

12th EADI General Conference
**Global Governance for
Sustainable Development**

The Need for Policy Coherence
and New Partnerships



**Land occupation and management plan for areas of
conflict and of environmental and social interest in Santo
Andre, within the metropolitan region of Sao Paulo, Brazil**

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Abstract

The present work discusses directives for land occupation, urban and environmental management in areas of conflict due to the overlap of Zones of Special Environmental Interest with Zones of Special Social Interest established by the Municipality's Strategic Master Plan. The work consists on a case study of the city of Santo Andre, within Sao Paulo's metropolitan region in Brazil.

The metropolitan region of Sao Paulo is populated by around 20 million inhabitants and poses as one of the most intensively urbanized and impermeable areas in the planet. Like others worldwide, it faces poverty increase, violence, social and economic inequalities, and, environmental impacts related to the growth and complexity of settlements such as slums and tenements.

In the past years, it is notable that Brazilian metropolises have had a loss of population in central areas provided by infra-structure, associated to an uncontrolled increase of population in peripheral areas lacking such infra-structure. Brazil has seen also an increase of local power's autonomy and dissemination of innovative experiences concerning urban and environmental policies. There has also been an increase of the real estate market oriented to high and middle income consumers in valued areas of the cities.

The object of this work is an area located in a periphery of Santo André, where there are conflicts involving precarious urbanization – slums and squatter settlements – and areas of preservation and environmental interest, such as river banks, tops of hills and areas with remaining vegetation.

A partnership was set among the Federal University of ABC, the Municipal Service for Environmental Sanitation and the Secretariat of Urban Development and Housing of the City Hall of Santo Andre. An interdisciplinary team was constituted for this work.

The project is based on the elaboration of an integrated and interdisciplinary diagnosis, composed by: urban, physical, environmental, geological, geotechnical, biological studies. Workshops were held towards sensitizing leaderships and community representatives of four Municipal Committees. Urban and environmental education activities were carried, and also two workshops with technicians of the involved institutions. A guidebook is being elaborated using popular language addressed to local residents.

The following guiding directives were adopted throughout the work: participation of residents' representatives; use of micro hydrographic basins as referential unity for territorial planning and management; management and monitoring of the quality of the water in the basins; alternative rain water management; integration of green areas in the city; right to adequate housing addressed to low income people; definition of urban parameters and adequate solutions for social housing; implementation of environmental and urban education public policies; capacity building of local technicians and university; protagonist role of the local government – supported by the federal and state governments – as policy maker, planner and manager of the territory.

As challenges to cope with: the need to overcome cultural and institutional dichotomy between the 'urban' and the 'environmental'; the need for a broad metropolitan management; the search for progress in quality of the housing and services supply considering adequate urban and environmental solutions.

This work is expected to contribute with methodology for the preparation of directives and management plans of areas facing social and environmental conflicts, suitable to the referred and other metropolises, aiming at preserving green areas and managing the quality of the water, improving the quality of human settlements in peripheral areas, systematizing technical capacity building experiences as well as environmental and urban education, and making available management tools for local and metropolitan governments.

This case study is financed by the Ministry of Cities, and the Ministry of Education, of the Federal Government of Brazil since December 2006 and is expected to have this stage concluded by December 2007.

1 - Objective

The objective of this study is to contribute to the planning and regulating of the land use and occupation in urban areas with importance for social housing simultaneously relevant for environmental protection. Based on studies carried out in the city of Santo Andre in the Metropolitan region of Sao Paulo, Brazil, in two urban watershed basins where these characteristics were present.

2 – Introduction

The study was developed with the partnership of the ABC federal University, the Sanitation and Environmental Management Service of the city, along with the Secretary of Urban Development and Housing from the city of Santo Andre.

The project was selected through notice to be financed by the Cities Ministry and the Education Ministry of the Federal Government as a project of extension that involved the university with environmental problems and regional sanitation, connected in partnership with the local government and the society at large.

The systematized activities were developed from December 2006 and the first phase was completed by December 2007. Like many other studies that interact with socio-economic and environmental dynamics, this study has other branches and processes that will develop throughout 2008.

2.1- Brief Picture of Urban Environmental problems in Brazil

According to different writers and intellectuals Brazil has gone through a grave urban crisis. Momentarily speaking, Brazil has 184 million inhabitants, suffered during the 20th century a precarious urbanization and construction of cities never seen before (Maricato, 2001) relating to the Industrialization process, migratory movements, and lack of alternatives to survive with dignity in the countryside (Maricato, 2001; Santos 1994, Cities Ministry 2004).

The national deficit in terms of the necessity of housing, sanitation and transport are sufficiently elevated. It has been proven that there is a shortage of housing of about 7.2 million families, with 5.5 million of this number living in urban areas and 1.7 million in rural areas. In relation to qualitative housing shortage, we can say that 10.2 million dwellers lack at least one of the vital public services, such as, water supply, sewerage system, collection of garbage and electric energy. It is noted that 60.3% of these dwellers live with an income of up to 3 minimum salaries (Cities Ministry 2004).

