978	705,0	198,0	28,1	Urban trans. EBTU 88,0; BNH/SABESP Sewage collection and treatment 110,0
1979	674,0	263,0	39,0	Urban development medium cities 70,0; BNH urbanized plots/low cost housing 93,0; BNH Water/Sewage NE 100,0
1980	695,0	301,0	43,3	Basic Education NE 32,0; BNH Water/Sewage 130,0; BNH MG 139,0
1981	844,0	270,0	32,0	EBTU 90,0; BNH Sanitation 180,0
1982	722,1	136,9	19,0	Urban Development Recife 123,9; nutrition 13,0
1983	1457,5	311,2	21,4	Metropolitan development Fortaleza/Salvador 8,9; BNH Water/ Sewage 302,3
1984	1604,3	169,7	10,6	Urban development PR 52,7; Health/nutrition 57,9; Education/technical training 20,0; Basic education 40,0
1985	1506,7	88,3	5,9	Education 72,0; water supply rural areas 16,3
1986	1620,0	239,0	14,8	Flooding NE 100,0; Metropolitan development Salvador 55,0; Development small cities SC 24,5; nutrition 59,5
1987	1261,5	274,5	21,8	Urban transportation 200,0; education 74,5
1988	1359,5	255,0	18,8	Flooding RJ 175,0; Water/Sewage small cities and low income areas CEF 80,0
1989	707,0	474,0	67,0	CONGAS 94,0; Municipal Development PR 100,0; SABESP Water 280,0
TOTAL	15533,2	3176,5	21,4	

Source: WB Annual Reports

Table 2.6 — IDB, Brazil — Loans (in million US\$)

Year	Total (1)	Social Area (2)	% (2/1)	Area/Agency distribution (in million US\$)
1971	148,9	30,0	20,1	Water/Sewage BNH 30,0
1972	2133,2	10,0	4,7	Clean Water RJ 10,0
1973	274,1	48,0	17,5	FINEP Science & Technology 32,0; Technical education 16,0
1974	187,0	-	0,0	
1975	269,5	50,0	18,6	Federal Universities Development 50,0
1976	239,1	-	0,0	
1977	361,5	-	0,0	
1978	283,2	-	0,0	
1979	365,5	-	0,0	
1980	424,4	-	0,0	
1981	383,1	-	0,0	
1982	372,2	155,0	35,1	Federal Universities Development 95,0; Urban Development MG 60,0
1983	441,0	149,0	34,7	Clean Water Salvador BA 149,0
1984	393,7	-	0,0	
1985	395,3	-	0,0	
1986	428,8	240,6	56,1	Flooding SP-PMSP 77,6; Sewage network SP-SABESP 163,0
1987	369,9	163,2	44,1	Water/Sewage Brasilia 100,0; USP Development 63,2
1988	7,1	-	0,0	
1989	525,1	-	0,0	
TOTAL	6082,6	845,8	13,9	

Source: IDB Annual Reports

In the Brazilian case in particular, it is possible to verify that this variation is more significant. It oscillates between no investment in the social sector, as happened in various years with the IDB, to 67 percent of the total of applications in the country, a record reached by the World Bank in 1989, due to a high loan for the sanitation services for SP State (Tables 2.5 and 2.6). This apparent lack of clear logic in the annual allocation of resources can be seen as reinforcement towards investing in prioritized sectors associated with production, instead of a clear agenda where social areas are perceived as the backbone of development.

In relation to the resources distribution between the social sectors, table 2.7 shows that IDB resources are destined to 4 areas: sanitation (53,4 percent); education (30,3 percent); flooding relief (9,2 percent) and urban development (7,1 percent). The World Bank has a slightly more varied range of projects in its lending portfolio: sanitation (45,7 percent); urban development (16,6 percent), urban transportation (11,9 percent) education (9,5 percent) flooding relief and gas network (11,9 percent). The social sector priority for sanitation is clearly linked to international institutions concept of a high rate of return on investment, in terms of population benefited. From this perspective, sanitation is a more productive investment than, for example, social housing, an equally important factor in shaping the urban fabric.

It is important to emphasize that the great '*informant*' of international institutions has been the state, in its central, regional and local instances or through its public corporations, because they are *a priori*, those that assume responsibility for the loans engaged. The state has played a key role in heavy infrastructure investments, in order to secure foreign private capital for ports, telecommunication, energy, transportation, etc. as well as in the establishment of base industry

and in the direct incentive towards commodities production in countries with late capitalism. With this strategy, the state aims to create conditions to encourage the production of capital, foster collective consumption and guarantee the circulation of information and commodities. Investment in these sectors molded more or less directly the relationship between capital and labor.

Table 2.7 — WB and IDB — Brasil — Resources in Social Area per sector

Sector	WB - BIRD	% of Total	IDB	% of Total
Sanitation	1450,6	45,7	452,0	53,4
Education	302,4	9,5	256,2	30,3
Nutrition	148,5	4,7	-	0,0
Urban Transportation	378,0	11,9	-	0,0
Urban Development	528,0	16,6	60,0	7,1
Others*	369,0	11,6	77,6	9,2
TOTAL	3176,5	100,0	845,8	100,0

*Others: Flooding, Gas supply

Source: WB and IDB Annual Reports (from 6 and 7 tables)

Investments in sanitation, transportation, education and health as well social housing, directly affect the living conditions of the population and are more visible and because they are applied within the urban area.

Due to the size of these tasks and often-favorable foreign lending conditions, international funding became a means by which governments were able to execute an ambitious public works agenda. In other words, resources have flowed when national priorities coincided with the agenda of the institutions. Obviously, national priorities were sometimes adjusted to meet the

International Institutions' policies, with the sole objective of obtaining resources, always very scarce in developing countries.

According to Moura and Melo (no date) in their study of the decision-making process between the World Bank and Brazil, the Bank's staff originated the pioneering projects in each sector. International institutions establish, then, a series of rules and goals in terms of concept and operation mode for obtaining resources. In spite of existing specific reports for each country, intervention proposals become very similar, due to the Bank's rigidity and insistence on adoption of certain policies (Hayter, 1972; Caufield, 1996), based on a common diagnosis of economic and living conditions in Third World countries. Escobar (1995) also emphasizes the lack of a local perspective in international institutions' approach.

Therefore, loan applications are presented according to the Bank's priorities, perfectly fitted for its loans programs. In this way, international institutions exercise a homogenizing role in the public policies of Latin American countries, even if their economic, cultural and political diversity would presuppose answers with a larger degree of variance.

In some instances, pre-conditions imposed by the agencies can be incompatible with a country's internal conjuncture of interests. This would explain, partly, the inconsistency of resources application over the years. It is noticeable however that sector allocation of loans in Brazil diverges from sector allocation elsewhere, suggesting that Brazil's internal priorities, for example in the national plans for development, were maintained (Abreu and Fristch in Moura and Melo, 1990).

Analysis of the annual reports of these institutions demonstrates that demands are differently attended, even within the same pre-defined line of financing. Smaller projects, such as social housing, appear with high frequency in countries with less advanced capitalism. In other words, the level of institutional and economic development of a country interferes with the demand for resources, because the existence of a certain degree of internal wealth is sufficient for funding projects of smaller span and of social vocation. This principle can be seen in the case of the Guarapiranga Recovery Project, because the social housing funding was a responsibility of the Brazilian side of the agreement, leaving to the Bank the less complicated and less politically charged side of the Program.

The World Bank, as well as the IDB, have always given central importance to lending for infrastructure, and within this classification, for works to improve sanitation (see Table 2.2). It is not surprising, therefore, that the BNH - Banco Nacional de Habitação (National Housing Bank), has emphasized sanitation in its investments with internal capital, diverting approximately 30 percent of its total resources away from its main mandate of building social housing (Maricato, 1987).

According to its 1980 Activities Report, between 1966 and 1980 the BNH obtained US\$ 890 million in the international market to supplement internal savings. This amount was equivalent to 15.3 percent of the total investment for water supply and drainage systems. Moura and Melo (1990) point out a definitive influence by international institutions in policy decisions by some sector agencies which they helped to organize, for example the Sanitation Division of BNH. From this point of view, the influence of international institutions in deciding the use of internal

resources, and ultimately shaping the built environment, was more important than the loans received from them.

The investments preferred by international institutions are in the production sectors, especially those with more guaranteed return. In addition, it is necessary to expand the material base of developing countries through modernization (for internal accumulation of capital) or through participating in a larger expansion program of global capitalism. The social sector has been a low priority in the investment agenda of international institutions, apart from the sanitation sector. Because of the priority given to sanitation works within the urban environment, international loans have had some positive impact on quality of life of the low-income population.

In view of these facts, project financing by international institutions has made them important agents of intervention in the urban scenario of developing countries. Along with resources, they contributed rules and conditions that influenced and interfered in projects.

INTERNATIONAL INSTITUTIONS INTERVENTION IN THE URBAN AND SOCIAL HOUSING QUESTION

The performance of international funding agencies has specific characteristics in terms of their allocation priorities. The diagnosis, recommendations, policy actions and the state's role have been modified over the years. These modifications of the past 30 years indicate that there were some changes of directions in the form of intervention on development issues and on social reality in developing countries.

IDB, USAID, UN and the WB are the main international institutions, which have been important in Latin America. They benefited from the accumulated experience of the Eximbank (Importation and Exportation Bank of Washington) and the IBRD that has been granting loans in Latin America since the beginning of the 50s. Within Latin America, there was a demand for external resources supported by the belief of possible nationally based development through industrialization, which would create the internal conditions for economic growth⁶. The participation of international capital was included, in the form of loans or in the form of investment from foreign companies. It was seen as necessary to appeal to 'external savings' through private investments, but "... (for the national officials) was very clear that lending was indispensable for eliminating strangling points in basic sectors, such as transportation and energy, without which opportunities for private interventions would suffer grave constriction" (Report from the Commission Brazil - US in Mantega, 1984).

The CINVA (Centro Interamericano de Vivienda - Inter-American Center for Housing) and the UN brought to discussion Latin American governments' agendas to address problems emerging from accelerated process of transformation in urban agglomerations.

The 1956 UN mission noticed that Latin America was going through a period of rapid change and transformation with no equilibrium between the potential of rural and urban development.

⁶ During the decade between 1940 and 1950, the analyses of the underdevelopment problem championed by CEPAL became widely accepted among Latin American countries. According to these, it was necessary to reorient the basic axis of the economy, till then turned towards 'outside', to a development model turn 'inside,' that is, based on industrialization for the internal market (Mantega, 1984).

Growing migrations kept in check the absence of policies concerning the supply of urban services and housing for lower income groups (Acevedo, 1956)

When social policies were present, they functioned under patronage criteria ('regalos y favores,' Acevedo, 1956). Also they could be attending to needy sectors as well as be associated with pension institutes, banks, etc. The mission verified that a significant volume of national resources, 25 percent on average, was being directed to construction works (sometimes monumental public buildings) with no consideration of the emerging problems of the cities.

The Carta de Punta Del Este (1959), signed by all Latin American countries except Cuba, presented a complete and articulated shopping-list of Latin American problems and objectives, and recommended ways to transform the existing underdevelopment situation through modernization strategy. The document listed economic aims: how to reduce dependence on importation of commodities, how to avoid inflation and deflation, how to reach a substantial growth in annual income for inhabitants. It defined also the type and quality of development desired, emphasizing democratic societies, well being, and opportunities for everybody. Finally, it defined objectives and aims for development in terms of education, housing, health, nutrition and environmental sanitation (Sabato, 1981).

Sabato emphasizes the central role of the USA in the formation and action of these agencies. he suggests there was already a comprehension that development was not only an economic problem, but had another political connotation, associated with the management of dissatisfaction generated by poverty. National and continental security questions were extremely

important, in view of the advance towards the communism represented by the Cuban revolution. Action in this direction was, evidently, preliminary to actions on social and economic areas (Sabato, 1981). But, as disparities were more significant within the social sphere where tension could lead to political questioning, it was there that these institutions started to concentrate their intervention.

Melo (1987), discussing the political arena and actions shaping the urban environment, points out that, as early as the beginning of the 1960s, Rio de Janeiro Governor Carlos Lacerda, (1960-64) had adopted a political strategy of mobilizing public investments towards urban consumer commodities, in particular housing. To implement his political goals he asked for support (economic and conceptual) from international institutions (USAID and IDB). Very attuned with the military, Lacerda was the leader of the civil opposition to the Goulart left-oriented government. His action in Rio de Janeiro, supported by foreign resources, was the first large program to promote *desfavelamento*, the transfer of slums to social housing in the periphery of the city, with the objective of neutralizing a potential source of social tension.

It is important to call attention to the dual action of financing agencies. Priority is given to investment in the production sector, principally agriculture and energy (in accordance with the 'interests' of development of Latin American countries). Since the beginning, there has also been clear political preoccupation with projects with wide social repercussion. The state establishes certain sectors as sole 'delegates' for the loans conceded, using the external resources for large

civil works, or transforming them into credit for the production sector.⁷ This practice persists to this day, with the political gain always wrapped in social aims.

Later, however, because projects in the social sector, mainly housing and urban development, did not represent even a partial solution for the social inequality that was being consolidated in the rapid growth Latin American cities, they became strategically less interesting to finance. Since the end of the 1960s, resources have dwindled incrementally, until by 1978 there were no loan resources whatsoever for social housing or related projects (Donelson, 1979; Hardoy, 1981; Burgess, 1982).

Funding was available for urban infrastructure (water and sanitation) and transportation. The social impact of these was broader, benefited more people within cities, and had a quicker financial return because there was just one borrower, the public power. There was even direct funding for institutional re-structuring of public entities, in order to direct their investments to urban areas, thus linking social and production investments.⁸

⁷ Mantega describes the present internal re-structuring led by the Brazilian State..."after a long period of improvisation and casually oriented politics, it begins to reunite the efforts of the State apparatus towards the facilitation, in all senses, of the industrial expansion. In this sense, the BNDE appears as the principal financial agency for investment in the country, destined to make projects aiming to industrial development viable through credits, guaranty for external funding and other privileges".

⁸ An example of this orientation is the funding of water and sewer systems for Brasilia (1987) with large civil works and urban networks. An extensive system for water catchment and expansion of the pumping station, improved and expanded the existing water network, linking five cities. As complementary works, water pipes were planned for the suburbs of Ceilandia, Taguatinga, Aguas Claras and Samabaia, and the connection of 43,000 households.

It became clear that the agenda of international agencies during the 1960s and 1970s was motivated much more by strategic political interests than by any structured program to benefit urban areas or the social sector.

In spite of warning signs presented by increasing social problems that threatened political stability, and the need to create strategies to overcome these problems, the actions did not expand from acting on isolated problems. Underdevelopment conditions were expected to be overcome by government efforts, planned action and foreign aid.

From the 70s, with the inclusion of financing for social projects, the World Bank, without abandoning its previous position, began also to support confined interventions, putting resources into experimental projects coherent with its objectives. In general, these were low investment projects, aimed to housing, sanitation, water distribution and urban transportation. There were intended to generate a "demonstration effect," an example to be followed by local public policies in similar countries, in order to reduce costs and public sector deficit (World Bank, 1991).

Subsequently, it was verified that these experiences (even in larger scale intervention and cost-recovery intervention) neither generate transformations within the institutional apparatus nor changed the logic of the public social policies (Caulfield, 1996). The evaluation of these experiments showed that they were too circumscribed, and did not mobilize the private sector. At the same time, with the rigid and regulatory character of the state, they were not able to incorporate any community initiatives.

So, from the final years of the 1970s, the Bank directed its policy towards projects with larger scope and supra-local impact, which could link the urban milieu to the national setting (such as institutional reforms and creation of credit systems).

The Bank's vision of the state's role was also changing. Since its inception the Bank had been preoccupied with directing the public sector via the state, through public policy.

In the first period, the State was responsible for creating the basis for industrialization; this role led it to assume investments and control of sectors of the larger infrastructure systems as well as production sectors. External resources for those did not abate.

In the 70s, emphasis was placed on the state's responsibility for worsening conditions faced by the urban population due to the development model adopted. It became important that the state acquire the capacity to intervene through public policies. The "philosophy" underlying policy became important, and the principal relationship between the Bank and the state tended towards delineating a policy's "design". At no time did the role left to the state reflect tendencies towards statism. On the contrary, its principal role in the battle against poverty was to generate mechanisms for private production to reach the lower income population, assuming implementation of collective services needed to maintain a certain minimum standard for survival needs. In the 1980s, with the economic crisis aggravated, the concept of rationalization of government performance became essential. The state was invited to review its attitude to the economy and public policy, leaving more space for private initiative.

From analysis of the performance of international institutions, in particular the World Bank, over the years, it is possible to detect two main tendencies. On the one hand, investment sought to start economic development, by directing most of the resources towards the production sectors in industry and agriculture. The choice relapsed always in sectors able to influence economic development, "increasing the national productivity, making the labour more productive and catalyzing the under-used financial and material resources" (Nientied, 1985). Investments in larger civil works fall into this category, as well as energy projects (hydroelectric power stations) and road transportation works. These are aimed at development that will stimulate several market forces. The state has an important role in financing, mediating and making feasible, but not, at any time, substituting the private initiative and free market competition. In this sense, there has been a broad preoccupation with incorporating sectors of the so-called informal market as a means to expansion and diversification. In the case of housing policies, this aspect halts, with some of the proposals going for the incorporating, in the formal market, production practices not totally capitalist, such as auto-construction (self-built).

The other axis of investment is towards rationalizing public sector actions. The public sector has been always seen internationally as an inflated and inefficient machine, swinging towards statism or giving too much to private interests and leaving out strategic sectors. This preoccupation, present in the 1970s, becomes the central point by the 1980s. On one hand, rationalization in some sectors is an objective; many of the loans related to urban development are directed towards restructuring the institutional apparatus. On the other hand, public spending restraint is enforced through mechanisms of macro-adjustment according to IMF directions, in the

elaboration of public policies to restrict the state's action concerning access and production of commodities and services.

To achieve this, international institutions, consistent with the neo-liberal agenda of the 1980s, propose that the state's action be reviewed, that some of its activities be transferred to private initiative. The state is given the role of facilitator of private action rather than producer of commodities and services. In relation to urban policies, the state approach to housing policy, for example, proposes that funds should be given to housing production, collecting resources from private initiative through savings and creating financing systems for commercial production of homes.

When it is not possible to exclude the state, public policy it is thought, should re-direct the state's attention towards minimum levels of social services ("poor policies"), lowering costs and standards. Included in "poor policies" for housing are the urbanized allotments and alternative projects of common sewage networks, and lately, upgrading of existing slums and squatter settlements. Since the end of the 80s, the World Bank has re-directed its intervention towards more general development strategies for urban areas, which has generated a strong impact upon developing cities.

Transformation of the urban fabric through investment by international institutions is visible:

- Re-structuring of existing space, through sewage, water, road, and transportation networks; the canalization of streams, and the construction of new public and private buildings.

- Integration into the "legal" city of spaces previously isolated from controlling land use and zoning legislation, through urbanization of favelas and de-regulation and revision of urban codes and laws.
- Incorporation of new areas into the urban fabric through expansion projects, as urbanized allotments and services networks extend into periphery areas.
- Increased offers of housing and low-cost service units, through implementation of financing systems, construction of housing units and collective equipment.

Objectively, project financing has made international institutions major agents in the urban scenario of developing cities. They have provided not only the financial basis of the physical transformation of the cities, but they have also been a huge influence on the rules that defined these transformations.

With the development of larger cities into megacities, the size of urban recovery programs has increased enormously, making the institutions a partner with whom developing cities will be dealing well into the next century.

Whether this will be efficient and satisfactory remains to be seen. It should be remembered that the World Bank was created with a built-in contempt for local knowledge, and this has been a lingering tradition. Eugene Black, one of the most influential Bank directors (1949-1962) warned that most people in developing countries would not want to

'...abandon old habits and attitudes, and work in favor of new ones ..The apostles of a new life... are the minority, typically those whose close contact with Western education, political thought and living

standards has led them to want greater opportunities to practice their knowledge, greater outlets for their ambition, and a better material lot for their countrymen" (Black 1963,).

J.M. Keynes, the Bank founder, said about the common man: "It is most dangerous that the people should, under normal conditions, be in a position to put into effect their transient will and their uncertain judgment on every question of policy that occurs"...(as cited in Adams, P., 1991, *Odious Debt*). While this approach might have been generally circumvented in most of his works, it became extremely dangerous when the "common men" were coming from the developing world. The Bank's agenda and rhetoric is clearly disdainful of inputs originating from recipient countries.

The Bank's mission since its creation was to promote in borrower nations development defined as an increase in GNP (Mason, 1973). This is not to deny, though, that improvements in low-income neighborhoods were achieved due to sanitation works promoted with Bank's loans. But it is not also surprising Caufield comments:

"The past half-century of development has not profited the poorest people, nor the poorest countries. Rather they have paid dearly - and their descendants will continue to pay dearly - for the disproportionately small benefits they have received. Development in the monopolistic, formulaic, foreign-dominated arrogant and failed form that we have known is largely a matter of poor people in rich countries giving money to rich people in poor countries" (Caufield, 1996)

The evolution of the Bank's lending policy and approach to projects suggests that its preference has been, for much of the last decades, to fund large infrastructure projects, within the continuous pursuit of development anchored in industrialization. The Bank has believed, for a long time, that

modern infrastructure represents the most reliable and solid foundation for all economic development.

There are, however, a number of indications of innovation within the Bank. There are new policy guidelines, and more socially oriented staff have been incorporated (Kardam, 1994). Cernea (1990) and other Bank social scientists have stated that even though the social difficulties encountered in many Bank's projects have not totally disappeared, strategies have improved and more resources are being channeled towards solutions of critical and complex social issues, in broader Bank policies and Programs.

Certainly, the Bank's policy has changed through the years. The question to be posed is whether these changes signify a new understanding of development processes within developing countries' perspectives, or are simply adaptations to the new global order.

CHAPTER 3

SÃO PAULO METROPOLIS

"One can never confound a city with the discourse that describes it."
(Marco Polo, talking about cities to Ching Emperor in Italo Calvino Invisible Cities)

INTRODUCTION

This chapter addresses relevant historic aspects of the formation of São Paulo. Political and social historical roots are considered as context to the formation and growth of Greater São Paulo. São Paulo is positioned in the context of changes in the international and national economic scenario, in its role as the principal Brazilian metropolis and main industrial pole. São Paulo's evolution has been tied into Brazilian development, and constitutes the necessary background to answer the question of how Brazil's place in the globalized economy, with São Paulo as its industrial engine, affected this city's metropolitanization process.

Background information is to show the significant price extracted from residents' quality of life in order to sustain São Paulo's position in the world economy. The economic growth model adopted has accentuated social inequity and unleashed implications beyond the built environment.

The increased skewed wealth distribution and the reinforcement of the growing social inequality in terms of race and gender are also results of the SPMA transformation and contribute to environment degradation. The price paid by society as a whole has been significant, especially in terms of social safety and increasing degradation of the urban environment. However, the

negative impact of industrialization of the SPMA and the economic development mentality sponsored for the Brazilian military (and dominant elite) has been borne mostly by the urban poor. They are the ones squatting, living surrounded by pollution and having dismal labour prospects.

The WB has been a key player in the SPMA. The Bank gives its blessing and full support to a group of policy-makers entrusted with translating policies into strategies tuned to the organization's rhetoric. These strategies largely overlook the relation between opportunity and need, and seldom consider communities' voices. Many of the policies advocated by the WB and the IMF (particularly since the early eighties) have been directed towards attaining greater internationalization of the economy. In Brazil, the economic and institutional reforms have focused mostly on deregulating specific sectors, in order to increase cross-border transactions and direct foreign investment in manufacturing or financial operations.

The SPMA, as the main Brazilian economic center, has reacted in two ways to broader inclusion in international trade and business patterns. It has developed advanced services and financial activities (the largest Stock Market and Commodities Exchange in Latin America) and sophisticated shopping and leisure places (Schiffer, 1998). Unfortunately, a concurrent set of negative side effects has arisen: urban violence, marginality, and increasing number of homeless, along with alarming level of environmental degradation.

The major urban impact of the SPMA transformation has been greater gentrification, with areas devoted to international-capital-associated activities receiving more investment, either private (as

in up-scale condos and buildings in line with international standards) or public (as in advanced services provision and infrastructure networks, especially tunnels and new roads). These changes privilege a small sector of the population, and have many times depended on international financing. The investments have largely ignored areas where most of the population is concentrated, either in the periphery or in low-income and decaying neighborhoods.

The main challenge to the SPMA is to sustain its centrality to the Brazilian economy while attaining a more equitable quality of life between the elite and the poor. Instead of concentrating investment only in global-market-oriented activities that benefit a small proportion of the population (the formal city), priority should be given to the whole quality of the urban environment, and to meeting the needs of low-income population (informal city). Thus, major re-orientations of urban development projects is necessary, in order to address a very visible, but still mostly ignored, urban social inequality.

BRAZIL: URBAN AND ECONOMIC DEVELOPMENT

In spite of having a city network incomparably more complex than the ones to be found in other Latin American countries, Brazil's population is concentrated in the Southeast region. São Paulo, especially, has grown dramatically in the 20th century. Processes that shaped Brazilian political power relationships and defined its economic path also determined this particular urban configuration.

Brazil's economic direction after the WW II became totally polarized. The nation began to open its economy to foreign investment as its old inward-oriented growth model became exhausted. Imports continued to rise, but the export sector was not able to develop sufficiently to pay for them. The idea of independent national development through locally owned industrialization gradually faded from the ruling elite's aspiration (Da Motta, 1992).

Developmentalism replaced Nationalism and agreements were made with foreign capital to develop the car industry, chemical plants, heavy and light engineering and other sectors). The *growth at any cost* philosophy pushed the economy to unprecedented levels. However, a new 'army' was being formed: an increasing mass of un- and under-employed people were not at all, or only partially integrated as productive labour into the 'modern' sector (Gelber, 1992)

The flow of people into the city, seeking work and income was also a result of the modernization of agriculture. The declared goal of increasing food production by modernization and the destruction of small subsistence farming, wiped out the traditional modest basis of survival for large sections of the rural population, provoking a huge migration of the landless to already overcrowded poor urban areas (Sorj, 1980; Graziano da Silva, 1978).

After the WW II, the Brazilian economy grew more than 6 percent annually, twice as fast as the population. The growth process that has taken place has completely changed the urban, occupational and economic structure of the country. It was in this scenario that São Paulo became the industrial fulcrum of the developmental economic model.

Brazil's Gross National Product (GNP), estimated at US\$ 651 billion in 1997 (Schiffer, 1998), is the largest in Latin America. However, due to the country's political, social and economic patterns, this wealth is distributed unevenly among economic sectors, regions, urban and rural areas and, quite clearly, among households. In 1983, the wealthier 20 percent of households retained 62.6 percent of the GNP, while the poorest 20 percent shared 2.4 percent (World Bank, 1991).

In recent decades, the model of development growth adopted by the federal government, international recession, external and internal inflation, strong dependence on petrol and especially the growing foreign debt have increased the gap between rich and poor, hitting the urban dweller most severely.

SÃO PAULO: GROWTH AND GLOBALIZATION

São Paulo is the main Brazilian economic center. Its transformation into a world city has signified a broader inclusion in the international trade and business patterns, with highly advanced financial and services activities. However, changes in the world economic order have been affecting increasingly the social, economic, and industrial environment of the region, altering labor relations and sustainable economic growth perspectives.

In recent years an ever-increasing share of Western investment has been flowing away from Brazil, and into other Third World countries. The accompanying industrial relocation has caused a reduction in real wages and limited improvement of living standards, especially for the low-

income strata. Combined with accelerated urbanization due to in-migration, reduced industrial job creation has been responsible for limiting expectations of widespread income improvement and increasing environment degradation.

Large cities in developing countries are being reshaped as potential world cities, as national economies open up to virtually unmediated global market forces, and external interactions become much more important. According to Friedmann (1986), the world city concept expresses spatial organization of the new international division of labour. As such, it concerns the contradictory relations between production in the era of global management, and the political determination of territorial interests. The form of large cities is no longer seen as a fixed location for the production of goods and services, as it was in the past, but rather as a set of junctions in flows, an inter-modal transfer and control point in the movement of people, goods, finance and information.

The sources and destinations of the flows are frequently beyond the authority and even the knowledge of governments. They are also subject to unpredictable fluctuations, so that city management needs to be both completely reliable and flexible (Harris, 1994). Instead of manufactured goods, the postindustrial metropolis/world city makes and deals in financial products for a global marketplace. The greatest cities of the modern world can be seen from outside as nodes in the global marketplace, and from within as urban communities and labor markets (Sassen, 1991).

The emergence of a fully integrated world manufacturing system implies that an increasing proportion of the world's output will be consumed far from where it was produced. This will continue possibly to accelerate the post-1950 trend for international trade to expand faster than production. The final output increasingly becomes no more than the assembly of inputs made in many countries. Slower world growth rates and recessions have not reduced this trend, nor the increasing dependence of developed countries upon supplies for manufactured goods from the developing countries (Friedmann, 1986).

In her discussion of social and economic impacts of globalization, Sassen states that the newly emergent financial services complexes are destabilizing their host cities domestically oriented sectors, pushing firms in low profit sectors into the netherworld of the informal sector, and accentuating social polarization of rich and poor (Sassen, 1994). A restructuring of urban labor market is taking place. There is a general shift towards casual and low wage work or no work at all. She stresses that world city status is leading to the bipolarization of the labor market that ensues from an economy based on advanced services. The burgeoning informal economy in global cities arises not only the consequence of an influx of migrants, but also from the character of production and demand within the service-based urban economy, outlining the potential sources of instability in present arrangements. Political economists still tend to stress economic health, and location choices of manufacturing as the underlying causes of local prosperity, a belief that cannot be sustained.

Locality

The São Paulo Metropolitan Area (SPMA) is one of the world's largest urban agglomerations, and it is the most urbanized, industrialized and affluent city in Brazil. It consists of 39 municipalities (see Figure 3.1), with São Paulo City (SPC) being the largest. The region registered an average annual growth rate nearly 5 per cent from the 1960s until the 1980s (Martine, 1992). In the last two decades, growth has slowed to 1.5 percent in the city of São Paulo and to 3.5 percent in the periphery (Leitmann, 1992). This is the result of a convergence of factors such as the economic crisis provoked by the OPEC oil rises, the nation's foreign debt, the development of other national economic poles, and increased land prices in the main industrial centres.

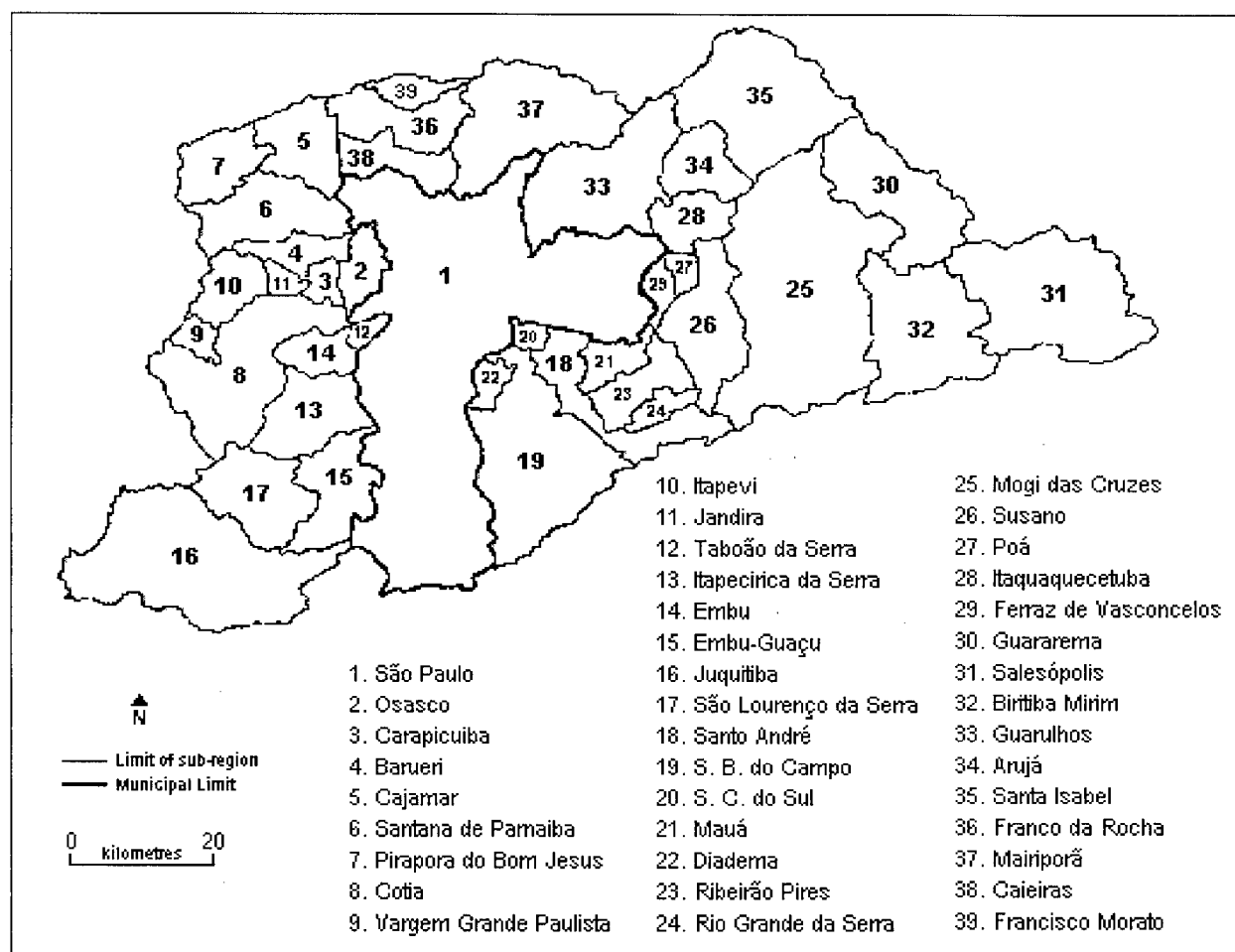


Figure 3.1 — Metropolitan region of São Paulo: administrative divisions

Source: EMPLASA, 1997

The SPMA population is projected to reach 24 million by the year 2000. This will make it the second largest city in the world (Leitmann, 1992). In 1982 the SPMA's per capita income was approximately US\$ 4,000, one of the highest among Third World metropolitan areas. However, at the same time, nearly 30 percent of its labour force was earning salaries of less than US\$ 2,000 a year, living in extremely poor conditions, and lacking the most basic urban infrastructure (Edel, 1989). This picture has not improved very much in the last decade, and the eventual diminishing

influx of migrants has not been accompanied by improvement of urban conditions, as a significant number of the residents still live below the poverty line.

