

Local Green Governance: integrating sustainability into Public Policy in light of climate changes¹

ABSTRACT

A little scientific advance has been observed in how cities will deal with climate change in terms of adaptability. Thus, it is necessary to anticipate future changes and to integrate them into local level planning, including investments and political decisions in a proactive way of adaptability promotion. For that, supporting local governance construction may help engaging a variety of stakeholders on the search for solutions focused on facing such issues. This investigation has as its objective proposing a Green Local Governance Model for Cubatão City/SP municipality, aiming to contribute for an increase of effectiveness in the implementation of public policies into the context of climate changes. The objectives are: i) bibliographical updating on the research theme; ii) creating data summary on environment, social and economic dimensions for Cubatão City/SP, iii) identifying environmental management system of the municipality; iv) verifying the constraints on social participation in the decision making processes in municipal environmental management, v) proposing a Green Local Governance Framework. The methodology to be applied is based on MEGA (Portuguese acronym) - Strategic Evaluation Methodology of Sustainable Development and Environmental Public Policies implementation at Santo André Municipality. The expected results are reports, papers on the research subject, data summary, report of the Environmental Management System of Cubatão/SP (administrative structure, legal apparatus, management tools and institutional capacity); guide to social participation, institutional improvement on climate change impacts focus.

KEYWORDS: Climate change; Public Policy, Green Governance, Cubatão City.

¹Preliminary version presented in URBENVIRON International Seminar on Environmental Planning and Management, Niterói, 2010, in theme: 1 - Environmental Governance at the Local Level: Urban planning as an instrument of local governance.

Maria Luiza de Moraes Leonel Padilha

Agronomist Engineer, Master in Administration, PhD in Environmental Health. Post-Doctorate on Environmental Policy Planning, in Faculdade de Saúde Pública in Universidade de São Paulo. E-mail: malupadilha@usp.br

Aline Matulja

Sanitary and Environmental Engineer. Master degree student in Environmental Health and Public Policies Program, in Faculdade de Saúde Pública in Universidade de São Paulo. Brazilian Research Council (CNPq) Fellowship.

Ana Karina Merlin do Imperio Favaro

Agronomist Engineer. Environmental Management specialist. Master degree student in Environmental Health and Public Policies Program, in Faculdade de Saúde Pública in Universidade de São Paulo. Brazilian Research Council (CNPq) Fellowship.

Juliana Barbosa Zuquer Giarretta

Biologist. Environmental Health Management specialist. Master degree student in Environmental Health Program, in Faculdade de Saúde Pública in Universidade de São Paulo. National Institute of Science and Technology for Environmental Studies (INCT-EMA) Fellowship.

Juliana Pellegrini Cezare

Biologist, Master of Science by Universidade de São Paulo.

Daniel Gouveia Tanigushi

Biologist. Master of Science by Universidade de São Paulo. Student of Doctorate Environmental Health Program, in Faculdade de Saúde Pública in Universidade de São Paulo.

Antonio Carlos Rossin

Professor on Environmental Policy, Planning and Management, in Faculdade de Saúde Pública in Universidade de São Paulo.

Arlindo Philippi Jr.

Professor on Environmental Policy, Planning and Management at, in Faculdade de Saúde Pública in Universidade de São Paulo and Pro-rector of Research that university.

INTRODUCTION

In 2010, the Southeast region of Brazil was affected by intense and frequent storms, which caused significant losses to the national economics. A scenario with hundreds of people homeless and victims of floods and landslides, requiring reallocation of government resources and solidarity of society. Heat waves have caused low levels of humidity comparable to African deserts (Miranda, 2010) leading to an increase in hospitalizations due to infections or respiratory complications, especially in populations with low adaptive capacity.

Besides feeling the changes of climate the company receives information from the media, as occurred during the 15th Conference of the Parties - COP15, United Nations, held in Copenhagen. This, added to extreme episodes brought the sample of cities possible effects of global climate change provided by the scientific community in the Intergovernmental Panel on Climate Change - IPCC.

Despite the uncertainties about whether they are natural or anthropogenic factors that cause the changes, the development of studies demonstrates that the changes should be taken into account by the different spheres of government and civil society (Martins, 2009). As this author says, this issue must be faced and properly addressed seriously by the "complexity of the topic and abstract and uncertain character of many of these changes and their consequent impacts" (Martins, 2009, p. 01).

Locally, there is the search for new ways to manage problematic in view of the particularity of "scenario with geographic, cultural, social, economic and political contexts, and in some cases, conflicting" (Salles, 2000, p. 02).

Thus, the question that arises is how to prepare for this new situation encompassed by uncertainty? When and where are these effects? Will be the cities most affected?

