The leading role of local governments in achieving a sustainable city

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ABSTRACT

There is a clear link between the actions of the cities about climate change and the larger goals of being a low-carbon economy, poverty eradication and global environmental governance. The role of cities in this new institutional architecture, as defined by the United Nations, is a unique opportunity for cooperation. Shares of cities serve as a catalyst for national governments, aiming to provide support to public policies, creating a virtuous circle. The purpose of the present work is to demonstrate that, faced with a troubling and urgent climate reality, local governments have taken responsibility and have been working in the formulation of public policies with the participation of various actors in society. The research developed in this article can be classified as the goals as exploratory. For this study, we adopted the bibliographical research and document analysis as research strategies. It underlines that this concentration of political efforts demonstrates the urgency in the scientific community of new and timely research on how climate change will affect urban areas.

Keywords: sustainable city, local governments, climate change, government policy, public policies.

INTRODUCTION

The greenhouse effect it is a natural phenomenon caused by the interaction of components of the troposphere, known as greenhouse gases, with the energy emitted by the Earth's surface in its cooling process, in the form of long waves, corresponding to infrared radiation (IPCC, 2001).

The existence of this phenomenon is what keeps the average annual global temperatures around 16.5° C and their absence could cause the Earth's temperature was 20° C negative (Mendonça and Danni - Oliveira, 2007). According to IPCC – Intergovernmental Panel on Climate Change (1990), the average temperature of Earth's surface is about 32° C higher than it would be if the greenhouse gases, especially carbon dioxide and water vapor, were not present in the lower atmosphere.

Carbon dioxide is present in the atmosphere since its formation. Despite its concentration vary over geological time, the concentration of this gas levels remained close to 275 ppmv – parts per million by volume – over the last 150,000 years. However, the concentration of CO_2 in the atmosphere has increased significantly since the intensification of burning fossil fuels, caused mainly by industrialization by increasing the fleet of motor vehicles in urban areas, reaching as well, since 1990, the concentration of 354 ppmv (Mendonça and Danni - Oliveira, 2007).

In addition to the reasons outlined in the preceding paragraph, population growth, changes in agriculture and land use and occupation, join the industrialization as the main causes for the increase in emissions of greenhouse gases (IPCC, 1990).

The increase of 0.5 ° C in mean atmospheric temperature of the planet, in less than 100 years of industrial activity, has raised serious concerns and debates, given that its effects are already being noted on changes in local weather. Thus, the human intervention in the greenhouse effect, materialized by increments of CO_2 concentrations in the atmosphere, is conventionally called by global warming (Mendonça and Danni - Oliveira, 2007).

The relationship between global warming and human activities were treated differently by the members of the academy. On one hand, those based on the argument that did not exist enough evidence that man are responsible for global climate change, on the other, those who were pointing in the same direction of the IPCC, claiming that the existing evidence suggested the real human influence in global climate change (Houghton et al., 1996).

In addition, the dissent also resided in considerations about the intensity of the changes and the possibility of control by society. So on one hand, some considered the changes would be gradual and within the means of social control, in contrast to the forecasts indicated by the IPCC that temperature changes and regional climate conditions would be significant (Houghton et al., 1996).

Despite the existence of such disagreements, there is a consensus among scientists that the Earth's climate is changing, that anthropogenic emissions are contributing to this change, and that society can mitigate the impact of climate change by reducing greenhouse gases emissions (World Bank, 2010).

To accomplish this, the cities are following the principle of Agenda 21 "Think Globally and act locally" and taking forward the discussions on climate change. The objective of this study is to assess how local governments can make a difference on issues related to adaptation and mitigation without waiting a global climate change agreement.

2. THEORETICAL FRAMEWORK

The theoretical framework of this study comprises broad areas related to climate change. A focus is set on climate change consequences (Section 2.1), in particular on questions about how cities can affect climate change issues (Section 2.2). These questions are linked to the cities as complex systems and how to tackle global warming (Section 2.3).

CLIMATE CHANGE CONSEQUENCES

According to Betsill and Bulkeley (2006), the global climate change threat is one of the most significant scientific and political challenges of the present moment in human history. Climate change affects all countries, but developing economies are the most vulnerable, paying about 75 % of the costs of the damage caused by climate change. It is estimated that an increase of 2º Celsius in global temperature would result in reductions of 4 to 5% of the gross domestic product of Africa and South Asia (World Bank, 2010).

Climate change also pose serious threats to urban infrastructure, quality of life and the urban system as a whole, both in rich and poor countries. The high and growing dependence on cities to external supplies such as food, energy and water, makes them vulnerable to climate anomaly events. In addition, since climate disasters affect the poorest populations, the example of flooding in poor countries, the population of richer countries, the example of the large number of older Europeans killed by severe heat waves (World Bank, 2010).

Most cities have developed nearby rivers and oceans, geographic features that facilitate transport and connectivity. However, these location advantages have become vulnerable conditions because of raising sea levels and the increasing number and intensity of storms. Only in Europe, about 70% of the largest cities have areas that are vulnerable to rising sea levels, and the majority of these cities are less than ten meters above sea level (McGranahan et al, 2010 Apud: World Bank, 2010).