The SPMA is the center of the Brazilian economy, the largest industrial pole in Latin America. With 12 percent of Brazil's population, the SPMA accounts for about 18 percent of the gross domestic product, 31 percent of the industrial domestic product, and 25 percent of the industrial labour force (Leitmann, 1992/São Paulo State Government, 1990). Industrialization and the process that has transformed São Paulo into a huge metropolis reflect the effects of globalization in developing countries main cities.

The SPMA has been the main economic center of the Brazilian economy since coffee production was introduced in the state, in the last quarter of the 19TH century. The world coffee glut in the first decades of this century channeled coffee production profits to the manufacturing industry., Foreign capital injections in the automobile industry between 1955-60 gave São Paulo industrialization further momentum, pushing manufacturing to 42 percent of national output in 1970 (Schiffer, 1998)

São Paulo lies in the southeast of Brazil, sixty kilometers from the Atlantic coast. The city is the central point in the narrow belt of regional urbanization and concentrated population that stretches nearly two thousand kilometers North and South along the coast (see Figure 3.2). Soil quality, climate, topography, rainfall and access to coastal points have favored economic development and urban growth within this zone, particularly in the region surrounding São Paulo.

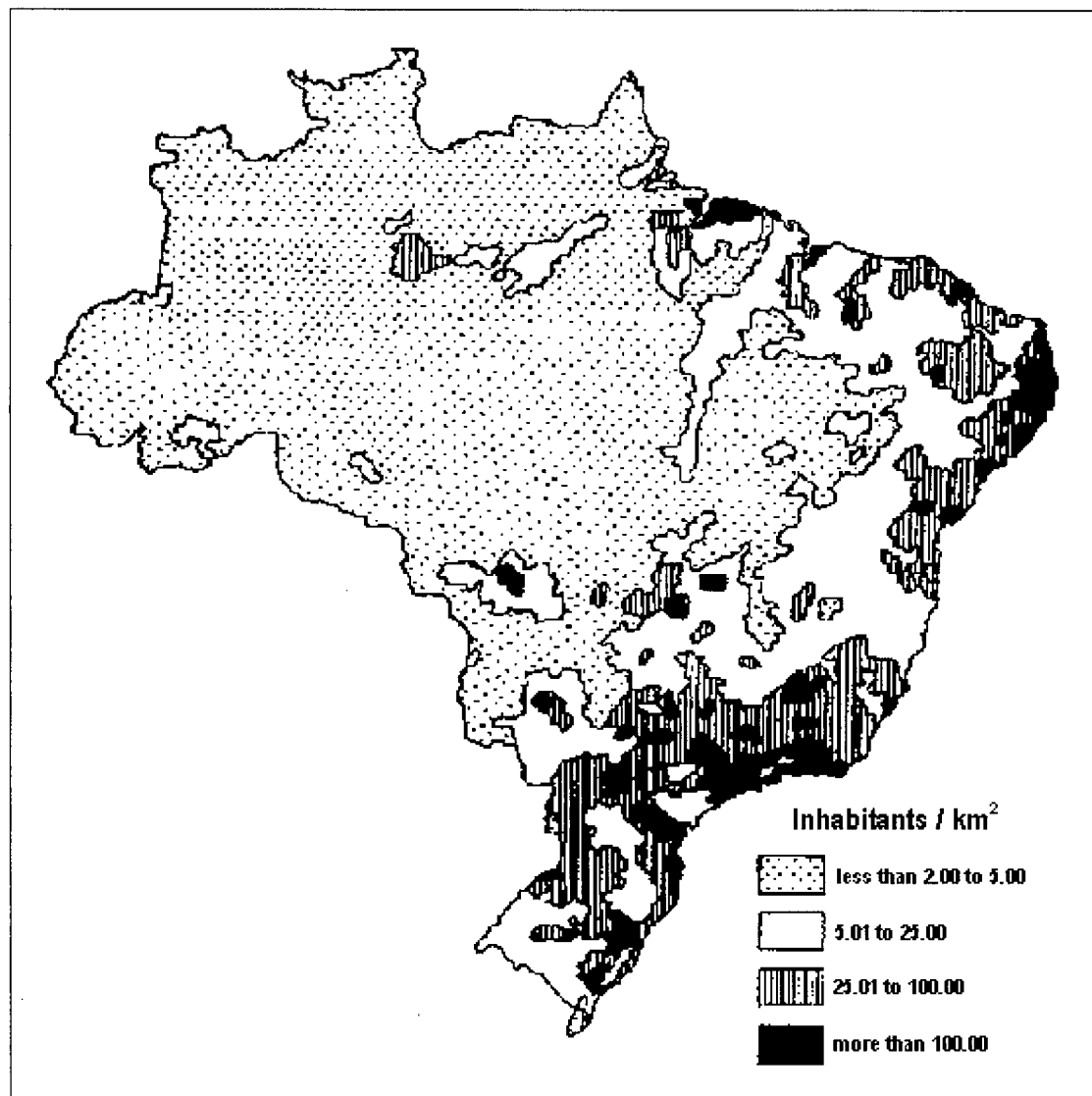


Figure 3.2 — Brazil: Population Density

Source: IBGE/IPT 1995

The Billings and Guarapiranga Reservoirs are extensive artificial lakes that were created for water supply. They took advantage of the sharp drop in elevation to produce the power necessary for initial industrialization in the 1920s. The remains of the original rain forest known as Mata Atlântica still covers the most inaccessible parts of the coastal escarpments. Its preservation

constitutes one of the major challenges facing any attempt to minimize the environmental consequences uncontrolled urban growth (Agenda 21 Local, 1996).

The Tietê, Pinheiros and Tamanduatei Rivers are the main waterways crossing the SPMA. The city grew occupying the relatively open and flat valleys, low mountain crests and surrounding hills, through the incorporation of hundreds of small subdivisions, without coordination between them except for the main routes following the ridge lines.

São Paulo was founded in 1554. By 1874 its population was only 24,000 inhabitants; twenty-six years later, at the turn of the century, the city had grown tenfold. In 1940 São Paulo had 1,500,000 inhabitants (see Figure 3.3) and since then its dominant role in the country's urbanization has been clearly established.

From an initial urban core around a Jesuit compound, São Paulo expanded to incorporate surrounding small villages linked by main waterways and other transportation corridors. Unlike many metropolitan areas that have grown from pressures on and within the central core, São Paulo grew from the gradual integration of settlements at the periphery, forming a conurbation. An unorganized pattern of streets and discontinuous development generated by uncontrolled subdivision of farmland were the main characteristics of the initial urban development of the city (Violich, 1987).

Later settlement followed a more consistent pattern of streets within a standard grid system, parallel and perpendicular to the slopes to facilitate drainage, but with no interconnection. The major transportation routes followed ridgelines and valley bottoms.

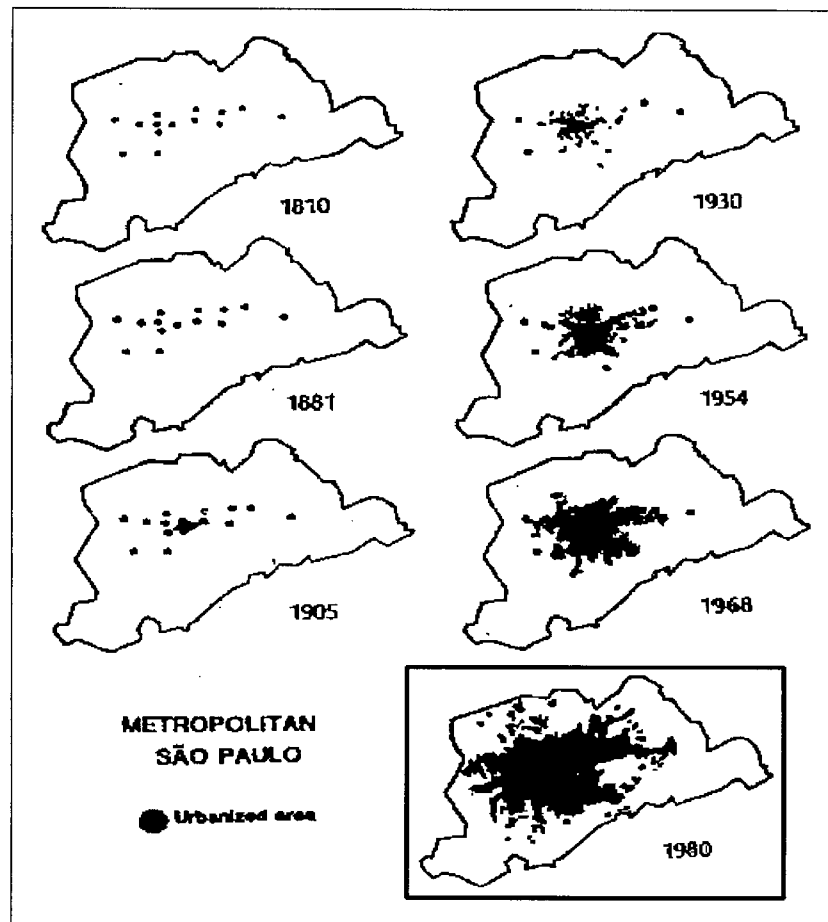


Figure 3.3 — Urbanization Process in São Paulo

Source: Violich, 1987

The well-defined inner core is occupied with high-density residences (skyscrapers), primary shopping facilities, public buildings, and the principal business offices. The industrial belt initially stood close to the inner core, but later was extended along the valleys of the Tietê, Tamanduatei and Pinheiros Rivers, served by rail lines. Later, large-scale industries and manufacturers tended to locate themselves farther from the central area, towards major routes leading to the port of Santos (São Bernardo do Campo, Santo Andre, São Caetano, etc.), northward along the Paraíba Valley, (Guarulhos, Poá, etc.) and recently to the west towards the

hinterland of the state (Jundiai, Campinas, etc.). Light industry, however, can be found spread between lower-income residential and commercial areas throughout the SPMA. Clusters of affluent neighborhoods, community facilities, large commercial developments and sophisticated office complexes as well as major retailers and shopping centers are scattered through this intricate urban fabric (Violich, 1987).

Three groups of interrelated factors have contributed to the transformation of this inland, elevated urban site, into a gigantic metropolis. First, it was the temperate climate, favorable site and transportation linkages that helped the city. The second factor to affect São Paulo growth was the coffee boom that created capital for industry and attracted foreign immigrants. Thirdly, it was the combination between industrialization (facilitated by immigrant workers and entrepreneurs), the availability of raw material and hydroelectric power, and a regional market for manufactures that transformed the city into a metropolis (Rabinovitz, 1971).

Within the national arena, the city is the urban result of a process of three main national development cycles over the last hundred years. The coffee export sector in São Paulo state expanded during the last decades of the 19th century and first decades of the 20th century. Growth of an industrial area to support the expanding coffee economy combined with the city's advantageous location make it an important import-export commercial center. Also, growing waves of European immigrants gave São Paulo a diversified pool of skilled labour for its growing industries.

The second cycle, defined by consumer-goods import-substitution industrialization, started in the 1920s. The proximity of a growing internal market created by the coffee economy gave impulse to the city. Availability of hydroelectric energy and good transportation connections with the interior of the state were additional benefits.

A third phase took place after WW II, and especially after the 1950s. Economic growth was led by expansion of capital and durable consumer goods industrial sectors. The SPMA became the spatial focus of changes in the structural outlook of the country within the Brazilian *developmentalist* agenda. Today, 75 percent of Brazilians live in cities. The migrant flows have been decisive in the area's growth, as shown in Figure 3.4. The role of these flows has been fundamental in the demographic growth process of the metropolitan area, particularly in São Paulo, reinforcing the highly concentrated development in the SPMA region.

This growth came to a halt in the late 1970s. Compared with early post-war growth, the 1980s have come to be known as "the lost decade". The Brazilian economy suffered serious decline after decades of relatively high economic growth.

Extensive borrowing from private banks in the mid-seventies to maintain the levels of oil importation at a very expensive price conversed with a sudden rise in international interest rates to unexpectedly increase in Brazil's debt. At the same time, Brazil's ability to pay off the debt declined because of the global recession and the associated deterioration in terms of trade for Brazilian exports (Wood, 1988).

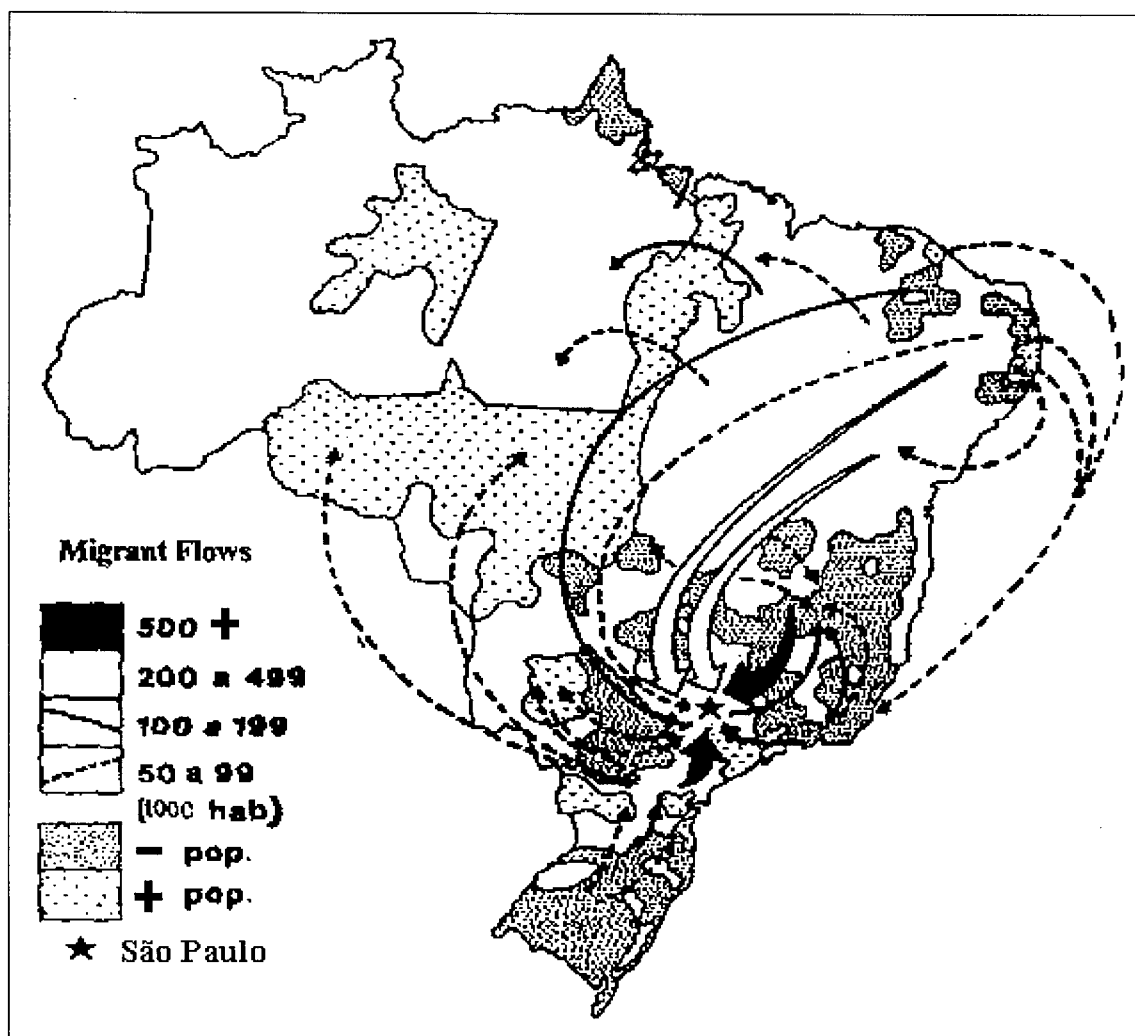


Figure 3.4 — Migration Flows 1950-1980

Source: IBGE/IPT, 1995

Consequently, Brazil experienced an economic crisis of unprecedented proportions. The poor, especially in the SPMA, were hit hardest. Freezing of per capita income, inflation, recession and rising unemployment brought about an impoverishment of the city. Slum areas (*favelas*) and tenement houses (*cortiços*) multiplied, spreading pockets of social and urban poverty and rapidly occupying suburban areas.

In 1973, about one percent of the population was living in slum areas, but by 1991 more than 8 percent of the population was installed in more than 700 *favelas* (Secretaria da Habitação e Desenvolvimento Urbano PMSP, 1991). Recent inflation control has brought little improvement for the millions of *favela* and squatter dwellers, because the framework of endemic urban poverty has not changed. Jobs, schools, and hospitals are insufficient and basic infrastructure services (water, sewage, transportation, etc.) are neglected, deteriorated or non-existent.

The Global Connection

Since the end of WW II, growing decentralization of the industrial productive apparatus has marked international economic relations between the central capitalist countries and the world periphery. The old pattern that concentrated on manufacturing has been changed by the 'new' international division of labour, in which newly industrialized countries like Brazil are important as centers for the accumulation of transnational capital. Although the largest part of direct investment by developed nations is absorbed internally between the advanced capitalist economies, by the mid-1970s, access to cheap labour and relatively large internal markets in peripheral economies was an important factor in capitalist competition in a world scale.

'Joint ventures' and direct investment in newly industrialized countries became attractive, provoking great changes to the social and economic structures of these nations. Thus, their dependent industrialization made them vulnerable to fluctuations in the central economies of the world system (Dorraj, 1995).

'Periphery' is not a homogeneous sphere regulated by a rigorous law of 'development of underdevelopment', and the transnationalization of productive capital was always marked by an increasing heterogeneity within the system's periphery. Brazil stands out as a singular case in the new international division of labour. In addition to developing a number of industrial sectors with the heavy involvement of foreign capital, it has created an advanced national intermediate goods sector with the assistance of the state, as well as a relatively large internal market (Kowarick, 1986).

Growth in production capacity between WW II and the 1980s made Brazil's balance of payments worse. During periods of low demand for export products and of high interest rates in the international financial system, importation of machinery and equipment to complement the national production aggravated the imbalance of payments.

For the most part, direct investment by multinationals was geared to support domestic capital through direct financing. Concomitantly, infrastructure, tax incentives and other measures highly attractive to foreign capital were implemented. The state was forced to invest heavily in energy, transportation and primary industries (steel, cement etc.) to create general infrastructure conditions to make full use of industrial capital in the transnationalized sectors. Thus public expenditure and consequently inflationary pressures and the degree of international indebtedness were increased. Most of the state's effort was made in the São Paulo region, which expanded its national importance (Cano, 1990).

Skewed structure of income distribution partially inherited from the previous period and aggravated by the military coup of 1964 was also responsible for the new structure of production dominated by durable consumer goods for the domestic market. The transnationalized sectors, in spite of increased productivity that created industrial expansion influenced wage deterioration, extended working hours and precarious working conditions. The capitalism being forged was undoubtedly technologically advanced, but required a repressive regime in order to more efficiently extract surplus value (Kowarick, 1986).

However, not only capital-labour relations were exploited by accumulation. Transportation, health, security, education and housing, as collective consumption goods to be provided through state mediation were also sacrificed. The government, guaranteeing urban infrastructure and services to corporations to facilitate the rapid circulation of capital and its valorization neglected totally the provision of all other needs of the urban labour force.

Urbanized areas of the SPMA expanded by a factor of nine between mid-1950 and mid-1980. During the 1970s alone, 480 square kilometers of peripheral areas were without basic urban services (Kovarick, 1986). Speculative land holding associated with periphery growth meant dramatic spatial segregation for the working class. The high rental value of urban real estate became an obstacle to the settlement of low-income groups in better-located and well-serviced areas. They were thrown into distant areas, squatter settlements, *cortiços* or *favelas*.

This urban pattern has become standard in recent decades. Although variations exist among types of housing for workers, overall conditions are extremely poor. At the same time, they efficiently

reduce the average social cost of the reproduction of labour, and position São Paulo as a metropolis of international importance.

SÃO PAULO: POVERTY AND POLLUTION

The principal source of the population growth of São Paulo metropolitan area has been migration from other regions, both within the state of São Paulo and from other parts of the country (especially from the Northeast, the poorest region of Brazil since the third phase of the development process. During decades of intense growth, migrants have contributed an estimated 70 or 80 percent of population increase. They constituted an army of cheap labour, which made possible the production of a large surplus without concern for conditions of employment, housing or basic welfare.

Early in the industrialization phase, it was acceptable for major industries to house employees in 'workers' estates' built near the factories on very cheap land. However, intensified industrial growth and reduced need to tie workers to a specific company (there was a immense reserve of labour force) made this policy unattractive to employers.

By then, companies had ceased to incorporate costs of housing and transport in wages. Costs of housing (purchase, rent, maintenance) and of transport were transferred to the workers, and costs of basic urban services, where existent, to the government (Kowarick, 1994).

Land speculation is responsible for one of the most peculiar characteristics of the SPMA urban sprawl. Property speculators establishing new sites for housing estates far from the existing urban

occupation left areas of empty land between the new nucleus and the serviced parts of the city. As infrastructure was extended to the new site, the value of the empty land would often increase before it was occupied. In addition to enriching speculators, this provoked an extremely unorganized pattern of land use and led to the growth of districts even further from the centre (Kowarick, 1977)

Another component of the disorderly process of urban development was growth of industry first along the railway lines surrounding the city, and later, around the main highways leading to the distribution centre. As new industrial centres developed, each of them created its own periphery.

People who lived far from work-centres were forced to travel long distances every day. This group of commuters increased rapidly, fostering the growth of dormitory towns, little more than camp-sites with no basic amenities which, in time, crystallized the kind of urban occupation found in most of the metropolitan area (Violich, 1987).

These aspects are intrinsically linked to the surge of shantytowns. Their location followed the course of industrialization, with shacks erected in areas close to the market for unskilled labour. The *favelas* usually occupy empty land, private or public, unsuitable for legal construction because they are in areas with high declivity, near streams (which are prone to flooding), or are reserved for future public use (green areas, playgrounds, etc.). Once the value of private land goes up, shantytown dwellers are pushed out. In 1987, 65 percent of the slums were situated on public land, 18 percent on private land and 9 percent on land with mixed ownership (Maricato, 1994). Those established on public land have had more tenure security, but at times, especially

during the 1960s, official effort to do away with the shantytowns intensified, in particular with the ones near middle class neighborhoods. Nowadays, the majority of slums are located in the interstices of the urban fabric, near highways and viaducts. They are both the cause and the victims of the urban environment deterioration.

Official efforts to resolve the housing deficit in São Paulo have thus far been ineffectual. During various periods public estates or social housing have been built, on cheap and distant land, with minimal and faulty basic infrastructure, mostly without any community services or reliable transportation. In 1991, an estimated one million people were living in shantytowns; three million in deteriorated multiple-family housing, and another 3 million lived in land developments (*loteamentos*) without the minimum legal requirements or urban infrastructure facilities (Secretaria da Habitação e Desenvolvimento Urbano PMSP, 1991).

These settlements, located in the periphery far from community services and transportation, occupy more than 300 million square meters of land. Here, the working class population has built their own houses. They do not have title to the land, although they may have bought and paid for it at market prices from speculators (Maricato, 1994).

The rapid, unorganized, illegal and highly segregated process of urban expansion represented a severe burden upon basic urban infrastructure, from sewage collection and treatment to urban transportation. Although 65 percent of the SPMA is connected to the sewer system, only 40 percent of sewage receives any treatment, waste water treatment plants process less than 26 percent of the region's flow. An impressive 92 percent of the residents are served with piped

water; however, because of growing demand and pollution problems, supply is subject to shortages or programmed daily cuts (rationing) that affects 3,5 million people (Leitmann, 1992).

ENVIRONMENT AND URBAN SERVICES: TRANSPORTATION, HEALTH, EDUCATION

Two main factors are unduly related to the problems of urban transportation. First, activities and housing are spatially segregated by income groups, with the majority of the working class living in the periphery and spending three to four hours in daily transport journeys.

Second, the development model of the last 30 years has been strategically linked to the automobile industry, fostering the use of private transportation to the detriment of public transportation. Where public transportation is in place buses have been given preference over railway and subway systems. In 1992, buses were responsible for 60 percent of the passenger trips taken in the city, transporting 6.5 million passengers per day, in 9,700 vehicles. At the same time, the subway and railway systems comprised only 41 kilometers, when other urban agglomerations of similar size typically have 200 to 400 km (Gregori, 1992). The number of private automobiles has been on the rise since the 1960s, provoking chaotic and congested traffic conditions for the SPMA population⁹.

Health and education service delivery in the SPMA is better, both in aggregate terms and when compared with delivery of these services for the country as a whole. In addition to the search for

employment, health and education opportunities have been strong motivations to migrants coming from poorer parts of the country, even though these services are stretched to the limit, and by international standards are far from ideal.

Poor transport planning contributes to a high rate of vehicular deaths. It is estimated that São Paulo traffic kills about 6,000 people annually and wounds 77,000, leaving 60 percent with permanent disability. Traffic accidents cost the country more than US\$ 5 billion annually, between 20 and 25 percent of this is in São Paulo (O Estado de São Paulo, October, 1995).

Many diseases are associated with environmental problems. Poor water quality, overcrowding, and substandard housing can be linked to diarrhea, tuberculosis, cerebrospinal meningitis, schistosomiasis and skin infections (Caccia Bava, 1994). Life expectancy at birth in the SPMA is 64.4 years, more than one year below the national average of 65.6. Infant mortality averages 37/1000 live births, well below the national average of 60/1000 (Leitmann, 1992).

In the area of basic education, which is compulsory and free between the ages of 5 to 14, in 1988 about 90 percent of the children were enrolled at school, but less than 25 percent were expected to finished the 8th year (Edel, 1989). The main problems are widespread poverty and deficient urban services: schools are unevenly distributed, forcing students to travel long distances to school. This, together with household poverty, results in high transience and absenteeism, as well as a high number of dropouts.

⁹ The last estimate in 1997, by CETESB, was around 5 million cars.

Daily function of health and educational systems in the SPMA is beset with problems. Most schools and health centres are ill equipped and personnel receive low wages, resulting in a low quality of service (Faria, 1991).

Sao Paulo's air contains excessive levels of carbon monoxide, ozone and particulate. In 1989, health warnings for the 3 principal pollution agents were given in 250 days. About half of this pollution comes from industries. It was estimated in 1980 that approximately 6,200 industries were sources of pollution, and that 15 percent of these had a highly toxic potential (Leitmann, 1992). Neither government nor industry shows concern for environmental consequences of rapid industrialization. In fact, the government viewed this negligence as an essential part of the pragmatic Brazilian model of development.

Urban sewage and industrial wastewater seriously affect the three rivers crossing the metropolitan area, as well as local reservoirs. The rivers are almost totally devoid of oxygen. High levels of lead and mercury have been detected. In addition, ground water and coastal waters are showing degradation linked to industrial emissions from the SPMA (Jacobi, 1994).

There is a daily production of approximately 22-ton of solid waste, one third generated by the industries. Throughout the metropolitan area, 80 percent of wastes are handled by the official system; of this, 75 percent are considered adequately or properly disposed (according to the Pan American Health Organization). No specific estimates of pollution from these sources exist. However, with 20 percent, at least, of waste going unprocessed each day, health and sanitation

problems are inevitable, specially in the low-income neighborhoods and areas outside the formal city (Leitmann, 1992).

Disasters resulting from inappropriate land use have increased in both frequency and intensity. Steep hillsides and areas prone to flooding have been occupied by low-income settlements. In 1989 there were 783 slums located in water basins, 385 in erosion-prone areas and 30 on or near garbage dumps. Flooding is very common during the summer, when heavy rains occurs, 468 areas have been identified as at risk from periodic flooding affecting approximately 75,000 people, most of them slum dwellers. Systematic destruction of green areas and a deficient urban drainage system are major causes of these human-exacerbated natural hazards (Maricato, 1994).

An additional problem concerns lands that protect the water supply catchment areas of the SPMA. Until the 1980s, these areas were reasonably managed, but with the economic crisis of the last decade, squatting has resulted in an estimated 800,000 people occupying the watersheds. This has accelerated degradation of the Guarapiranga reservoir, the source of drinking water for nearly 5 million people (Bartone, 1996).

In the mid-1980s, 1.5 million people in the SPMA were unemployed, 20 percent of the economically active population. The level of industrial employment has been stagnant since the mid-1970s, in spite of a 38 percent population growth over the same period. Although Brazil ranks high in the capitalist world in terms of industrial production, wage levels are very low. Comparative studies on living standards show that although Brazil is one of the countries in the

capitalist periphery which industrialized the most after WW II, it is also an indisputable leader of social and economic inequalities (Kowarick, 1986, Maricato, 1998).

Although inflation has been somewhat controlled in the last two years, localized economic growth indicators show that recession still prevails. The importance of the so-called 'informal economy' as the only viable option for many strata of the *Paulistano* population is expanding. People in informal jobs have increased from 12.2 percent of the working age population in 1989 to 14.7 percent in 1996. An overall deterioration in labour market conditions was also detected in the same period: 59 percent of new job offers are associated with the informal sector, 13 percent are from outsourcing, and 14 percent from non-registered-employee jobs (Schiffer, 1998)

The metropolis is the headquarters of big capital and the site where a vast contingent of workers is concentrated, and social contradictions here are more acute. Struggles and conflicts are more numerous here than elsewhere in Brazil (Kowarick, 1986). This contributes to the increased violence and unsafe environment that is frequently portrayed in the media (Veja, June 1996).

Some of the conflict is endemic to Brazilian society: class, gender and especially race issues have been present since colonial times. More recent economic development has exacerbated these dimensions, and has made the disparity of wealth distribution and social benefits more acute. As Armstrong and McGee (1985) point out the growth of cities in capital accumulation and generation of dependence, structural inequality and poverty is ingrained in the larger history of unequal relations already existing within societies.

As of 1990, it was estimated that the rate of in-migration to Greater São Paulo was approximately 1000 people per day (Shidlo, 1990). The push of rural displacement combined with the lure of better opportunities in the big city contributes significantly to the explosion of the SPMA. However, a 1995 Lincoln Institute of Land Policy case study indicates that while the annual growth rate in the SPMA is still two percent, the current migration rate is smaller. The opening of the Amazonian frontier for mining, agriculture, forestry, and major infrastructure programs such as roads, and hydroelectric projects is one explanation for the slowing or even reversal of migration. This economic activity has drawn a large number of migrants, particularly men in search of higher paying jobs. Unfortunately, these jobs are part of a quest for short-term profits, and therefore generally of an unsustainable nature. This could mean that migration to the major Brazilian urban centres might simply be deferred for a number of years.

METROPOLITAN GOVERNMENT IN SÃO PAULO

Brazilian administrative institutions are organized with strong powers concentrated at the federal level. This has led to very efficient delivery mechanisms for urban policies consistent with the favoured development model. The constitution establishes the powers and rights of federal and municipal levels, leaving to state governments the remaining responsibilities, including those for metropolitan areas. Metropolitan legislation deals with municipal interests as expressed by the mayors of the municipalities that make up the metropolitan regions.

Municipalities are the only units of local government. The existing disparity among them, in terms of territorial extension, population, and allocation of financial and administrative

resources, has been a source of administrative difficulties, particularly within the 39 municipalities that comprise SPMA.

Some metropolitan policies have been implemented to address these difficulties, especially those related to the environment. In spite of an explicit guarantee of municipal autonomy in the federal constitution - a rather uncommon feature within federal systems and developing countries - the financial resources of municipalities are not always adequate for their metropolitan shared responsibilities. Municipal responsibilities include: adoption of their own charter; election of a municipal government (council and mayor); instituting four taxes reserved for them by the federal constitution, including tax assessment, levying and collection; the raising of revenue from other sources (fees, services charges, special assessment or improvement charges, loans); participation in federal and state taxes; free utilization of tax revenue, except for the obligation to apply 25 percent of the revenues from municipal and shared taxes to education; organization and administration of municipal services; and municipal urban land-use planning.

In practical terms coordination of municipal services among the three levels of government presents major problems, especially in developing strategies for resource mobilization. Services such as education at all levels, health care, recreation, culture, child and old age care, and social assistance, may be provided by all three government levels, leading to duplication or insufficiency of resources through lack of integration..

The provision of urban and feeder roads, as well as urban transportation, are distributed between federal, state and municipal administration, causing problems with defining responsibilities for

their construction and maintenance. Garbage collection and disposal, public markets, open-air fairs, slaughterhouses and street lighting are run by the municipalities; telephone and electricity services are mostly a federal responsibility; water and sewers are run by state companies that were funded by federal loans to improve service delivery through the National Sanitation System.

Housing is mainly provided by the private sector, in spite of the existence of the Housing Financial System (HFS), created to attend social housing programs, but whose main role has been to channel private-sector money into the building market. As public housing funds are extremely small, HFS restricts its activity to policy-making and regulation. Some states and a few municipalities are involved in popular housing projects (cooperatives, self-help, etc.) but more recently municipalities have concentrated their efforts on improving the conditions of slum areas, and on providing infrastructure for housing projects undertaken by either the private sector or the state government.

Nevertheless, municipal autonomy means that, much of infrastructure and social housing provision depends on the political party in power and the commitment of municipal authorities towards the betterment of the poor. In practice, attitudes towards development in any Brazilian municipality, or even the embellishment of a city will depend on the municipal politicians ideological approach (Cheema, 1993).

Under pressure of dealing with complex urban issues in critical stages due to industrialization and its consequences, military rulers created several federal institutions to manage urban

development. The Federal Service for Housing and Urban Development (SERFAU), created in 1965, had authority to enforce the national requirement for comprehensive local planning by the municipalities. This is a top-down approach, in which planners define a Master Plan to contain and control urban growth.

In 1973, SERFAU was dissolved, and its functions were divided between the National Housing Bank (BNH) and the National Commission on Metropolitan Regions and Urban Policies (CNPU). CNPU assumed responsibility for defining national urban policy, and acts as intermediary between local and federal government with regard to the administration of metropolitan regions (Violich, 1987).

In 1967, the Executive Group for Greater São Paulo (GEGRA) was created, the first metropolitan planning agency in Brazil. Municipalities of the metropolitan area, the federal government, professional associations and state government were represented. Its task was to oversee and coordinate the allocation of state investments within the SPMA, through comprehensive plans and specific sector studies (industrial development, transportation, etc.).