There are 18 million people living in urban areas of the country without access to a public supply of water, 93million without adequate sewerage, 14 million without garbage collection, and close to 70% of collected sewerage is dumped "in natura", rivers, seas, oceans, and streams contaminating the environment and impacting on public health.

From the point of view of mobility and transportation, close to 33 thousand people are dead and 400,000 thousand are hurt by traffic accidents every year in the country. Quantitatively, traffic accidents are the second major cause of public health in the country. Due to congestion in big and medium cities, 258 liters of combustive are lost,123 tones of carbon monoxide are launched into the atmosphere. Those losses are equivalent to 2% of the GDP (Cities Ministry, 2004). In the city of Sao Paulo, the biggest in South America, in some neighborhoods of the suburbs more than 50% of journeys are done on foot, constituting what the professor and Geographer Milton Santos defined as "exile in the suburbs" (Maricato,2001).

Besides this, the city of Sao Paulo in February 2008 reached a mark of 6 million vehicle circulating in the city that corresponds to 2.4 inhabitants per vehicle. Actually, there are close to 800 vehicles being registered each day. With public transport still being highly restricted- the metro for example, only has 61km of rail extensions and these restrictions constitute to a vicious cycle that on average leaves a great part of the population to opt for private transportation which in turn becomes more problematic for the circulation of vehicles.

Brazil consists of 27 officially recognised Metropolitan regions with a total of 70 million inhabitants. Like other metropolitan regions in the country, the metropolis of Sao Paulo has suffered a lot of significant alterations in the last decade in various aspects, this according to data from the Brazilian Institute of Geography and Statistics (IBGE).

In the year 2000, the Metropolitan Region of Sao Paulo (RMSP) had a population of 17,878,703 inhabitants and in 2006 close to 19,235,000 inhabitants. Copying the tendency of other metropolitan regions in the state of Sao Paulo the MRSP, showed a slight decline in the growth of population.

In the case of the State of Sao Paulo, it has been verified that there has been significant population growth in the municipal district and suburban regions of metropolitan regions, with relevance to the MRSP and The Metropolitan Region of Santos (MRBS).

It is to be noted that facts from the census carried out by BIGS in the last 20 years, have shown relevant differences between growth rates of different municipal districts in the metropolitan region of Sao Paulo and also between different districts and sub-councils in the Municipality of Sao Paulo.

In terms of space, it can be verified by the Metropolis of Sao Paulo at large that there has been a general tendency in the increase of population growth rates in the more suburban municipal districts and a constant decline of growth rates in the main municipal districts of Sao Paulo. Citing a respected demographer "the growth rates of the main municipal district from the Metropolis of Sao Paulo are declining much more than other Municipalities in the metropolitan region".(Tascher,2001).

Yet, quoting Taschner (2001), "the weightiest factor for stagnation of the paulistano population was the displacement of long time inhabitants of the city to the outskirts of the capital". The region that has grown more in the state was the suburban belt of the municipal

district of Greater Sao Paulo, with a positive migratory balance of 440,000 inhabitants between 1991 and 1996.

This Phenomenon has been repeated in other Metropolis in the country. According to the Cities Ministry (2004), over the last few years, the total population of the seven biggest regions have officially grown to 30%, whilst the population of their main districts grew less than 5%. In some cases the population of the main municipal districts declined.

This scenario underlines the tendency of maintaining this pattern of suburban growth. According to Taschner (2001) the phenomenon that was evident in the 80's became more relevant in the 90's; " the poorest inhabitants are pushed to regions each time more and more distant, as well as within the city and suburban municipal districts. Quoting the writer, the concentration of poverty is in the outskirts : 40.7% of family heads has an income of up to 1% of the minimum salary live on the ring of the outskirts of the Municipal district of Sao Paulo with 34% declaring they are without any income"(Taschner 2001).

With the number of informal settlements on the outskirts of the city of Sao Paulo and the growth of these areas, the problems and urban environmental conflicts in the last few years are becoming more complex with an increase in density of shanty towns and irregular settling and squatting is intense in areas of environmental protection such as mangroves. Santo Andre as a suburban district of the metropolis of Sao Paulo has suffered a lot as a result of this process. The phenomenon of dispersing central neighborhoods and joining suburban neighborhoods is also valid on the scale of this district. The areas of study in this project are referring to suburban districts in the municipality of Santo Andre where there is an interest of preserving the environment, social and habitation inclusion. It is also about the limits of possibilities compatible with the interests that encapsulate this project.