This paper is part of the project (Local Government: Action Plan for Adaptation to Climate Events) submitted to FAPESP - State of São Paulo Research Foundation. The locus of the research is Cubatão-SP due to the particular

characteristics in the theme social, economic, environmental, cultural and historical is more likely the effect of such climatic events. Also, the municipality counts on the Center for Research and Training in the Environment (CEPEMA) of the Universidade de São Paulo(USP) as a support.

BACKGROUND

According to Barry and Chorby (1998), the results of a study on behavior of the climate predict that over the next 100 years the increase in global temperature can vary 2 ° C and 4 ° C, together with the rise of sea level of 20 cm and 60 cm.

In response to scientific evidence of climate change, the United Nations Environment Programme and World Meteorological Organization, established in 1988, the IPCC to get subsidies for the development of public policies (IPCC, 2001).

The potential effects of climate change in cities are exposed to storms, erosion, rising sea levels in coastal towns, fresh water scarcity, need for new water sources and infrastructure, increased pollution, increased incidence of diseases infectious diseases such as dengue or yellow fever with a high public health Thus the local effects of climate change are economic, social and environmental issues, most visible in developing countries by the characteristics, economic (less resources to deal with the effects of global change) and economic vulnerability and social (Samaniego, 2009; La Torre et al., 2009; Philippi Jr. et al., 2010). Consequently, the output is the implementation of effective action in public spheres.

The economic factor is the vulnerability of populations, thus the share in poverty is more likely to suffer from food shortages and other impacts, difficulties of return and their activities tend to migrate to other locations (Cord et al. 2008; Valencio, 2008; Philippi Jr. et al., 2010, Marengo, 2010).

The data presented in reports like the World Bank, besides demonstrating the vulnerability of developing countries on climate change, bring about the need to invest in mitigation strategies and adaptation, but necessity is not recognized

by the international community as noted by Sachs (2010).

It is known that the generation of knowledge about the vulnerability of countries is related to formulation and implementation of effective public policies to adapt to climate change, which will happen only when developed the mapping of hotspots in South America and the complex interrelationship of development human and climate change.

The complexity in addressing the issue of climate change as soon approached, led us to look forward to study it in an interdisciplinary approach to environmental policies in local government, included a proposal for sustainable development. For this to make brief reference to this subject.

The reason for choosing public policies in place rests with the globalization process that transformed the world into a global village as called Ianni (1997) and the environmental issue of "global change" and created new challenges for municipal management.

Within this new reality is the need to reform the state in order to humanize and restore stability in a society where the migratory flux may be intensified - from the most affected regions to less affected ones. Such movement has influenced populations to translocate daily management to the local sphere, while government structures still work at a beginning of century way (Dowbor, 1998).

To change this panorama of centralized decision making that affects greatly the local societies of Brazil, stands out as a legal reference, the promulgation of the 1988 Federal Constitution, which prescribes how provision (in Chapter IV, Article 29, section X) the need to "cooperation of representative associations for the planning, pointing, therefore, guidelines for municipal management. Moreover, the Constitutional Charter provides in Chapter II of Article 182, urban policies and the article in question is regulated by the City Statute of 2001 (Brasil, 1988; Brasil, 2001).

The Statute of the Cities (Federal Law No. 10.257 of 2001) in his article two on public policy reaffirms how it should be municipal management in item II: democratic management through

participation of the population and associations representing various segments of the community in formulating, implementation and monitoring of plans, programs and projects for urban development and focuses on Article 45: (...) The management bodies include mandatory and meaningful participation of people and associations representing various segments of the community, to ensure control direct its activities and the full exercise of citizenship. There is thus explicitly the need to assess and monitor the actions of management by different societal actors (Brasil, 2001; Padilha et al., 2007).

Through instruments such as municipal councils thematic or management of public policies, citizen participation might enable the legitimacy and effectiveness by means of parity in the official media of public administration in order to be spokespersons of the community in dealing with the "common good" (Milaré, 1999; Philippi Jr. et al. 1999; Assis, 2009).

This focus on participation of different actors "in the process of articulation of demands" as cited Cardoso (1995), is essential for the municipal administrations to set priorities for action. The demands priority should naturally be part of municipal planning.

In general, we observe the results of the project "Strategic Assessment Methodology Process for Implementation of Policy Development and Environment in the Municipality of Santo André, SP - MEGA difficulties of the municipal management facing society engagement with the councils and local decision-making, especially regarding the continuity of projects.

From the experience of the MEGA project in the municipality of Santo André, it is believed that a proposal for sustainable development including climate change in government policy allows for the implementation of strategies to adapt to global changes in the society.