In 1971 the Metropolitan Plan for Comprehensive Development (PMDI) was completed. As well as establishing directives for the entire metropolitan area, it conceived and recommended creation of an intergovernmental agency to direct growth in the metropolitan region (Rolnik, 1990). In 1973, a federal law established the official São Paulo Metropolitan Region (SPMA).

In 1975, a Secretariat for Metropolitan Affairs was created as coordinator and executive of the metropolitan systems, through the Metropolitan Corporation for Planning of Greater São Paulo

(EMPLASA). Its task is to control land use and occupancy in the metropolitan region, with particular emphasis on the protection of water resources (Cheema, 1993).

Since its inception, EMPLASA's major challenge has been to establish an acceptable integration between government agencies at the municipal level (traffic engineering company, secretariat of housing, planning, health and hygiene, culture, public works and public roads), state level (corporations for environmental protection, water and sewage, planning, electric energy department), and national level (national association of municipalities and environment). These agencies together with labor unions, professional associations, NGOs, community groups, and the legal and legislative system, are stakeholders in the process of defining and implementing urban metropolitan policies. This has been a great challenge for EMPLASA and for municipal and state secretariats which have been under pressure to display a tougher attitude toward environment protection in the SPMA (Maricato, 1994). Unfortunately, due to political problems in the state government EMPLASA's mandate has been steadily shrinking. This has left a void in the mediation space between state, municipal and public interests, the private sector and civil society.

SÃO PAULO IN TRANSITION

The transformation of SP reflects the confluence of rapid urbanization, industrialization, and the growing importance of services in the economy. Changes in the occupational structure, restructuring of labor markets and emergent social inequality since the mid-1940s are reflections

of the pace of industrialization and the insertion of the national economy into the international economy.

Within this transformation, some aspects are particularly significant. First, although changes in occupational structure signify modernization, they also generate greater diversity and have led to increased social inequality. Second, one can no longer usefully identify a homogeneous working class based around industry. There has been a dramatic decline in the salaried workforce and growth in alternative labour modes (informal, self-employed and non-remunerated labour). Third, this *informalization* is not simply a form of survival strategy; rather, it is part of a pattern of significant changes in labour force utilization. Fourth, the working class *per se* is losing its importance as the axis around which social and political identity is created. Also, now that migration no longer offers opportunities for intergenerational mobility, socioeconomic mobility is declining.

Historically, the availability of an immense supply of cheap labour has been a major factor for rapid urban growth and the persistence of high levels of poverty, which was concomitant with the expansion of wealth within the SPMA. This has fostered visible, intense social contrasts and made the urban infrastructure precarious. Also, in face of serious damage already caused and ongoing deterioration, the environmental implications of São Paulo's transformation cannot be emphasized enough.

In more recent years, however, this pattern of intense growth has slowed. Increasing industrial deconcentration has spread industries towards both the interior of the state and the adjacent

states, especially to the South. Diseconomies of agglomeration have emerged in the metropolitan area of São Paulo, visible in the price of lots and rents, in environmental and congestion controls, and in wages increases (Diniz, 1994).

Decentralization was an objective of government intervention: public investment, fiscal incentives, construction of infrastructure, as well as the search for new natural resources induced development of new regions. Unification of the national market through transportation and communication infrastructure, which has contributed enormously to the ongoing restructuring of the geography of production.

This late tendency may represent a breathing space in the SPMA's ongoing population growth, but it in no way eases the already heavy burden of urban problems on the city's population and the environment.

The chronic crisis of the Brazilian economy affects the quality of life in the SPMA in several and cumulative ways. Unemployment is still rampant - unofficial estimate is around 20 percent of the labor force. There is no abatement in the constant repression of normalization of labour relations. There is a disturbing growth of informal economic activities within marginal sectors of the urban economy. The number of people working without legal registration is steadily rising, even amongst skilled workers.

The occupational profile of the labour force has changed: during 1994-95, three out of four jobs available in São Paulo were in the service sector (OESP October 1995). The number of jobs offered by industry is decreasing, not only because of the economic crisis, but also because of

industrial modernization. The growing use of high technology, management optimization techniques and robotization will likely marginalize a larger portion of the actual labour force. Basically, workers lack the means that could update their job skills, as education and financial support for retraining are not available.

Urban violence and crime rates are on the rise, registering numbers larger than New York and Los Angeles and becoming the most tragic indicator of the depth of social crisis. Particularly, the increased incidence of offenses against property appears to be correlated with rising unemployment and cost of living, factors that increase widespread poverty and the growing desperation of the most destitute portion of the population.

São Paulo's prospects will no doubt be affected by the decline of economic activities that have reached the fiscal base of state and municipal governments. This has already affected the performance of public services that rely on employment expansion for their funding. Agencies responsible for housing, social security, health and educational provision have nearly collapsed. Informalization of the economy needs to be faced creatively, in order to foster the search for new ways of funding public services.

São Paulo's impressive performance as an economic centre contrasts with the levels of inequality and poverty that still prevail. The modernity and complexity of its industrial base, as well as its financial institutions are impressive, so is its differentiated commercial network, some sophisticated services sub-sectors and the richness of its cultural life. However, the size of its problems and its increasing ungovernability, together with the enormous amount of resources

needed, are areas of much concern. At a press conference, the Mayor of the city of São Paulo said:

"If, by some miracle, the prefecture would receive today 13 trillion cruzeiros necessary to eliminate, in a year, the city's deficit in infrastructure, housing and urban equipment, São Paulo would gain over 6,000 kilometers of paved and lighted roads, 1,000 kilometers of sewers, 4,000 childcare centres and almost a million dwellings, along with hundreds of health centres, dozens of hospitals, plazas and playgrounds."

(Luiza Erundina, Workers Party Administration, 1989, cited by Faria (1991))

This means that the city of São Paulo alone would consume about US\$ 30 billion - 12 times its budget at the time and one third of the Brazilian foreign debt - just to overcome its most urgent problems.

Thus, the globalization of the world economy has not been an unequivocal blessing to SPMA. It certainly does not provide for the needy of developing societies. Therefore, it remains to be seen whether the current trend of lower inflation and relative stability, strongly supported by the re-installed democracy, will last long enough for the necessary social and economic reforms. These reforms need to be comprehensive enough to reduce at least partially, the impact of international movements of the world economy on low-income groups. As a metropolis in the capitalist periphery, SPMA represents the failure of a particular pattern of economic growth to protect social justice and environmental quality.

Without political pressure and a greater influx of international resources environment recovery will remain a low priority. São Paulo could make use of the 'international responsibility' claimed by First World countries to obtain necessary financial resources for recovery and amelioration of its urban conditions. Existing loans from the international community are not enough for the

completion of basic projects necessary to update the infrastructure systems. In addition, loans are often tied to solutions inappropriate to national technical capability. Maricato's analysis of changes of investment priorities in São Paulo after the Workers Party administration illustrates this. Combined with the character of local and metropolitan administrative structure, this reinforces the need to improve the decision-making process, and incorporate civil society as a real agent of change.

Some decisions must transcend political concerns if reliable recovery of urban systems is to be sustained. More than anything else, environmental management must be prioritized in order to stop degradation and reverse pollution processes, and especially to protect waterbasin and the remnants of the indigenous rain forest Mata Atlântica. These are some of the objectives of the Guarapiranga Recovery Program that in face of the conditions discussed in this chapter, represents a paradox: too small for making real difference, but big enough to point in the direction towards a more integrated way to tackle SPMA urban environmental problems.

CHAPTER 4

SÃO PAULO WATERS

*".. the waters of march, closing the summer,
are life promises to my heart..."*

(Tom Jobim)

INTRODUCTION

This chapter discusses the water resources of the metropolitan region of São Paulo. It not only outlines physical aspects of water sources, but also examines legislation responsible for issues of utilization and preservation. Although a new legislation is in place, it will take time for reality to catch up with new juridical guidelines, and for possible incompatibilities to emerge between actual land uses and the new legislation. It is important to analyze how the evolution of watershed preservation laws has created the actual situation, which will significantly affect the outcome of the Guarapiranga Recovery Program.

The discussion of water resources protection must recognize that there has been conflict among different interest groups, in relation to land occupation in the catchment areas of the main water supply reservoirs of SPMA. Conflict has been particularly strenuous in the Southern region of SPMA, where the Billings and Guarapiranga Reservoir are localized near the Southern axis of heavy metropolitan industrial development.

Uncontrolled residential expansion - mainly through illegal settlements, such as squatter settlements, low-income communal households and other forms of unofficial real estate

development - has been taking place in the area, despite existing legal constraints controlling the local environment. The unofficial settlement process was fuelled by an expanded labor demand from a nearby industrial park, and also from higher income neighborhoods and commercial services. Non-implementation of low-income/social housing programs in other areas of the city and the lack of development of other job areas have aggravated the problem.

In 1975, a specific "Water Resource Environmental Act" was added to existing zoning laws and regulations. These measures, based on a top-down planning approach and far from the local reality, lacked institutional forcefulness and were insufficient to control urban expansion. The growing demand for residential land has also contributed to pressure to exclude the reservoirs areas from legal constraints.

Existing social conflicts have generated discussion among different interest groups - the population, the technical public sectors, city planning professionals, landowners, entrepreneurs and others - in support of, or against, increasing environmental and land use controls. The dynamic process of urban expansion and the real estate market took over, pushing the legal constraint objectives further from the reality. Hence, the actual problems and environmental implications presented by settlement of protected areas vanished in the face of conflict reinforced by an exclusionary social and economic reality.

In addition to the physical characteristics of the metropolitan region, this chapter describes the multiple functions of the reservoirs (water supply, sewage disposal, and energy generation), the

role of many public agencies involved in the area, and the sanitation approach favoured by professionals and public bodies.

Different approaches to the reservoir issue by different planning and policy groups are reviewed, in light of the conflict between views of the city as a closed space - by stopping its expansion process - and as a dynamic place of social conflicts with political mediations.

The public sector has had a monopoly on decisions, particularly at the state level. The minimum role played by local municipalities in the decision-making process illustrates the need to enlarge their responsibilities towards local population needs and social conflicts between environmentalists, professional and social groups. The official discussion has emphasized only technical aspects of the reservoirs environmental problems, highlighting the non-existence of popular input into environmental questions. In addition, popular sectors likely channel their efforts towards other everyday survival questions.

Legislation has been characterized by: emphasis on legal constraints rather than introduction of new variables or the search of new alternatives; maintenance of existing laws, against changes in their contents; adaptation of existing legislation to what happens (the land occupation reality) through a policy of sanctions or fiscal incentives.

The aspects presented and discussed suggest three main determinants to be pointed as major factors in dealing with the SPMA watersheds:

- The importance of city concepts and a broad vision of the reservoir question;

- The importance of opening up a broad participatory process to encompass the many social sectors and their specific interests;
- The diversity of positions surrounding the legal aspects of the issue.

More detailed information concerning legislation (laws and decrees) and changes within the political context of the time when the legislation was implemented and changed is provided in the Appendix A.

THE WATERSHEDS OF SÃO PAULO

The city of São Paulo has overflowed its boundaries and become Greater São Paulo, institutionalized by Federal Law as São Paulo Metropolitan Region, in the midst of a general lack of urban infrastructure and services.

In 1969, 45 percent of São Paulo municipality residents did not have piped water and 63 percent had no sewer system, 66 percent of streets were not paved and from those, 76 percent did not have streetlights. In 1975, infrastructure was still deficient, with 30 percent residents without water and 60 percent without sewer system, and 60 percent of streets were unpaved (Camargo, 1975). Metropolitanization, accelerated population growth, and general lack of urban infrastructure were accompanied by scarcity of natural resources, especially water resources.

In 1975, the prognosis by state authorities regarding public water consumption was already very disturbing:

"Presently, the demand for water for domestic consumption is around 28 m³/s, and the industrial park is practically self-sufficient. However, the estimated consumption for 1985, considering the public demand and adding significantly more for the industries, will be equal to the sum of the available flow in the basin (39 m³/s) and the existing reversions (10m³/s). In 1990, the demand will reach 71m³/s. Therefore, it is necessary, to start to consider water importation from neighboring basins for the next decade."

(São Paulo, Assembléia Legislativa, 1975) [my translation]

The Tietê, Paraíba do Sul and Juquiá rivers originate within the São Paulo Metropolitan Region. The principal between these rivers watersheds is the High Tietê Basin, which consists of the Tietê River and its tributaries, from their source to the Pirapora Dam. Until mid-1982, water resources within this basin were almost totally diverted for energy production. At that time, 87 m³/s were being directed to the state energy corporation (ELETROPAULO) generators in Cubatão, leaving 3 m³/s to flow downstream (São Paulo, Assembléia Legislativa, 1975). Only 20 percent of water resources was being used for public consumption, but the prognosis cited above alerted the public authorities of the need to mobilize all available water resources within the Tietê basin and neighboring watersheds to provide water for Greater São Paulo.

However, not all of the water resources in the Tietê basin were usable for public consumption: 51 percent *"...are unsuitable for consumption and leisure use due to the extremely high level of pollution"* (São Paulo, Assembléia Legislativa, 1975).

On the other hand, a substantial part of the water resources usable for public supply, the Billings Reservoir, was compromised by the diversion of the polluted Pinheiros River, to service the demand of the Cubatão energy plant. Complementing the picture, the urban expansion of Greater

São Paulo was already involving the borders of the reservoir and threatening its utilization for water supply. The main reservoirs and rivers are shown in Figure 4.1 below.

(LELEO COLOCAR O MAPA AQUI)

PUBLIC WATER POLICIES

In 1975 protection policies for the water resources of the region were implemented. The Watershed Protection Legislation was devised to control the use and occupation of land on the tributaries' slopes of the metropolitan watersheds. A separation between the two arms of the Billings Reservoir was built to protect part of the reservoir from pollution, and more recently the State Constitution established a date for the end of the diversion of River Pinheiros into the Billings Reservoir. These were the immediate measures to avoid the loss (and eventually recover) the Billings Reservoir as a water resource for the SPMA.

Also in 1975, work began on the controversial SANEGRA, the sewage treatment system for Greater São Paulo, financed by the Housing National Bank (BNH). It was designed to discharge effluent into a watershed protected by law - the Billings Reservoir - in clear violation of the legislation just approved.

In 1982, management policies were implemented for the water resources of the High Tietê Basin, especially for the control of flooding and pollution. Initially, all the flow of the Tietê and Pinheiros Rivers, and consequently, all their pollution load, was discharged into Medium Tietê (operation sanitation) to reduce the pollution of the Billings Reservoir. Subsequently, the normal

flow of these rivers and correspondent pollution load were divided in equal parts between the Billings and Pirapora Reservoirs (balanced operation). During the rainy season, the full pumping capacity towards Billings was set in motion, and all the flow capacity liberated towards Medium Tietê (flooding operation). During the dry season, the total flow of the Tietê River above the junction with the Pinheiros was diverted to the Billings Reservoir, to facilitate the work of deepening the Tietê channel.

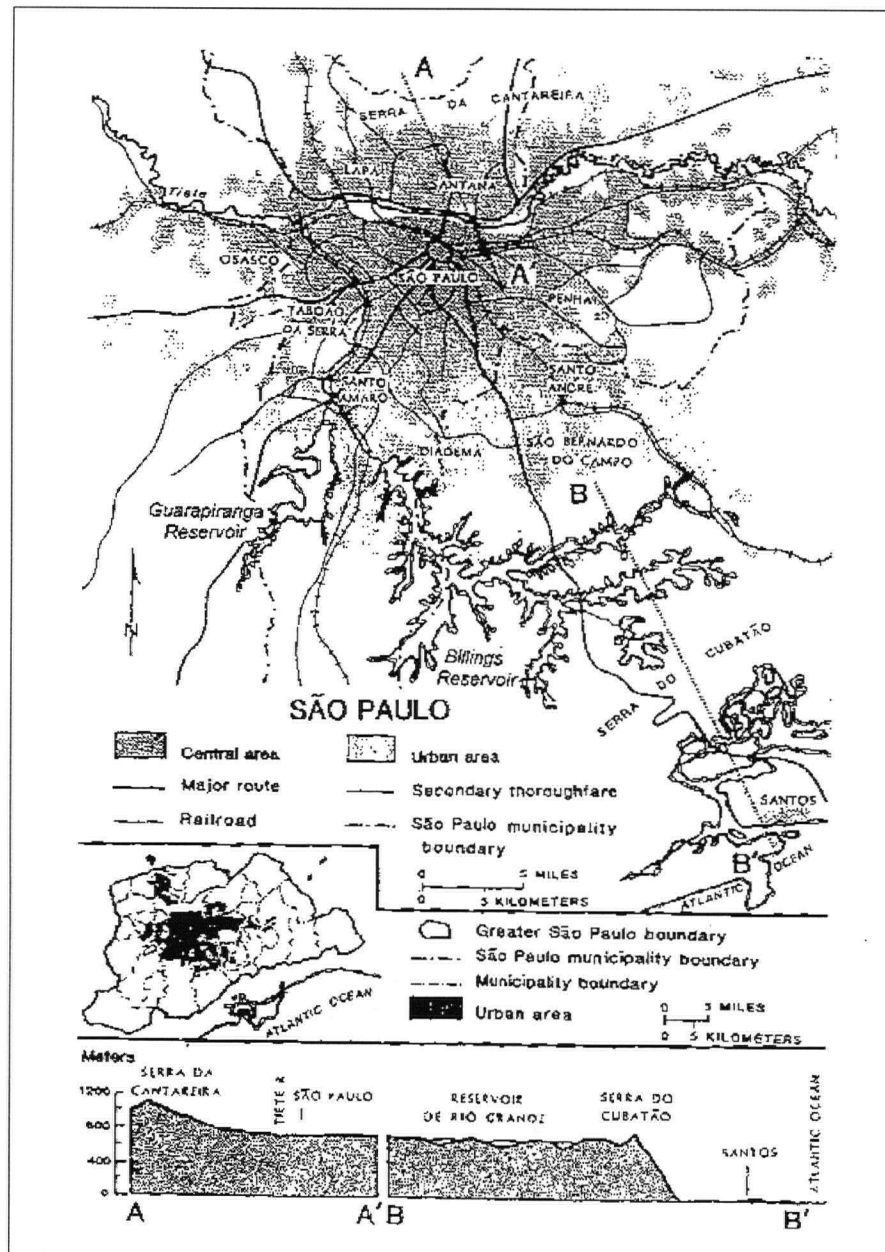


Figure 4.1 — Tietê Basin

Source: Violich, 1987

Water supply policy was intended to protect all the usable water resources in metropolitan São Paulo. Its tool was, mainly, watershed protection legislation, that made viable the multiple and alternate uses of the water resources of the High Tietê Basin. If these resources become polluted,

they will no longer be suitable for consumption. Clearly, the two sets of public policies were not compatible.

Energy policy preserved the inversions of the Rivers Tietê and Pinheiros, and the pumping of the polluted Pinheiros waters into the Billings Reservoir, with the objective of generating electricity in the Cubatão plant. Its tool was the 'balanced operation' supported by the decision of the Federal Accordance Committee between the Ministry of Energy with the São Paulo State government (the higher management institution of water resources within the High Tietê Basin). This policy jeopardized one of the watersheds protected by law, by pumping Pinheiros River into the Billings Reservoir.

For sewage treatment, public policy allowed the discharge of effluent from the ABC¹⁰ region treatment station into the same protected reservoir.

Until 1982, almost all the available water from the High Tietê Basin, except for 3 m³/s, was pumped into Billings Reservoir with the objective of generating electricity in Cubatão. The state government then decided to stop the inversion except during flooding times in order to recover the Billings. The result was a sensible reduction of the anaerobic portion of the Billings reservoir and the increased pollution of the Pirapora reservoir.

In response to protest from the population living in the margins of the medium Tietê, especially in Pirapora town, the flow of the High Tietê Basin and its pollution load was divided into equal

parts between Billings and Pirapora Reservoirs. This left both reservoirs polluted and amplified the availability of water for electricity generation in Cubatão.

So, while pumping persisted, the protection of the reservoir, at least in its central water body, would only be possible if pollution were reduced in the two rivers: Pinheiros and Tietê. This would be very difficult to achieve, because the 7.2 m³/s possible flow to be treated was beyond the capacity of the existing sewage treatment station. The volume of distributed water, and consequently the volume of sewage to be treated, was bigger than the 31.5 m³/s of maximum capacity of the central collector.

Electricity produced in Cubatão electricity may be insignificant within the energy system of the Southeast region of the country. However, the electricity supply system of the SPMA, with its capacity practically saturated, has depended on electricity from Cubatão, and therefore, on polluted waters being pumped into the Billings Reservoir.

Whose interests did these policies serve? They did not protect the water supply; that needed all the water resources available within the metropolitan region not compromised by pollution. They did not help the population living in the margins of the reservoirs, anxious for decontamination of the waters. But they did benefit the energy production system, which depended on the availability of water for generating electricity in Cubatão.

¹⁰ ABC: Santo André, São Bernardo and São Caetano are municipalities at the Southeastern part of the metropolitan area.

In the context of scarcity of water to supply the metropolitan population, and increased urban growth toward watershed areas, the conflict between water supply and electricity generation presented a gloomy scenario of public policies serving very narrow interests.

The focus of the public power dominated this question. The procedure was to avoid confrontation between the parties in conflict or contradiction, by treating each side's problem in isolation, as though it were separate from the other ones, thus maintaining control by public power.

Illustrative of this was the sector division of watersheds problem:

- The management of the High Tietê Basin water resources, involving the flow control of Tietê River, carried out by the Committee of the Agreement between the Federal Ministry of Energy and the State of São Paulo government.
- The treatment of sewage from Greater São Paulo, which used water bodies in the High Tietê Basin to dilute sewer discharged 'in natura' and to dilute effluent from sewer treatment stations, managed by the state sanitation public corporation (SABESP).
- The water supply of the SPMA, which designates available water resources to supply the metropolitan area, managed by SABESP.
- The protection of the SPMA water resources, including control over occupation of tributaries slopes of the metropolitan watersheds, controlled by the Housing and Urban Development and Environment Secretariats, and by the state environmental technical control public corporation (CETESB).

THE WATERSHEDS PROTECTION

The SPMA and its population compose an environment system in which all elements are interrelated and mutually dependent in processes of interchange of energy and matter: humans' presence is decisive. In this ecosystem, the hydrological cycle has been altered. The destruction of the natural vegetal cover - the Atlantic Forest - has reduced evaporation-transpiration and consequently the humidity present in the air. Soil impermeability has reduced infiltration and consequently the volume of water stored in the sub-soil. Surface impermeability and rivers channeling have increased the speed of water drainage and removal of water from the ecosystem. Water bodies have been altered. The quantity of foreign matter entering water bodies is noticeably larger than their capacity to assimilate. In particular, decomposition of domestic sewage, rich in organic matter, has reduced the level of oxygen dissolved in the water, altering profoundly the structural character of aquatic fauna and flora

To guarantee the actual and future water supply of the region, it is necessary to protect the watersheds against the effects of human occupation around their borders. Also, rivers, streams and underground water, which together with the reservoirs comprise the regional water resources, need to be protected. Thus, protection of watersheds also involves protection of their drainage basins, a more extensive area than just the water bodies *per se*.

Legislation for the protection of watersheds was approved between 1975 and 1977¹¹. Also the State Constitution of 1989 included dispositions for the protection of watersheds, including the Billings Reservoir (see Appendix A for summary of Laws, decrees and legislation changes). The legislation and its amendments basically referred to:

- Protection of water resources, by means of sanitary codes, water codes, norms against pollution, land use and occupation controls.
- Use and management of water resources, for example: hydropower, supply water, damming rivers, height of dams, minimum outflows.
- Creation, organization and modification of public agencies linked to the use and protection of water resources, planning and control mechanisms.

THE DEBATE ABOUT THE WATERSHED PROTECTION

Extensive debate accompanied the legislation for metropolitan watershed protection. For almost a decade, it involved not only the public sector, but also citizens groups and universities. Several government institutions such as the Secretariat for Metropolitan Issues, the Deliberation Council of Greater São Paulo (CODEGRAN), and the Consultative Council of Greater São Paulo (CONSULTI) were involved, with members of the state parliament in continuous discussions about the details and scope of the several laws, and decrees and their respective amendments.

¹¹ It was not the first state or federal legislation aimed at protecting watersheds and the environment, but was the first legislation that established control of land use and occupation for the protection of water resources. State Laws 889/75 and 1172/76, the decrees 9717/77 and 12219/78 hold the specific dispositions, also Laws 2177/79, 3286/82, and 3746/83 and the decree 15037/80.

Citizens' organizations, that united the residents of the areas under discussion, were vocal about their interests, not always harmoniously because they represented different population strata and different geographical locations.

It is possible, as Gronstein points out that this predominance of 'official views' was due to lack of formal channels of communication and expression, since all this happened towards the end of the authoritarian regime in Brazil. Some of the civil society manifestos were not even directly linked to the environment:

"(), but they are around basic questions of survival, originated from the way the settlements of these populations have happened within the watershed protection area - the illegal settlements, the slums, the invasions - or from the own fight for a better housing, in broader terms, or from the fight for land within the watershed area in narrower terms."(Gronstein et al, 1985)

Thus, the legislation was extensively discussed, criticized and amended. Even so, it did not accomplish its aim: to protect the water resources of the metropolitan region in a sustainable manner. Its impositions, far too difficult to implement and monitor, were unlikely to be respected. The state apparatus was totally unprepared to follow its own law.

In response to the pressure of rapid urbanization, in São Paulo in particular, since the 1970s the state has started to modernize its apparatus for the management of urban centers. It has instituted the first metropolitan regions and initiated a network of agencies with complementary mandates: to address the insufficiency of public services already existing, as well as to prepare for future demands; and to cope with the environmental impact of urban growth. The environment and basic sanitation were recognized as primordial issues to the functioning of urban centers. Urban

growth and pollution were acknowledged as parallel phenomena in the whole process of urbanization. To the energy demands from past decades for industrialization were added drinking water demands, and the need to treat sewage. In the cities, the non-existence of sewer systems was transforming water bodies into a natural absorber of the sewage, in a vicious circle of problems.

Organizations involved in the Watershed Issues in Metropolitan São Paulo

Federal Level

- Ministry of Interior
 - Ministry of Mining and Energy
-

State Level

Metropolitan System of Planning and Management — SPAM

- Secretariat for Metropolitan Issues — SNM
 - Deliberation Council of Greater São Paulo — CODEGRAN
 - Consultative Council of Greater São Paulo — CONSULTI
 - Metropolitan Planning Corporation for Greater São Paulo — EMPLASA
 - Secretariat for Works and the Environment — SOMA
 - Department of Water and Sewage — DAEE
 - Public Corporation for Supply/Management/Distribution of Electric Energy – ELETROPAULO
 - Public Corporation for Technological Control of Pollution – CETESB
 - Public Corporation for Supply/management/ Distribution of Water and Sanitation – SABESP
 - Public Corporation for State Generation of Energy – CESP
 - Highways and Roads State Department – DER
 - Secretariat of Issues Related to Transportation
 - Public Corporation for the State Railways – FEPASA
 - Governors of São Paulo State since 1975
-

Municipal Level

- Secretariat for Urban Planning – SEMPLA
- Secretariat for Housing – SEHAB
- Public Corporation for Social Housing – COHAB
- Mayors of Metropolitan Municipalities

Community Organizations:

- Comissão de Defesa Da Billings (Group for Billings Reservoir Protection)
 - Sociedade Amigos da Riviera Paulista Friends of the Riviera Paulista Neighborhood)
 - Comissão de Defesa da Guarapiranga (Group for Guarapiranga Reservoir Protection)
 - Comissão da Defesa da Bacia da Guarapiranga (Group for Guarapiranga Basin Protection)
 - Associação de Defesa do Tietê (Group for the Tietê River Protection)
-

Awareness of the impending collapse of large urban centers made the state pay more attention to its competency in relation to basic sanitation. Emphasis was directed to financial viability of projects and programs. The Financial System for Sanitation (SFS) and the National Plan for Sanitation (PLANASA) were created, along with measures and norms for pollution control. In 1975, the federal Ministry of Mining and Energy initiated policies emphasizing environment preservation. This was the initial step towards public responsibility for protection of SPM watersheds.

The public position on watershed protection in São Paulo has varied with each government in office, sometimes paying attention to the expectations of the preservationist movement, and at other times listening to the interests of well defined groups, such as constructions companies and real estate speculators.

According to Gronstein (1985), even the government that actually proposed the protection legislation, incorporated contradictions, because at the same time that it was proposing protection of the watersheds it was proposing a project, the ill-fated SANEGRAN, that would endanger the Billings Reservoir.

State government institutions either proposed limiting the protected area or stimulated the public campaign for de-pollution of the reservoirs, positions that represented the overall political orientation of the Party in power at the time.

Until its extinction, the Secretariat for Metropolitan Issues either affirmed the need to apply the protection legislation as it was, or defended its reformulation, therefore reflecting the position of

different governors. After examining newspaper interviews and articles, Gronstein shows several perspectives towards the matter that were adopted by the Secretariat. Even details of monitoring and policing the protected area were periodically put forward and discussed according to the specific view of the subject prevalent in that administration. Therefore, it has been difficult to formulate a coherent and effective policy.

The Greater São Paulo Deliberative Council (CODEGRAN) was a state body that integrated the administrative system of the metropolitan areas. It was composed of the state governor, secretariats, São Paulo's mayor and one representative from the other municipalities in the Metropolitan Region, in accordance with the Executive position. Its goal was to protect the Coastal slopes, water reservoirs and the coast zone of mountains from urbanization, avoiding deterioration of their natural ecological condition.

The Metropolitan Consultative Council of Greater São Paulo (CONSULTI) was a state body that integrated the metropolitan administration, bringing together the mayors of municipalities. It mobilizes twice around watershed issues. Near the beginning of its activities, in 1975, it supported the protection legislation. Several years later, in 1983, it served as a special commission to study and propose measures to improve watershed protection legislation, and its application. Its report is summarized in the section that examines the legislation.

Some community organizations had spoken out frequently, in response to announcements of programs and projects for the areas. Their manifestos reflected the polarization of opinions about the theme. The "Comissão de Defesa da Billings", "Sociedade Amigos da Riviera Paulista and

"Comissão de Defesa da Guarapiranga" were in favor of the watersheds protection. The "Comissão de Defesa da Bacia da Guarapiranga" defended the interests of residents within this basin. The "Associação de Defesa do Tietê" was against protection of the watersheds (for a summary of their positions, see Appendix A).

There was a multitude of visions of how to protect metropolitan water resources. The diversity was at times, an obstacle to establishing a common vision likely to be imposed on the public power. However, the constant outcry was somehow efficient. It kept the public aware of the complex problem of water resources protection, and undoubtedly exerted considerable influence upon the eventual effort to improve the legislation.

PUBLIC POLITICS FOR THE PROTECTION OF THE WATERSHEDS

The most common notion of politics defines it as a competition for a mandate to exercise power, or party proselytism, or the ability to manage human relations, or sagaciousness, shrewdness, deceitfulness, or mendaciousness (Buarque de Hollanda Ferreira, s/d). According to these definitions, politics is construed as emanation of power, with a subject plainly defined - the public agent - and with the objective also clearly determined - the gain of this agent. But it is not in this sense that politics are understood here.

Politics can be understood as the collection of acts and attitudes that guard relations with the government through power (**politic**), or as a human action that involves a program, a concerted action (**policy**), or as a group of techniques or procedures to obtain success (Brito, 1986), or as

"the framework in which society deals with its contradictions and unevenness between its different instances" (Castells 1983).

However, these conceptions of politics are incomplete. In the first definition, politics has a defined subject - the state - but there is no definition of the objective. In the second and third assertions, politics has a defined objective - the concerted action or the group of techniques - but the subject is not defined. In the last, the objective is clearly defined - dealing with the contradiction that composes society - but the subject is vague - society.

Politics can also be understood as the "group of actions and omissions that manifest a specific modality of state intervention in relation to a question that call attention, interest or mobilize other sectors" (Oszlak & O'Donnel, 1976). From this perspective, politics has a clearly defined objective - intervention in a specific issue - and has a subject also clearly established - the state. In this model, the state functions as an independent actor, removed from the parts involved, or from the objective of its intervention. However, the state can be understood as the condensation of a social formation, that excludes its absence in relation to the objectives where it exerts its power (Poulantzas, 1986). Under these conditions, state interventions are not motivated only by questions which call its attention, but also by the parts in conflict or contradiction, which are located within itself, the state.

Politics can also be understood as the "residue from the interaction between conflicting groups" (Lowi, 1976). In this model, the subjects are clearly defined as the parts in conflict or

contradiction; the objective is clearly defined as the regulation of conflict or contradiction; and the state is only a spectator, carrying out the resolution reached by the involved parts.

However, as Lojkin points out, politics is not only "regulation-neutralization of contradictions of a social formation", because the state is present with its immense judicial and financial apparatuses, which gives to it the capacity to "determine the immediate objects of conflict", or the capacity to participate actively in the formulation of public policy (Lamounier, 1986).

So, politics is not only a group of actions and omissions that manifests itself according to a certain modality of intervention from the state in relation to a question nor is it simply the residue from interaction between conflicting groups. Public politics is the result of interaction between state and parts involved in conflict or contradiction. In this model, politics has a clear subject, the state and the conflicting parts, and has an objective also clearly defined, as the regulation of the conflict or contradiction.

In the case of watershed protection, public politics has, as subjects, the users of the watersheds, the land owners and users of protected watershed basins, and the state, that defines the land use within the protected watersheds basins as its (conflicting) objective.

Public politics can be classified as distributive, regulatory and re-distributive (Lowi, 1986). Distributive politics is characterized by resource de-aggregation, and by its allocation to isolated units without conformity to any general criteria. Favoured and non-favoured do not conflict. Opposition is neutralized by benefits. Its agent is the public distributor of the benefits. Each actor

looks solely for its own benefit without opposing benefit to others. This model can also be called "clientelism".

Regulatory politics involves benefits less de-aggregated, and problematized or disputed. Favoured and non-favoured conflict, and there is a direct choice between them. Its arena is the representative institutions of society within the state apparatus.

Re-distributive politics involves relationships between broad social categories. It is characterized by negotiation between favoured and non-favoured. Its agent is the state that gathers and develops the correlation of forces within society.

In reality, these three categories of public politics, or these three political agents as defined by Lamounier, can be considered as one: regulatory politics, which varies according to the problematization of the benefit. When the issue involves interests shared among social classes, class fractions or dominant categories from different production modes, its resolution is achieved by confrontation between actors and crystallized by public policies. When the issue involves fragmented beneficiaries, the arbitration of the state substitute the confrontation of the parts, and expresses, at least in discourse, the resolution of conflicts.