2.2- Recent Institutional Advances for Urban and Environmental Politics in Brazil

The new federal constitution of Brazil approved in 1988, after the beginning of the re-democratization of the country permitted significant and marked advances. With the approval of the federal Law that established the statute of cities in 2001, Brazilian districts can count on some new and important mechanisms and instruments to formulate and implement their urban political development, taking into consideration the existence of diverse obstacles as resources of financial limits such as institutional infrastructure and technicians.

These instruments made available by federal law permit the district, through its city plan to implement the regulation of urban politics in a sense of trying to reverse or soften the intense socio-economic inequalities as a way of preventing and mitigating inumerous environmental impacts and conflicts that have resulted from the described precarious urbanization process.

The environmental institutional legal framework has also experimented with significant advances in the last few years in Brazil. The country also possesses a system for the environment, and is coupled with an expressive set of laws, instruments, mechanisms and instances of environmental management. Together with the national, state, and environmental district councils that represents a significant part of this advancement, influencing the greater possibilities of participation by the society thereby increasing the complexity of management.

The creation of the Cities Ministry in Brazil in 2004 permitted other important advances in a sense of trying to integrate urban political development through means of connected organisation of national secretaries in the following areas: housing, environmental sanitation

(which includes water provision, the collection and treatment of sewerage and solid residues) mobility and transport, and planning and territorial management. Obviously, there still exist a lot of barriers for a real integrated approach to the question of the urban environment in Brazilian districts, under various points of view, particularly, in the point of view of complying with the norms of use and occupation of instruments and mechanisms of planning and territorial management.

2.3-The problem of Approaching This Piece

The theme of integrated management of territory and the compatibility of urban instruments with environmental ones is greater nowadays for the planning and territorial management in Brazil and in other countries.

In spite of institutional advances occurring in recent years, it is to be noted from the point of view of practical action in the territory as well as populations, there is a considerable quantity of obstacles to hurdle, from intersections yet not resolved and from relative adjustment to limits that can be considered acceptable and not acceptable, in terms of use and occupation of urban soil versus preservation and conservation of environmental resources.

This equation has become yet more complex, considering the gigantic movements in the construction of cities and human settlement, a good part is improvised and irregular, principally in part by low income earners of the population on the outskirts of Brazilian metropolis', without adequate housing alternatives.

From this perspective, the preservation and recuperation of environmentally protected areas on the fringes of metropolitan regions and from big and medium cities constitutes a complex challenge, principally considering the interdependence between processes and possibilities of preservation with the mechanisms and historic development of the urban Brazilian, suburban and outsider.

These regions on the outskirts and environmentally sensitive, that have been dealt with in this piece are exactly those that has suffered intense human occupation from the poorest population that is pushed to occupy these areas as a result of alternative offers to adequate housing, whether it be by the state, the market forces, or in areas appropriate to that of a formal city.

This picture suggest the necessity of a robust managerial apparatus, technical, juridical and institutional capable of responding to the many contemporary emergency demands as well as planning and management of territory in a perspective of construction of sustainability in the metropolis.

Between the fragilities more felt by technicians and managers, as much as the area of urban development as of the environmental area refers to exactly the compatibility of instruments and approach of integrated management of territory that permits the prevention of impacts and conflicts and the resolution of urban environmental impasse that exist, considering that the environmental systems (including the laws and instruments of management), from one side, and of the cities on the other, though the majority of times these two sides don't complement nor dialogue with each other, possessing distinct logics.

3-Methodological procedure and development activities

The general methodological principle utilized in this piece corresponds to action research. It consists of a type of social research empirically based that is conceived and in direct association with an action or solution of a collective problem and with the researchers and relevant participants of the situation or problem with which they are involved whether it be in participative or co-operative way (Thiollent, 2000).

In development of the project there were different sets of activities of different natures taking into consideration the necessities of : the construction of diagnosis that would permit an integrated vision of an analysis of the region; the accomplishment of activities that can enable people to act and the enabling of technicians from the municipal council, local bodies and social leaders participating on the municipal council; the production of information, ways of divulgation and the multiplication of experiences; systemization of proposals and general results of this piece.

They were accomplished together with the following activities:

a) Meetings of team planning activities: Quite a few planning meetings for activities of research, systemization, workshops and the collection of data in the field from members of the Federal university of ABC (UFABC), the management of the Municipal service and environmental sanitation council of Santo Andre (SEMASA), and the secretariat of Urban and Housing Development of the council of Santo Andre (SDUHPSA);

b) Meetings of Technical work with a view to discussing concepts and references, as well as the exchanging of ideas and operational decisions taken with members of UFABC, SEMASA, and SDUH PSA;

c) Activities for the production of multi-disciplined diagnostic that has as it's objective to permit a integral analysis, through processes that, indirectly performed the role of attaining and enabling technicians from participating institutions. It also has relevant and diverse primary and secondary data raising, technical field visits, and technological surveys.