For this to happen, according to Camargo (2003) cited in Fapesp (2009) in the balance of 10 years from 1992 RIO has demonstrated the lack of governance mechanisms in order to strengthen the management capacity of both governments to increase their participation, the

effectiveness of results in light of sustainable development.

It is understood, therefore, that strategies for implementing sustainable development and the new changes indicated by the IPCC should take citizen participation into account in environmental planning.

Thus, when discussing the environmental planning for the climate change of a municipality, it is imperative to assume the necessity of a representative process involving multi-stakeholder, what should be done in a transparent manner. Such actions can result in an appropriate proposal for sustainable municipal development as envisaged in Agenda 21 (Oliveira, 2004; Agenda 21, 1994).

In this sense, the direction of public policy, from a mission and a vision of the future - already defined by legal means and institutions that embody the expectations of citizens - is the means by which the city administration does its job. Thus, sustainable development, bounded by support economic, social, environmental and cultural (Fernandes et al., 2009), may become more viable and be implemented within the established and future prospects of socially desired in a given space.

Reopening the issue, the implementation of strategic planning for climate changes will depend, for their enforcement - among others - the orientation of public policies in line with the interests of society in line with the new scenarios in relation to emissions reduction greenhouse gases. Apart from the possible impacts as a result of oil exploration in the Santos basin.

Thus, the proposed environmental planning must be preceded by the verification available tools to analyze the evolution of municipality management by researchers, planners and all taken as executors of public policies. For this reason, historical, socioeconomic and environmental studies are needed, through the review of municipal regulations governing environmental planning, so that managers can rely on a feedback tool for their actions.

The key points to be taken into account involve the assessment of strategies linked to the generation of employment and income, regional disparities and

interpersonal reducing, changes in patterns of production and consumption, the construction of sustainable and healthy cities, the adoption of new models and management tools (Fapesp, 2009).

According Salles (2000), municipalities have several possibilities for application of instruments required for the establishment of strategies for prevention, control and mitigation of adverse social, economic and environmental, through plans, programs and projects, always taking into consideration priorities and local and regional aspects.

This same author classifies the instruments as: Legal - Organic Law, the Master Plan, Installment Land Law, Law of use and occupation and Environmental Code; Budget - Municipal Environment Fund and Incentive Tax, Administrative - Information System, technical-administrative, technical and technological and Communications - Environmental Education, Agenda 21, Regional Consortium. Given that governance at local level requires a mechanism to mediate between civil society and state, providing improved capacity gestational government in formulating public policies, it becomes relevant to investigate how to structure such principles as that enables the State and civil society, increasing the degree of adaptability of the city opposite the impacts resulting from climate change.

At COP 15, Brazil announced the goal in Brazil to reduce emissions of greenhouse gases and promulgation of the National Policy on Climate Change - NMCP, (Federal Law No. 12,187 of December 29th, 2009), which defined the need "to implement measures to promote adaptation to climate change by 3 (three) areas of the Federation "(Brasil, 2009).

This is explained in the guidelines of the NMCP (FL12, 187/09) in paragraph V: stimulating and supporting the participation of federal, state, county and municipal as well as the productive sector, academics and civil society organizations, in the development and implementation of policies, plans, programs and actions related to climate change as well as demonstrate the necessity of involving stakeholders and the development of research among others,

aiming to reduce the impacts of climate change.

In Article 6 of NMCP (FL12, 187/09) between the instruments given are "measures dissemination, education and awareness" is this topic important to allow for the involvement of the most affected. In this vision, outlined by experts in the field of the effects of climate change, whereby certain segments of the population will be most affected, there is compelling need for this new environmental concern to be included on the local agenda by means of instruments that aim to implement measures appropriate to reduce impacts and promote sustainable development.

THE CITY OF CUBATÃO

The municipality of Cubatão is located in the Metropolitan Region of Baixada Santista (Santos Lowland), by the State of São Paulo coast, an area which occupies 142 km² and situated 57 km away from the state capital, with altitudes varying from 3 m to 700 m above sea level. Its environmental issue is centered in the complexity of mediating its economic and social conflicts, as well as the peculiarity of local ecosystems.

Territorial division for land occupation and usage was established by Complementary State Law 2.513 dated 10/10/1998 and today the determinations for soil usage in the municipality of Cubatão are only "for fiscal, urbanistic, and planning purposes, solely in preservation urban area and urban area" (Prefeitura de Cubatão, 1998, art. 3^o). Agriculture prevailed until the mid-Twentieth Century in the Santos lowland, which changed starting in 1960, when Cubatão began to be occupied predominantly by industries (Ferreira, 2007).