In the case of watershed protection in São Paulo, public politics had the appearance of regulatory politics because it was approved by a legislative body and by the State Constitution. However, it was, in fact, distributive politics. One of the interest groups, the owners and users of the land within the protected area was fragmented and disorganized, and the other part was the state itself

functioning as the operative agent of the infrastructure systems and energy of Greater São Paulo, and ultimately the conflict was defined and regulated by the state itself.

This explains the arbitrary and case-by-case treatment of conflicts with the owners and users of the land within the basin. This pattern characterizes distributive politics, and occurs in the concession of metropolitan licensing.

In its application in the urban space, public politics has three dimensions:

- A planning dimension.
- An operational dimension, that is the group of real practices that allows the central state and local state apparatus to intervene financially and juridically in the organization of urban space.
- An urban dimension that condenses implements and measures the social effects in the space of urban planning/urban operations combination.

The planning dimension as defined by Castells corresponds to "ideological texts that characterize the political intervention as directed not towards the urban system, but towards the general ideological instance". In the case of the protection of the São Paulo watersheds, it encompasses the discourse about this protection (Castells, 1983).

The operational dimension, in addition to the judicial dimension of regulation, involves the group of judicial tools and financial mechanisms of the state apparatus. In the case of watershed protection, it involves only legislation for watershed protection, administrative policies for land use within the watershed area, and the constitutional instrument related to prohibition of pumping polluted waters into the reservoir.

The urban dimension is the combined effect of the discourse and instruments applied to the urbanized territory of the basin. It encompasses the impact of the discourse and legislation of watershed protection upon urban expansion. It also includes the impact, in the adjacent areas of the reservoir, from this discourse and from prohibition of pumping polluted water into the reservoir.

THE WATERSHED PROTECTION DISCOURSE

The watershed protection discourse affirmed that the water resources of the metropolitan region were insufficient for the future demand of Greater São Paulo, and that these resources are threatened by the urban expansion of the metropolis.

The hydro balance presented in the legislative debate about the proposed law 241/85, which originated the Law 898/85, forcefully demonstrated the scarcity of water resources for the region's supply:

"Nowadays the water demands for domestic use is around $28 \text{ m}^3/\text{s}$, and the industries are almost self-sufficient. Around 1985, it is estimated that the public system's demand including a more significant part of the industries' demand will be equal to the sum of the available water in the basin ($39 \text{ m}^3/\text{s}$) and the existing reversions ($10 \text{ m}^3/\text{s}$). In 1990, the demand will reach around $71 \text{ m}^3/\text{s}$. It is necessary, then, to start in a medium time span, to import water from neighborhood basins." (São Paulo, Legislative Assembly, 1975) [my translation]

The prognosis of compromised water resources potentially useful for drinking water was distressing in view of increasing urban expansion within watersheds in the metropolitan region:

The continuous disorganized growth will lead to lose the remaining availability, as happened with 51 of the 90m³ of the Alto Tietê Basin, and will compromise the reversion schemes planned (69m³), once it is proposed the use - that the growth would impede - of the reservoirs from the Alto Tietê (Juquerí, Biritiba, Jundiaí, Guarapiranga and Ponte Nova) as receptors of these reversions (São Paulo, Legislative Assembly, 1975)[my translation]

In order to protect these water resources, the discourse for watershed protection affirms that land use control was indispensable:

"The implementation of the proposed measures in the law will permit the preservation, guaranteeing adequate land use, and expropriating land only exceptionally, for the availability of the 67,5m³/s additional: 32,5m³/s from the Alto Tietê and 35m³/s imported."
(São Paulo, Legislative Assembly, 1975)[my translation]

Thus, the watersheds protection discourse emphasized the relative scarcity of water resources to serve the metropolitan region; it warned of the risk of urban expansion toward the watersheds; and it preached the appropriate land use for the protection of all potentially usable watersheds for the metropolitan supply.

At that point, the controversy about the use of water resources was pervading discussions about the situation. Therefore, all that was said about watershed protection did not resolve the dispute over water resources from the Alto Tietê Basin, because it did not decide how they would be used. It was possible that the protected water resources would be used either to meet water demand, or to generate electricity, in spite of their scarcity in the metropolitan region.

The lack of definition for the use of protected resources made them vulnerable to be used, at any time, for other ends. Thus, the absence of public policies defining the use of the Alto Tietê Basin waters was not fulfilling their main objective, the water supply of Greater São Paulo.

THE APPARATUS FOR WATERSHED PROTECTION

Within the Brazilian federation, states do not have a mandate to allocate water resources. Therefore, the São Paulo State government had to restrict its watershed protection action. The jurisdiction for deciding the use of water resources was always federal, as clearly stated by the Judicial Act of the Federal Supreme Justice Court (OESP, 1984). It remains a federal jurisdiction under the Republic Constitution of 1988:

Article 21 – It is the Union's mandate:

XIX - to institute a national system of water resources management and to define criteria for the concession of real rights of use;

But the states have jurisdiction over health, including protection of water resources. This mandate is defined in the same Republic Constitution, and this constitutional right has given the state the capacity to legislate in matters concerning environmental protection:

Article 23 - It is a common mandate of the Union, the States, Federal District and Municipalities:

II - take care of the health and public assistance, of the protection and guarantee of people with deficiency;

VI - protect the environment and combat pollution in any form;

Article 24 - It is a mandate of the Union, the States and the Federal District to concurrently legislate about:

VI - forests, hunting, fishing, fauna, flora, nature preservation, soil quality and natural resources preservation, environment protection and pollution control.

Law 898/75 concretized the protection of the SPMA watershed. It legislated control of "opening of road access, sub-divisions, buildings, as well as the practice of agricultural, commercial, industrial and leisure activities" (Article 30) in the drainage basins of the protected watersheds, through restrictions established by law.

Thus, the operational dimension of watershed protection public policy was: definition of the area to be protected; imposition of norms related to land use and occupation, to sub-divisions and opening of roads, to the impermeabilization of surfaces, deforestation, and the collection and final destiny of waste and sewage; definition of the state agents for effective management of these norms.

Other possibilities for the protection of the watersheds were not taken into consideration. Public politics concentrated on control of human activities inside the drainage basins. Only three years after the promulgation of the State Constitution¹² did public policy for the watershed protection take into consideration other instruments, ending the pumping of polluted waters, the discharges of polluting substances into the reservoirs. Similarly, other possibilities for the control of human activities were not considered. Even the traditional strategy of "emptying" the basin areas was

¹² Still, in 1998, this disposition is controversial, as attested by a news report about a recent claim from the ELETROPAULO of the need to increase the water supply of the H. Borden Energy Station (O Estado de São Paulo, May 6, 1998).

abandoned "overcome by the actual financial impossibility" (OESP, 1994) and "applicable only in exceptional character" (São Paulo Legislative Assembly, 1975).

In fact, the protected area includes 55 percent of the metropolitan region, and to empty it is impossible. This does not mean, however, that expropriation (when the state requires the use of the land) is outdated, or that it should be applied only in exceptional cases. Law 1172/76 says that 0,5 percent of the protected area must be used for metropolitan parks. The São Paulo City Planning Secretariat had already considered creating a park between Guarapiranga and Billings, as an effective instrument for the control of urban expansion in the direction of the watersheds¹³. Public parks and ecological reserves are legitimate reasons for expropriation.

So, the public politics of watershed protection restricts only the occupation of drainage basins. Its object is to control the conflict between users of the watersheds (for water supply), and land users. Its subjects are: the state public administration; the water services provider, SABESP (that integrates the administrative apparatus of the state government); owners and users of the drainage basins.

Legislative instruments did not consider the possibility that these water resources might be used for other purposes that did not need watershed protection. To allow for this, it would not be sufficient to define the object and all subjects that needed public politics as an instrument for watershed protection. Administrative policy regulating human activity in areas surrounding

protected watershed was necessary to the protection of water resources, but not sufficient to guarantee the linkage of these resources to the objective that justified its protection. This is an aspect seldom considered, and it has not been incorporated in changes to legislation. It was also not clear the municipalities involved in the protection were aware of its significance.

Positions in relation to watershed protection laws ranged from identifying the issue to protective legislation. One extreme position reduced watershed issues to a problem of legislation, which would use a unique instrument for preservation, acknowledging existing and recognized aspects of the situation: to preserve the water for supply by the scanty occupation and control of the areas through laws. The other extreme position, denouncing the legislation as impractical, implied expansion of the question. It pointed towards a total revision of the legislation, and could indicate new ways of seeing the question. What was needed was a new vision that could provoke creative ways to recover and preserve the water resources of the SPMA.

¹³ This issue is again in discussion, according to article in *O Estado de São Paulo*, June, 1998, defended by some agencies as a reasonable solution, and attacked by other as unrealistic and impossible to implement, especially in face of the construction of the Highway Orbital of SPMA, which crosses both Billings and Guarairnaga waterhseds.

CHAPTER 5

URBAN LAND AND WATERSHED PROTECTION

INTRODUCTION

To have a secure home is one of the most enduring and culturally wide-spread needs of people. A sense of deprivation, insecurity and isolation seems to be common in most societies when need for housing is not met. This 'expectation' has evolved from *having* a home to actually *owning* a home. The reasons, rationale and controversy surrounding this expectation are beyond the scope of this work, still it must be acknowledged as something that goes beyond the individual desire for *ownership*, and is a major source of social conflict and economic hardship for the poor in the developing context. This chapter examines briefly how land issues and ownership have been evolving in the SPMA and how the Watershed Protection Law has shaped the provision of housing for the poor. By freezing more than half of the metropolitan territory, the legislation has had a profound impact on the settlement options of the lower income population, from the way land has been subdivided to how the problem of housing production has been resolved.

Because the legal housing market in SPMA in the nineties does not serve poor and low-income¹⁴ families, this portion of the metropolitan population must resort to irregular/illegal solutions in the periphery, without infrastructure services and commonly in environmentally risky areas.

¹⁴ Less than US\$1,000 per month.

Both government and the private sector have shown pragmatic disregard for the problem during decades. Historically both have relied on illegal provision as a safety valve to relieve the increasing pressure created by housing needs. Throughout the last decades, the cheap housing solution offered by *favelas*, *cortiços*, illegal subdivisions, and illegal building standards had costs endured only by the working class. Adequate resolution of the housing issue needed higher salaries and more efficient public politics, as extensively discussed in works by Maricato, Oliveira and Bonduki. Even if these aspects are not the primary concern of this work, they must be taken into account because the shape of metropolitan São Paulo's urban environment is viscerally linked to them.

The logic of illegal subdivisions in protected areas has been connected to freeing 'nobler' urban space from *favelas* and *cortiços* that occupied land that eventually became more marketable. The real estate market (speculation) has also hindered consolidation of many fringe neighborhoods, in the waiting process of prospective valorization. Communities that eventually succeed in their pursuit of services and infrastructure have also been dragged into this land-valorization game, or the price of plots increases many-folds, once services are in place reinforcing the cycle of displacement of the lower income strata.

Therefore, unless the institutional posture toward land issues changes, this pattern of social and urban exclusion will be reinforced. The public power needs to review the regulation of the formal market, as well as the finance mechanisms and to define new rules for land use and occupation which take into account the lower income layers of the metropolitan population.

Although they have no mandate to resolve structural problems such as land issues, international financing agencies represent a respected and authoritative forum for fostering and/or spearheading changes to long term postures and modifying legislation concerning land issues. Also, when they fund extensive urban-oriented programs, which have a direct impact upon the built environment, housing and land use are affected by these agencies' policies. In spite of McNamara's affirmation, in the 1970s, that the WB should not intervene in land issues because it would "affect the power base of the traditional elite in the developing societies"(in *Assault on Urban Poverty 1975*, as cited by Caufield, 1996), the new development discourse reflected in the actual Bank's agenda is not so blunt in its support of the land *status quo*. Somehow, the nineties' agenda advocates more equitable access to and distribution of land. Thus, the objective of this brief exam of land issues has been to point out the political dimensions of urban environment shaping. The urban form, ultimately, reflects the politics that is ingrained in the way land is divided, distributed, and eventually controlled according to laws, within the particular social and economic reality.

THE QUESTION OF LAND AND HOUSING FOR THE POOR

Throughout Brazil's history, illegal land tenure has been the principal agent of spatial segregation, in both rural and urban areas (Maricato, 1997). According to Baldez (1986) until the end of last century land occupation was a legal way to obtain tenure. Only with the emergence of

free workers¹⁵, land ownership legislation was passed, in order to guarantee the continuity of the landowners' (*latifundiarios*) control over production. Therefore, the automatic exclusion of the peasantry/low income population from any possibility of legal ownership has been part of the process of human settlement in Brazil. In response to this several strategies of land occupation, have evolved from the process once seen as traditional (the occupation of free land) to an illegal and threatening event to the contemporary landowner elite.

According to Fernandes (1997) three processes have made the settlement and growth of population in urban areas possible in Brazil: the authorized division of land, the proliferation of irregular peripheral land divisions, and the widespread invasion (and illegal subdivision) of urban land. Such processes have shaped some of the social practices associated with the settlement process of large parts of the city. In particular, they were the only option available to the low-income population and the majority of migrants to metropolitan São Paulo. The state has not been unaware of these processes, and has oscillated from connivance to repression, according to the whims of political interest. These elements have shaped an urban legal order that is difficult to enforce and not necessarily in the best interest of lower income people.

Urban land became the object of more extensive legislation when the real estate market started to develop. The eventual stratification of the urban environment, though, came hand-in-hand with expulsion of the low-income population from potentially more valuable areas, subordinated to unscrupulous real estate capital (Maricato, 1997).

¹⁵ Brazil was the last country to abolish slavery. The law freeing all slaves was signed in 1888.

Historically, urban housing production in São Paulo has been regulated by legislation that establishes where and how urban land can be divided, which kind of infrastructure can be implemented, and how many square meters can be built on a land parcel. Basically, the objective of the legislation is to assure the quality and adequacy of construction and to balance the urban built environment in terms of infrastructure and social equipment (from the point of view of the urban planning vision of the time when the legislation was initiated). In addition to legislation about design and construction rules, all land sub-divisions and housing sales are subject to public registry, and financing depends on documentation proving the legality of the activity or transaction.

However, most housing was and is provided outside the existing legal framework and outside the formal housing market, which can only recognize and administer legally, registered pieces of real estate. So, the city has grown outside plans and urban laws, almost totally based on more or less irregular subdivisions.

In an extensive study of the housing market in São Paulo, Silva and Castro (1997) have demonstrated that the irregular forms of housing provision cannot be exactly described or quantified. They are *favelas*, *cortiços*, illegal sub-divisions, and precarious housing that shelter the low-income metropolitan population. According to their study, “a minimum of 44 percent - and probably more than 60 percent - of the housing produced in São Paulo between 1880 and 1991” do not conform to the legal framework, in one or more aspects. Even with all the administrative mechanisms, such as taxes for public street cleaning, water and ownership, it is

not possible to know exactly how many of the *Paulistano*¹⁶ population live in illegal housing arrangement.

However, ownership is a recurring and persistent aspect of these arrangements in SPMA, unlike in many other developing cities (Silva and Castro, 1998). In consolidated *favelas*, location has increasingly affected the informal market. In 1993, 13.8 percent of household heads said they had paid for their plot, against 4,3 percent in 1987. In more than 90 percent of the *favelas* researched by Tashner buy-and-sell advertisements were seen, with 45.5 percent costing between 10 and 20 minimum monthly wage, and 32.3 percent costing between 20 and 50 minimum monthly wage (Tashner, 1995).

The rental market in Brazil has been strongly influenced by regulation and scarcity of accommodation. This, in turn, was linked to the disinterest of both private investors and the public power in producing rental units or renting existing real estate. Production for rent decreased since the 1940s, in response to leasing legislation, and was completely marginalized in the financing programs of the National Financing Housing System (SFH). These programs have focused entirely on ownership since the second half of the 1960s. In addition to not financing private and public production of rental housing, the National Bank for Housing (BNH), the main deliverer of the SFH, determined the selling of all rental stock owned by public entities or similar institutions such as retirement funds, etc. Thus, there is currently no specific production for rental accommodations in the formal sector, but only a controlled market by location companies, and

¹⁶ "Paulistano" is a person born and/or living in São Paulo City

some private transaction between individuals. Rent values reached an extraordinary high during the Plano Real (1994) and started to come down only towards the end of 1995. The historic average for SP rent was around 0.5 percent of the selling value of the house, and 1 percent of the value for low-standard housing. At the beginning of 1996, the rent represented around 1 percent of the selling value, in some cases reaching 2 percent (Silva and Castro, 1997).

It is a known fact that the wage of the Brazilian worker does not cover housing costs. Because of this, they need to own their house at the lowest cost possible. Irregular solutions for accessing land allow them to obtain a house. These solutions are relatively cheaper than entering the formal market. Even so, both rent and self-built solutions are high cost, in addition to the precariousness of urban and building standards.

Therefore, to own a plot of land to build one's house is a most cherished ambition of the poor population (and for the middle class also). A major part of the city has been produced irregularly, and a great number of workers have had to use irregular forms for secure housing. The fact that the plot or construction is irregular has impeded access to private or public housing financing. The owner of a house in an irregular situation does not have the necessary documentation to use the *cartas de credito*, the official document that works on the housing market. The Caixa Economica Federal, the agency for housing financing has had difficulty in disseminating this because of the gigantic dimensions of tenure and real estate illegality. Public financing helps the better-off strata of the population that can buy within the legal market. As Silva and Castro noted, "law for the minority; market for the minority; financing for the minority".

Many ways have been devised to address the situation, but none has been effective in diminishing the large number of illegal dwellers. Also, different approaches have not yet created a significant body of legal and social expertise with enough social, political and theoretical strength to overcome the traditional and expected resistance of the landholder elite, real estate speculators and conservative government policies.

Regularization of low-income settlements has been the object of much controversy in recent decades. In an International Forum sponsored by the Lincoln Institute (Colombia, March 1998) three main approaches dominated the discussion. The upgrading approach involves the physical regularization and implementation of basic infrastructure in slums and irregular settlements. Another very common approach is the transformation of a *de facto* situation into *de jure* property ownership, through the legal regularization of settlements. A new view of the issue takes a holistic approach using a wide variety of measures aimed at social and civic integration of informal settlements into the main urban fabric.

Many programs have been developed in recent years to upgrade informal settlements, with creative and innovative approaches specific to each situation. In spite of positive aspects such as involvement of the local community, most of the larger programs depend on an extensive budget, particularly when major services such as main sewage collectors and road access to critical areas are involved. The necessary relocation of potentially dangerous houses, those subject to flooding or sliding, is another expensive aspect. Replicability of successful programs, a very desirable characteristic in this kind of project, sometimes can not happen, due to crescent difficulty in obtaining large amounts of financial resources, commonly through international funding. This is

the case with the Guarapiranga Program and all significant metropolitan programs during recent decades, which have their continuity jeopardized by eventual lack of local resources to match loan agreements.

There are costs to residents implied by the improvement of the settlement. They are subject to services and other taxes which, on top of installation costs could push families into sub-location, sub-division or eventually selling the lots. The rate of housing improvement can diminish once the financing available to the household becomes smaller.

Physical improvement of settlements has also significant impact in which way levels of government are involved in urban administration. It stimulates decentralization, strengthening municipal government and adding a new dimension to the importance of institutional building. From improving fiscal capacity to developing reliable program coordination routines, an apprenticeship is essential to build capability in the municipality. This can include skills needed to participate in negotiation between stakeholders and to discern the best solutions most likely to be replicable.

The legal framework for physical upgrading has not been an insurmountable barrier, but it faces the same limits as tenure legalization, as well being deeply affected by the political vision of municipal authorities. The design of mechanisms such as improvements to privately owned land or insertion of slums into otherwise *formal* urban fabric to circumvent regulation obstacles, can

assume the form of special zones (ZEIS and Pre-ZEIS¹⁷) which give greater flexibility to the projects without too much controversy.

Perhaps a greater benefit of this approach is the enhancement of the concept of citizenship rights and its dissemination through the affected communities. Rights to infrastructure and urbanization benefits, and ultimately housing rights are more easily understood after the implementation of recovery programs. A fringe benefit of this process is the citizens' heightened sense of responsibility as the natural follow-up (visible in payment of consumption taxes and community responsibility towards conservation and maintenance).

In spite of the arguments in their favour (see Figure 5.1), most land title legalization programs in place have been lengthy and expensive, and lack clear indication of significantly improved quality of life in settlements. Most home improvement and consolidation appear to be dependent on direct resources. Service providers have their own rules that do not normally depend upon property tenure. However, the recent work done by Moser in four developing countries suggests that tenure has clearly affected the way Latin American families have responded to settlement programs (Moser, 1996)

There is also certain wariness among low-income populations about formal credit systems, debt is something best avoided in an environment of job insecurity. Tenure regularization has been an objective of housing policies and institutions in several Latin American countries. It can be a strong political tool and has occasionally helped to organize the flow of infrastructure provision.

¹⁷ ZEIS = Special Zone with Social Interest (Zona Especial de Interesse Social)

Arguments For Legal Regularization

- Provide security against eviction
- Provide incentives to stimulate investments in home improvements and consolidation
- Facilitate and provide for the introduction of services such as electricity and water
- Generate access to credit using the home as collateral
- Incorporate residents into the property-owning citizenry and the democratic process
- Integrate settlements and property into the tax and regulatory base of the city

Figure 5.1 — Arguments for Legal Regularization

Source: Ward, P. 1998

More recently, international funding institutions are making land titling in informal settlements as a basic element of their agenda, in order to further urban land management. The integration of a large percentage of the urban population into the universe of taxes, recovery of cost of services and infrastructure, planning controls, construction permits and consumption charges is considered an essential requirement of any urban resident set of obligations, regardless of her/his income bracket. Sustainable urban programs emphasize this component. Regularization of land ownership is defined as one of the main tools for urban management, and a guarantee of urban sustainability. According to Ward, this is the main reason why it is an essential part of urban policy in many places. It is interesting, though, to recognize that policies of this nature are implemented less enthusiastically for private land than they are for public land. Some judicial mechanisms have been developed in order to transfer ownership based on occupancy rights. In the Brazilian legal system, the *uso capião* system allows those who can claim continuous occupancy for the previous five years to claim proprietorship of the plot, even if it is smaller than 250m². This is a new extension of an existing rural-oriented system in order to accommodate urban reality.

In spite of support from many institutions, regularization of land tenure is still a very slow process in Brazil. This is in part due to the juridical complexity of the system, but more often to the low degree of priority that regularization receives from the government. This delay is also linked to faulty land registry/cadastral system and accompanying entanglement of property documents. For example, some plots have nothing more than a contract of purchase, while others have registered property title. This leaves considerable space for challenges to title requests, and leaves low-income population easy prey to unscrupulous lawyers and real estate agents.

The “regularization as a means of social integration” approach (Ward, 1998) attempts to integrate low-income populations into a set of social opportunities such as health and education, thereby incorporating them into full urban citizenry and leading to regularization of occupied land. Because the definition of “a good citizen” is a class-bonded construct, regularization could eventually be used to create an artificial social convergence and conformity. This has caused much controversy. Some of the main defenders of this approach are concerned with increased violence in informal settlements. *Favelas* are sometimes controlled by drug dealers and delinquent gangs. They may be totally inaccessible to official policing powers, subject only to the *justiceiros*¹⁸ methods of violence control. Social integration of the settlements would offer an opportunity to enhance social responsibility and stimulate the modeling of good examples for citizenship.

¹⁸ “Justiceiros” are “hit men” who usually work for local businessmen or rival gangs. Usually they are retired or unemployed policemen, or even active policemen in their free time.

However, this 'holistic approach' is a new concept, which needs to be more profoundly explored in terms of real impact, sustainable in the face of strong social forces. Rampant unemployment, increased economic inflation and national deterioration of social benefits and expenditures are outside the boundaries and the control of local communities.

The Guarapiranga Program has tried to follow, at least in principle and according to some interviewees, the third, holistic approach toward the population settled in the margins of the reservoir. This view is justified by the appalling index of urban violence in some neighborhoods in this region, considered the most violent in the metropolitan area. Endemic unemployment and the deprived physical environment of the area have fostered and maintained this tradition of urban violence.

THE WATERSHED PROTECTION LAW AND ITS EFFECT UPON URBAN EXPANSION

When watershed protection legislation was proposed, the official report "Diagnosis 1975" was already warning about urban expansion towards the watersheds area (Cesar, 1975). Subsequent urban expansion has been extensively documented through occupation maps by EMPLASA.

After the promulgation of the law, urban expansion deviated from prescriptions. Two facts are related to this expansion. First, the proportion of the protected area occupied by urbanization was not significantly large in relation to the extension of the total protected areas, nearly 55 percent of the total area of the metropolitan region. Secondly, SPMA urban expansion was localized principally in close proximity to already urbanized areas. However, expansion reached the

margins of the Guarapiranga reservoir and the valley of the Juqueri River, within the protected area.

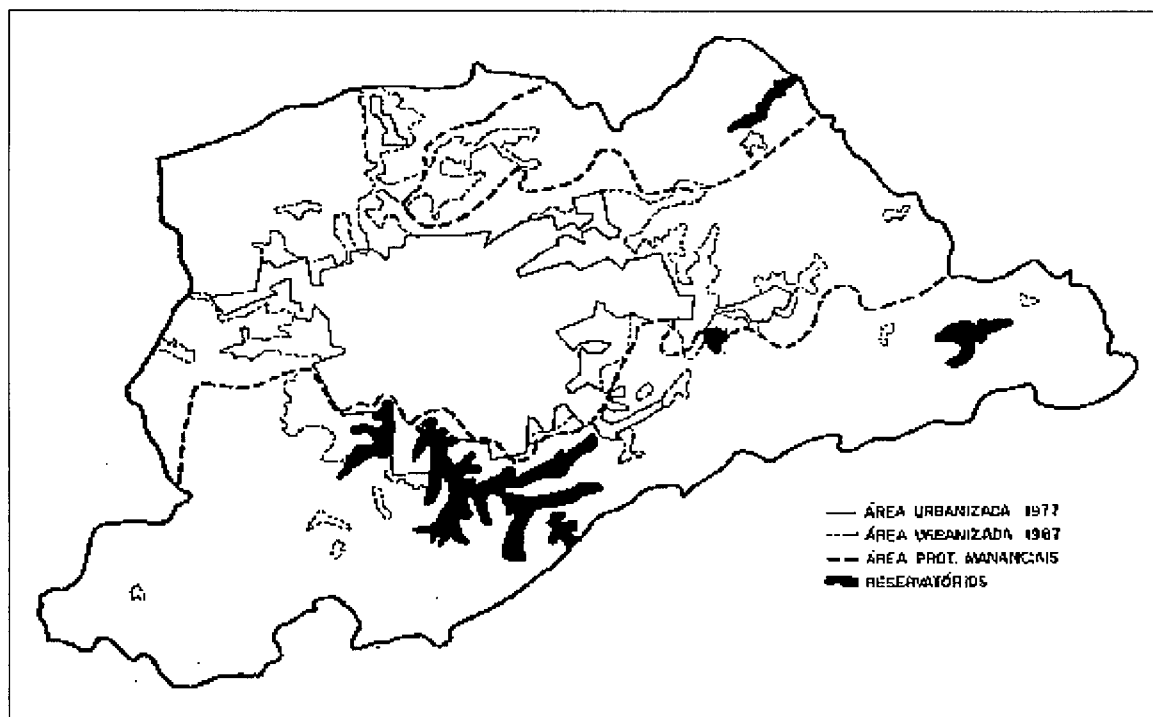


Figure 5.2 — Evolution of Urbanization within the Watersheds

Source: EMPLASA, 1990

Therefore, one could say that the objective of the legislation was partially attained, except close to the already urbanized area. The relative containment of urban expansion can be attributed to some extent to watershed protection mechanisms, but more directly to the 1980s slower rate of metropolitan growth, and consequent reduced impetus to urban expansion.

Urban occupation of the protected area happened in spite of the mechanisms for its protection partly because a portion of this area was already prepared for urban use. The occupation was an extension of the surrounding urban fabric. In these areas, the poor strata of the periphery

population, already used to clandestine housing arrangements, found itself a place to build. Lack of investments in public services and water supply, sewage installation, proper road systems, and transportation set poor standards for land occupation. Combined with fragile building techniques, they made the occupation very harmful. Conditions of occupation were also predatory, illustrated by the small size of the lots that low-income settlers could afford. Post-occupation and post-construction improvements were rare, because it was impossible for residents to self-finance any improvement which would take into consideration adequate environmental preservation.

The occupation occurred in response to intense pressure for areas affordable by populations endemically deprived of financial means and formal mechanisms to obtain any official help for housing (existing financing programs, loans, etc). Thus, with a growing contingent of migrant and displaced people searching for more urbanized areas in the SPMA, demand for land became intense. It is not surprising that the public policies for the watersheds protection have been insufficient to contain urban expansion.

The discourse surrounding watershed protection, along with mechanisms for disciplining human activities within the protected drainage basins has had some effect in avoiding a larger urban occupation of the areas. At the same time, authorities have been unable to efficiently contain the urban expansion, in the face of extreme pressure towards urbanization. The pattern of occupation cannot be attributed solely to watershed protection prescriptions *per se*. It is, rather, a characteristic of land use patterns and occupations throughout the region.

CONTROL OF LAND USE

From its onset, the discourse around watershed protection established a connection between watershed quality and control of human activity in the drainage basin:

The law design is based on the general principle that the waters from a watershed are a natural product from the drainage of an area, which is its hydrographic basin. From the activities to be developed within that basin, it will depend, naturally, on the qualitative and quantitative regimens of the drained water, and consequently, the quantity and quality of the watershed water (São Paulo Legislative Assembly, 1976). [My translation]

The control of human activities within the drainage basin had as its primary objective:

Assuring the possibility of drinkability of the Greater São Paulo watersheds waters, accepting the diversified expansion of the land use within the respective basins until the limit that, once overcome, will impede the rational utilization of the water resources as supply watersheds in the metropolitan region;

Stimulating the development of other uses of the water and adjacent land compatible with the drinkability (leisure, recreation, flooding control, preservation of the water fauna) in order to accelerate the economic feasibility of these watersheds into a supply system for the Greater São Paulo Region (São Paulo, Legislative Assembly, 1976).

Law 1172/76 endorsed these aims by specifying where and how land occupation would proceed. It defined the area to be protected, established first category areas, where restriction were prevalent and broad, and second category / class A, B and C areas where fewer restrictions were applicable.

For each of these areas, the law established different norms of land use; occupation; impermeabilization; road design; deforestation; and collection, transportation and final destination of waste and sewage. Few elements of urban occupation were missing (Appendix B

examines in more detail how areas were categorized, to clarify the law's scope). Such a rigorous institutional stand has rarely been seen in such matters, but follows the top-down planning approach peculiar to the times. It is easy to understand the difficulties in effectively implementing such draconian legislation.

THE WATERSHEDS AS A COLLECTIVE CONSUMER GOOD

Parallel to land occupation issues created by the protection laws, the fate of the São Paulo metropolitan watersheds is enmeshed in the dispute between the water supply system for SPMA and the electricity generating system¹⁹. This dispute has taken place in an urban ecosystem with scarce water resources, which is under pressure of urban expansion towards the watersheds.

From a strictly technical point of view, the problems of water scarcity, urbanization effects within the drainage basins, and competition for Alto Tietê basin water resources could have been resolved. It would be necessary only to mobilize social and the public power resources for:

- De-pollution of water resources in the Alto Tietê Basin,
- Implementation of urban infrastructure, particularly sanitation, in the areas already occupied by urban expansion,
- Substitution of energy sources which supply SPMA.

¹⁹ The Southeast energy supply system for the country involves all the water resources of the Alto Tietê Basin.

However, the question was not merely technical. Systems for water supply, sewage removal and electricity generation are collective consumer goods, i.e., are “material support of activities destined to the amplified reproduction of a social work force” (Lojkine, 1972). In fact, their value for use is collective, because they meet needs that can only be addressed collectively. Their use is permanent, because it does not destroy the installation that collects the water, de-pollutes the water bodies or generates energy. Their use value is difficult to separate or be materialize into products disassociated from the conditions that produce them.

Containment of urban expansion in the direction of the protected watersheds has been due, mainly, to slowed growth in SPMA, and only secondly to the watershed legislation. These laws were not effective in the surroundings of already-urbanized areas where there was greater pressure towards urbanization. Therefore, it appears that watershed protection legislation was insufficient in containing expansion of urbanization within the protected area; this indicates that new legislation, *per se*, will not save the water resources of SPMA.

Part of the protected area was already prepared for urbanization when the law was promulgated. This was an area with low urban qualification, due to precarious public systems for water supply, sewage, roads and transportation. It represented the first option for occupation by the poorest strata of the population in search for land.

The production of differentiated areas by urban qualification is, according to Castells, the “urban stratification corresponding to the social stratification” (1983). It is also, according to Lojkine the “expression of the material and intellectual labor division, which resumes the contradiction

between labor development requirements and capitalist accumulation, and that tends to restrict to the maximum the labor development” (1981).

According to Lojkine, this urban segregation is motivated by urban financial gain, which engenders the unequal distribution of housing, the under-serviced workers’ neighborhoods, and the crisis of public transportation. It also foreordains areas with the lowest differential gain to become urban ghettos (Harvey, 1980) and, at least in São Paulo, to occupation by the working class (Bonduki and Rolnik, 1979).

Thus, the protected areas near already-urbanized areas presented for urban expansion its readiness for urbanization and its low qualification, in an urban locus that destines lower qualified areas to the poorest. It was inevitable that the lowest income strata of the population would occupy it, because it would chase away any other social strata.

Occupation of these areas by the poor population is almost always predatory for the watersheds, due to generalized lack of public urban services and equipment: it is the territory of low urban qualification, with very small lots. This is land accessible only to poor people, who are unable to self-finance improvements that would assist in environment preservation.

In this context, it is not simply human activities that determine the “qualitative and quantitative regime of the drained water of the watersheds” but rather the form of these human activities. Also, it is not urbanization that will lead to uselessness of remaining land and that will compromise possible uses, but mainly the form of this urbanization (as referred in text from São Paulo Legislative Assembly, 1976).

So, it is not human activity which squanders the environment, neither is urbanization the origin of environment problems. It is necessary to link environmental damage to its proper origins, to “articulate it to the different processes of the social structure” which produce it (Castells, 1983). It is necessary to recognize that different forms of urbanization have different impacts upon the environment, and that those forms are determined by the urban qualification of these areas.