- i) Identification of urban and environmental legislation
- ii) Raising of facts and cartographic basis, to mount an integrated geo-referenced organ of information from the environmental bodies with urban organs about the areas of study;
- iii) Definition of singular territorial units for local planning and management;
- iv) Identification of the situation of the division of land and property, from a historic view of human settlement and social existence of organisations;
- v) Raising of public and private investment, private and foreseeable projects for the areas;
- vi) Raising of Urbanism fields and areas of environmental preservation (APP's), equivalent to lower regions closer to streams and rivers;
- vii) Geological - Geo technical diagnostic including land survey and technical reports;
- viii) Field raising in the region, of the flora for the diagnostic;
- ix) Field raising in the region, of the fauna for the diagnostic;

d) Activities for the movement and Enabling of the representatives of 4 municipal councils and community leaders, as well as, technicians from the institutions involved in the development of a set of actions during the process of organisation, realisation of diagnostics and the discussion of demands and of problems in the neighborhoods. They consist the following realisations:

i) The presentation of the idea of the project in the 4 Municipal councils that will be involved: The Municipal Council of Housing (CHM), The Municipal Council of Urban Politics (CMPU), The Municipal Council of Environmental Management and Sanitation (COMUGESAN), The Municipal Council of Participative Budget (OP);

ii) The realisation of the movement of workshops together with 4 councils.

iii) The realisation of environmental education of field workshops " recognizing the quality of water from the district of Jardim Irene".

e) Production of materials and ways of divulging and multiplying of experience and contents generated throughout the work;

i) The presentation of work a the National Meeting of Assemae- National Association of Municipal Sanitation Services;

ii) The presentation of the work and debate at the National Seminary of Permanent areas of Urban Preservation (APP's Urbana's) organised by the Urban and Architectural faculty of the University of Sao Paulo;

iii) The selection of work and article for the "River Tiete Vivo Forum" promoted by the Brazilian Society for the Progress Of Science-SBPC;

iv) Publication of the shorter version of the article in an official book from the Ministry of education and the Ministry of Cities - MEC/MCidades;

v) Elaboration of a pamphlets with didactic language - pedagogic for action with local leaders and inhabitants of neighborhoods involved in the project

f) Activities for the systemization of proposals and main guidelines of use, occupation and management of action in the areas of the project. The project demands for it's obtainment the realization of diverse studies, meetings and workshops for the systemization of diagnostics, production of prognostics and main guidelines for the plan of use and occupation. In this sense diverse activities were realized, in what was mentioned:

i) technical workshop for discussion and definition of main guidelines for interventions in the areas (Technicians involved in the cart project of SEMASA, SDUH PSA and UFABC);

ii) Technical meeting for integrated study of sectoral diagnostics and production of prognostics and main guidelines (involving those responsible for sectoral diagnostics and the co-ordination crew responsible for the integrated study and systemization of proposals);

iii) Research for technical solutions appropriate for the areas of rivers and deep national and international valleys

- iv) Systemization and production of main guide lines and proposals for the plan of use and occupation.

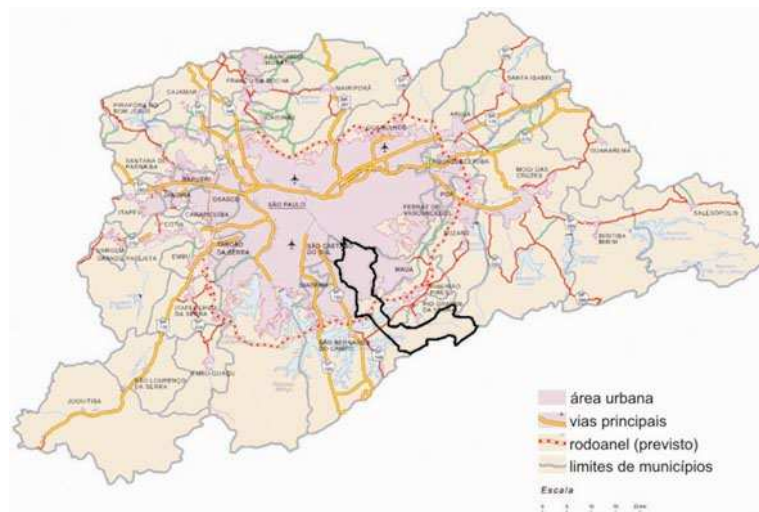
4- Description of the intervention area

The municipal of Santo Andre

The municipal of Santo Andre is situated in the Metropolitan area of São Paulo, in the big ABC region, characterised by intense industrialisation and economic growth principally between the decades of 1950 and 1970, marking the period urban industrial development of the country linking it to the automobile industry, chemicals and more recently the petrochemical industry. It's an industrial municipal, however, with it's location on the outskirts of the Metropolitan Region. It's population is close to 668 thousand inhabitants within a territory of 175 Km².