According to Young and Fusco (2006), urban and industrial occupation in a very fragmented and dispersed way caused negative impacts to the region's natural environment in the municipality, which were not limited to the implementation of the petrochemical pole alone. Since the building of Anchieta Highway and, latter, Imigrantes Highway, Cubatão became a municipality inhabited mainly by low-income and low-qualified workers, with labor ties in civil

construction and local manufacturing plants. Better qualified workers possessing higher income and better conditions moved to neighboring municipalities in search of more adequate housing and infrastructure. Thus, despite being rich, the municipality of Cubatão consolidated itself with a profile of a low-income population.

For that reason, pockets of poverty, which demonstrate the social vulnerability of a portion of local population, can be seen. According to the Índice Paulista de Vulnerabilidade Social - IPVS (Paulista Index of Social Vulnerability) -, 42.2% of the Cubatão population are exposed to high and very high vulnerability. The index is comprised of, among other indicators, family income, level of education of the head of the family, and by the number of children (SEADE, 2000).

Another factor to taken into account is the location and altitude of the city which, according to forecasts of sea level elevation due to climate change, will suffer massive impact, reaching, especially, the already vulnerable population.

As a result of the building of Anchieta Highway and the consolidation of Cubatão as the Industrial Pole of the Santos Lowland, the region started receiving a large population contingent and, consequently, irregular settlements began to appear with greater expression (Young and Fusco, 2006).

Aside from this aggravating point, another factor that must be mentioned is population's exposure to contaminants liberated by the manufacturing plants. The Cubatão community lives in the petrochemical pole and is exposed to a wide range of toxic substances, leading to public health problems. According to Guilherme (1988) the harms to the Cubatão public health are divided into three groups: 1) those resulting from absence of sanitation and housing infrastructure - poverty related harm; 2) those related to the production process - occupational diseases and labor accidents; 3) those resulting from industrial pollution. The author also reports the fire in Vila Socó due to leakage in a Petrobrás oil pipeline, as well as several physical and/or mental development congenital anomalies in newborns possibly related to pollutants.

Located in the Atlantic Forest

biome, Cubatão possesses mountainous and flatland areas comprised chiefly of Dense Ombrophilous Forrest and Mangroves, which suffered with the pressure of firewood exploitation in the past and, since 1950, beginning of the industrialization process, with the installation of manufacturing plants and population settlements (Borges et al., 2002).

Thus, Cubatão possesses Conservation Units, whose main purpose is the conservation of nature and definition of boundaries. In Cubatão, the Parque Estadual da Serra do Mar, the Parque Municipal do Perequê and the Parque Municipal Cotia-Pará (CIESP, 2006) stand out. The Cubatão municipality is composed of the Núcleo Itutinga-Pilões of the Parque Estadual da Serra do Mar, responsible for approximately 80% of all the water supply of the Santos Lowland, revealing its regional importance to hydric production. Those reservations also contribute to the improvement of air quality since it increases relative humidity and improves climate conditions in a general way, rendering an environmental service to neighboring human populations. The forest also contributes to the formation of a natural coating of mountainsides, reducing the risk of landslides.

Regarding the matter of Cubatão's basic sanitation one finds complexities related to the municipality's socioeconomic nature. Its main problems are associated to the non-prioritization of resources directed to the infrastructure of essential services, as well as the precarious conditions living conditions in irregularly occupied areas.

Therefore, the current situation of the municipality of Cubatão is unsatisfactory. The deficit in services of drinking water supply and sanitation sewage to the population are in 72 and 29% respectively, according to the SNIS - National System of Sanitation Information (Brasil, 2007). The regular operation of those services is provided by SABESP - Basic Sanitation Sao Paulo State Company, under a concession contract expiring in 2009.

Though this deficiency portrays the reality of most Brazilian municipalities, it figures as a real challenge to local management considering that a great part of the population lives in Permanent

Protection Areas, preventing the normalization of water and sewage services. When comparing water and sewage service indexes between the years of 2004 and 2007, one finds an increase of 7% and 1% respectively in the rendering of such services (SNIS, 2004 e 2007).

It is important to point out that besides the quantitative indexes of the provision of water and sewage services the municipality of Cubatão presents demands for improvement in qualitative monitoring. According to Agenda 21 (Prefeitura Municipal de Cubatão, 2006), the current monitoring of water quality parameters such as turbidity and the presence of heavy metals is deficient. Besides, the same document points out the difficulty of the population to access existing information. Both, SABESP and CETESB - São Paulo State Environmental Agency operate monitoring wells. Until the date of publication mentioned, monitoring of the quality of treated domestic effluents was nonexistent.