In other words, if society and the public power provide better-qualified areas in that the poor population may settle, and provide better qualification of protected urban areas, it is likely that environmental damage and watershed contamination can be averted.

An attempt at watershed protection which limits itself to the discipline of human activities within the areas adjacent to the protected watershed, and whose instruments comprehend only the de-qualification of these areas for urban purposes, was not enough to contain urban expansion in the borders of the already urbanized area. It did not consider the conditions of the area, i.e., its preparation for urbanization, its low urban qualification and its destination to the low-income population. Therefore, it was a failure not only by conceptual contradiction, but also by omission and misinformation.

THE EFFECT OF THE DISCOURSE AND MECHANISMS UPON THE URBANIZED AREA

The effect of the watershed protection discourse and the instruments it used was to transfer accountability for protection to the owners and users of the area. In fact, regulation of land use, which predominantly restricted urbanization and buildings, reduced the utilization possibilities of

urbanized and 'urbanizable' land-holdings, impeding valorization and frustrating the expectation of real estate gain.

The level of conflict between people interested in watershed protection and the proprietors and users of the protected area was determined by the intensity of real estate de-valuation, which was caused by the severity of restrictions imposed on the land use and occupation. Therefore, conflict about watershed protection occurred in response not only to the protection itself, but also to the methods adopted to achieve protection.

In first category areas, such as marginal bands of protected water bodies, forest and indigenous vegetation, and grades higher than 60 percent, public policies pretended to impede urban uses and oblige owners to preserve vegetation even if it was of no utility to them. This leads to idleness of the areas, and exposed them to invasion and forest destruction. From this attitude, it was expected reclassification of the area, which would ease land use and forest protection restrictions.

In second category class A areas, already-urbanized, the legislation established urban restrictions compatible for the most part with standards of the periphery. It led to occupation of these areas according to current metropolitan patterns consistent with the legislation.

In second class B and C areas, which accounted for the remaining and larger part of protected areas, public policies established urban rules too restrictive in comparison to the urbanized area. The effect was uncontrolled urban expansion, without minimum urban standards, around already urbanized areas and in pre-existing allotments.

URBAN EXPANSION AND ITS CONSEQUENCES

The urban expansion of São Paulo has had marked characteristics. During this century, the public power tried to equip itself through consolidation of normative mechanisms to face this growth. But, as clearly shown by the study of the protected watershed areas, public power has abdicated its responsibility to manage the city's explosive expansion.

The private sector has assumed the almost absolute *de facto* control of urban land. This process condemned the residents of the periphery to irregular housing arrangements, in illegal and precarious subdivisions, in face of the existing legislation. In addition, the public power has been paying the price of a very expensive and badly serviced city. Particularly in the Southern direction of São Paulo city, in an area where environmental constraints were important to protect the water resources of the region, by this urban process assumed a predatory form. Occupation of this region took place in defiance of legal impediments, of municipal regulations governing the subdivision of lots, and of state laws which prescribed the *modus operandi* for watersheds protection.

The Watershed Protection Legislation complemented existing laws governing division of urban land lots suitable for land occupations, and defined preventative actions to control pollution and enhance preservation of the water sources of the metropolitan region. However, the legal mechanisms implemented had a partial focus, and ignored the real possibility that measures of this nature could not prevail in the urban configuration of São Paulo.

The normative mechanisms implemented were restricted to controlling and establishing rules for land subdivision, without interfering in the way the urban growth was happening. The mechanisms were insufficient to eliminate the distortions produced by the way land had been subdivided, commercialized or accumulated and traditionally, in patterns which retained empty spaces for future speculation and directed urban expansion towards the periphery. Administrative and legal mechanisms that would have allowed the state to curb the real estate speculation were not implemented.

The problems that emerged with the occupation of protected areas around the Guarapiranga Reservoir demonstrated that the law was not capable of completely containing the occupation of the protected areas. The fact that the state neglected to apply the law, and gradually renounced its responsibility as enforcer of the legal prescriptions, combined with structural problems related to urban expansion to create the present urban situation around the reservoir. They are different characteristics of the same posture.

CHAPTER 6

METROPOLITAN SÃO PAULO WATER SUPPLY TODAY

INTRODUCTION

In spite of efforts, the nineties brought serious problems of infrastructure and basic water services to the Greater São Paulo region. Conditions reached the serious point where the efficient supply of drinking water to the metropolitan population was threatened.

The water resources of the SPMA, once abundant and adequate, have been progressively deteriorating, due to uncontrolled urbanization in the watersheds and the failure to put in place an efficient and clear policy for water preservation and control of pollution.

The problem transcends the local sphere, becoming regional and sometimes even inter-state determined by geographic features around water bodies rather than political boundaries. Thus, the role of preventative measures is more urgent and more complex. Effective policies must be established to control pollution and to curb other endangering activities in order to protect the watersheds. These measures must not be restricted to a single institutional level, because the problem involves many layers of government, as well as a multitude of civilian stakeholders with interests depending upon the quality and quantity of water.

The water resources of the SPMA have been “protected” by a group of laws in place since 1975, but this protection has been inadequate to address the complex issues involved in the

preservation of metropolitan watersheds. Thus, new legislation was proposed and extensively discussed, and was finally enacted in late 1997. Open acknowledgment of the mistakes incurred by the old law raised great expectations. Crucial to efficient revision of the Watershed Protection Legislation was the need to address the institutional complexity of the SPMA, and to adequately define policies for maintaining quality and availability of water resources, and for implementing administrative and legal mechanisms for the water's use and protection.

Recent revision of the Watershed Protection Law is briefly discussed in this chapter, as it has been a key factor in the Guarapiranga Recovery Program. The changes proposed will take effect at almost the same time as the Program finishes. Therefore, the new law could be either a source of contention or a means of support for the achievements of the Program, or even both, depending on the issues involved.

As part of the discussion of the SPM water resources, and to learn more about the Guarapiranga area where the Program is located, a brief exposition examines the characteristics of its basin from physical features to the settlement process, which has been occurring within the protected area surrounding the reservoir.

WATER SUPPLY IN MSP

Water supply problems in the metropolitan region of São Paulo affect not only São Paulo City's population, but also the population of the several municipalities within the region, as well as

other cities and towns in a radius of at least 100 km. The environs of the watersheds have been supplying (and have been affected by) a population of more than 15 million people.

The SPMR has 2.8 million sewage connections, provided by SABESP (the public corporation responsible for sewage treatment and supplying of water within the region). This number means that 92 percent of households are served by the water company, while the remainder have another source of water supply: clandestine taps, collective taps, clandestine wells, artesian wells or water-trucks. The graph below shows the water production by source for the metropolitan region.

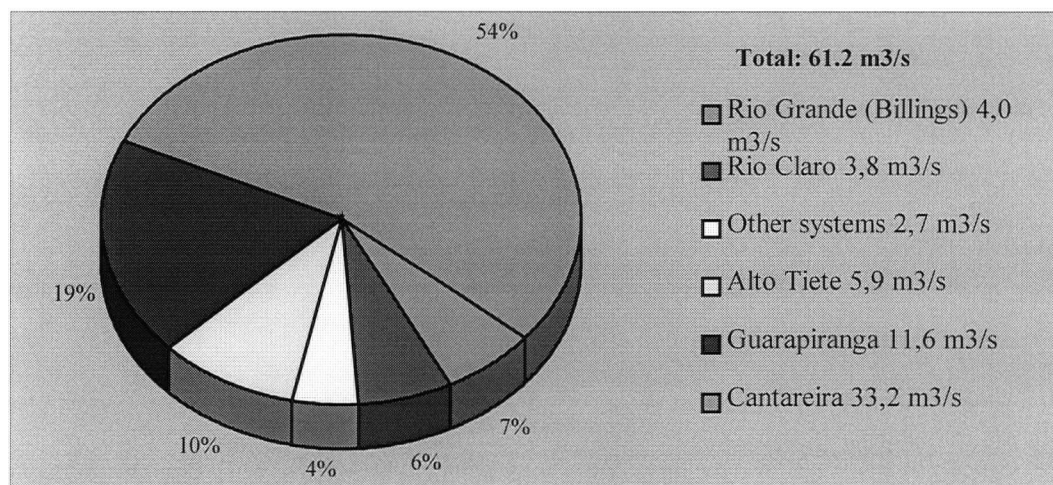


Figure 6.1 — Distribution of water production in São Paulo

Source: OESP, April 1998

There are seven water sources in the region (see Table 6.1 below). SABESP grades quality of water for domestic supply on a scale of 1 to 4. Class 1 watersheds have had their water approved for human consumption, either without treatment or with simple disinfecting. In class 2 are water bodies that receive conventional treatment and can be used to irrigate vegetables and fruits, and for leisure activities. Class 3 is unsuitable for irrigation and requires special treatment for human

consumption. Class 4 is unsuitable for human consumption and does not support fishes or any form of fauna or flora.

Table 6.1 — The Water Supply System for SPMA

Water Source	Served population	Location of water source	Class	Production m3/s	% Total
Cantareira	8.7 million	Atibaia Bragança Paulista and South of Minas State	1	33,0	57
Guarapiranga	3.4 million	São Paulo Itapecerica da Serra Embu Guaçu	2	12,0	21
Rio Claro	1.1 million	Biritiba Mirim	1	4,0	7
Billings	1.1 million	São Paulo and ABC Region	3 - 4	4,0	7
Alto Tietê	0.8	Mogi das Cruzes and Suzano	1	3,5	6
Alto Cotia	0.2	Cotia	1	1,5	2
Baixo Cotia	0.1				

Source: SABESP/SOS Mananciais (1996)

The Cantareira System is responsible for fifty seven percent of the water delivered by SABESP. Because it is located outside industrialized regions and does not present significant indices of pollution, this watershed is classified as 1. In other words, the water receives simple disinfecting treatment prior to being sanctioned for consumption. In the same condition are the Rio Claro System (Mogi das Cruzes region), responsible for seven percent of the supply; the Alto Cotia System (situated between the towns of Cotia and Vargem Grande), that contributes two percent; and the Alto Tietê System (Suzano and Mogi das Cruzes), with six percent of the water supply.

The systems with more problematic water quality are the Billings and Guarapiranga Reservoirs, situated within the metropolitan region, and responsible for twenty eight percent of water supply.

In the Billings System, bad water quality is associated not only with industrial pollution, but also with the great number of residents - around 350,000 people - living irregularly along the margins of the reservoir. Through clandestine connections, a load of about 1000 tons per day of sewage is poured in natura into the reservoir. Another source of harm to the reservoir is water discharged from the extremely polluted Rio Pinheiros into the reservoir during the rainy periods. In addition, during drought years, the government has often authorized the forced siphoning of the Rio Pinheiros into the reservoir to guarantee electricity generation for industries in Cubatão.

In the Guarapiranga System, problems are caused by dense occupation of its margins by more than 600,000 people; clandestine sewage connections; illegal proliferation of garbage dumps, and also by the highly damaging activity of mining sand for building companies.

The Guarapiranga is actually classified as class 2, therefore needing more careful treatment than class 1 water bodies. The Billings System, though, is worse: its water is rated as class 3, and in certain periods, when the reservoir receives water from the Pinheiros River, it is classified as 4

SABESP cannot meet the consumption demand of approximately 3.2 million people, who frequently do not have water in their household taps. To make this scenario worse, approximately forty percent of the distributed potable water is wasted due to clandestine tapping and leaking. Reports published by SABESP ascribe this loss to the neglect, for years, of investment in efficient controlling and maintenance actions.

During frequent, extensive periods, especially during the dry season, part of the region's population is under frequent shortage of potable water. SABESP applies emergency measures, such as distribution shifts, in order to avoid a supply imbalance. Potable water is also wasted within the household. Educational campaigns are needed to increase awareness and create habits of optimizing water usage and avoiding wastefulness.

THE PROTECTION OF THE MRSP WATERSHEDS

During recent decades, the metropolitan watersheds have been objects of much polemic on how, not if, to preserve them. However, measures and concepts discussed took an important turn towards the late 1980s, when population and officials of different government strata realized the degree to which water resources were being compromised.

It was no longer a discussion of political whims or different environmental approaches. As a vital resource for human survival, the water sources were viewed as a natural asset to be protected by the different institutional levels of government, as well as by the population. Their preservation and recovery from early damages assumed priority.

The SPMA lies in a region with many rivers, streams and headsprings. Its continuously urbanized area covers 31 of its 39 municipalities. The urgent need to protect and preserve watershed areas cannot be disputed.

Diagnosis of the situation should lead to implementation of effective public policies conducive to the progressive recovery, in quantity and quality, of water resources. Public action must coordinate, articulate and implement policies to really protect the watershed areas.

However, these policies cannot restrict themselves solely to the application and observation of existing Watershed Protection Laws. These laws are a usable tool but should not be the only one. Their effectiveness was as limited by their internalized contradictions and difficulties presented by inspection and actions to effectively protect the water sources. Laws, per se, do not transform reality. Transformation always requires continuous human action, persevering and responsible in envisioning the accomplishment, in this case, of the desired protection.

It is important to consider the action of the state since the inception of watershed protection laws. After that point, this power considered itself to be satisfactory in these areas, as if protection could be obtained through the simple existence of those laws.

Public power was not vigilant in the protected areas. They did not have enough patrol people in place and it did not punish violators; did not promote concrete actions encourage enterprises consistent with the law; did not promote basic sanitation programs in urbanized areas; did not seriously attempt to diminish water pollution. Action, when initiated, was intermittent, and did not use adequate means and tools.

The state public power is mainly responsible for watershed protection because, constitutionally, it has non-transferable responsibility for the equation and solution of inter-municipal matters. However, for the last two decades, it has been absent from any effective measure to assure this

protection. Therefore, it does not possess the authority to demand that private agents comply with existing laws.

The reality of the protected watershed basins clearly demanded improvement of the existing legislation. The elapsed time, the unorganized land occupation, the absolute omission of the public power in relation to the occupation of the areas and also by civil society: everything has contributed to the urgent need to improve existing laws.

More urgent than improvement of the legislation though, is implementation of effective policies expressed in concrete action for water protection. These policies must be more consistent with the public interest objectives that inspired the laws than with the exact application of some of their articles (dispositions).

Also, it is the duty of state public power to lead this process. The state must articulate, coordinate, promote initiatives, provide incentive and lead public and private stakeholders to make the public interest prevail over the private. For this to happen, it is indispensable that, on one side, the state government will effectively acknowledge its responsibility, and on the other side, civil society, conscious of its role, will be able to demand from the government the necessary action.

THE REVISION OF THE MRSP WATERSHED PROTECTION LAW

Discussion of the protection of watersheds in the SPMA was, and still is, very complex, transcending the limits of narrow legislation, to touch on social, political and urban issues.

The legislation to be changed is 20 years old. During the past two decades the socioeconomic profile of the region's 39 municipalities, as well as that of the whole country, has radically changed. Therefore, distance has grown between the motives of those who had formulated the law and the existing reality within watershed protection areas. This causes great difficulty in defining objectives, as well as territorial inclusion and management systems.

There has been consensus, mainly due to profound conceptual changes that followed the evolution of the civil society in Brazil, around the need for revision. In addition, it is clear that the legislation did not meet its objective of impeding predatory occupation of the preserved area around the reservoirs, rivers and streams, and that water quality has consequently deteriorated.

Concern for the environment, incorporating life quality and species preservation as objectives, has caused government to prioritize basic sanitation and sustainable development programs for recovery and preservation. However, it has also fostered consciousness of the need to replace basically restrictive legislation with laws that would induce compatible uses of the water resources, taking into consideration the extolled principles of the Local Agenda 21.

In brief, new approaches towards protecting the metropolitan watersheds would ideally be guided by:

- integrated management of water resources, with water as an integral part of the ecosystem, and a natural social and economic commodity, whose quality and quantity determine its use;
- consideration of aspects related to land use and water to be done for the whole basin or sub-basins;

- integration of the measures to protect and conserve water sources, with clear planning for use of land and forests, and preservation/protection of water bodies margins and slopes;
- consideration of water as an indivisible resource, that demands a holistic management approach based on a balanced examination of population and environment needs.

In addition to these aspects, it should take into account new constitutional precepts acknowledging the need for legislation to be compatible with water resource systems, sanitation and environment, at federal and state levels.

One can also not forget that in the SPMA water resource problems extend geographically. Their analysis must take into account an area extending from the south of Minas State to the south Littoral region, including the Campinas region, and the Baixada Santista region. This area has seventy percent of the São Paulo State population. This will require special levels of participation and coordination, new to the Brazilian government institutional framework.

The aim should be to articulate existing supply systems and those in process of implementation. The goal should be a comprehensive management of the socioeconomic and physical-territorial basis of all water basins, in the interest of adequately supplying the SPMA, and other metropolitan regions to be created in the state.

How much of the above observations are effectively integrated into the new legislation for the watershed protections remains to be seen. Again, it is important to remember that laws are just one part of the process. Much will depend on constant monitoring and adjustment of policies

established by these laws, as well as on avoiding eventual manipulation and changes dictated by gains in the economic or political sphere.

THE GUARAPIRANGA HYDROGRAPHIC BASIN

The total area of the Guarapiranga basin, i.e., the region drained by the rivers and streams in the basin, is 63,698.21 ha. It is the catchment area of the second largest water supply source for the SPMA. The Guarapiranga Basin is spread through the municipalities of São Paulo, Embu, Embu-Guaçu, and Itapecerica da Serra, and includes small portions of Cotia, Juquitiba, São Lourenço, São Vicente and Itanhaém. The principal rivers are the Embu-Mirim and Embu-Guaçu.

According to reports from the Unit for the Management of the Sanitation Program of Guarapiranga (UGP), the basin had, in 1995, a population of 622,500, distributed as shown in Table 6.2. Predominantly, this population has lower and extreme lower incomes: average income below US\$ 300/month. More than 50 percent of the “urban” areas within the basin is occupied with illegal subdivisions and favelas, and has no infrastructure. Approximately 70 percent of the total population are within São Paulo Municipality (SPM), living within the reservoir borders and margins of rivers.

Table 6.2 — Distribution of Population in the Guarapiranga Basin

Municipality	Population	% of total
Embu	51,653	8.30
São Paulo	419,263	67.36
Itapecerica da Serra	102,986	16.55
Embu-Guaçu	45,171	7.25

Cotia	1,855	0.30
São Lourenço	535	0.08
Juquitiba	1,044	0.16
TOTAL	622,507	100.0

Source: RIMA, UGP, São Paulo, 1996

Agricultural activity is largely loosing its importance, and urban production activities are characterized by informality. There is no structured economic activity predominant within the basin.

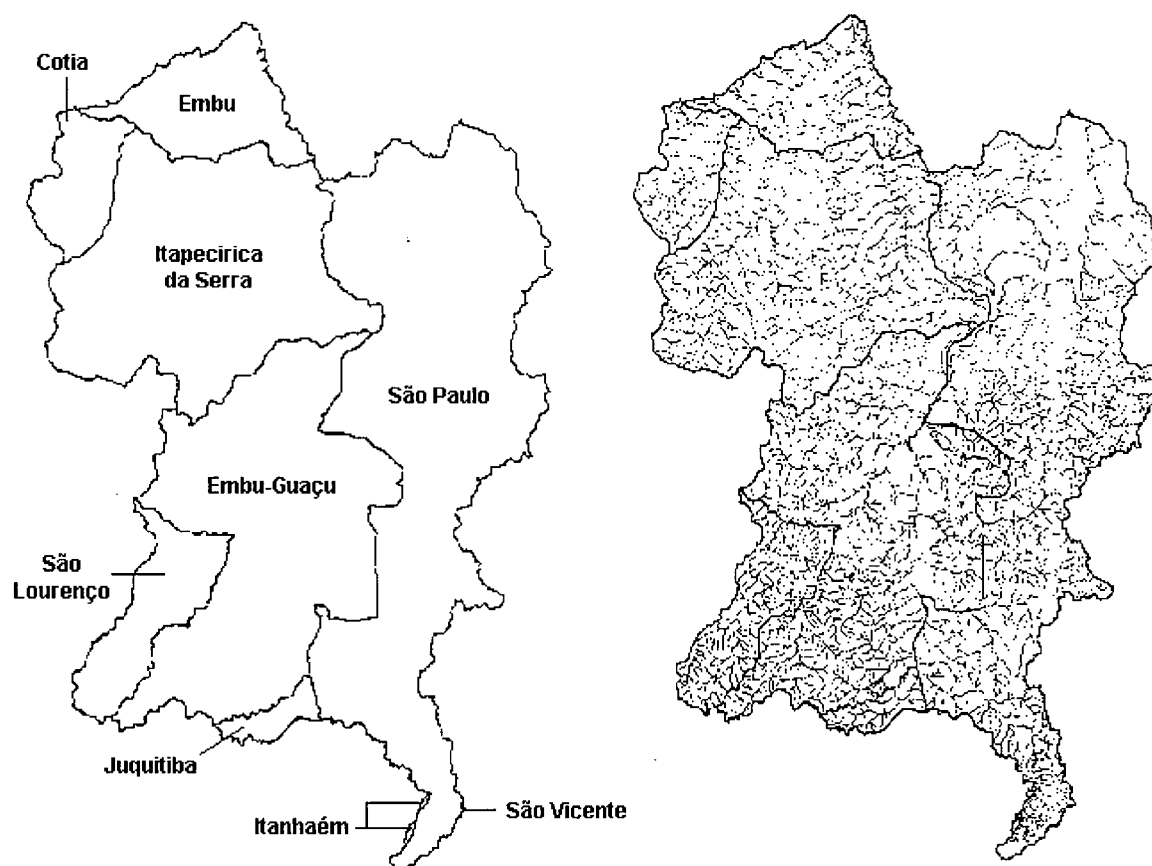


Figure 6.2 — Map of Guarapiranga Hydrographic Basin

Source: ISA SP, 1998

The Institute for Technological Research of São Paulo (IPT) has developed an analysis of the natural fragility of the basin and the dangers of occupation (Physical Aptitude for Human Settlements). From information such as landscape variation, soil characteristics, and natural vegetation, this report attempts to define guidelines for urban expansion and technical criteria for subdivision projects. The goal is to minimize geo-technical problems, in particular erosion, soil sliding, silting and flooding.

The IPT study subdivides the Guarapiranga Basin into four classes according to capacity to support urbanization: favorable areas; areas with localized restrictions; areas for eventual occupation with serious restrictions; and areas with severe restrictions. Table 6.3 shows the results of this analysis.

Table 6.3 — Physical Aptitude for Human Settlement within the Guarapiranga Basin

Aptitude Class	Area in Ha	% of Total
Areas favorable	3,249.72	5.09
Areas with localized restrictions	16,385.31	25.73
Areas with serious restrictions	22,678.21	35.60
Areas with severe restrictions	15,375.79	24.11
Areas urbanized (built)	2,435.00	3.82
Water Bodies	2,706.37	4.25
Areas of parks and reserves	782.18	1.23
TOTAL	63,698.21	100.00

Source: ISA SP, 1998

More than half (59.71 percent) of the total Guarapiranga Hydrographic Basin area does not have physical characteristics adequate for human settlements. This means that urban growth or urban

occupation in these areas generates negative impacts on the environment. Only five percent of the areas are adequate for urbanization.

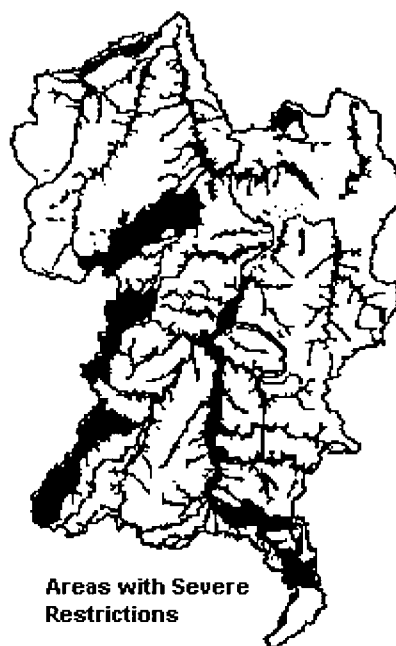
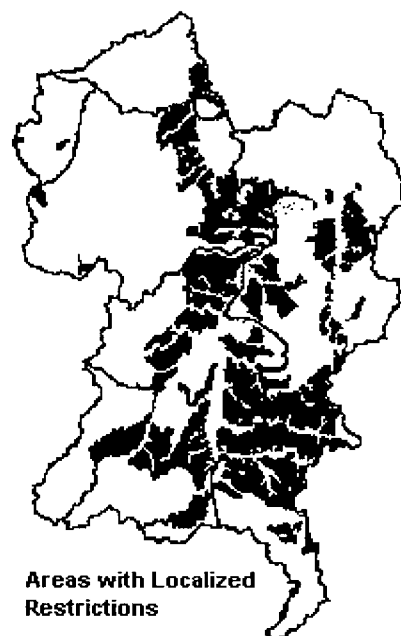
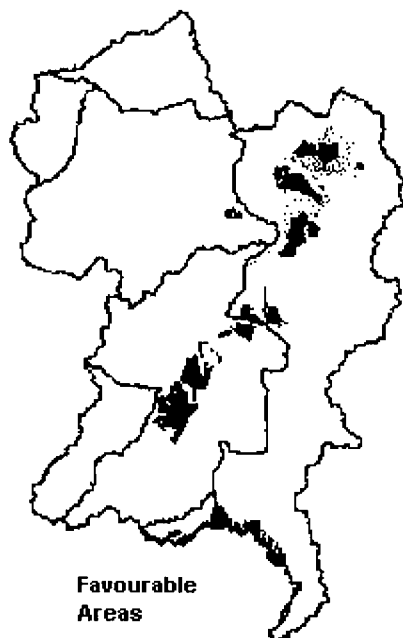


Figure 6.3 — Map of the Physical Aptitude for Human Settlement

Source: ISA SP, 1998

An analysis of the evolution of land occupation developed by the Instituto SocioAmbiental (ISA) complements the analysis of the environmental conservation of the basin. This work determines how much of the region has already suffered alteration, the impact of this alteration on the original environment, and the likely impact of these alterations, in cases where no measures are taken to curb them. Table 6.4 shows the evolution of occupancy between 1989 and 1996, according to sub-basins of the Guarapiranga area.

Analysis of land use was achieved by comparing satellite images, developed by the National Spatial Research Institute (INPE) between 1989 and 1996. Land uses chosen were: urban expansion (urban areas in formation or growing); built areas (areas already consolidated); atrophic fields (non-urban areas altered by human activities, such as agriculture and pasture); exposed soil (areas without vegetation, native or introduced); native forest covered areas (Mata Atlântica in several stages of regeneration); and non-native forest cover (silviculture of eucalyptus and pinus).

Through this analysis it was possible to establish which land uses have evolved positively (i.e. a larger area in the 1996 satellite images than in the 1989 images), and which had negative evolution (larger areas in the 1989 images). These data revealed that the positive factors in terms of the protection of the Basin (native forest cover and silviculture) diminished during the analysis period, and the negative factors (urbanization, exposed soil and atrophic fields) increased

significantly. This evidence makes it more urgent to implement measures to protect the basin and control negative aspects of land occupation.

Table 6.4 — Evolution of land use in the Guarapiranga Basin by sub-basins: 1989-1996

Year:	1989		1996		Variation	
	Há	%	Há	%	Há	%
Built areas	2,387.79	3.75	4,031.31	6.33	1,643.52	68.83
Urban expansion	4,213.08	6.61	6,043.20	9.49	1,830.12	43.44
Subtotal 1	6,600.87	10.36	10,074.51	15.82	3,473.64	52.62
Exposed soil	1,293.63	2.03	1,962.90	3.08	669.27	51.75
Atrophic fields	7,607.88	11.94	9,895.50	15.53	2,287.62	30.07
Subtotal 2	8,901.51	13.97	11,858.40	18.62	2,956.89	33.22
Mata Atlântica initial: in regeneration	6,937.65	10.89	5,237.00	8.22	-1,700.65	-24.51
Mata Atlântica medium/advanced: in regeneration	24,370.20	38.26	19,989.30	31.38	-4,380.90	-17.98
Mata Atlântica dense: in regeneration	5,046.39	7.92	5,697.90	8.95	651.51	12.91
Subtotal 3	36,354.24	57.07	30,924.20	48.55	-5,430.04	-14.94
Silviculture	5,003.07	7.85	4,074.02	6.40	-929.05	-18.57
Others (water bodies and satellite shadows)	6,838.52	10.74	6,767.08	10.62		
TOTAL	63,698.21	100.0	63,698.21	100.0		

Source: ISA SP, 1998

Sub-basins near the reservoir are under significant stress. In the map of the sub-basins below, sub-basins 4, 5b, 6 and 7 are typically urbanized, with urbanization coefficients above 75 percent. Sub-basins 20, 24, 19, 21 and 22, on the other hand, have coefficients below 4 percent. The sub-

basins having more forest cover, and therefore more protection, are more distant from the reservoir. In contrast, the urban sub-basins, involving practically the whole Guarapiranga reservoir, have less forest cover and less protection. The ISA study showed which sub-basins have suffered greater impact. A surprising result was that the sub-basins that suffered more hydro degradation during the period studied were not the ones nearest the water, with greater urban concentration and scarce native vegetation. Rather, the sub-basins that suffered more impressive hydro degradation were 5d, 10, 14, 16, 21, 22, 13, 14 and 26. Greatest impact was seen in those with the highest density of native forest cover, particularly sub-basins 20, 22, 24 and 26. The results demonstrate that the direction of efforts towards the recovery of the sub-basins surrounding the reservoir is not entirely correct. If immediate measures are not taken to preserve the sub-basins that currently have the best environmental conditions, resources spent in the neighborhoods and communities surrounding the reservoir will not be sufficient to guarantee the quality and quantity of the water from the Guarapiranga. These sub-basins are the initial source of water, and they will be compromised.

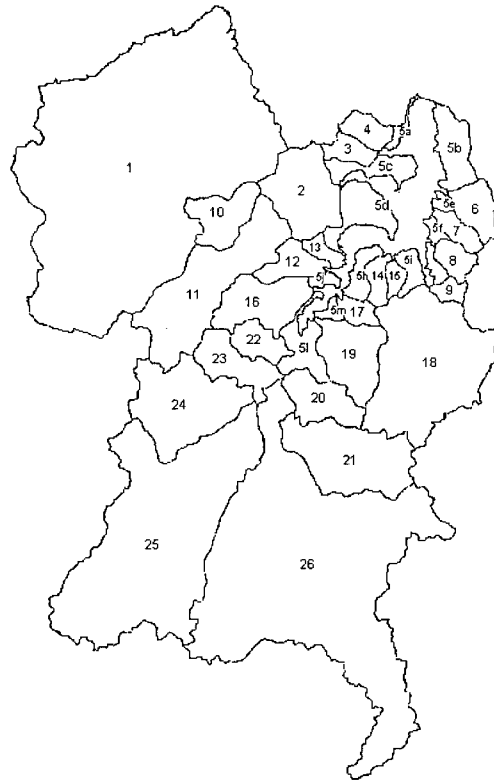


Figure 6.4 — Map of Guarapiranga Sub-Basins

Source: ISA SP, 1998

CHAPTER 7

THE GUARAPIRANGA PROGRAM

INTRODUCTION

This chapter describes and analyses the Program for Environmental Sanitation of the Guarapiranga Watershed (also referred as Guarapiranga Recovery Program). It examines how the Program was conceived and implemented, the main agents and stages of implementation. The achievements obtained until September 1997 are described in Annex C.

The World Bank, the Government of São Paulo State and the São Paulo City Government funded the Program. It was designed to undertake preventative and corrective action, as well as to improve management of the watershed by establishing a new range of activities within the area, described in Chapter 6.

Located in the Southwest of SPM, the Guarapiranga Reservoir was built between 1906 and 1908, with the objective of generating electricity for the Parnaíba Station in the Tietê River. In 1927, the reservoir was integrated into the water supply system for SPM. Initially, the reservoir contributed with 1 m³/s. Its contribution gradually increased 10.7m³/s, which corresponds to 20 percent of the SPMA water supply. Today, approximately 3.4 million people depend on the Guarapiranga reservoir, and it is the region's secondary system (ISA Report, 1998).

In the 1970s, special legislation was promulgated to control the use and occupation of all watershed areas supplying the metropolitan area. These laws, as discussed previously, had as

their main objectives the maintenance and improvement of the water sources, to guarantee their capacity to fulfill the water demand of the metropolitan population.

In spite of these legal instruments, within the last two decades there has been an inordinate and chaotic occupation of the watershed areas, particularly around the Guarapiranga reservoir. The increased demand for land created by accelerated urbanization of the region, as well as the proximity of the reservoirs to the important industrial pole of South São Paulo, is among the most important factors behind this occupation. Approximately 18 percent of watershed area residents are slum dwellers. The remaining 82 percent are divided between occupants of illegal subdivision allotments (in fact they are the larger part, occupying 33 km² of land without any sanitary infrastructure), and residents of the area prior to the legislation (SRHS, Report 1993).

The form and rate of occupation are alarming, and represent an increasing threat to the water quality of the Guarapiranga Reservoir. The most serious problem is the volume of organic material, especially from domestic sources, that is discharged with no treatment into water bodies connected to the reservoir.

This pollution causes eutrophication of the water bodies, by provoking the uncontrolled growth of algae and other microorganisms. Today, phosphorus and nitrogen concentrations in the water are rising constantly, putting the water at risk.

The first major crisis in the Guarapiranga Reservoir happened in 1990, when algae spread throughout the reservoir, affecting the quality of water. These algae liberate toxins and give water an unpleasant taste and nasty odor. Their growth was nourished by organic discharges in the

reservoir - the domestic sewage. In some instances, algae blocked SABESP filters, such was their quantity.

In 1991, faced with the risk of losing the reservoir as a water source due to increasing contamination, the State of São Paulo Government created a task force to design a sanitation and environmental program for the Guarapiranga Watershed, under the coordination of the Secretariat for the Water Resources and Sanitation (SRHS). In 1992, the State of São Paulo, the São Paulo City Government and the World Bank signed a loan contract for the recovery of the Guarapiranga Watershed area, allocating US\$ 262 million for the *Project for Environmental Sanitation of the Guarapiranga Watershed* (WB Program Report, 1992)

As stated in the official documentation, the main objectives of the Project are:

- to ensure the quality of the water supply of the São Paulo Metropolitan Region
- to develop local technical, financial and institutional capacity for the management of the basin, within sustainable development principles;
- to ameliorate the life quality of the 548,000 residents of the watershed area, through optimization and expansion of the sanitation network (sewage, garbage collection and final disposal)
- to create parks and green areas, and restore native forest.