The areas of study represent dynamics of expansion and population growth that can only be plainly understood within the processes of expansion of the needy outskirts of the region: High rates of urban growth and low standards of urban housing, and the advance of the areas of preservation and environmental protection of the green belt of the metropolis.

Figure 1: the municipal of Santo Andre in the Metropolitan Region of Sao Paulo



The municipal of Santo Andre has it's territory divided in two very distinct areas with different characteristics: in the north of the urban macro zone and in the south the ,macro zone of environmental protection is divided territorially and is very limited by physical barriers. In the north limit of the source protection area Parque Pedroso is situated, and combines an entertainment area and a natural reserve with irregular occupations in it's surroundings that recently has been met with a revitalisation process. The municipality is still cut by an arm of the Billings dam, and its extreme south is accessible only by inter municipal highways.

The two areas of study- Micro basins of the sources of the Cassaquera river and the Guarará river- are situated on the borders of the urban area in areas that had major population growth in the last decade. They are areas of the municipality that have remained empty even during the periods of great population growth and urban Santo Andre, between 1950 and 1970, in function of their physical environmental characteristics of propitious wells in urban settlement.

New division of lots, in most parts are irregular, opened in those decades, principally occupied the depths of valleys and cultivated plains, of the south region of the urban area, and had remained empty on the undulating hillsides. Only at the start of the 90's these regions were being occupied.

Institutional structure of territorial management and planning

The municipal of Santo André has approved it's Master plan in 2004 and consequently a series of instruments in the perspective of two pillars of importance of federal law of the Cities Statutes and democratic management of the city and of the carrying out of social functions of urban property.

In 2006, a Municipal Housing plan was elaborated upon. In the environmental area important initiatives were realised as the Master Plan of Water supplies of 1990, The Master plan of drainage of 1997, the Master plan of Drainage of 1998 and the Integrated management of solid Residues incorporated to the SEMASA in 1998. Another relevant initiative in this perspective is referred to the process of construction of PLAGESAN- The environmental Sanitary Management plan. In what should be incorporated and integrated in all plans relevant to environmental sanitation. The Municipal Master plan, established in it's special zoning system. The category of special zones of environmental interest (ZEIA's) fall into SEMASA, that has delegated a team to this project to realise an integrated diagnostic of the physical environment of ZEIA's areas, to analyse the restrictions and potential of use and occupation and propose guidelines of use and occupation, in the form of Plans for Use and Occupation for ZEIA's. These plans of use and occupation should integrate The Municipal Plan of Planning and Environmental Management (PLAGESAM) that is in a phase of elaboration.

Between the principal social, technical and environmental challenges of this process there is an outline of treatment to be destined to the areas of Special Zones of Social Interest (ZEIA's), in particular to the areas already occupied by shanty towns and the areas destined to the production of housing of social interest. It is these areas that corresponds to ZEIA's B, the central object of this piece.

This interfaces upon defined areas as special environmental interest and special social interest, taking up the challenges of approaching problems of urban environmental of the city, another practical and theoretical challenge refers to the norms and mechanisms of local management- in ZEIA's units and of shared management in the case of areas transcending the territory of a particular municipal. Besides the many demands of shared metropolitan management and regional management in Brazil, there are a lot of difficulties and technical conflicts, institutions, politics and law in this sense.

4.1- Synthesis of The Diagnostic and of The proposals: The Watershed Basin of the Guarará River

The first division of lots dates back to the end of the 1930's, but only at the start of the 1970's there was a consolidation or urban occupation.

In the region of the birth of Guarará, the first settlement Vila Luzita, dates from 1938, where it is today the principal centre of the district. In the decade of the 50's new settlements were implanted in the districts of Guarará and Aclimação, but only in the 1970's was the urban occupation consolidated and the first set of investments in infrastructure in the region realised. It was in this decade that the presence of shanty towns were first noted and registered.

Up until the start of the 90's, beyond the districts cited above, the urban occupation limits itself to the Sitio dos Vianas, which started out as an irregular occupation, and the area of JD. Irene (settlement JD Irene, which must not be confused with the complex of Jd Irene, described below) and Vila Joao Ramalho- these two settlements were opened in the decades of 1950 and 1960, that turned out to have urban occupation in the last two decades of the 20th century, and currently has an average density of 190 inhabitants per hectare in Jd Guarará, for example, there are 135 inhabitants per hectare in the centre of the Vila Luzita district.

The centre of the Vila Luzita district is today characterised by a commercial corridor of great importance in the region to be situated in the principal roads of connecting the urban south of the area with the central area, and by the presence of an urban bus terminal. In the last 15 years there have been great growth and intensifying of the region, with outlined attention to occupation of the Jd. Irene complex and of the Cata Preta nucleus.