Regarding Solid Waste the city of Cubatão uses a Sanitary Landfill located in Santos, in adequate conditions since 2003 according to the assessment of the Landfill Quality Index (IQR) of the Environmental Company of the State of São Paulo (CETESB, 2008). Though the collection of domestic waste is satisfactory in urban areas, according to the municipality's Agenda 21 analysis (2006) the system presents deficiencies such as insufficient collection in areas of disorganized occupation, resulting in the practice of waste dumping in bodies of water, underexplored recycling programs and absence of composting of the organic fraction.

PROJECT OBJECTIVES

Considering the current context of climate change, a local governance model is necessary as opportunity to increase the effectiveness of decision making and the implementation of public policies in face of climate change, guaranteeing, thus, development on sustainable basis.

Thus, the main goal of project is to build participatory management tools in order to assist the implementation of public policies addressing climate change in

Cubatão. The specific objectives are proposed upgrade on bibliographic research theme, in order to create the database environment, social and economic study on the municipality and check the conditions for social participation in decision-making processes at the municipal environmental management, identify the Environmental Management System (EMS) in the municipality, identifying the weaknesses in the light of climate changes.

METHODOLOGIES

According to Gil (2002) scientific research depends on a "set of intellectual and technical procedures" so that their goals are achieved. For this, Mehta and Singh (2001) state that their preparation must be based on careful planning, as well as solid conceptual reflections grounded in existing knowledge.

Thus, the methodological framework described below is based on this project proposal aimed at applying the theoretical knowledge of the MEGA methodology and other of participatory nature, still arrangement phase.

The MEGA methodology - Methodology for the Evaluation of Strategic Environmental Management, funded by FAPESP, was developed by SIADES Group and coordinated by the Department of Environmental Health, School of Public Health School, whose final objective was to propose a way of evaluating strategic formulation and implementation of environmental policies in the context of environmental management as mentioned in the literature review (Fapesp, 2009).

MEGA The methodology is structured in the following steps:

1. Data collection through interviews and workshops: Search up and understand the processes of construction and implementation of public policies, since the problems that motivated them, spaces for discussion, political debate until the final formulation, implementation and review of the effectiveness of some cases.

2. Systematization of data - is on three levels of access and construction of knowledge: the raw data, dimensions and concepts of reality (Quivy and

Campenhoudt, 2008). The grouping of raw data reflects this phenomenon. The dimensions of reality and complex classification of the phenomenon is a result of the grouping of the main features (most often in speeches either in interviews or in the workshops). The concepts are the basis for referential analysis of public policy, especially the dimensions of sustainability and the principles of Agenda 21.

3. Strategic analysis: from the "tool of SWOT matrix" study are four vectors of the strategy: strengths, weaknesses, opportunities and threats. This is the analysis model from which we can highlight in each of the dimensions of reality, merits and weaknesses, as well as positive or negative influence exerted in the context of the process of policy formulation.

4. Assessment for improving learning: Based on the previous steps, appears the following circular process of evaluation of public policies: a) Decision-making, b) Planning and Implementation, c) Monitoring d) Evaluation.

Based on the methodologies described above, the project was structured in three stages: the first in Diagnosis, which will be built in the scope of theoretical research as well as the setting for the reality of the city. The second of building local governance, with the community, in order to build the vision and mission of the municipality for adapting to climate events, thus, providing subsidies for the identification of appropriate management tools to that community that will structure the Plan Action to adapt to climate events, and finally the stage of validation of the action plan with the community and experts. Such technical procedures used in making the research operational are described below:

- (i) Bibliographical Research of scientific publications on governance, governance indicators, climate change, local governance, environmental syndromes and participative environmental management strategic indicators, legal scope on the subject as a whole and studies (cases) performed in Cubatão-SP; to be accomplished in libraries, portals of journals, books and others, consolidating concepts and methods in supporting the proposition

of the Green Governance Model.

(ii) Documental Research of environmental, socio-economic, and institutional data on the municipality of Cubatão. This is a continuous process throughout the project and is accomplished through databases of governmental and non-governmental institutions that play a role in the promotion of quality of life and sustainability, such as IBGE - Brazilian Institute of Geography and Statistics, SEADE Foundation - State System Data Analysis Foundation, CETESB - Environmental Sao Paulo State Agency and SNIS.

(iii) Field Research to be accomplished in two ways: through semi-structured interviews with the consent of the interviewee, where participation is non-mandatory and the right of abandonment is sustained throughout, observing the ethical aspects recommended in research involving human beings (CNS Resolution 196/96). It should be pointed out that this project will be submitted to the School's Ethical Committee during the qualification stage (second semester of 2010).