The Program has encountered problems during implementation due to the slow disbursement of funds, particularly for social housing projects from the São Paulo State. Much has been achieved, but questions remain regarding maintenance of these achievements. The continuous influx of

new residents to the existing and upgraded favelas around the reservoir, which are now more attractive with better living conditions, is particularly worrisome.

Also, difficulties arising from uneven access to technical expertise and resources experienced by municipalities within the basin, illustrates the complication of maintaining information, monitoring, and investment to sustain the Program's gains. Absence of real cooperation between involved institutions and agencies has made the project difficult to implement. The educational component, very important to sustaining gains of the program through popular awareness of preservation, has been extremely weak, and has not, so far, had a significant impact. More than anything else, complaints about the level of community and NGOs participation in all steps of the program have been noted. The recent report from ISA (discussed in chapter 6) is also a source of concern, because it shows evidence that the real challenge of medium and long term preservation within the basin has not been taken into account: no significant effort is being made to protect the water sources in the areas where water emerges. These areas have shown the highest degree of degradation in the last seven years, and urgently need protective measures.

THE PROGRAM

The Program was initiated in January 1993, following the loan agreement. It was designed as both a corrective and preventative strategy to maintain the reservoir as a healthy and reliable source of water for the SPMA. To achieve its goals, the Program proposed these strategic points:

- emergency corrective measures: expansion of sewer system; improvements in solid waste collection and disposal services; the rehabilitation of the urban areas affected by solid waste disposal; modernization and rehabilitation of urban drainage systems; the construction of basic sanitation and other infrastructure facilities in low-income communities; the re-urbanization of slums; the resettlement of residents of risk areas; the reforestation of rivers banks and public areas; and the creation of parks and leisure areas.
- medium and long-term preventative measures: a basin management strategy that combines corrective mechanisms with a long-term prevention strategy according to an Environmental Protection and Development Master Plan (PDPA); creation of a watershed operational unit; adoption of improved managerial instruments; more effective fiscal and monitoring activities; promotion of environmental education and environmentally safe activities; and sector studies and projects in housing, solid waste, sewerage and drainage, mining and water quality control to assess how the private sector can be attracted to this area.

In order to make these measures more efficient, the Program planned three sets of operational tools:

- information base and assessment tools: a geographic information system; a water quality model that relates land use and water quality in the reservoir; economic and financial mechanisms for sustaining watershed assessment; and technical directives for land use and infrastructure systems operation;

- program monitoring: ongoing technical verification of water quality; and monitoring and enforcement of the operational and financial responsibilities of institutions and agencies involved;
- reorganization of the institutional framework: the heart of the program is a new management paradigm consisting of an integrated network of several institutions, including local authorities, community leaders, universities, research institutes, and non-governmental organizations.

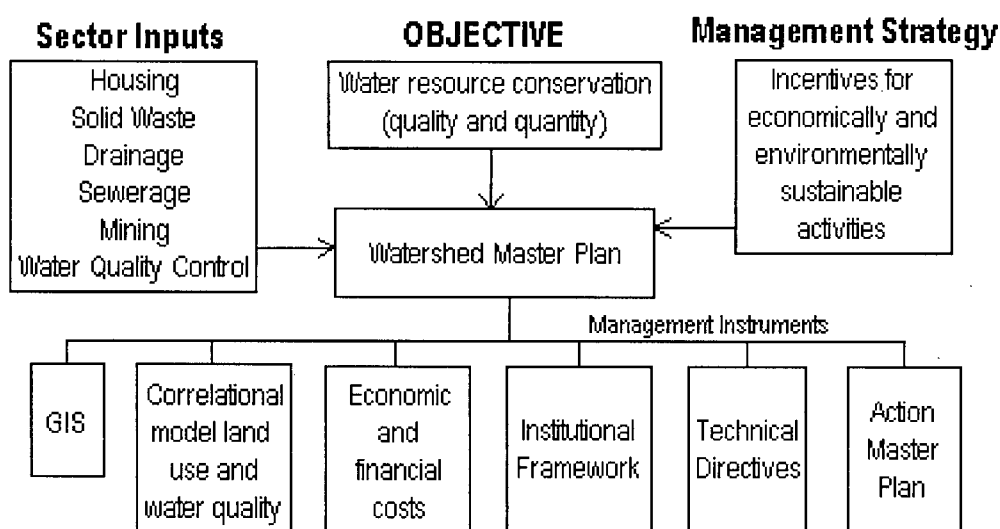


Figure 7.1 — Guarapiranga Watershed Management System

Source: WB, 1995

To ensure better water quality, the program has established water quality indicators to measure effectiveness at controlling pollution. The target is to reduce phosphorus load by 45 percent in the next five years from 192 kg/day to 87 kg/day.

At the time of the fieldwork, the following specific projects were being implemented:

- expansion of the sewer collection network;
- upgrading of slums and squatter settlements;
- improvement to existing inoperative sewer network;
- implementation of plans for garbage collection and disposal;
- acquisition of street cleaning equipment;
- restoration of borderland vegetation in railroads, roads and water bodies;
- implementation of 28 green areas and 6 parks;
- assessment of fish species and evaluation of a proposed pisciculture (fish farming) project;
- mining control and correction of mining techniques;
- lymnological diagnosis and control plan for algae blossom;
- assessment and control of diffuse pollution sources;
- re-registering of industrial pollution sources;
- programs for sanitary and environmental education;
- leadership training;
- reinforcement of land occupation controls;
- feasibility studies for economic ventures in the watershed area;
- a management plan.

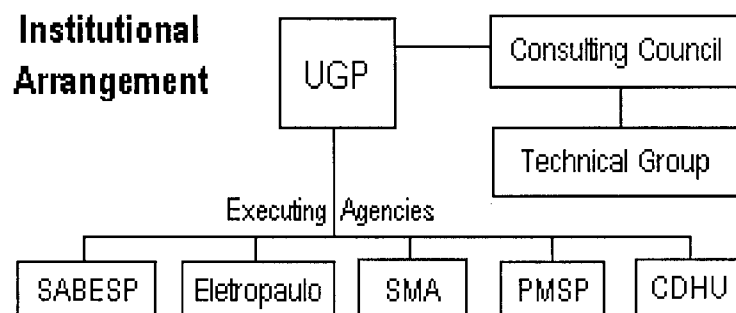


Figure 7.2 — Guarapiranga Watershed Management

Source: WB, 1995

An administrative unit (Unidade de Gerenciamento - UGP), based in the SRHS, coordinates the Program, with a threefold consultant council. Representatives from the state, the municipalities and civil society, compose the 42-member council.

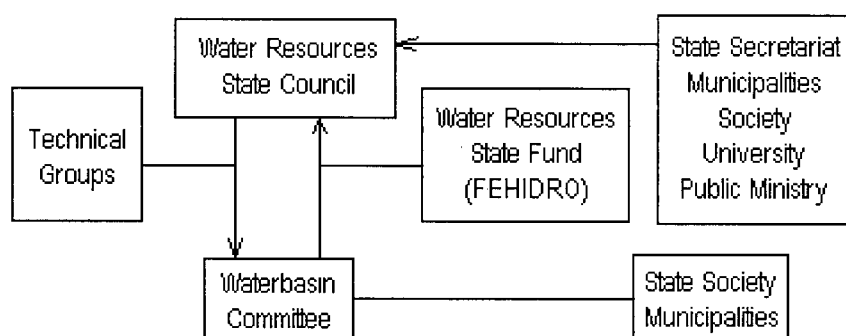


Figure 7.3 — Water Resources Integrated Management System

Source: WB, 1995

The executive institutions for the Program are: State Secretariat for Water Resources and Sanitation (SRHS); State Secretariat for the Environment (SMA); São Paulo City Government and the public corporations: SABESP (water and sewage systems), Eletropaulo (energy) and Companhia de Desenvolvimento Habitacional e Urbano - CDHU (public housing).

From 1993 to 1997 São Paulo City administration implemented slum upgrading projects, including stabilization of landslide areas, drainage works, water supply networks, isolation of sewer systems, and amelioration of road access for garbage collection.

Since 1995, the São Paulo Government has started the following projects:

Under the Secretariat for Water Resources:

- extension of the sewage network and isolation of sewer systems, to serve approximately 80 percent of the population;
- operational improvements in the existing sewage network (serving 270,000 people);
- improvement of the water treatment process, using new techniques to control algae blossom and eutrophication;
- diversion of pollution sources affecting the Guavirutuba and Itupu rivers, Guarapiranga reservoir tributaries;
- improvement (correction and extension) and environmental control of the collection, treatment and final disposal of garbage within the municipalities of Embu, Embu Guaçu and Itapeceirica da Serra;
- acquisition of equipment for street cleaning and garbage collection;
- creation of a computerized managerial information system and a management plan;
- environmental and sanitation education programs;
- technical capacity building programs for the management of watershed areas.

Under the State and Municipal Secretariats for Housing:

- relocation of residents out of critical areas, where it is not possible to extend the sewage system and garbage collection, and from areas subject to flooding and landslide;
- construction of public housing.

Under the State Secretariat for the Environment:

- diagnosis of native vegetation and creation of models to restore native vegetation;
- restoration of vegetation surrounding water bodies, and in road and railroad borderlands, within the watershed areas (“Mata Ciliar”);
- urban reforestation;
- design and building of parks: Ecológico do Guarapiranga; Ilha dos Eucaliptos; Várzea do Embu Guaçu; Lago Francisco Rizzo; Ecológico da Represinha; Aquário;
- revitalization of the historic tourist center of Embu - Praça dos Jesuítas;
- implementation of fishing and pisciculture projects;
- adjustment and control of mining sites;
- limnological and ecological diagnosis of reservoirs;
- pollution: re-registering of industrial pollution sources and registering of special sources of pollution / evaluation of diffuse sources of pollution;
- sanitation and environmental education;
- analysis of the economic feasibility of enterprises environmentally compatible with basin protection;
- introduction of equipment for patrolling and monitoring within the watershed protected area.

In Annex C, there is a brief description of achievements of the Program at the time of the fieldwork, with a relation of the principal projects.

THE ACTUAL STAGE OF THE GUARAPIRANGA PROGRAM

The Guarapiranga Program has evolved over three reasonably distinct phases. The first phase officially finished with the signing of the loan agreement between the Brazil's governments (federal, state and municipal) and the World Bank, in December 1992. At that time, a wide range of activities (corrective and preventative physical interventions, technical projects, scientific studies) was prepared, which constituted the Program base, and these were distributed among an equally wide group of public institutions, responsible for the Program development. This was a clearly successful stage. The time allotted for the preparation, although short, permitted the assembly of an innovative technical and institutional program, whose chosen route has sought to break the inertia of the several compartments of the public administration.

The second phase was the implementation of the contract with the World Bank, early in 1995. Quick implementation of the Program was frustrated by undefined administrative action and consequent difficulties for the financial counterpart resources from the state, which needed to be available at the same time as the WB resources.

During this period, very little was accomplished. SPM started urbanization works in seven slums that sheltered 2,000 families. SABESP finished the work necessary for reversion, during dry seasons, of the Guavirutuba and Itupu rivers, the two more polluted tributaries in the left margin of the reservoir. In addition, it initiated operational improvement of the networks and main collectors of existing sewers, and re-designed complete extension plans for the sanitary draining system (without completing tender procedures for initiation of the work). The UGP initiated studies for a comprehensive plan for development and environmental protection of the water

basin. Water conditions in the reservoir were stabilized, mainly due to water quality monitoring by SABESP (though with still disquieting levels of pollution).

The third phase was and is being marked by the clear definition of the Program's priority illustrated by resolution of the lateness of payments to constructions companies and consultant firms contracted. Several activity fronts were open and, in general, implementation of the Program was accelerated, to the point that, in spite of some schedule delays, evaluation by the WB in December 1995 was positive.

The practical and more significant outcomes have been:

- SABESP proceeded with the necessary interventions for operational improvement of existing sanitary systems. It concluded tender processes for construction of the network sewer expansion, main collectors and sewer elevation stations. These contracts totaled US\$ 58 million.
- SPM finished urbanization works in four of the seven slums initially targeted. The others are being concluded. Eighty families were removed from these slums and placed in CDHU public housing units. Technical works for another thirty slums are complete, and contracts for construction work are expected to follow.
- CDHU will complete construction of 900 housing units for the families to be removed from the thirty slums being upgraded by SPC. It has also initiated plans to upgrade slum areas in Embu, Itapecerica da Serra, and Embu-Guaçu, municipalities within its jurisdiction.

- The SMA made several contracts, especially those concerning construction of the Parque Ecológico do Guarapiranga, the largest park of the Program, and updated registration of pollution sources in the area.
- UGP is concluding a geographical information system of the watershed area, SIG - Sistema de Informações Geográficas da Bacia. The system consists of a data bank of digitized geo-referred information. SIG will be operated in an integrative form; the equipment necessary to its operation is being tendered. This project is part of the development and environmental protection plan for the watershed area.
- The Conselho Consultivo do Programa Guarapiranga (Consultative Council for the Guarapiranga Program) is a tripartite organism that brings together representatives of the state government, of watershed area municipalities and civil society. It constitutes a forum for follow-up and discussion of activities during planning and implementation.

While not totally auspicious, outcomes of this phase have positive aspects. In particular, collected sewage volume was increased through extension of the collection network, reducing the amount of sewage carried by streams to the reservoir.

Also, urbanization of seven slums permitted implementation of sanitation systems, as well as general improvement of housing conditions of these settlements. The physical interventions in process, and the ones to be initiated allow us to foresee new possibilities for improvement of living conditions around the Guarapiranga, with associated maintenance of reservoir water quality (equal to its quality of three years ago).

The development of technical tools, such as SIG, will likely open the way to a new management approach for the Guarapiranga reservoir. However, it is important to consider that the effectiveness of these tools depends on a long overdue innovative institutional approach, in which information is constantly and reliably collected and shared among municipalities, institutions, and public corporations. In spite of demonstrated advances, the future is uncertain. A fundamental concern is to find ways of strengthening and disseminating gains from the Program.

Another source of uncertainty is the need for institutional organization and strategy to deal with the several aspects of management of the water basin territory. In other words, the search for ways to contain urban occupation of the watershed area still presents a great challenge to the future of the watershed.

The issue of territorial control opens a wide range of questions. It opens up discussion about the function and limits of the state in its institutional capacity: what is in reality the range of urban planning?

These questions extend also to the revision of existing legislation of SPMA watershed protection. They raise the possibility of integrating several public activities - sector planning, expansion and operation of sanitation physical infrastructure systems, transportation, roads, drainage, equipment, etc., currently operating with a very low degree of integration.

In many aspects, the responses to these questions are linked to acceleration of the Program and implementation of its goals. Conclusion was initially set for 1998, but has been given a one-year extension. The Program's success will have a positive impact upon projects and plans for

recovery of the Billings Reservoir, the Capivari/Piracicaba, and Paraíba do Sul watersheds, programs in incubation, which address the complex relationships between urban economic development and environmental protection. This is a theme relatively new to the Brazilian public agenda, and needs to be openly and widely discussed between stakeholders.

ANALYZING THE PROGRAM

According to the team responsible for its implementation, the Guarapiranga Recovery Program does not claim to solve the whole problem of reservoir pollution and degradation. It focuses on priority actions to address the most critical factors in water quality deterioration. These actions comprise several sub-programs aimed at preventing the loss of this water source, which directly or indirectly affects the lives of people in the SPMA. The Program also tries to explore new possibilities for environmental interventions in the context of megacities.

Nonetheless, some of the goals have not been accomplished, either because of specific circumstances during implementation, such as a change of municipal or state government, or because gaps in the conceptual framework affected its design. This research comments on the suitability of various Program actions and implementation procedures. Also, to more completely understand the issue of tenure security within the watershed protection area, it discusses reflections of community leaders interviewed.

The interviews in particular, along with newspapers' articles collected, initially suggested two main approaches to evaluating the Program's performance:

- problems of project design
- barriers to project implementation.

Yet, links between these two approaches became more obvious as analysis of the implementation of the Program progressed. Furthermore, detailed analysis of official data, documents and supporting bibliographic material brought clarification to the issue of accountability, so this was explored in relation to the analysis of some aspects of the Program.

The Program has had many positive impacts that should be acknowledged, because they could hardly have been obtained without the Program. They emerged from activities and experiences of the design and implementation phases, and exemplify advances in the fight against environment degradation in São Paulo. Among these are:

- the Program has been instrumental in motivating and reinforcing changes to the Watershed Protection Law;
- the Program has had a positive impact in the recovery of degraded areas;
- the Program has solved some immediate problems arising from occupation of dangerous areas;
- a base of local knowledge has been developed that can be applied to similar projects within the metropolitan area;
- there have been gains in local people's capacity;
- the Program has exposed the role of government in encouraging occupation of watershed reservation areas;
- Watershed Basin Committees have been strongly reinforced;

Negative impacts illustrate the Program's conceptual frailties. Aspects that should have been addressed at the design stage, many of them associated with the specific conditions faced by São Paulo in the 1990s, have limited the possibility of attaining the expected results within a defined time frame.

The following list outlines where the Program appears to be having negative impacts, or to completely lack forceful effect:

- the Program's institutional complexity is an enduring obstacle to implementation of long-term policies;
- coordination *within* and *between* public agencies is very difficult;
- institutional support and capacity at the municipal level is uneven;
- attainable local goals are difficult to address;
- there has been limited involvement of local population;
- there is no acknowledgment of claims to tenure security by the resident population;
- the Program has had no impact on national housing policies;
- the pre-existing Watershed Protection Law has presented a strong institutional barrier;
- development of and response to environmental education programs has been limited;
- there appears to be little public knowledge of the Program and poor public awareness of follow-up;
- no clear security procedures have been put in place to guarantee follow-up and maintenance.

THE FINDINGS

The first significant positive impact of the Program has undoubtedly been the revision of Watershed Protection Legislation. In spite of being in operation for a long time²⁰, the Program created sufficient political momentum to push for the modification of laws. The new proposal for watershed protection presented by the Environment Secretariat is surprisingly good. It is not only a revision of old legislation, but offers a promising new approach for the protection and recovery of São Paulo State watersheds.

Some of positive aspects of the proposal for the legislation are decentralized management by basins or sub-basins, recognition of the diversity and the need for special actions in the areas to be protected or recovered, and community participation in management and preservation of water resources.

The new tools introduced in the proposal expand the possibilities of action by public powers and society. They permit a departure from paralyzing discussion, in which arguments built on restrictive, normative and generic concepts have predominated, only advocating occupation taxes and indices, densities, and land use coefficients. The discourse has usually addressed generalities around idealized and limited models that treat structurally diverse situations in a homogeneous way. The Law's 20-year existence has demonstrated that neither were watersheds protected nor

²⁰ The long and extensive discussion of this legislation and its consequences is presented in Chapters 4 and 5, Annex A.

did urban occupation happen within the prescriptions of the legislation if a conflict of interests existed.

In fact, the new law changed the object to be protected. The focus is no longer to establish legislation to protect a unique space, but has shifted to management of specific fragments of this space, the water basins or sub-basins, throughout the state. The idea of diversity as a structural component of public intervention in the protection of water resources is extremely positive. It will be addressed by formulating environmental protection strategies specific to each watershed area, establishing and defining watershed sub-basins with regional interest.

The areas under urban occupation pressure in the southern part of SPM cannot be treated in the same way as others, where the attraction poles and social determinants of housing demand do not exist. Without admitting the diversity of existing situations in the 4,356 km² protected by the existing legislation (from the 8,051 km² of the SPMA) it will be impossible make progress toward preserving the watersheds. And, without institutional acknowledgement of effective occupation in some areas - more than 600,000 people only within the Guarapiranga alone- it will be impossible to formulate policies and effective practices to recover areas already degraded or in the process of degradation.

However, it is necessary to consider that cities do not develop or limit themselves to occupying one or other waterbasin. Cities are cultural and social spaces that are independent of these limits. Therefore, inter-municipal questions are fundamental and relevant, especially concerning public management of the spaces outside the limit of the basins. In metropolitan regions the continuity

of the built environment cannot exist without a political entity that articulates and harmonizes the different municipal interests.

In SPMA, it is clear that the metropolitan dimension must be incorporated into waterbasin management. The proposition of regional councils should be the first step towards a more concrete discussion of metropolitan levels of governance necessary for a complete approach to SPMA sustainability.

The root causes of water quality degradation must be examined. Predatory urban occupation is, without question, a factor, but it is a survival response by poor people to the public neglect and an absence of housing alternatives. Other causes of environmental degradation, such as industrial activity, must be addressed with public policies, to control the release of liquid waste. The fact that rules exist does not mean they will be implemented. Enforcement efforts are necessary, but not easy to put into practice due to the existing legal and juridical “maze”, and to the tradition of corruption in the policing structure.

In evaluating the performance of government projects, the concept of governance is a key part of the analytical framework. It is a hidden influence on a project’s concept and implementation, as well as its inner capacity to adapt to unforeseen circumstances. The governance concept is, though, very elusive. Governance can be defined as “the manner in which power is exercised in the management of a country’s economic and social resources for development” (WB 1992). Therefore, it is intrinsically connected to the way any specific development project is implemented or managed.

In the Brazilian context, the governance concept has not commonly been used. Historically restricted by an absence of democratic relationship between civil society and government, Brazilian structures have not yet internalized a concept of governance, where the state is important as mediator between the needs of several sectors of society. According to Fedozzi, the definition of governance that most accurately applies to the Brazilian context is a “governing process that embodies popular participation in the public sphere based on citizenship rights” (Fedozzi, 1994). It should also represent a modern and democratic relationship between government and civil society, and have bureaucratic-administrative efficiency able to positively link the political to the technical aspects of the issues to be dealt with. Therefore, questions about the advance of democracy, decentralization, the corroboration of better governability and the promotion of development have been converging towards the local space or local power, reaffirming the political importance of municipal units in the economic and social spheres. Many changes since the 1980s have affected the importance of the Brazilian municipality: institutional changes, re-articulations within civil society, decentralization tendencies and the economic crisis. These changes have brought into focus themes such as federation, democracy, decentralization and the role of the state. There have been many challenges to municipal management, as well as several interesting possibilities. All of these possibilities, though, point to the municipal unit as the locus of articulation of civil society and intermediation with other levels of government. The discussions about these issues are intertwined with the way watershed protection and management of other natural resources are conducted.

However, these observations do not seem to have been addressed within the Program's design, approach or implementation. It is clear that the magnitude and scope of such project would create a need for tools to reach beyond the municipal frontiers. The Program has, sometimes, been a source of conflict between municipalities and executive agencies, making implementation slower and more difficult. Particularly, the issue of maintenance of completed works (parks, upgradings, etc.) is tightly bound to local structures, which in present circumstances are financially and technically unprepared for such tasks. Some common ground has been reached in addressing several problems that have arisen from the top-down approach assumed by the Program's implementation. But the resentments and missed opportunities for a meaningful interaction between metropolitan municipalities will be a constant remainder of the separateness of metropolitan spaces and of their unique characteristics.

The Program's experience involving several levels of state and municipal government has shown many difficulties in collaboration, even when resources are available. However, it is generally accepted that only by continuously working together will it be possible to develop more rational and effective watershed management in the long run. But the Program missed an opportunity to foster a better institutional integration; this, at least in terms of design, was one of its goals (see Figures 7.1 and 7.2).

Public bureaucracy delays have been a constant constraint in Program development. International funds, approved at the federal and state levels, are subject to the same restrictive regulations as is public expenditure in general, because they are disbursed through the Public Treasury. Therefore,

the administrative planning and agility needed in this kind of program are absent, and efficient implementation of the various projects is thereby impaired.

Almost all institutional levels lack effective mechanisms to follow-up projects over the medium and long term. This presents a serious obstacle to achieving lasting results. Even if the future Watershed Management Plan were to have dispositions for mechanisms for follow-up it would be too late to save work developed and implemented in some specific areas affected by the Program. There has been a noticeable increase in occupation within projects already finished, with new residents extending existing houses or using small pieces of idle land near the settlements. No updated information or follow-up of these events is in place.

In addition to the issue of control, there is an unresolved problem of tenure security. One of the main limits to the potential benefits of the Program is the failure to resolve uncertainties of tenure for the resident community. This lack of concern towards tenure security was common in traditional WB projects. However, it is surprising that a project representative of the WB's new era and following a more comprehensive view of sustainable development does not consider tenure security for the residents as a priority action.

The Program will not solve the land property problem in Brazil; this is an enduring challenge for the whole political system. However, clear acknowledgment of this issue within the Program context would be a major achievement for millions of urban dwellers who are at present defenseless against a cruel and outdated tenure law. Considering also that the poor are the excluded in Third World cities, any action that could contribute to a change in their status would

be one of the most sustainable measures of any development program. But by relegating the solution to a nonexistent political jurisdiction that has been so far totally insensible to the plight of the squatter and slum dwellers, the Guarapiranga Program has only reinforced the official government pattern of ignoring the problem.²¹

Even if granting tenure rights would not by itself resolve the precariousness of the illegal settlements, the perception is that if the residents feel secure in having a tangible fact (the ownership) to look for, they would be more ready to participate in community organization for the maintenance of long-term achievements of the Program.

Also, it is critical to point out that changes to legislation governing housing market, as well as in regulation of housing standards, need to be implemented in order to establish guidelines for efficient and adequate urban occupation. It is time to acknowledge what has been happening in the periphery of the SPMA, not only in the watershed areas. Regulatory changes could eventually create a mitigation for housing pressure within the protected areas, opening urban spaces through bonus density and other planning devices.

Water resources management converges directly to protection of watersheds, and also to thousands of clandestine households within these areas. The Program has brought to the surface and highlighted the debate about what to do with this huge number of homes and illegal allotments, and the preeminent need to preserve the water sources. Existing legislation was

²¹ This subject, its national roots and implications was discussed in previous chapters.

designed to meet this water protection need, but has indirectly provoked an explosion of illegal land occupation by sharply lowering land values.

However, local grassroots leaders have been insisting that it is possible to reconcile preservation with occupation. According to one coordinator of social movements, an average of 100 houses per day is built within the watershed protection area. He does not believe official census estimates of 600,000 residents. He says the real number surpasses 1 million, as the economic crisis and unemployment persist and make people poorer. His explanation: as the value of the land is very low, legal owners hope to be “invaded” because they can then divide the land into very small lots and sell them. Because lots are illegally subdivided, prices are low, and they will be sold to families that can not afford anything else, and the houses they will build will be precarious, and the settlement will have no infrastructure. It is a situation that will persist because he cannot foresee any economically and socially positive changes.

Interestingly, about the polemic question of preservation and occupation, this leader is very emphatic in defending the possibility of concord between occupancy of the watershed areas and water sources preservation. But according to him, it is necessary to change the existing law and enforce a realistic zoning code, and environmental education of the population starting in the elementary schools. A land occupation plan is also needed to fulfill preservation requirements, and permit housing densification (through vertical solutions) to meet existing demand. He emphasizes the need for a compromise between civil society and public power.

This coordinator notes that the industries that have been polluting the reservoir are still there. Also, when the sewage elevation station is in trouble, SABESP discharges sewage into the reservoir. A SABESP director told him that it is better to release sewage into Guarapiranga than to have it back up into the houses. Surely, the coordinator argues, an alternative solution can be found. Finally, he argues that residents were forced by the government policies to reside in the watershed protection area, and they have little choice but to use natural resources intensively, which in turn causes pollution.

Another community leader ascribes some responsibility for the situation to Brazil's lack of rural land reform. The poor are expelled from rural areas and see the city as their only alternative. These families come looking for the cheapest bargain, the poorest lot in the poorest region of São Paulo, because they can not afford anything else. Whoever owns the *latifundio*²², whoever dominates the real estate capital in the city, has control of land in society. Workers are left out and become an easy target for unscrupulous real estate developers, who offer lots at low prices. People buy because they need a piece of land to build a house and rid themselves from rent expenses. They cannot afford to care about papers or illegal transactions. It is only too easy to blame the settlers for the actual situation, he says, without looking into the roots of the problem.

After so many years of ignoring what was happening in the watershed areas, as well as the Guarapiranga Program, since the first semester of 1998, the media has been publicizing information about the Program and views of officials linked to it. It is perhaps due to the

imminent elections at the state level. Some of the information shows the positive achievements, but others clearly point to some failures. Also, it is interesting to listen to officials who have been trying to explain the situation in the reservoir areas and their efforts to deal with illegal settlements.

Just one of the planned eight sewage collectors is ready. Waste from approximately 620,000 people that are “illegally” living in the basin, are still being released into the reservoir, without any treatment. This has been forcing SABESP to use four times the quantity of chemicals to treat the water, as is used in the Cantareira System in the North of the city.

In the surroundings of the Guarapiranga Reservoir, the Program has upgraded some slums, channeled streams and built a sewage network in order to improve the water quality. In April 1998, about forty percent of the area is served by sewers. The Program’s goal is to reach eighty percent by its end, but at one year from the end-date, it is not even close. Until the main network collector is ready - in the beginning of 1999 - the system will not bringing any benefits for the majority of dwellers (Folha de Sao Paulo, April 1998).

Reports from Instituto Socio Ambiental, developed with the Nucleo Pro-Guarapiranga, have been released in 1997. One of these reports shows that between 1989 and 1996, the southern part of the basin suffered the greatest environmental impact (see Chapter 6). Satellite photos show several new nuclei of deforestation and invasions that will not benefit from the Guarapiranga

²² “Latifundios” are the large estates (farms and plantation) owned by few people throughout Brazil. They rely on transient labor (migrants).

infrastructure program. Deficient policing has resulted in an increased number of invasions within the Guarapiranga area. In the southern part of the basin where there are dozens of springs and streams that feed the reservoir, deforestation and waste discarded into them by the invaders is affecting the water quality. Data from the government confirm that population growth in these areas was four times the population growth in SPC between 1980 and 1991, and eight times the growth between 1991 and 1996. The secretary of ISA, João Paulo Capobianco says:

“The government was naive and unable to see the complexity of the Guarapiranga area. It is necessary to re-direct resources towards the areas that area being presently degraded. There is still time to act beforehand” (Folha de Sao Paulo, April 1998).

The State says that, at the end of the Recovery Program, the water quality will be the same as that registered in the beginning of the 1980s. The Secretary for Water Resources and Sanitation, Hugo Rosa, the highest state official responsible for the Program, says:

“ We are gaining an added-life of 20 years for the reservoir. But the future of Guarapiranga will depend upon the future management”. (Folha de Sao Paulo, April1998)

The same secretary has contested ISA’s report defining priority areas for the works, and says that the major population pressure is still in the Santo Amaro region, at the margins of the reservoir:

“We have prioritized the works in the areas most in need. But we are going to implement projects and propose legislation to induce the occupation compatible with the watershed protection area” (Folha de Sao Paulo, April 1998).

Again, discrepancies in understanding of priorities are clear and show the Program’s failure to acknowledge needs and to have a vision about the region’s future. In an election year, the concern of what is important “electorally” prevails under the Bank’s blessing or ignorance.

The Federal Deputy candidate, Fabio Feldman, former head of the SMA and mentor of the changes in the watershed protection legislation says it is very difficult to monitor and protect such a big area with so few resources: “We did what was possible” (JT, 1998).

Edis Milare, SMA Secretary from 1992 to 1994, when the Program was paralyzed, also complains that there were not enough financial resources to monitor the watershed protection area. He says that the delay of the program was due to

“the difficulty in resolving bureaucratic problems and the lack of investment from the State. In theory, the Program was very nice. But the government was not able to provide the necessary financial resources. The budget of my secretariat was 0,76 percent of the State resources. It was a ridiculous amount”,

affirms Milare, trying to explain the shortcomings of implementation under the responsibility of his Secretariat (OESP, May 1998).

Financial and bureaucratic difficulties were a common complaint during the interviews with institutional representatives as explanation to the delays and eventual reduction of some expected works.

According to the newspaper, the state government will have to invest at least US\$ 40 million more than the anticipated budget of the Guarapiranga Program, on top of the original budget of US\$ 108 million. According to SRHS Secretary, Hugo Rosa, there was an increase in Program costs because the project exceeded its initial objectives: “Today, the Program’s costs are around more than US\$ 300 million” (Folha de Sao Paulo, April 1998).

The other part of the Program, which has been funded for SPC and anticipated an expenditure of approximately US\$ 36 million, will also need to be increased. Only the World Bank part, seventy percent of the US\$ 119 million originally foreseen as the total cost, has not been updated.

The question of the costs, though, exceeds delays and increased expenses. The main point of contention has been whether the resources, including the WB funds, are being used to maximum benefit. "A good part of the investment was thrown out. If we do not prioritize the areas still preserved, we are always behind the destruction", is the opinion of João Capobianco, president of ISA. The ISA Report indicates that 38,5 percent of the occupations between 1989 and 1995 happened in areas with strong use restrictions and which did receive negligible investment.

Even the WB engineer responsible for the Guarapiranga Program, Abel Mejia, says that he is worried by increased illegal occupation on the Southern part of the basin, but is very vague about the matter. According to him, the monitoring/policing model used in the basin has been inefficient: "We need to incentive occupation that does not produce impact in the region" (Folha de Sao Paulo, April 1998).

The state government believes that the new law concerning environmental crimes, in place since March 1998, along with participation by municipalities in monitoring will stop the new invasions. Dagoberto Meneghini, monitoring director from the Environment Secretariat:

"Before the new law, whoever deforested the area would receive a administrative fine. Nowadays, he can go to prison. This is going to make the perpretators to think twice before deforesting any area within the watershed protected area" (Folha de Sao Paulo, May 1998).

Effectively, no official structure has been established to deal with these specific offenders. Therefore, it is difficult to see the resolution implemented soon.

According to the Environmental Justice prosecutor from the Public Ministry in São Paulo, Marcelo Dwalibi, every two days, a new invasion happens in the Guarapiranga reservoir areas, "The invasions are increasing all the time. This illegal expansion is already out of the state control", affirms the prosecutor. And he attributes part of this growth to one specific social component: endemic unemployment, thus far beyond the scope of the Guarapiranga Program.