There were some important aspects detected in the region for the mounting of an urban environmental diagnostic chart.

- a) Some recent implanted lots have already presented problems of geological and geotechnical stability a lot possibly owed to problems in executing leveling works.
- b) There exists a presence of a great line of electric energy of high tension that crosses in the middle of the segregated district. If one side, it is an area that possesses in numerous restrictions for occupation it can be utilised as a passage for animals, as much as an area for horticulture and running vegetables.
- c) There is a significant presence of areas of fragmented vegetation with different degrees of impacts and obligations.
- d) There is an existence of underutilized or sub occupied areas with potential for projects of social housing.
- e) There are diverse areas of permanent preservation (APP's) with different degrees and obligations: preserved, strongly impacted by urbanisation, and irregular occupation.
- f) There is soon to be constructed, a big integrated educational centre (CESA) next to Guarará river, that should contribute to urbanistic qualification and landscape, as well as the social-cultural inclusion of inhabitants.
- g) There are projects ready to initiate the urbanisation and land regularisation of big informal settlement of the region (shantytown), investment that could contribute to the betterment of urban conditions, environmental and sanitary to the resident population.

Project proposals for the Micro Watershed Basin of the Guarará River

Among the accomplished proposals in the meetings and workshops of technicians from three participating institutions are;

- a) A search for the guarantee of preservation of a strip of 15 meters in distance from the APP's already occupied by human settlers of no income and together with new housing to be constructed for relocation of the dislocated population in the preservation areas;
- b) Landscape qualification in the depths of the valley as well as margins of rivers and streams already affected by urbanisation with integration with other urban activities, reforestation with uses of entertainment, removal of buildings in dilapidated conditions, new vegetation and redirection of rain water.
- c) The establishment of environmental protection in appropriate areas detected by the diagnostic, remarking public parks with trails for ecotourism, sustainable use for areas under the line of high tension with urban agriculture, trails with control access of people for the emergence of springs of water, proposal of urban forest;
- d) Revision of the urbanisation project and regularisation of the slum Jd. Irene: revision of the model of collection and treatment of rain water and amplification of spaces with qualified landscapers and urbanites.

Measures to repair and compensate the Lots of Pereira that possesses problems of geological-geotechnical stability and drainage.

5- Guidelines and general challenges

- a) The micro basin as one unit of planning, intervention and management: The recuperation of APPs from the extremities and depths of the valley should have as a unit of analysis the micro basin, guaranteeing that they monitor the results of realised actions. In the micro basin, urbanistic limits should be considered: the land situation, use and occupation of the soil, considering actions and adequate instruments for specific situations. The micro basin also defines on a scale of prioritisation and action that permit visible results in relatively short periods.
- b) Integration of green areas, seen as “residuals” in the city: to incorporate effectively green areas of lots in the city, outskirts areas, non-aedificandi areas, distribution channels (electrical network), among others, that makes up a group of green areas. These areas, seen in the micro basin and in the district, represents great environmental potential, and an improvement of the quality of life of the urban population. In the contexts studied, of urban suburbs with elevated degrees of consolidation, are rare preserved areas and actions to improve the environmental quality will only succeed with the restructuring of the urban network, incorporating green areas as a positive mode of urban life;
- c) Integration of private areas in the system of green areas: big areas of preserved and recent vegetation, with the potential of entertainment and environmental education – relation between the population and the preserved new areas of the main urban brooks – are in private property, which demands instruments that allow the possibility of public use with adequate infrastructure;

d) Interventions of basic sanitation are essentials: the integration of the APP areas to the city, as areas of entertainment and contact of the population with natural resources necessarily demands actions of collection and treatment sewerage (guaranteeing the quality of water in urban rivers), and access to a network of portable water.

e) Innovation in the treatment of rain water: replacing traditional treatments, modifying the rooted culture found among government technicians and the population at large, at collecting and directing rain water, for a more integrated vision of hydrological flows, giving privilege actions to those that can guarantee permeable areas, the percolation, the recharging of aquifers, as well as the decelerating and retention of waste;

f) The quality of water management: the quality of water can be a very effective indicator of monitoring of the efficiency of sanitation and urbanisation actions, better than various indicators used today, for example, the percentage of sewerage collected or treated. Simple tools can also permit that the control of the water quality can be done in a participative way involving local communities.

g) Enforcement of the Environmental Federal Law (Resolution CONAMA 369) considering the plan of the micro basin: the application of legislation for the preservation of APPs define strips of rigid preservation, as a general parameter without considering local realities. The federal norm eases its application in cases of social interest, however, the interpretation of its application form is still not clear between technicians in the environmental and urban areas. The elaboration of the micro basin plans, defining the areas that have environmental value, the areas that have [praetorian](#) social interest as well as general characteristics and localization of compensation measures can be a way to get over the current impasse.