According to QUIVY and CAMPENHOUDT (2008) interviewing is a method that allows for analysis of the actors in terms of related knowledge, analysis of a specific problem, reconstructing a process of action, experience or past event, enabling for a degree of depth into the elements gathered in the analysis, allowing for the collection of statements and interpretations of the interlocutor, respecting his/her own reference frames.

The purpose of the semi-structured interview is to corroborate the evidence resulting from documental research and/or add information about the environmental management system of the studied municipality. The interview will be performed with the administrator responsible for the municipality's environmental management (secretary, director, manager), who will be identified in the course of the research.

(iv) Workshops: scientific tool for the conceptual discussion among the members of the SIADES network indicators, by means of forums promote for the discussion with the community, both

municipal and scientific, represented by the members of the SIADES group, in the course of the project. The contributions and proposals arising out of those events will be taken into account at the closing of the many stages.

(v) Seminar: conducted to present the partial results of stage of the project to the community.

Furthermore, weekly meetings will be conducted as a way to inform the team about the latest happenings of the Project and making necessary adjustments. Those events will take place via Skype and face to face. Larger meetings will be scheduled via videoconference, signaling the beginning and closing of each working stage.

It should be pointed out that the following is intended throughout the research: (i) Producing and disclosing knowledge through publications and seminars as to contribute with new public policy proposals in the context of climate change; (ii) Guiding efforts toward consolidating the network of indicators - SIADES; (iii) Inserting knowledge and experience acquired throughout the research period into teaching and research activities in the São Carlos Engineering University (EESC-USP), School of Public Health (FPS-USP) and Environmental Training and Research Center (CEPEMA)

As the research is performed, it becomes necessary to measure (quantitative) or analyze (qualitative) if the expected objectives of changes are being reached, translating into indicators of observable and measurable manifestations (Quivy and Campenhoudt, 2008).

The technique of thematic content analysis (GOMES, 2007), with adaptations, will be utilized for the analysis of the conducted interviews. Initially, the recorded material will be listened to, with the objective of: (a) having an aggregated view; (b) learning the peculiarities of the set of material to be analyzed; (c) elaborating initial assumptions that will serve as landmarks for the analysis and interpretation of the material; (d) choosing initial forms of classification; (e) determining the guiding theoretical concepts for the analysis.

At a second moment, the analysis

itself will be conducted, according to the following stages: (a) take down notes of excerpts, fragments, or phrases of each text for analysis; (b) distribute the parts into categories; (c) make a description of the categorization result, (d) interpret obtained results with the support of adopted theoretical grounding.

As for the identification of environmental management scenario in Cubatão-SP, through bibliographical and documental research, it will be accomplished through analysis of the adopted theoretical reference.

Analysis of quantitative data: Microsoft-Excel-developed statistical spreadsheets will be elaborated for tabulating all data, and analysis categories based on the designed theoretical reference will be created for crossing all gathered information. Graphs will be designed later for better understanding of those results.

EXPECTED RESULTS

Each of the mentioned specific objectives is linked to an expected result with a set of activities and methodologies for its achievement, as displayed in the following table.

Table 1 - Expected Results

PHASES	SPECIFIC OBJECTIVE	ACTIVITIES	EXPECTED RESULTS
Diagnosis	Update bibliographical collection on the following themes:	<ul style="list-style-type: none"> - Updating bibliographical research focused on the following themes: governance, governance indicators, climate change, local governance, environmental syndromes and participative environmental management strategic indicators, legal scope on the subject as a whole and studies (<i>cases</i>) performed in Cubatão-SP; to be accomplished in libraries, portals of journals, books, and consulting institutions acting in that field; - Increase in contact and visits to other national and international learning institutions (like China, Australia and SIADES Group) to identify research and interests related to objectives of this project; 	Theoretical compendium on the subject of research
	Create environmental, social, and economic database on the studied municipality	<ul style="list-style-type: none"> - Gathering of data through institutions such as IBGE, SEADE, CETESB, SNIS, and others, as well as with the municipality of Cubatão - Data systematization 	Data Summary
	Identifying the municipality's Environmental Management System (EMS)	<ul style="list-style-type: none"> - Understanding of the dynamic involving municipal environmental management in the Municipality of Cubatão-SP; - Consulting documents that record activities in the Cubatão-SP municipality's environmental management scope, along with city hall and competent entities on the referred subject; - Interview with key administrators to be identified along the process 	- Scenario of the Cubatão-SP (administrative structure, legal apparatus, management instruments and institutional capacity)
Construction	Local governance	<ul style="list-style-type: none"> - Construction of the vision and mission of the municipality - Discussion of feasibility of each instrument with a focus on climate change along with key leaders, managers and specialists, both technical and academic 	Training of managers and local leaders
	Proposal of an Pilot Action Plan for climate events adaptation	Construction of a Framework proposal for dealing with the main local adaptation challenges	Pilot Action Plan for climate events adaptation
Validation	Validate the Plan of Action for Adaptation to climate events	<ul style="list-style-type: none"> - Identification of faults by means of workshops with managers, key leadership positions - Adjustments 	Action Plan for climate events adaptation