CHAPTER 8

CONCLUSIONS

"Water - water management - is essentially politics. All the rest follows"
(Guy Le Moigne, addressing the 2nd Annual WB Conference on Environmentally
Sustainable Development, Washington, DC. September 1994)

"Water is life."
(Slogan of the PMSP campaign to clean the reservoir
during the Workers Party administration)

Water management is urban politics, especially *"when the city invades the water"* (Gronstein et al. 1985) as it is the case of the watersheds of SPMA. But it is much more. The question of the watersheds, their protection, recovery and preservation cannot leave out other questions related to the politics that shape the urban environment. SPMA urban politics must translate a concept of urban environment that places the watershed question within the making of the city.

This study indicates the strong relationship between the way urban politics is defined and exercised, and the reinforcement of ongoing inequalities present in the social makeup of the city. Urban politics cannot only reflect a legal treatment of urban problems, but must pledge the different positions in relation to legislation and nature of propositions dictated by conflicts between stakeholders. They must attack the roots of spatial inequality that have made pollution the landscape of poverty in São Paulo. By not acknowledging the need to incorporate the informal city and its residents as citizens, major urban decisions ignore urban (dis)order.

In spite of advances in tackling pollution threats to the urban environment, there are no clear signs that change is occurring in the way urban politics is perceived or exercised. The presence of

the WB, a major player in the development of urban environment, has not affected the decision-making spheres of the technical bureaucracy. Nevertheless, it is important to recognize that the WB Program has provided an important thrust towards approval of the new watershed protection legislation, which implementation is supposed to open avenues to address the social exclusion of watershed residents.

Analysis of WB Program performance demonstrates that the political environment of SP led the Program to fortify existing urban planning positions. It reinforced the preference for technical solutions with short- and medium-term impacts over long-term actions with broader social and urban dimensions. Even the level of financial, capacity building and information resources put into the Program was not enough to establish planning consensus between various actors and agents involved in changing the way urban politics is played.

Much depended on the way the Program was conducted and the decision-making process was developed. With a strong technical focus towards 'saving the water', rather than negotiating with the immediate water polluters and users (the occupiers of the watershed) it alienated most of the affected population. Their support would have been a key aspect in the maintenance of the Program's gains. The long-standing over-reliance on technical approaches, as well as concern for possible political gains occurring from the Program, clearly prevailed over a more flexible approach with participation by community organizations and NGOs.

The Program has undoubtedly had a significant beneficial impact on quality of life for residents of the settlements that received infrastructure upgrading. Also, residents of middle-class

neighborhoods near the reservoir are benefiting from the infrastructure works. The question is, how long will benefits last? With an increasing number of residents moving into improved informal settlements, one can predict an eventual burdening of the new infrastructure systems. The same can be said for most of the sub-programs, which lack plans for clear and reliable maintenance.

This examination of questions concerning the watershed has used the WB Program as a means of inquiring into urban politics in São Paulo. A major part of the discussion has been centered on specific aspects of the project. The highlighting of achievements and inconsistencies of the Program revolves around urban politics and the physical dimension of social exclusion in SPMA in pursuit of understanding how such a major player in the urban environment as the WB affects this scenario.

THE NEW LEGISLATION

In spite of promises of new legislation, the approach adopted toward SPMA watersheds did not consider the particularity of the urban structure of the SPMA, neither did it address problems caused by the multiple uses of the reservoirs. Questions of an effective institutional system to manage urban growth, basic environmental and sanitation needs, and social demands and claims of affected communities have been omitted.

Lack of reinforcement of existing executive structures concerning regional issues will likely be a hindrance to implementation of efficient water management public policies. Different resource

availability in metropolitan municipalities may become a source of conflict between regional and local interests, making it more difficult to sustain the Program's gains.

URBAN POLITICS

Historically in São Paulo, political emphasis has been on financial viability of specific sanitation projects and programs. This preoccupation is reflected in the political agencies formed to manage technical responses to these questions. Consequently, the majority of technical people who were the interlocutors of these problems came from the sanitation sector.

Two decades after deterioration of metropolitan water resources was officially included in the public agenda, the same technical approach that dominated the solutions to urban problems in the SPMA influenced the Guarapiranga Program. The big technical problems have been addressed (like the sewage networks, control of the quality of the water, etc.) and in spite of schedule delays, they should be completed. Other issues such as land use and occupation, as well as the need for more sustainable actions with social and community foci, were not addressed. Issues such as housing, community services, environmental education initiatives, etc., appear less likely to be realized in short or medium time. Some of these have been addressed, but with the least successful results in the Program. The local political scenario has influenced this bad performance. However, one cannot exclude from blame the WB's support of a perspective that precluded introduction of long-range policies. Social achievements are difficult to sustain if not strongly supported by policy reforms.

The Southern watershed areas in SPMA are some of the last areas available for urban expansion. They are also one of the most attractive, because of their proximity to jobs in nearby industrial and services centers. Urban infrastructures already in place, location relative to the main transit axis and land low price are additional attractions. This is the principal arena in which, explicitly or surreptitiously, the conflicts between different social groups emerge in the fight for urban space. It illustrates, in acute details, most of the problems occurring throughout the urban fabric, where social inequality prevails.

The Program, projects and proposals, which at an institutional level sealed the area's destiny, did not consider the diversity of interests in the area. They tried to concentrate on defense of a common good - the preservation of clean and reliable water. They did not see positive aspects related to possible land uses and activities, nor did they consider which areas might eventually absorb high-density housing, and in what form.

Here lies the Program's main failure so far. It has failed to acknowledge the role of urban politics in shaping watershed occupation, and to define an occupation model for the watersheds, which incorporates sustainability and feasibility (social, economic and physical) without excluding existing residents. This cannot possibly be achieved by legislation or law enforcement, nor by expensive technical solutions for sanitation systems. It is a task for the whole society, and one in which public power and different social groups must participate as equals in decision-making and responsibility for the desired accomplishments.

The Program presented an opportunity to start a comprehensive discussion about urban politics. The opportunity was not to solve the question, because urban politics is a living question, with no simple or quick solution. It was, rather to initiate a thorough understanding of the problems beyond its immediate technical dimensions. Solutions for the Guarapiranga area more sustainable than upgrading of some *favelas* and installing sewage networks were not considered. One of the interviewees, a high profile official, articulated the veiled reason for this omission: "...you see, in the long run, all these people should be moved out...". The recognition of the impossibility of removing nearly one million people from the protected area seems not fully acknowledged by the technical elite responsible for the decision-making process in large infrastructure programs.

Another difficulty arising from the urban political apparatus is the dominant technical view that basic sanitation - water, sewage, garbage and drainage - is the main element of urban order. It is very difficult, in SPMA or any developing city, to imagine basic sanitation as the spearhead and defining factor in the urban arrangement. The existing deficit of water is so large, and the forms of water supply so diverse that it is difficult to sustain this concept. It is necessary to recognize the informal city, acknowledging it with an urbanism of the *possible*. This is a difficult conceptual step, because the idea of an orderly, formal city is ingrained in planners and city officials alike. The concept of the city as obeying certain patterns is an idealized middle and upper class urban configuration. The "sanitation" people, who design the systems and programs, come from these classes.

Therefore, reproduction of accepted patterns is almost inevitable. *Favelas* have been treated as transitory for a long time in SP. Their eventual disappearance in the face of progress and

development is accepted as inevitable. The relocation of *favelas'* population to settlements that will look like formal city is an absurd fantasy, yet to this day it is discussed and accepted in many technical spheres. If one surveys the editorial pages of the main SP newspapers over the last six years, it is apparent that this assumption was responsible for the ineffectiveness of aspects of the Guarapiranga Program.

URBAN ENVIRONMENTAL ISSUES

In SPMA, environmental problems have been growing rapidly. They have been brought to public attention by the virulence of their impact. There has been an immense increase in areas subject to flooding as well as in the frequency of flooding episodes. Difficulties in solid waste management and its disposal are growing, and the impacts of increased air and water pollution on public health abound. Recently, the threat of clean water shortage has risen significantly for the whole region.

However, it is increasingly apparent that these risks are unevenly distributed among the metropolitan population. This situation lays bare the contradiction inherent in discussing urban sustainability without examining socially prevalent practices, or acknowledging the relationship between social justice, quality of life and environmental equilibrium.

Nevertheless, the development model in place in recent decades has generated this praxis. The core of the problem is failure to recognize environmental degradation as the cumulative effect of

widespread poverty, social inequality, unemployment, misinformation and ignorance of the relation between environment and health risks.

The question raised by the Guarapiranga Program is: *"In what aspects is the Guarapiranga Program contributing efficiently to attaining environmental improvement in the entire SPMA waterbasins?"* The response would have to acknowledge that while there are immediate gains for some low- and higher-income communities living around the reservoir, most of the population now "informally" settled in the watershed area will have no long-term gains, because the urban policies have not changed.

Environmental problems take on great importance in SPMA, not only because they are acute but also because they call into question basic assumptions upon which social and economic development has been grounded. Environmental degradation is a by-product of structural aspects of production activities and of land occupation. In developed countries, ecological questions are largely limited to revisions of lifestyles or protests against concrete, specific interventions. In these countries, structural aspects of the relationship between humans and nature seem to have been better resolved, either because the social contract has been able to balance this relationship more effectively, or because much of the dirtiness has been transferred to other parts of the world.

In Brazil, environmental problems are complex and diverse, ranging from rain forest devastation to rivers that are open sewage like in SPMA. To alter this scenario of environmental destruction implies a profound revision of the relationship between state and society, a relationship which

has been strongly marked by social exclusion and inequity, and which permits only a partial exercise of citizenship rights.

Environmental problems demand immediate answers. Pressures from the international community and from environmental organizations, ecological accidents and the risk noted above have, recently, obligated the Brazilian government to review its role as regulator of resource use.

The spectre of environmental risk presents a challenge to build coalitions of capable citizens able to create acceptable living conditions that stimulate development of community practices and preventative public policies without negatively interfering with the environment. Society must be mobilized to assume a dynamic role in proposing action. Civil society must be prepared to demand government initiatives which promote sustainability, social inclusion, and development within the context of increasing economic difficulty.

INFORMATION

There is a need to create an agenda for urban environmental sustainability that takes into account the importance of expanding access to information. Environmental information is often scattered and difficult to interpret. But it is indispensable that information be available to all actors in the urban environment in a clear and accessible way.

The Guarapiranga Program is a huge step towards filling the gap in information about the watershed areas, but will the information be available to all stakeholders? Several questions arise: in a system with much information, who will control it? Who will say which information

enters which system and who can have access to the data bank? Who belongs to the commissions that are now entitled to the information? And whom do they represent? At present, none of these questions can be clearly answered.

PARTICIPATION

Broader popular participation in the decision-making process is the only way to promote necessary changes to the present unjust social system, and thus confront the serious urban problems faced by the SPMA. Such a large proportion of the metropolitan population - slum dwellers, landless, “illegals” – must not be excluded from management of their city and from the political process constituting the urban order. They must be recognized as citizens. The majority of the urban population must not be compelled to live as would-be citizens in the “informal” city, where the criteria and requirements of the “official” city are not applicable.

According to Kessides (1997), World Bank standards require participation to be encouraged by group identification and mobilization followed by information dissemination and discussion. By the proposal and decision stage, the necessary commitment will have been generated. In a model project, small groups of households are invited to discuss their sanitation problems and needs with a program team, whose members have both engineering and community mobilization skills. Thus, not only needs are assessed, but also possibilities, because the team’s technical staff are able to immediately assess the feasibility of the groups’ proposals.

What has group identification and mobilization meant in the Guarapiranga Reservoir Program? Although information was gathered prior to the Program's start, neither residents nor community organizations were called to participate in defining implementation guidelines and post-program activities. According to the residents, community leaders and NGOs interviewed, the worst thing is that they are not part of the implementation and maintenance processes, which will, ultimately define the success of the Program. They feel totally excluded, and suspect that the social and economic information gathered before the Program started has been discarded, or at least, been accorded a low priority.

One can argue that the communities may have unrealistic expectations that generated technically or economically impossible proposals. But experience has shown that poor urban communities have a very clear view of their needs and realistic expectations (Moser, 1996). The Program team's approach suggests distrust in the common sense of the residents. In not incorporating communities and NGOs through the implementation process, the team's handling of participation has compromised the trusting relationship essential in this kind of community elicitation and cooperation.

The Bank's guidelines regarding information dissemination and discussion suggest that if the group expresses interest in technical details, costs, financing, rules for participation in the project, etc., they should be so informed. But participants felt that the Guarapiranga project had been defined prior to their involvement, and discussion was only limited to small details and adjustments. More importantly, nothing has been clearly in place to address this step of the process. Participation was developed as part of the project's draft design, but was never really

implemented. It should be emphasized that this participation is essential to maintain and ideally multiply the Program's gains.

THE LAND AND HOUSING DISCOURSE

The discourse concerning land use and occupation was profoundly affected by the watershed legislation. In the urban planning milieu, it generated a belief that regulation and its application would be enough to control urban occupation of the area. These mechanisms were restricted to the normalization of land division, did not consider how urban expansion happens, and did not work. The public power and the planning milieu has ignored the need to turn public politics into concrete actions that would confront the problems in the region.

While issues of administration, energy, sewage and water supply have polarized technical opinion around different projects and solutions, no controversies have fuelled technical debate or political guidance concerning land distribution. Only when the city was threatened with water supply collapse, the state turned attention towards different levels of competence and responsibilities within the realm of the urban environment.

The expansion of 'illegitimate' solutions (based on illegal subdivision or land invasion) in the periphery of SPM and watershed protected areas is linked to the absolute insecurity of work (wages, retirement, unemployment). Furthermore, the contractual conditions for renting have forced the working population (formal and informal) to make any sacrifice to own a house in order to escape renting. The permissive attitude taken by the state towards irregular subdivisions

is a means to reproduce the economic system and accompanying inequitable model. Escape from the *cortiço* or *favela* into land ownership, even with no guarantee, improves the living conditions of the household.

Land and water are essential to life. Land for housing and clean water are essential elements of a healthy urban life. The social conflicts associated with these elements occur because they are finite, and therefore, vulnerable to socially produced scarcity. Only an expressive housing policy will assure protection and preservation of water resources and watersheds, and prevent the loss of the large investment committed to the Guarapiranga Program.

In the 1990s, the WB has avowed the need to make urban regulations more flexible as a way to eliminate obstacles to the private actions and increase urban productivity. This agenda assumes that urban poverty increases in relation to demographic growth and that restrictions to productivity create barriers to employment generation and cause restricted access to urban services (WB, 1990). A small state, more productive and with most services provision privatized would dedicate itself to social policies and poverty alleviation, as well as defending the environment. Thus, the neo-liberal vision held by international institutions has incorporated claims and demands that have been made by popular movements during recent decades: tenure for "spontaneous settlements"; incentives to associativism/cooperativism for job generation; incentives for community initiatives for self-help and self-managed housing and urban infrastructure provision (Maricato, 1997).

There is an urgent need to recognize and support the efforts of the poor, in the household and in the community, in order to face their own needs through community initiatives and organizations” (WB, 1990;

How can an “illegal” practice of the excluded segment of the population be seen as a virtue and an example of an active population replacing the state? It appears that when the money is short, practices that have resulted from years of state neglect become the recommended alternative. According to Smolka, it reinforces a model where the state is seized by advanced, modernized, influential sectors of society and becomes allied to international agencies, leaving the rest of society to their own means. Something that was happening in practice has also entered the discourse of international agencies (Smolka, 1992).

The urban reality of SP has combined an excess of regulation for an extremely exclusionary formal market with total disregard and abandonment of the informal, which defines the majority of urban land. But excessive regulation is not only created by bureaucracy; it is basic to upholding financial gains in real estate industry, in a highly concentrated market.

In Brazil, the state traditionally defends the private property at the expense of the public one. This explains the inefficacy of public investment and ignorance towards the generalized occupation of areas so important for the environment. (Maricato, 1997). Thus, it is not surprising that gaps appeared in the conceptualization of the Program, since it was conceived and nurtured by a small parcel of the society with clear ideas about whom international money should help and to what purposes.

Access to urban land and housing cannot be decided by market forces alone; recognition of the long claimed "right to the city" is a condition for Brazilian democracy. However, law does not grant urban reform. It must be won through the political process. This will only be possible when residents of "informal land and housing arrangements" are recognized as full citizens.

CITIZENSHIP RIGHTS, FORUM AND CIVIL SOCIETY ORGANIZATIONS

Better environment is intrinsically connected to the concept of *citizenship*. One is capable of defining her/his betterment if she/he has clearly understood her/his *rights*. In this particular case, *citizenship rights* embody her/his full participation in bringing about a better urban environment. These rights comprise, certainly, access to clean water, but also include tenure security, employment, health, education and community participation. Although some of these *rights* may not be completely attainable through technical projects within the scope of the Program, the Program offers an excellent opportunity to address some of these issues and initiate discussion of possible actions.

The absence of mechanisms for regional action within Brazil's political-administrative tradition makes it difficult to address supra-regional issues such as watersheds. The work of detailing constitutional amendments outlining regional organization of the state is in its infancy. The diversity of agents and of involved interests makes the discussions extremely complex. State government response to the need to resist sectorialism and centralization has been limited to proposals for sectoral councils, with different territorial inclusion.

The amplitude and complexity of environmental issues, though, requires intense collaboration between councils such as the Environmental Regional Council, and Water Resources or Sanitation Councils. From this conjuncture rises an important innovative fact: inter-municipal Councils, uniting several cities, could lead various actions, and confront the state government in a more consistent form than can isolated municipalities. As associations between municipal executives, the *consortia* are more likely para-state associations than non-governmental organizations. NGOs are commonly seen as the only legitimate source of people's representation and advocates of citizenship rights. In many ways, *consortia* can be stronger than NGOs because they offer consensus positions within municipalities, and give important assistance in organizing the environmental debate.

Within this multifaceted picture, besides proposing immediate amelioration of public actions for the environment, is the understanding that the montage of agreements and practical follow-up actions between the various entities involved should anticipate any engineering work. The public or private agents involved need to agree not only on concrete actions but also on decision-making and follow-up mechanisms.

There are no unique models to be followed: each forum, as well as its proposals, should represent specific characteristics of the situation it endeavors to resolve. The forum must confront the complexity of problems, involve the public power, and deal with issues such as territorial extension and the maturity and articulation of civil organizations involved. They should reflect the specific conditions of each region.

The task of NGOs and other organizations, as well as spearheading autonomous initiatives should be to lead and integrate community initiatives. They must have as a permanent target government reforms that would permit the state to act as regulator between conflicting interests. Their task is also to convey clarity, transparency and control of their actions to society, as an important exercise of citizenry.

THE URBAN PLANNING REALM

In the metropolitan scenario of physical exclusion, urban planners must make room for active all-citizen participation in decision-making processes, and help low-income communities to increase their access to social power. They should allow for flexible standards in the construction of the built environment, and not just be mainly concerned with technical regulations and codification. The new urban planning must be participatory and a provider of strategic information to all participants in the planning process, thus empowering the excluded. Planners should forge consensus through negotiations between stakeholders, emerging as mediators in the urban politics and finding collaboration across the widening social, political and economic divides that has been prevalent in the public domain.

SUGGESTIONS

Two points must be part of any approach to address SPMA environmental problems. First, any sustainable and feasible solution depends directly on governmental measures. Second, a central

point in any solution is the need for the state and society to work together in a concerted and concurring way.

It is necessary to prioritize urban environmental problems as part of the long collective process for Brazilian re-democratization, and thus, part of a broader national project. It is important to recognize that new federal and state constitutions have made advances towards this goal, but there is a long way to go before these legal advances are transformed into realities and effective practices.

Nowhere is this so clear as in the specific context of urban water sources. At stake is environmentally sound management of watersheds within highly developed regions that have high indices of urbanization and industrialization. The threat to existing water resources due to pollution has stirred up bitter disputes. These questions demand the participation of society – representatives of industry and agriculture, popular organizations, environmental organizations, university and research centers. In a federate regime, coordinated actions from Union, State and local government are also necessary. It is important to define fields of intervention for the judiciary, legislative and executive powers at each level of government. No less important is close cooperation between units of the same government, especially within the state and municipal levels.

The need for awareness of environmental degradation is fundamentally important and opens a wide range of possibilities. One is to make visible the risks posed by an assumed development model. This involves discussion of future events, but people usually ignore or show little interest

in something that does not affect immediate their daily existence; their first concern is how to survive, to have a house, to obtain or hold a job. Thus, crucial decisions of how to prevent pollution should necessarily address poverty and social practices that are the roots of social inequity.

To confront environmental risks, to expand people's awareness, and thereby to minimize risks, implies changes in social practices. These changes should lead to alternative actions operating from a perspective of sustainability, and should challenge the prevalent practice to avoid addressing poverty and pollution unless it is politically convenient, practice that is common in predatory public policies. The necessary changes require that social practices strengthen access to information and to environmental education. The initiatives should develop from the premise that more accessible information and more transparent management of urban environment issues will lead to re-organization of authority and power.

The Guarapiranga Program should concentrated on developing a comprehensive and more participatory Management Plan to guarantee that, in the medium and long term, resources will not be wasted. The community's lack of information about the upgrading work, its maintenance and preservation, the high incidence of vandalism, and carelessness make completed upgrading difficult to maintain. Specific action to address these issues must be incorporated into the Watershed Management Plan.

Modification of the Watershed Protection Law is undoubtedly essential for adequate implementation of this Plan. Nevertheless, changes to the law per se will not make any difference

without public support at the local level for Plan implementation. Therefore, discussion of medium and long-term priorities within each community should precede specific municipal legislation to consolidate the Plan's aims.

The use of land for public parks enhances important aspects of social life for the community. Parks can also be a valuable tool in the valorization of reservoir borderlands. Thus, municipalities should be encouraged to do constant maintenance and to make sure that parks' public safety is adequately addressed. Also, general sanitation and environmental education programs, as well as information on parks' features play fundamental roles within the communities. Continuous programs should be implemented to disseminate environmental awareness and give people opportunity to learn and enjoy themselves.

Relocation of a few slum areas will not bring about the recovery of the reservoir, and not all the slums that threaten water quality should be relocated. A special project should be set up to address the need to relocate all risky area dwellers. Also, constant follow-up from education monitors and social workers is necessary to help the community to preserve and improve upgrading works.

The sewerage system being constructed by the SABESP will significantly improve the quality of life of recipient communities, directly and indirectly. However, sustained improvement will depend on maintenance and community cooperation. Sanitary education is fundamental.

To regularize land use and control, and to enforce appropriate standards of occupation, a decentralized policy that transfers to municipalities resources adequate to the demand is needed.

Such a policy would also transfer responsibility for enforcement and control. An entire collection of actions is necessary: social consciousness; participation of community organizations; policy decentralization; services decentralization; ample discussion of environmental issues and regularization proceedings.

Modifications in the administrative structure at metropolitan and municipal levels are certainly necessary. Particular attention should be paid to aspects of service provision and the allocation of resources. An associated problem is the challenge posed to tax mechanisms by the increasing informalization of the economy. Particularly important to environmental protection are basic infrastructure services such as waste and sewage collection, and preservation of green areas and parks. Strong links between community organizations, NGOs and government agencies will create a democratic chain of shared power. Priorities could then be defined according to needs and available resources, a practice that do not exist in SPMA today.

The role of international financing needs to be considered and evaluated within this context. The tasks of recovering and preserving the environment are enormous. Also, international institutions have been major agents in São Paulo's transformation, and as such should become more efficient partners in meaningful changes.

Suggested policies for integrative management of watershed basins in SP should involved stakeholders in:

- Discussions of all aspects of occupation processes in the Guarapiranga watershed basin: demographic and socio-economic dynamics; socio-political and political-institutional aspects;

degree of pollution, scarcity or excess of water volume, capacity of the water sources; subdivision of the area into smaller compartments (urban, peri-urban, and rural zoning), involving management and technical staff of state and municipal governments, who are concerned with urban development and environment.

- Identification of points of conflict (land use, political, legal, normative) and of convergence (main interests or common problems); identification of financial sources for medium and long term self-management; and exploration of possibilities for financial support by involved managerial institutions,
- Development of systematic regionally based management (water resources, environmental sanitation, and metropolitan issues), using primary and secondary data and addressing competencies and responsibilities: administrative, institutional, executive, financial and legislative (co-management of the watershed basins).
- Discussion and adaptation of models and international experiences of watershed management in urban zones (current uses and the potential to combine and maximize compatible land uses, while preserving the watershed areas and water sources).

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APPENDIX A

SPMA WATERSHED LEGISLATION

THE LAWS 898/75 AND 1172/76

The first disposition of watershed protection was State Law 898, dated 18 December 1975. Its contents were:

- the indication of watershed, streams and reservoirs and all the protected water resources;
- definition of the area to be protected - the drainage basin of the protected watersheds;
- requirement of a permit from the Secretariat of the Metropolitan Issues, re-named Secretariat of Housing and Urban Development, hearing CETESB in the environmental aspects for the exercise of any activity within the protected areas.
- definition of sanctions to be applied to offenders;
- the public works were obliged to carry out the minimum requisites defined by the Secretariat of the Metropolitan Issues.

State Law 1172 from 17 November 1976, outlined:

- delimitation of the protected watershed area, and areas of more or less restriction;
- definition of permitted and forbidden occupation uses, establishment of urban indices, and benefactions for forest preservation;
- mandatory permit for removing forest, or moving soil and for the amplification or intensification of industrial operations;

- demand for protection and conservation of soil in agricultural and forestry areas.
- prohibition of public sewage and water systems in the urbanized areas and their borders;
- mandatory exportation of sewage to other basins; in case this is not possible, mandatory treatment with a ban on disposal in specific zones where no sewer system exists; the mandatory of aseptic tanks;
- ban on storing solid waste from public cleaning or sewer treatment within the protected area, domestic waste-exempt;
- restrictions in use of nutrients and defensives in agricultural activities;
- definition of dates for: adaptation of individual sewer systems to the norm (3 years); transference of hospitals, sanatoriums and other public health equipment that deal with infectious-contagious diseases (5 years); developing a project for disposal of industrial sewage (1 year);
- authority to expropriate estates within a specific use zone where it could be demonstrated that the public sewer system was not present or was insufficient for the volume of effluent, and to expropriate industries where it was demonstrated that it was impossible to install proper sewage treatment systems;
- obligation to allocate 0.5 percent of the protected areas to metropolitan public parks around the main water bodies;
- obligation of the Secretariat of Metropolitan Issues to use the technical services of EMPLASA - the public metropolitan corporation - to fulfill its obligations defined by law.

THE DECREES

Decree 9714, 19 April 1977, approved Laws 868/75 and 1172/76, and defined:

- roles of the Secretariat of Metropolitan Issues, later Housing and Urban Development of EMPLASA - Empresa Metropolitana de Planejamento da Grande São Paulo (Metropolitan Planning Corporation for Greater São Paulo); of CETESB - Companhia Estadual de Tecnologia de Saneamento Básico e Defesa do Meio Ambiente (State Corporation for Sanitation Technology and Environment Protection); and the Secretariat for Agriculture ;
- procedures for licensing activities and realization of works within the protected area;
- powers and attribution of controlling agents, of fines for transgressors, and of procedures for billing, fine collection and legal appeals;
- method of adaptation for urbanization, buildings and pre-existing activities, and specification of criteria for identifying of pre-existing situations.

As for benefaction for enterprises that preserve forest and all forms of original vegetation, this decree added to the laws, and forbade the conjoining of areas not adjacent to each other, except when separated by public streets.

The second set of regulations created by the Laws 868/75 and 1172/76, the Decree 12219 (September 1st, 1978), authorized the Secretariat for Metropolitan Issues to celebrate agreements with the municipalities of the metropolitan region for examination, adaptation and approval of uni-familiar housing projects within protected areas.

MODIFICATION OF WATERSHED PROTECTION LEGISLATION

Watershed Protection Legislation Revision

All governors after promulgation of the watershed protection legislation tried to modify the laws. Some of them made some alterations; others commissioned studies for eventual revisions. Their policies oscillated between a preservationist view and protecting the interests of private companies and real estate speculators. Modification actually accomplished was insignificant.

Legislation Modifications in the Maluf Government

Legislation modifications promoted by the Maluf government, Laws 2177/77 and 3286/82, reduced the extension of the protected area, respectively near the end of the Guaió River and near Mogi das Cruzes municipality. These modifications had little impact beyond addressing localized situations. They can be understood as adjusting the technical proposal to fit political reality.

The first modification happened silently. But the second one was strongly criticized by the Legislature, for setting a serious precedent. Both alterations were approved by time, a controversial device in Brazilian legislative procedures that considers approved a matter that cannot be discussed and either dismissed or approved within a certain time-frame. These modifications, though, were never really voted for.

Studies during the Montoro Government

During the Montoro government some modifications also happened. It was the Law 3286/82, ruled on legislative procedures concerning alteration of protected areas. It imposed a need for

technical appraisal from CETESB and from the Secretariat for Metropolitan Matters before modification of existing laws. By subjecting the legislative decisions to technical appraisal it encouraged a democratic system at the state level, revealing the attempt from the technical staff—within the Executive power—to impose itself to the political decision, peculiar to the legislative power.

This technical position was common during that government's period, at least in matters of watershed protection. The period was marked by many studies of the legislation, and few initiatives to actually modify it.

Some observations from reports of that period:

- ...“the legislation was elaborated 10 years ago, and was based in a survey from 1974. As the monitoring of the area was never efficient, the actual situation is very different. The urbanization is extensive and intense, legal and illegal”.
- ...“the legislation is very complex, difficult to understand. It is necessary to clarify it in order to be understood and obeyed. Besides, the delimitation between the classification of the areas according to its use was never very clear”.
- ...“the uses and densities permitted were established considering basically the existing urbanization in 1974 and the distance from the water bodies. The new geo-morphological studies of the region indicate that for certain areas the use needs to be more restricted than the existing ones. In other areas, the densities and uses can be increased.”

- ...“some of the legal dispositions were never regularized as the ones regulating the soil movements, the use of fertilizers, etc.”.
- ...”there is a need to regularize situation de facto, when impossible to relocate. In what kind of conditions this is going to happen? For the definition of criteria it is necessary a survey of the illegal consolidated activities, as subdivisions, buildings, urban activities management of rural plots, etc.”.
- ...”it is reasonable that the municipalities that have part or the totality of its territory within the watershed protection are, have a form of flexibilization in order to orient the urban growth in their cores, according to their peculiarities socio-economic and geographical. Some mechanisms of compensation within the municipalities should also be available and permitted, respecting the medium values dictated by the law”.

A Special Commission, installed to study and propose improvement of watershed legislation, defined its **immediate aims** as:

- priority for sanitation infrastructure in the protected areas;
- de-centralization and improvement of the approval process for private projects within the area;
- reconciliation between municipal legislation in the areas and existing state laws;
- creation of a Metropolitan Chamber for Watershed Protection.
- studies to investigate financial compensation of municipalities within the protected area;
- studies to regularize unlawful situations;
- studies to regularize existing works from public organizations;

- studies to extend the protected area to the limits of hydrographic basins important for the Metropolitan Region
- re-study of criteria for application of urban indices defined by existing legislation
- re-study of the limits of industrial areas within the protected area;
- studies by municipalities to create incentives for the preservation of native forest in the protected area.

In a report entitled “Proposals for the Revision and Improvement of the Watershed Protection Laws” EMPLASA recommended:

- definition of criteria for application of urban indices to enterprises larger than the limits of each classification;
- definition of additional restrictions for plots 500m² or smaller, in specific areas (class B and C);
- simplification of the licensing process, eliminating CETESB approval;
- unification of technical staff from SNM and EMPLASA, linked to licensing and monitoring, zoning legislation, industrial development, and the pre-approval of metropolitan subdivisions; within EMPLASA, unification of technical staff;
- proposal of financial compensation for municipalities included in the protected area.

The same report also proposed *new laws* to:

- define applicable restrictions to cemeteries in the protected area;
- extend EMPLASA’s mandate to apply and monitor federal and state environmental protection law compliance, as well as all respective regulations and normative acts, in respect to

preservation of forest areas and other vegetation, and soil removal connected to mining activity within the metropolitan region;

- create a consultant commission to subsidize decisions of the Secretary for the metropolitan issues;
- cancel some incongruent articles in the actual law;
- admit, for each size class of lot, at least the larger dimension of permitted built area in the prior class;
- establish administrative links between acts for approval and licensing of state institutions in the metropolitan region, so that the last public agent involved receives the initial solicitation, and each license takes effect after approval of the last administrative act;
- substitute a sliding scale of fines for a fixed value in non-monetary units (because of inflation problems with updating the fines).

None of these proposals resulted in any initiative from the Executive. Apparently, the government was not interested in proposing its own modifications to Watershed protection legislation. But it offered a subsidy for civil organizations to propose modifications.

Therefore, Executive initiatives concerning the watershed protection legislation during the Montoro government were limited to administrative procedures, adopted under one Secretary and revoked by the next one.

Based on Justice Act 117/84, EMPLASA decided that nothing was impeding installation of water supply and sewage collection networks in the allotments and all situations pre-existing to the

Watershed Protection Law. With this decision, it permitted implementation of extensive networks in the urbanized and occupied areas that had nervously lacked services.

Based on Justice Act 078/85, EMPLASA also made some alterations to the urban indices, in order to accommodate situations existing in the periphery and permitted by the municipal laws, without altering the density and occupation standards prescribed by the law.

But all these measures did not indicate consensus. During its next Director's mandate, when the report described above was developed, EMPLASA revoked all these decisions, creating a strange situation where the measures accrued more restrictions during interpretation and adaptation of the legislation than had been present at the start.

The Proposal from the Quercia Government

At this point the Executive sent the proposed Law 262/88 to the Legislature. The law, not voted by the end of his mandate determined:

- restrictions to the regularization of housing condominiums
- addition of certain conditions to the implementation of infrastructure services (water and sewage)
- obligation of the Secretariat for metropolitan Issues and the Secretariat for the Environment to enact aims, objectives, norms and criteria for regularization or removal of illegal buildings
- creation of a Commission for monitoring Watersheds

The first modification of the watershed protection legislation was Law 2177, 26 November 1979, which changed the description of the river Guaió, one of the streams protected by Law 898/75.

Decree 15037, 6 May 1980 re-defined the protected area, taking into account modifications introduced by Law 2177/79. However, the protected area was defined by Law 1172/76 and was therefore exempt from alterations by decree.

The second modification to the legislation was Law 3286, 18 May 1982, which altered the description of one of the watersheds protected - the River Tietê up stream from Mogi das Cruzes Village. In addition, Law 3286 changed the protected watershed area that had been defined by Law 1172/76.

The third modification, by the same Law, concerned legislative procedures related to modification of protected areas. It demanded previous pronouncement from CETESB and the Secretariat for Metropolitan Issues.