h) Interventions should consider degrees of consolidation and environmental potential: to define on the basis of use and occupation plans of the micro basin, areas that should receive interventions/removals independently of the consolidation. There are cases of low occupied areas or free that can be more adequate for urbanisation (for instance, Santi Empreendimentos area). On the other hand, areas with bigger degrees of occupation can have great potential for environmental recuperation (for example, APPs in Jd Irene). The viability of the cost / benefits relation has to be taken into account in each case, considering the scenario of the micro basin.

i) Develop urbanistic parameters and adequate projected solutions for housing of Social Interest (HIS): The production of the HIS is based on a series of concepts like the serial production, the standardization etc. One of the principal questions in all of the HIS projects is that it should be repeated to get efficiency and economies of scale (the cohabitational cell, the building etc.). Is what should be modified to recognize the specifics of each place (the localization of buildings should have bioclimatic criteria of orientation, respect the relief etc.). In cases analysed in this piece the physio-environmental characteristics are highly significant and demand special attention when formulating projects.

j) Implementation of environmental education public policies: in order to involve the population and diverse segments presents in the municipality in the discussion and equation of the problems tackled by this piece. Environmental education can not only guarantee the preservation of interventions realized by public power, but also permit the population to be transformed agents of their socio-environmental reality.

k) Involve the population in the planning and management of actions: the participation of the population is considered by technicians and intellectuals as a fundamental assumption for the success of any policy or public program that aims at transforming and improving the structural conditions of the socioeconomics and environmental conditions.

General challenges

a) Overcoming the impasse caused by a segmented vision of reality in the urban districts and environment: the restrictive legislations and incompatible, and segmentation of the entities in charge of urban and environmental management (on all levels of government), has generated impasses that has limited the effective performance in areas that has displayed these characteristics (social interest and environmental fragility). The paradox is that these incompatibilities in the legal system and in the conception paralyse public power, preventing effective performance and contributing in an indirect mode with the reproduction of dynamics of urban growth that produces intense environmental degradation and conditions of life of the population.

b) The necessity of broad urban development policies: these policies should tackle the problem of population migration from the Municipality of Santo Andre and the Paulistana Metropolis (central regions with developed infrastructure), that constitute the reverse of the process of suburban growth. Without these policies, the intervention in urban outskirts loses efficiency.

c) Furthering the planning and management of the regional metropolis: considering the interfaces of the physio-territorial borders of the municipalities as well as the articulation of sectoral policies and intrasectoral regional interests. The dynamics observed in the municipal and the areas of study can only be fully explained in the metropolitan dynamics. It is therefore necessary to advance in relation to policies and regional management.

d) Guarantee lines of financing for HIS that permits urbanistic solutions and an adequate environment: the current lines of financings that exist severely limit the architectural projects. It can be affirmed that the financing of engineering is the principal factor that conditions the final forms of housing settlements, contributing to the project of serial and repetitive projects. This problem is already grave in itself, but it worsens when considering that in the case of the urban suburb of Santo Andre where there are limited lands available, and that the available lands do not have good characteristics for occupation (undulating slopes, deep valleys etc.). The interventions in places of this nature demand adequate standardized projects to specific environmental and physical conditions. This reality is still not recognized by current mechanisms of financing.

e) Improving the quality of water in the urban environment: respecting the constitutional right of adequate living in a sustainable city, utilizing public policies of sanitation and environmental management as well as environmental and urban education.

f) Expanding the quantity of resources for urban and housing policies aiming at realizing projects and works of land urbanization and regularisation of shanty towns and precarious human settlements, resettling of families and constructing new housing units as a way of combating the quantitative and qualitative housing deficit.

6 – Results, difficulties and perspectives

6.1 – Reaching of results in terms of contributing to a sustainable metropolitan region

The results of projects should influence the way of territorial planning and management aiming at interfering in processes of production excluding urban spaces, that has generated intense socio-spatial segregation, allied to the processes of environmental degradation. This dynamic of production of urban space is predominant in the Metropolitan region of São Paulo that besides of having had strong reduction in its growth rates in the last two decades, it continues to present high growth rates on the outskirts of urban occupation.

As a solution for this occupation, we have seen the attempt of applying restrictive measures however, that has given little effective results. This project intends to collaborate that the environment is seen on an integrated way, considering the environmental fragilities and opportunities, and the urbanistic and social aspects. In search of solutions of occupation of sustainable territory in its various dimensions.

The project in all its stages, since its conception, development and elaboration and distribution of proposals involves the responsible entities of local environmental management (SEMASA) and urban (SDUH/PSA). In its course, it has always been an objective to involve advisors from four municipal councils related to the problem in question (areas with both social and environmental interest), that brings together representatives of public power and civil society with great participation of popular leaders. It still intends to extend this participation, which will be the project's first step, with the utilisation of the guidebook in urban and environmental education programs.