Acknowledgements

Acknowledgements to the National Institute of Science and Technology for Environmental Studies (INCT-EMA), Brazilian Research Council (CNPq), State of São Paulo Research Foundation (FAPESP) and Center for Environmental Research and Training (CEPEMA-Poli-USP).

REFERENCES

Barry, R. G.; Chorby, R. J. (1998), "Climatic change", in: Barry, R. G.; Chorby, R. J., *Atmosphere, Weather and Climate*, Routledge, New York, NY, pp. 311-335.

Borges, W. R.; Braga JR., J. C.; Torres, F. R. (2002), *O que você precisa saber sobre Cubatão*, Cubatão: Design & Print, Cubatão, SP.

Brasil (1998), *Constituição Federativa do Brasil 1998*, Federal/Centro Gráfico, Brasília, DF.

Brasil (2001), "Lei no 10.257 de 10 de julho de 2001. Regulamenta os artigos 182 e 183 da Constituição Federal, estabelece diretrizes gerais da política urbana e dá outras providências", available at <<http://www.planalto.gov.br/L10257>> (accessed 15 February 2007).

Brasil (2009), Lei nº 12187, de 29 de dezembro de 2009. Institui a Política Nacional sobre Mudança do Clima - PNMC e dá outras providências, *Diário Oficial da União*, Brasília, DF.

Brasil (1994) Ministério do Meio Ambiente. Agenda 21, Capítulo 6. Brasília. Secretaria Executiva. Projeto PNUD BRA/94/016. Versão eletrônica 1.1. available at: <<http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=18&idConteudo=575>>. (accessed 14 November 2008).

Cardoso, F. H. (1995), "O mais político dos temas econômicos: desenvolvimento", *Revista de Economia Política*, Vol. 15, No. 4, pp. 148-155.

Companhia Ambiental do Estado de São Paulo - CETESB (2008), "Inventário Estadual de Resíduos Sólidos Domiciliares", available at: <<http://www.cetesb.sp.gov.br/Solo/publicacoes.asp>> (accessed 18 January 2010).

Cord, L.; Hull, C.; Hennem, C.; Van Der Vink, G., "Climate Change and Poverty: An Integrated Strategy for Adaptation", available at: <http://www1.worldbank.org/prem/PREMNotes/Note3_Climate_Change_and_Poverty.pf> (accessed 20 April 2010).

Dowbor, L. (1998), "Globalização e tendências institucionais", in: Dowbor, L.; Ianni, O.; Resende, P. E. A. (Org.), *Desafios da globalização*, Vozes, Petrópolis, RJ, pp. 9-16.

Ferreira, L. G. (2007) *A gestão ambiental do polo industrial de Cubatão a partir do programa de controle da poluição iniciado em 1983: atores, instrumentos e indicadores*, Dissertação de Mestrado, Faculdade de Saúde Pública da USP, São Paulo, SP.

Fundação de Amparo à Pesquisa do Estado de São Paulo - FAPESP (2009), *Mega - Avaliação estratégica do processo de implementação de políticas públicas de desenvolvimento e meio ambiente no município de Santo André-SP: relatório científico*, São Paulo, SP.

Gil, A. C. (2002), *Como elaborar projeto de pesquisa*, Atlas, São Paulo, SP.

Gomes, R. (2007), "Análise e interpretação de dados de pesquisa qualitativa", in: Minayo, M. C. S. (Org). *Pesquisa Social: teoria, método e criatividade*, Vozes, Petrópolis, RJ, pp. 79-108.

Guilherme, M. L. (1998), "Urbanização, saúde e meio ambiente: o caso da implantação do pólo industrial de Cubatão e seus efeitos urbanos e regionais nos setores de saúde e poluição ambiental", in: Tartaglia, J.C.; Oliveira, O.S. (Org). *Modernização e desenvolvimento no interior de São Paulo*, EDUNESP, São Paulo, SP.

Ianni, O. (1997), *Teorias da globalização, Civilização Brasileira*, Rio de Janeiro, RJ.