THE STATE CONSTITUTION

The new São Paulo State Constitution (1988), Articles 205 and 213, contained legal dispositions that decided on the water resources. Articles 43 and 46, in the transitional dispositions applied to the same issue.

Article 208 forbade the discharge of untreated effluent into any water body. Article 46 allowed the public power 3 years to impede the pumping of used water, wastes and other pollutant substances into the Billings Reservoir.

The other articles dealt with:

- institution of a management system for water resources, within 2 years from the beginning of adaptation works
- protection of groundwater and of strategic reserves, including those used for water supply;
- public contribution to development of municipalities having reservoirs or being under their influence;
- measures for soil erosion control;
- state incentives to municipalities for adopting conservation and water protection policies;
- collection of taxes for water resources use;
- obligation of the State to consider the use of rivers for energy generation, and to recognize the multiple uses, water control, drainage, and correct utilization of the flat land alongside the watercourses;
- obligation of the State to take into consideration the protection of water quality and quantity, when setting standards for fishing and hunt activities, fauna and forest conservation, soil protection, and protection of other natural resources and the environment.

POSITIONS DEFENDED BY CIVIL SOCIETY ENTITIES

The “Comissão de Defesa da Billings” was created in 1976. It took a position against the SANEGRAN project because it felt the project would compromise the central body of the reservoir. In addition, it was against the state decree re-classifying Billings water from class 2 to 3; it was against compartmentalization of the reservoir’s arms, saying this would compromise the central body of the reservoir; and it was against changing watershed protection legislation; it was against the study of the watershed areas done by FABES-USP; it was against the position of the

“Associação de Defesa do Tietê” in favor of the SANEGRA and the compartmentalization of the reservoir’s arms. It favoured the balanced operation that has improved the condition of water in the Billings without causing harm to cities along the medium Tietê.

The “Comissão de Defesa da Bacia da Guarapiranga”, was an the aggregate of several civic organizations from neighborhoods surrounding the Guarapiranga reservoir. It was committed to fighting occupation of the reservoir’s border by mansions, clubs, industries, allotments, bars and restaurants, because it felt that the best locations were used by private enterprises or owners while the worst—muddy and abandoned—were available for people in need to settle.

The “Sociedade Amigos da Riviera Paulista” was an organization in a neighborhood on the reservoir margins. It wanted to preserve the land for low-density use and maintained the watershed protection legislation to avoid devaluation of the land

The “Comissão de Defesa da Represa Guarapiranga”, created in 1983, showed concern with the increasing deterioration of the reservoir, and said that it intended to police the discharge of residential wastes and try to impede new subdivisions and buildings around the reservoir. It adopted a position contrary to public works that induced occupation, such as duplication of the Estrada de Parelheiros, main road access to the area, and introduction of the metropolitan train in the region.

The “Associação de Defesa do Tietê” was against the sanitation operation implemented in the Billings reservoir saying it was responsible for discharge of sewage into the Tietê. It was in favor of the SANEGRA; it was in favor of maintaining the Light System, and continuing of the

Henry Borden Dam operation; it was also in favor of the compartmentalization of the reservoir's arms.

APPENDIX B

CATEGORY AREAS

FIRST CATEGORY AREAS

In the first category areas restrictions were most extensive. They included mainly the marginal bands of protected streams, forests and all forms of indigenous vegetation, and slides above 60 percent.

The discourse of land use regulation was directed towards preserving areas covered by forests and all forms of native vegetation as the main measure to secure the hydrological cycle, and established incentives for enterprises that would preserve the vegetation as:

“The main measure to preserve the hydrological cycle is, without doubt, the stimulus given to the maintenance of the forests, to which is sought an original approach. Instead of purely prohibiting the deforestation, which could have the contrary effect desired, the law proposes a group of benefactions for enterprises that preserve the original vegetation. The maximum densities allowed for enterprises that maintain the forests can be 2,8 times higher than the accepted ones in the case of the deforestation, what would contribute as an incentive very efficient for the preservation of the exuberant vegetation still found in the continental slope of the Serra do Mar Coastal Chain, indispensable to the ecological balance of the Paulistano Tableau.” (São Paulo Legislative Assembly, 1976).

The discourse of the land use regulation within the watershed protection area also charted the protection of marginal bands of water bodies, as:

“establishing of a sanitation security band around the watershed, where it will be stimulated the reforestation or at least the use of low vegetation and which would constitute as an efficient measure to retain many toxic substances or nutrients released into the water;

Sanitation security band with stimulus to the preservation of the native vegetation because the presence of this vegetation around the watersheds constitute ant efficient obstacle to the conduction of solid waster for drainage waters." (São Paulo Legislative Assembly, 1976)

In first category areas the legislation expressly prohibited deforestation and removal of original vegetation or soil except for permitted works and building. In these areas legislation permitted any kind of visitors except campers; any sport that does not need permanent installations; any works or buildings necessary to protection of the watersheds; regularization of out flows for multiple ends; control of flooding and water use; small anchorage ports, boat-launching ramps, tableaux for fishing and pisciculture tanks.

In order to compensate for these severe restrictions, the legislation established incentives for enterprise that would preserve forests and native vegetation. The incentive was an increment of the urban density index according to the proportion of the enterprise areas covered by forests and indigenous vegetation. But these incentives were not enough to reinstall the economic utility of first category areas.

These incentives applied only to enterprises in second category class C areas, which encircled areas within the first category. In other words, enterprises in second category areas, classes A and B, which did not circle first category areas did not receive incentives for preservation of forests and indigenous vegetation. These enterprises were faced with exactly what the legislation intended to avoid " the pure and simple prohibition of deforestation which could result exactly in the contrary of what it is aimed at" (São Paulo Legislative Assembly, 1976).

Also, these incentives were not attractive enough, because they were added to already very low urban indices allowed within second category areas, class C. The following Table shows indices with incentives in the proportion of the area covered by indigenous vegetation and forests.

Table B.1 — Benefactions for the Preservation of Native Forests

Forest		Density		Area Plot		Coefficient approv.	
%	Benefact.	Min	Max	Min	Max	Min	Max
10	1	6	34	133	7500	---	---
20	1.212	7.3	41.2	109	6188	---	---
30	1.424	8.5	48.4	93	5266	---	---
40	1.636	9.8	55.6	81	4584	---	0.21
50	1.848	11.0	62.8	71	4058	---	0.37
60	2.06	12.3	70.0	64	3640	0.16	0.64
70	2.272	13.6	77.2	58	3301	0.27	0.80
80	2.484	14.9	84.4	53	3019	0.48	0.80
90	2.696	16.1	91.6	49	2781	0.48	0.80
99	2.907	17.4	98.8	45	2579	0.48	0.80

Source:

As the Table illustrates the urban indices with incentives were still very low compared to standards in urbanized areas, including those in the low-density neighborhoods of São Paulo.

In the practice, it did not really serve the interest of forest preservation. It was as much a kind of stimulus for their destruction in the attempt to de-characterize the obligation of preservation, as well as for actions against the State in expectation of compensation for projected losses. In both cases, the result was the inverse of what was intended: instead of preservation, what happened was continuous forest destruction; instead of regularized private activities, with the State assuming eventually the preservation of the vegetation remnants onus.

Application of the legislation in first category areas was appreciably difficult. The law defined as preserved areas the marginal bands of protected water bodies as well as all indigenous vegetation. But which marginal bands and which vegetation? Both are mutable. And there was no registration of these natural features when the law was passed. The existing maps either predated the legislation or were produced after its approval (1974 and 1977). Because of difficulty identifying and characterizing forest and indigenous vegetation, EMPLASA had to impose restrictions according to the latest map produced, based on the aero-photogrametric survey from 1977. Ultimately, this did not accurately support the concept described in the legislation.

So, the public politics of regulating human activity in order to protect the watershed emphasized preserving first category areas in order to assure the most convenient regime for reanwater drainage and to prevent the carrying of solid waste, toxin compost and nutrients by rain waters.

Its mechanisms were to disqualify these areas from urban use through severe restrictions and not very attractive incentives, as well as to oblige their owners to preserve vegetation that was of no use to them.

The effect of this discourse and its mechanisms was also to transfer the cost of preservation to the State. This had already been determined by judicial instances, in some cases through payment of compensation to the owners. This was in flagrant contradiction of the discourse of drainage basin preservation which was presented as a no-cost alternative for the State.

SECOND CATEGORY AREAS

Second category areas had fewer restrictions and were the watershed areas excluding the first category areas. These areas were subdivided into classes A, B and C corresponding respectively to areas urbanized before the legislation took effect, the surroundings of these urbanized areas, and the remaining protected areas of the watersheds.

The discourse surrounding regulation of human activities within second category areas was clearly intended to limit their human occupation:

"The law has as its nucleus a land occupation model that guarantees the allocation of the maximum population within the hydrographic basins avoiding the risk the drinkability possibilities of the watershed waters." (São Paulo Legislative Assembly, 1976)

Limits to human occupation of second category areas was determined by the watersheds' capacity for cleaning the pollution loads:

"The total permissible number of occupants was determined in such way as to guarantee that the pollution loads generated by human activities, after treatment, do not surpass the limit capacity of absorption and removal of pollutants by the watershed, guaranteeing the minimum standards established in legislation already in place." (São Paulo Legislative Assembly, 1976)

This limit to human occupation was determined according to proximity to protected water bodies:

"It must be implemented, in this way, a zoning for the hydrographic basin, where the larger demographic densities will be situated within the borders of the areas already urbanized, and where the lees demographic density will be close to the watersheds, resulting in a maximum population the assures the desired quality of the waters." (São Paulo Legislative Assembly, 1976)

This model preceded the subdivision of second category areas into classes A, B, and C, further categorizing suitability for land occupation.

Second category areas class A

Second category class A area were already urbanized when Law 1172/76 was enacted.

Within these areas, regulation of human activities permitted their occupation until urban infrastructure, especially sanitary infrastructure, reached its capacity:

“In order to diminish the pollution risk for the watersheds, the spatial distribution of the population is done taking into account the maximum demographic densities allowed and establishing that the increases of population could be attained in the existing urban centers, until their urban infrastructure capacity reaches saturation, especially sanitation.” (São Paulo Legislative Assembly, 1976)

Within these areas, land use restrictions did not inhibit urban activities, nor did it compromise the economic use of the properties. Almost all uses were permitted, except:

- a) industrial use, which needs to be submitted for CETESB approval;
- b) warehouse commerce;
- c) hospitals, sanatoriums and other public health facilities, except those serving local population, and not to treat communicable diseases.

In these areas, subdivision restrictions were severe. However, they did not halt urban development because by definition, these areas were already sub-divided. The maximum permitted density (total) of 50 inhabitants/hectare was equivalent to low-density neighborhoods in São Paulo City. It was lower than the lowest density proposed by the Basic Urban Plan for Greater São Paulo (75 inhabitants/hectare) and it was very restrictive for current patterns within

the periphery. The minimum size for a residential plot of 500m² was also very restrictive for the periphery standards already established.

Within these areas, building restrictions for plots of 500m² were compatible with housing standards found in the periphery, and equivalent to the Z-2 zoning of São Paulo City. For plots larger than 500m², these indices were smaller in proportion to the larger size of the lot, making the density comparable only with the lowest density neighborhood in São Paulo City.

The resulting urban standards within these areas were similar to those in the urban periphery in areas not covered by watershed protection legislation. These areas were already subdivided when the Law 1172/76 was passed, and so were not affected by density restrictions and minimum lot sizes.

Understandably, the population built its city using patterns and standards they were used to, and according to urban indices accepted by the legislation. However, metropolitan licensing and legalization of sub-divisions, before and after the legislation, were still not formalized because they contravened the law.

The delimitation dispositions in second category areas not easy to implement. The criteria defined in the law are objective, but delimitation requires special resources, such as photo-interpretation. In practice, EMPLASA has a monopoly on delimitation. It has adopted the more restrictive position of classifying as B or C areas that could eventually be classified as A.

Application of the urban indices established by law (occupation index, coefficient for maximum built area, height index) has posed some difficulties. In particular, application of the height index

permitted some degree of arbitrariness. In the practice, EMPLASA sometimes assumed the height index as the coefficient between built areas and ground areas; this represented another restriction. Sometimes the index was calculated as the coefficient between built areas and occupation potential, a less restrictive approach. Sometimes, it just excluded the need for the index.

So, the discourse attached to public politics for the human activities within the second category class A areas admitted population increases in existing urban centers, within the capacity of the infrastructure in place. It established urban parameters equivalent to those existing in the periphery except for lots larger than 500m², and for sub-divisions. As these areas were already sub-divided, the effect of the discourse and urban parameters was to give coherent form to patterns of occupation already in place, accepted by the watershed protection legislation.

Second category areas classes B and C

The second category classes B and C areas were the drainage basins exclusive of the more restricted areas and areas already urbanized.

The discourse around regulation of human activities in these areas aimed at decreasing densities in the direction of the watersheds:

“In order to diminish the pollution risks of the watersheds, the spatial distribution of the population is done taking into account the maximum densities permissible and establishing that the population increases only happens in the areas of urban expansion and rural areas, guaranteeing that the maximum admissible demographic densities are decrescendo from the borders of the actual urban areas, towards the watersheds.” (São Paulo Legislative Assembly, 1976)

In these areas, the restrictions on the land use did not inhibit urban development, nor did they compromise the economic use of the properties. Within the restrictions, almost all uses were permitted, except those forbidden for class A areas. Restrictions on sub-division were more restrictive the closer the lots were to the protected water bodies. Standards were much lower than those currently used in the periphery, and were only compatible with weekend leisure lots.

The maximum density permitted—varying from 6 to 34 inhabitant/ha—was lower than that of the lowest dense neighborhoods in São Paulo City. It was also lower than that established by the Basic Urban Plan for São Paulo (75 inhabitant/ha)

The minimum lot size per residential unit varies between 1500 and 3000m², too low even for the lowest density neighborhoods in São Paulo. In these areas, except for plots with dimensions of less than 500m², for which there are no restrictions, building regulations are also very restraining. The occupation index varies between 12 and 25 percent of the lot area; the coefficient for maximum built area varies between 12 and 50 percent of the lot area, and the height index varies between 1 and 2 floors. All these are more restrictive than the lowest existing indices in São Paulo.

The index for allowable impermeable surface was between 30 and 40 percent of the surface of the lot, compatible with the index for maximum built area for the lot area. This was very different from the habits of periphery residents, who tended to pave the whole surface of the non-built area of the lot. Installation of water and sewage networks in the second category class C areas was also forbidden.

On the border of existing urbanized areas a peculiar situation occurred. In areas already subdivided to lots smaller than 500m², and therefore not controlled by the legislation, a ban on public water and sewage systems was overruled by rights acquired in pre-existing situations. It persisted, though, for the majority of buildings, and in irregular sub-divisions dating from pre-legislation times.

Delimitation dispositions had not been easy to apply, because they depended on the delimitation and dimensions of class A areas.

Public politics for areas B and C included a discourse that permitted decreasing densities near the watersheds. The discourse disqualified these areas from urban use through urban parameter and regulations too restrictive for the periphery and through prohibition of public water and sewage systems in “C” areas. It thus impeded urbanization of the larger part of the protected watershed area, except in pre-existing allotments and on the border of the urbanized area. In pre-existing allotments lots had been occupied according to patterns current in the periphery and not prohibited by legislation—except referring to its sub-division. In the vicinity of the urbanized area, illegal sub-divisions were occupied according to periphery standards and totally lacked the necessary public infrastructure, equipment and services.

APPENDIX C

ACHIEVEMENTS TO DATE (SEPTEMBER, 1997)

URBAN RECOVERY

Slum Upgrading

Program developed by São Paulo City Government through the Municipal Secretariat. To date, 7 slums have been upgraded serving 2,000 families. Work is in progress in 15 more slums and another 168 are in the contracting phase. They will serve 22,000 families.

Public Housing

Program developed by the State Secretariat, through CDHU (Companhia de Desenvolvimento Habitacional e Urbano - Public Housing Corporation of São Paulo State). 300 new housing units have been built to relocate families living in slide-prone or risk areas, or areas where conditions prevent improvement of sanitation systems (remaining needed units are being contracted)

SEWAGE

SABESP (Companhia de Saneamento Básico do Estado de São Paulo - Water and Sewage Corporation of São Paulo State) has isolated and extended 247,828m of sewer lines, connected to 20,000 housing units. Plans to improve the network to serve 270,000 people are being in the contract stage.

GARBAGE

Plans are being developed for the improvement and environmental control of existing dump areas, complete implementation of the plans is awaiting on legal approval. Garbage collection equipment has been acquired for the municipalities of Embu, Embu Guaçu, and Itapecerica da Serra.

WATERSHED MANAGEMENT PLAN

A geographical information system has been created for the whole watershed area to facilitate management and give the municipalities involved an efficient tool to control and evaluate land use and occupation.

However, the necessary equipment and trained personnel to operate the system are still in the process of discussion. A capacity building workshop was held to stimulate participation by non-governmental organizations in the watershed management process.

The Master Plan for Development and Environmental Protection of Watershed Area (PDPA - Plano Diretor de Desenvolvimento e Proteção Ambiental) has just been put together by the UGP. This Plan, which is currently under analysis by the executive institutions, comprises complementary procedures, actions, and recommendations for final definition of the Management Plan. It is supposed to take into account also the new Watershed Protection Law dispositions (statutes).

VEGETATION

The vegetation diagnosis project has identified 500 principal species of vegetation within the basin. The main types are *capoeirinha*, *capoeira*, *capoeirão*, *mata* and *mata de várzea*. Ten models for the recommended reforestation have been created. For the borderlands reforestation, 500,000 scions of native trees have been planted in a 200 ha area.

Additionally, 140ha around railroads and roads have been covered with native bushes and trees. As major urban reforestation, 6 green areas were restored and opened: 3 public places with leisure equipment and a green area in Embu Municipality, and 2 green areas with sports equipment and native reforestation in Itapecerica da Serra Municipality.

PARKS

A team that won a national competition in 1990 designed the Parque Ecológico do Guarapiranga. The project will be implemented through an international tender procedure.

In the Parque Ilha dos Eucaliptos, work to control the erosion of the margins has been finished, with protective dikes erected and slopes rebuilt. 2,000 scions of native trees have been planted, and warning and educational signs for the permanent preservation of the areas positioned in strategic places.

Cultural and sport facilities have been built near the entrance of the Parque Várzea do Embu Guaçu. The várzea area, which acts as a natural filter for pollution and helps improve water

quality, can be accessed on foot from a pier. The intent is to show the native vegetation without endangering it.

Slope stabilization and recovery work of the lake formed by mining activities in the Parque Francisco Rizzo is in the contracting phase. The Parque Ecológico da Represinha has been finished. An environmental educational centre, hiking trails and leisure areas have been constructed, and the park has been totally covered by native vegetation from the Mata Atlântica.

The Parque Temático in Itapecerica da Serra is under construction. It will have slope erosion control and an aquarium housing fish species from the Guarapiranga Reservoir. An educational sign project is being implemented in all the parks and green areas, using the same symbols in different colors.

Revitalization of the Historic Centre of the Municipality of Embu is in the final design phase. It involves the re-routing of traffic within the town centre, transferring heavy traffic out of the area where historical monuments are located. The design also includes reconstruction of the Praça Lagoa dos Jesuítas, as a venue for reenactments of historical events. An amphitheater for cultural events is already finished, with space for Embu's popular and traditional public market.

FISHING AND PISCICULTURE

This project, still in its initial stage, has already led to re-establishment of 18 fish species in the reservoir. Pisciculture (fish farming) tanks are being installed in the water, but it is too soon to assess the potential for fish hatchery.

MINING

The assessment of local mining sites within the watershed is complete. Mineral potential has been determined, and a plan for environmental monitoring of working and abandoned mining sites developed, along with recommendations for their control.

LYMNOLOGICAL DIAGNOSIS

This project is still in the design phase, with data still being collected. It will lead to a proposal for monitoring algae in the reservoir.

POLLUTION CONTROL

The evaluation of diffuse pollution sources has started, with concomitant implementation of monitoring procedures. A mathematical model is being developed to determine the relationship between land occupation and water quality, to assist in the design of feasible watershed management. The re-registering of industrial pollution sources and the registration of special pollution sources is being finalized. Geo-referred data is being collected, as well as data about production processes, and raw material, water and energy consumption of industry and principal sources of non-industrial pollution.

ENVIRONMENTAL AND SANITATION EDUCATION

Centres for environmental education have been established in Embu, São Paulo and Itapecerica da Serra to promote the program and its goals in local schools and at local events. The campaign “Rio Limpo, Represa Limpa” is in place, involving more than 2,000 people, including university students as monitors.

PATROLLING AND MONITORING

Security around watershed areas has been increased: 9 new professionals have been hired; 10 radio linked vehicles purchased, and an additional telephone line installed. Use of helicopters to control and prevent invasions and environmental damage has increased to 12 hours monthly. In addition, a group of people is being trained in photo-interpretation and processing satellite images to increase control of land use and land occupation.

APPENDIX D INTERVIEWS

The following people were interviewed during the development of this thesis.

Afrane Benicio de Freitas, Coordinator of the Technical Documentation Center, Metropolitan Planning Corporation for Greater São Paulo, EMPLASA

Alceu Bittencourt - Director, COBRAPE Consultants (Responsible for the planning and follow-up of the Guarapiranga Program)

Arlindo Phillipi Junior, Environment and Green Secretariat for the City of São Paulo, USP
Public Health Professor

Beto, resident

Berenice, resident

Carl Bartone - Principal Environmental Engineer, Guarapiranga Program Supervisor, The World Bank

Carmen Ribeiro, Senior Planner, Guarapiranga Program, State Secretariat for the Environment

Cleusa Chimelli Mello - Social Assistant, Guarapiranga Program Coordinator for the Social Work, Secretariat for Housing and Urban Development for the City of São Paulo

Cida, resident

Community Leader One

Community Leader Two

Constante Bombonato, General Coordinator, Water Resources Department, SABESP

Darcy Brega Filho - Watershed Management Division Coordinator, SABESP

Dirceu Rioji Yamazaki - Guarapiranga Program, General Coordinator, State Secretariat for Water Resources, Sanitation and Public Works, UGP Member

Elizabeth França - Guarapiranga Program, Coordinator, Secretariat for Housing and Urban Development for the City of São Paulo

Erminia Maricato, USP Faculty of Architecture and Urbanism Professor, LAHAB

Gilda Collet Bruna, President of the Metropolitan Planning Corporation for Greater São Paulo
EMPLASA, USP Faculty of Architecture and Urbanism Professor

Gina Besen (Rizpah), Secretary for the Environment, Embu Municipality

Guillherme, resident

Ignacio da Silva, Social Worker, Ribeirão Pires Municipality

Inacio, resident

Jodete Rios Socrates, Director of the Data Collection Center for the Faculty of Architecture and Urbanism (CeSAD), USP

Jorge Hereda, Planning Secretary of the Ribeirão Pires Municipality

João, resident

Lucia Bastos Ribeiro de Sena - Senior Lawyer for the State Secretariat for the Environment,
Coordinator of the Watershed Protection Law Revision Commission

Lucinalva, resident

Marcia Pastor, Social Worker, former resident of the Guarapiranga Region and Environmental
and NGO Activist

Matilde Maria de Almeida Mello - Sociologist, CNEC Consultants (responsible for the planning
stages of the Guarapiranga Program)

Mauro Scarpinatti, Espaço Formação Assessoria e Documentação Director, (NGO involved in
the social assessment during planning stages of the Guarapiranga Program) resident

Member One, SOS Mata Atlântica NGO

Mieko Ando Ussami - SEMPLA, State Planning Secretariat

Paula Pini - Coordinator of the Guarapiranga Program for COBRAPE

Paulo Maia, Senior Planner, Guarapiranga Program, State Secretariat for the Environment

Pedro, resident

Ricardo Araujo - Senior Advisor SABESP, UGP Member

Ricardo Neder, UNICAMP, Philosophy and Human Sciences Institute Professor, Coordinator for the Guarapiranga Program Workshop

Vera Bonomi - State Guarapiranga Program Coordinator, State Secretariat for the Environment

Virginia Chiarovalloti, Researcher for the Center for Contemporary Cultural Studies (CEDEC), Environmental and NGO Activist

Zé Antonio, resident

APPENDIX E

PHOTOGRAPHIC REVIEW



Public Sign Of the Guarapiranga Program



Várzea do Embu Guaçu Park - Inauguration Day



Várzea do Embu Guaçu Park - Inauguration Day



Várzea do Embu Guaçu Park - Inauguration Day



Várzea do Embu Guaçu Park - Inauguration Day



Guarapiranga Reservoir Borderland



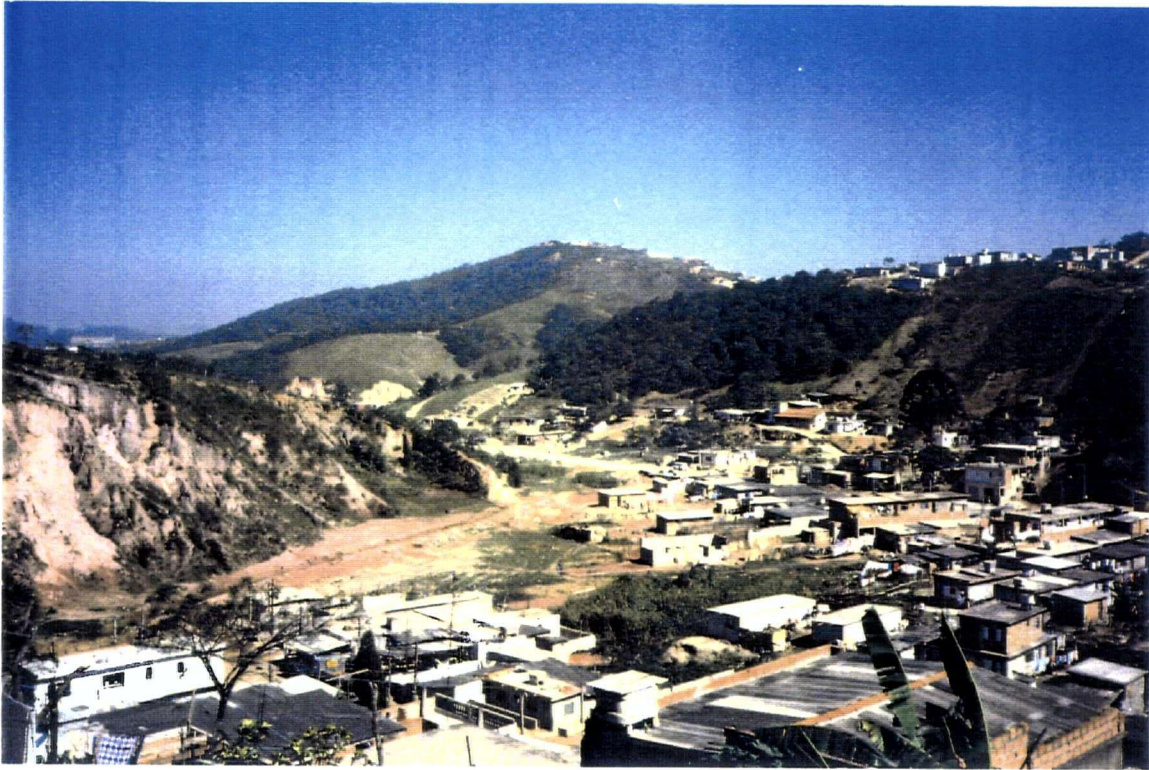
Sewage Elevation Station - Guarapiranga Reservoir



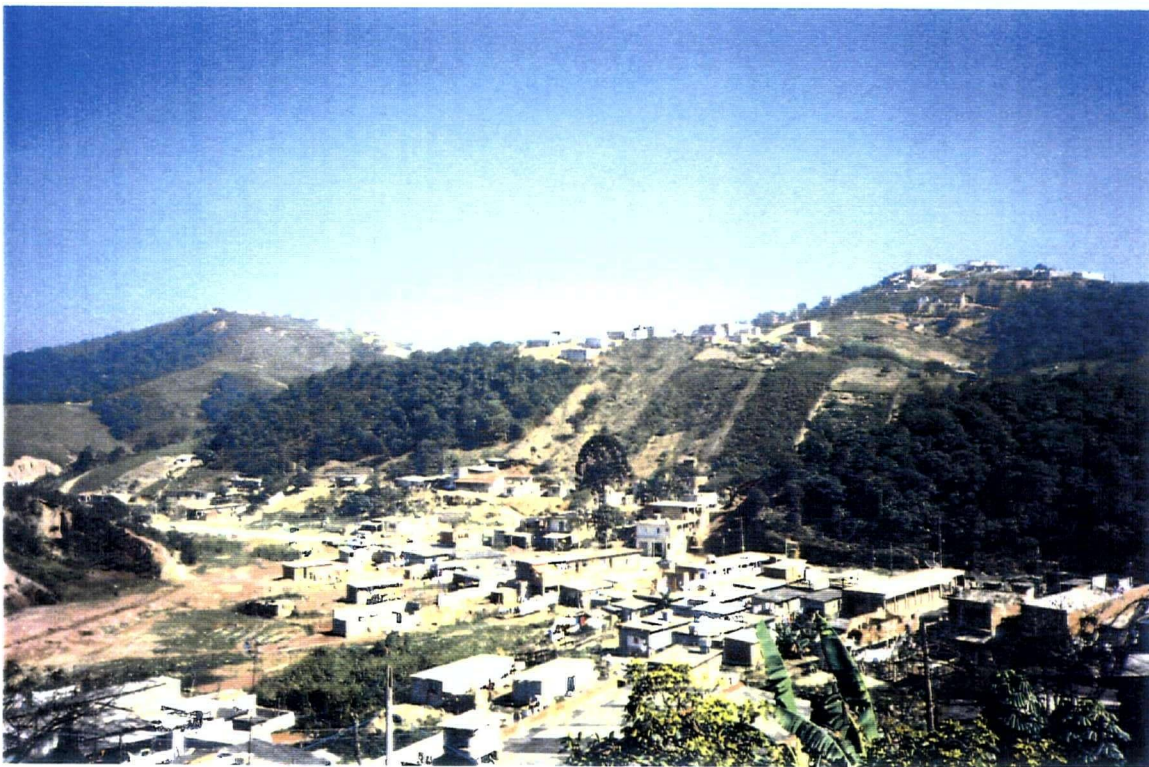
Abandoned mining site to be recovered - Embu



Abandoned mining site to be recovered - Embu



Illegal land occupation - Watershed Protection Area



Illegal land occupation - Watershed Protection Area



Illegal subdivision allotment - Urbanization works



Illegal subdivision allotment - Urbanization works



Favela Jardim Alpino



Sanitation upgrading work - Favela Jardim Alpino



Upgrading work - Projeto Reboco - Favela Sete de Setembro



Upgrading work - Favela Sete de Setembro



Favela Jardim Imbuías - Stream



Favela Jardim Imbuías - Stream contention work



Favela Jardim Esmeralda - New Housing



Favela Jardim Esmeralda - Stream containment works



Favela Jardim Esmeralda - Stream containment works



Favela Jardim Alpino



Favela Jardim Alpino



Favela São José - Slope contention work



Favela São José - Slope contention work



Favela São José - upgrading



Favela São José - upgrading



Conjunto Habitacional - Social Housing - 102 Units



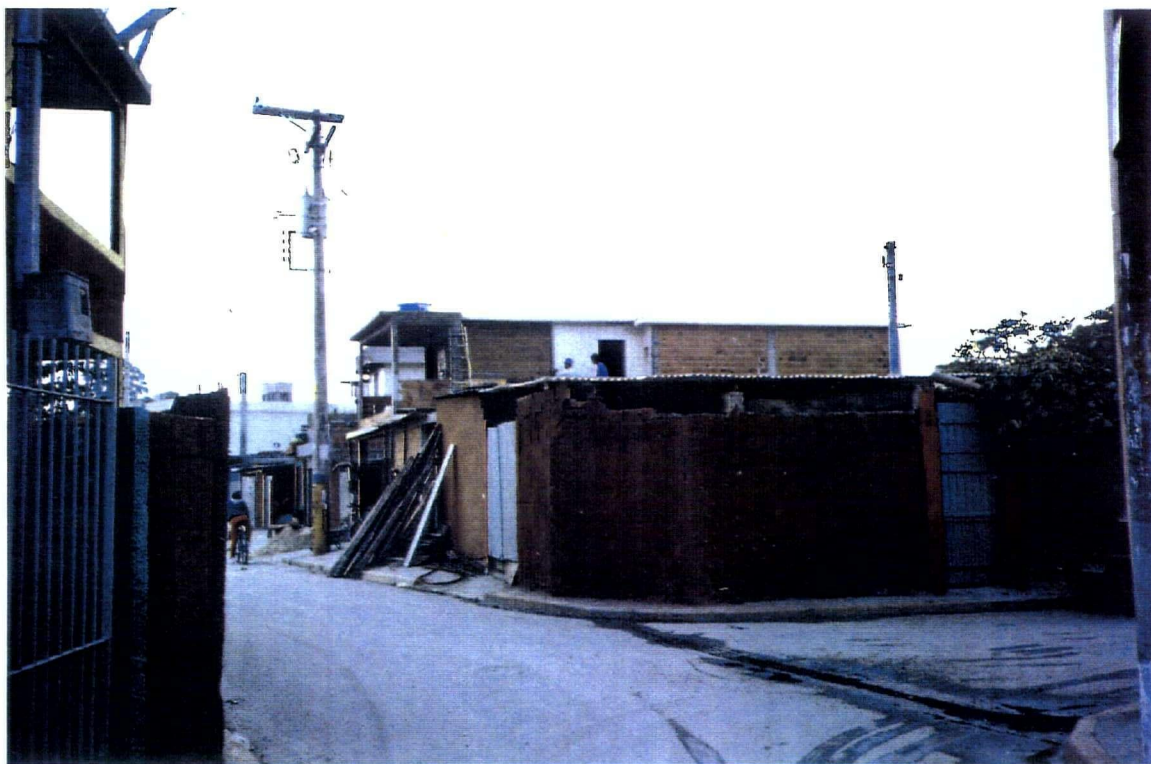
Favela Jardim Esmeralda - New Housing



Favela Jardim Esmeralda - Urbanization



Favela Guarapiranga I - Urbanization



Favela Guarapiranga I - Urbanization



Illegal Allotment - Urbanization



Illegal Allotment



Public Housing



Public Housing



Favela São Luis - New housing addition after upgrading



Favela Santo Angelo - Sanitation work



Favela Jardim das Imbuías I



Favela Jardim das Imbuías I