The participation and the involvement of public managers, and responsible organs for decision making and action implementation, was from the start considered a basic requisite to guarantee that proposals can be viably implemented, adequate for the social reality in question and oriented by priorities identified by diverse involved agents.

An important result to be underlined is the recognition of the importance of a monitoring program for water quality, as an indicator of obtaining results with suggested proposals. This program should start with municipal management together with participative advisors and local community involvement.

6.2 – Potential of methodological diffusion and experience for governors and participatory committees of watershed basins in Sao Paulo and in Brazil

As the proposed methodology starts with the urban environmental recuperation from micro basins, (territorial units composing urban sub-basins), it is said that the project possesses considerable potential of diffusion and replication.

The principle of analysing each micro-basin from their environment and urbanistic variables, characterizing the water body from its birth to its mouth, characterizing homogeneous parts and proposing management and intervention measures physically directed in part by public power and perfectly applicable to other areas of the RMSP. As a principle and methodology, it can strengthen new criteria for discussion for analog cases in Brazil.

Because it is a project realized in a municipality that possesses a good tradition with democratic and participative management, there were no difficulties involving advisors and

social leaders. As the active participation of entities and representatives for civil society is very important in this type of process, in the case of application in other realities, this factor should be taken into consideration.

6.3 – Main difficulties in the project’s realization

The urban and environmental study of the ZEIA B area intended to contribute in the discussion of sustainable occupation of the territory, on the basis of the critical review of the following challenges:

Replace the mainly restrictive focus by a more pro-active focus, that relies on a more profound knowledge of the territory, and in the participation of diverse agents involved.

Overcome the dichotomy discussion that reduces the alternatives for the territory and the urban-environmental management to two positions: “Settle” or “Don’t Settle”, intervene destructively or maintain. Propose, in its place, a more difficult discussion but which also is far more promising: like settling the different parts of the territory.

The urbanization projects can point out ways of overcoming the segmentation of areas of knowledge proposing solutions that tend to the social demands and contribute to the improvement of the environmental quality of urban areas.

Break the conceptual dichotomy “nature-city”, seen as opposite. This is vital when intervening in RMSP’s pretty anthropic context.

Understand and reaffirm that totally “artificial” elements, culturally elaborated, are very important from the point of view of the environment. An urban park or a brook partially rectified, but with the preserved margins and permeable soil are essential for the environmental balance and quality of life in the city. Which leads to the point that can be paradoxical: intervene, modify, change the landscape, is not always and inevitably a source of destruction and environmental imbalance.

The rupture of this conceptual dichotomy “nature-city” permits a new vision of problems. On one side, it does not make with every and any alteration a source of negative environmental impact. On the other hand, it permits that a city and its inhabitant recognize the environmental value of their territory yet this can be a modified territory by the actions of man, creating a new conscience with respect to what is considered valuable or significant resources.

Breaking with analysis of segregated space, with well marker borders between urban areas and areas of protection. To consider the space on the basis of broader analysis that consider basins and hydro graphic micro-basins, forest and green corridors, areas of urban expansion and urban flow. Consider these areas as multiple functions: environmental, urban and landscape protection.

In summing up, it is necessary to overcome a segmented vision of reality, from the acknowledgment of many problems of urban and environmental management which originate because there are partial views, based on specific theoretical schemes, technically and legally specifics, that refer to parts of the whole.

7 - Next Steps

Discussion and approval in the instances of participative planning of the municipal of detailed proposals of Plan of Use and Occupation in Special Zones of Environmental Interest and Special Zones of Social Interest. Which should include:

- General Plan of Occupation of Micro-Basins: specialization of general proposals for the micro-basins.
- Specific Projects: integration of areas of high environmental value as green corridors and depths of valleys; project for the recuperation of water streams, including guidelines for the depth of valleys and drainage; projects for landscape qualification replicable for other areas with similar characteristics in the city.
- Emergency Interventions Proposed: for areas of risk, situation of erosion and the shall owing of water streams.
- Public Programs and Policies: monitoring the quality of water; educational environment and integrated urban education; urban licensing and integrated environment; permanent program of qualification of technical teams for integrated intersectorial actions.
- Identification of replicable actions and proposals: for other areas of the city, the Metropolitan region and the country.
- Identification of proposals for the Improvement of management types, handling, fiscalization, monitoring and regulating of areas of both social and environmental interests.
- Consolidation of the diagnostic and project's guideline methodologies, the studies developed should be replicable also in areas of ZEIA B of the municipality, and also for other areas of conflict between environmental and social interests.
- Production guidebook / manual that should be utilized in programs of existing environmental and urban education for the population to have access to information that will permit a more active and qualified participation on their part in planning, implementing and monitoring of actions took into consideration in the Plan of Occupation.

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9 - Annex: Pictures of the areas of study of this project