Local Governments for Sustainability - ICLEI (2001), "Cambio Climático y Desarrollo Limpio: Oportunidades para Gobiernos Locales", *Una Guía del ICLEI.s.d.*, 1 CD-ROM.

Intergovernmental Panel on Climate Change - IPCC (2001), available at: <www.ipcc.org.ch>, (accessed 28 April 2010).

La Torre, A.; Fajnzylber, H.; Nash, J. (2009), "Desarrollo con menos carbono: respuestas latinoamericanas al desafío del cambio climático. sl.:Banco Mundial", available at: <<http://cmsdata.iucn.org/downloads/desarrolloconmenoscarbono.pdf>>. (accessed 10 September 2009).

Marengo, J. A. O. (2010). *Encontro Acadêmico Mudanças Climáticas e Impactos na Saúde: uma revisão*. Faculdade de Saúde Pública; Instituto Nacional de Pesquisas Espaciais, São Paulo, SP.

Martins, R. D'A. (2009), "População e mudança climática: dimensões humanas das mudanças ambientais globais", *Ambient. Soc.*, v. 12, n.2, December, p. 399. Available at: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-753X2009000200014&lng=en&nrm=iso>, (accessed 24 April 2009).

Menezes, E. M.; Silva, E. L. (2001), "Metodologia da pesquisa e elaboração de dissertação". Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, available at: <<http://projetos.inf.ufsc.br/arquivos/Metodologia%20da%20Pesquisa%203a%20edicao.pdf>> (accessed 16 February 2009).

Milaré, E. (1999), "Instrumentos legais e econômicos aplicáveis aos municípios. Sistema Municipal do Meio Ambiente - SISMUMA/SISNAMA", in: Philippi Jr. et al. (Eds), *Municípios e meio ambiente: perspectivas para a municipalização da gestão ambiental no Brasil*, Associação Nacional de Municípios e Meio Ambiente, São Paulo, SP, pp. 33-42.

Miranda, G. (2010), "São Paulo terá o maior prejuízo absoluto", available at: <<http://www1.folha.uol.com.br/fspciencia/fe0702201002.htm>>, (accessed 15 August 2010).

Oliveira, D. P. R. (2004), Planejamento estratégico: conceito, metodologia e práticas, Atlas, São Paulo, SP.

Padilha, Maria Luiza. M. L.; et al. (2007), "Impact of textile industry on cities and its role in the Brazilian context", in Kenneweg, H; Tröger, U. (Org.). 2nd International Congress on Environmental Planning and Management: vision, implementations and results. Berlin, Technische Universität Berlin, pp. 307- 310.

Philippi Jr. et al. (1999), "Estruturação de um sistema de gestão ambiental", in: Philippi Jr. et al. (Eds), Municípios e meio ambiente: perspectivas para a municipalização da gestão ambiental no Brasil, Associação Nacional de Municípios e Meio Ambiente, São Paulo, SP, pp. 128-130.

Philippi Jr., A. et al. Síndromes climáticas y pobreza en la América del Sur. Proyecto aprobado Fundación Carolina, 2010.

Prefeitura Municipal de Cubatão (2006), "Agenda 21 - Cubatão 2020: A cidade que queremos", available at: <<http://www.novomilenio.inf.br/cubatao/agenda21.htm>> (accessed 25 November 2009).

Prefeitura Municipal de Cubatão (1998), "Lei Complementar nº 2.513 de 10/09/1998", available at: <<http://ceaam.net/cbt/legislacao/>>, (accessed 04 August 2009).

Quivy, R.; Campenhoudt, L. V. (2008), Manual de Investigação em Ciências Sociais, 5ª Edição, Gradiva, Lisboa, PT.

Sachs, I. (2010). Rumo a Cúpula da Terra de 2012 [palestra]. São Paulo: IEA/USP.

Salles, C. P. (2000). A situação da gestão ambiental municipal no Brasil. São Paulo,

[Dissertação de Mestrado] Faculdade de Saúde Pública da USP.

Samaniego, J. (2009), "Cambio climático y desarrollo en América Latina y el Caribe: una reseña. Comisión Económica para América Latina y el Caribe", available at: <http://www.eclac.cl/publicaciones/xml/5/35435/28-W-232-Cambio_Climatico-WEB.pdf>, (accessed 10 September 2009).

SEADE - Fundação Sistema Estadual de Análise de Dados (2000). Índice Paulista de Responsabilidade Social - 2000. São Paulo, SP.

Valencio, N. F. L. S. (2008) Economia ambiental. [Anotações de aula] Disciplina do Curso de Pós-graduação de Ciências da Engenharia Ambiental da Escola de Engenharia de São Carlos da USP, São Carlos, SP.