Thus, the rise in global average temperature, with consequent rising temperatures of ocean waters, causing thermal expansion thereof and the melting of glaciers, has caused rising sea levels, endangering the lives of human populations that stay in areas of low elevation relative to sea level. As an example may be cited the Tuvalu Island, located in the South Pacific Ocean, and whose population was forced to seek refuge across its borders. The UN – United Nations – considered such population as the first environmental refugees (Carmo and Silva, 2009).

In Brazil, the city of Rio do Fogo (State of Natal) suffered homes' destruction and flooding streets because of the sea level advancement, and, according to Trabanco et al. (2001), the possible consequences of rising water levels of the Atlantic Ocean have scared part of the Brazilian population living in coastal areas.

Despite the global warming reaches all countries and socioeconomic strata, the population of deprived areas are the ones who suffer and will suffer the most the consequences of the phenomenon. Cities in developing countries like Brazil have developed rapidly, creating spatial segregation (Santos, 2002), with large share of low-income population occupying risk areas, poor infrastructure and minimum basic services to the maintenance of their lives (Sposito, 2013), such as flood plains and hillsides, which suffer from extreme events of rainfall, causing loss of life and environmental damage.

The living conditions of this large portion of the world population is likely to worsen in the face of climate change scenarios identified by the IPCC for decades to come, thus requiring global action, but above all places, leading to effective deal with the problem.

HOW CITIES CAN AFFECT CLIMATE CHANGE ISSUES

Cities are important in the challenges of sustainable development given that they concentrate two-thirds of global energy consumption; generate 75% of the waste and live with exhaustion processes of water resources and exaggerated expansion of potable water consumption (Leite, 2012).

Bulkeley e Betsill (2003), based on Satterthwaite (1997), point out that if the cities want to achieve sustainable development, they must improve their environmental performance. Not only in terms of environmental quality within their borders, but also in terms of reducing the transference of their environmental costs to other people, other systems or for the future. Thus, the authors conclude that the fight against climate change should be an essential component of sustainable urban development.

Cities concentrate most of the economic activities and half of the world's population, but this portion consumes more than 80% of the total energy produced in the whole world. With the levels of growth of urban areas, greenhouse gases emissions are being caused less by industrial activities than the energy services needed for lighting, heating and cooling of cities (World Bank, 2010). Thus, cities are seen as responsible for issuing about 80% of the emissions of the greenhouse gases caused by mankind (Hoornweg, Sugar and Gomez, 2011).

This situation may worsen, since the urban population is expected to increase significantly in the coming decades and should reach the value of about 6 billion people by 2050. Such population will have to live with climate change consequences due to the increase in greenhouse gases emissions and will be exposed to local urbanization effects, such as heat islands (Mark, Best and Betts, 2010).

Despite the cities, since the Industrial Revolution, are always cited as guilty for causing environmental problems, given its high concentration of people, businesses, motor vehicles and waste, some authors have pointed out that the high densities and large population concentrations can bring benefits both to the satisfaction of human needs, such as the environmental management (Dodman, 2009). So cities can be models of environmental efficiency once they can contribute to the reduction of transport services costs and energy consumption, to promote innovation and prosperity through economic development (World Bank, 2010).

The proximity and clustering enable the creation of infrastructure and the provision of services required to minimize environmental damage. In addition, the concentration of firms facilitates the enforcement of environmental legislation and the proximity of residential areas to work can encourage walking, cycling and using public transport (Dodman, 2009).

Among the features highlighted by the World Bank (2010) and to highlight the potential of cities to respond to global issues such as sustainable development and global warming, can be cited: a) the cities have organic system of government that expresses the aspirations of its citizens more succinctly and quickly compared to other levels of government. When there is joint local initiatives the overall impact is considerable; b) the cities are the first to respond to crises and are the first to experience the trends; c) the cities constitute the principal place of guidelines implementation of

national governments; d) due to its proximity to the public and its focus on providing the everyday services, cities tend to be more pragmatic than the other levels of government; e) in the field of politics, the cities are reliable laboratories of social change with appropriate scale for the development of effective actions; f) at the economic level, the potential of cities can be perceived by the sum of the gross domestic product of the 50 largest cities in the world, which is higher than China; g) the cities allow better response to global issues such as climate change, as they represent a more tangible scale actions, typically offering possibilities for more direct and effective communication between the local government and other decision makers.

According to Bulkeley and Betsill (2003), based on Angel et al. (1998), among others, the cities are important for dealing with climate change, since local governments exert a degree of influence on emissions of greenhouse gases, directly impacting the ability of national governments to achieve the internationally agreed goals. Such influence is due to its role in energy management, transport and waste, as well as the appropriate land use planning and awareness of local communities. In addition, local governments, influenced by the guidelines of Agenda 21, have struggled to meet the goals of sustainable development, reflecting the discussions at the international level in effective local practices with ways to mitigate climate change. The authors also point out that local authorities can influence the action of other institutions, either by pressing the federal government, or by demonstrating the benefits of controlling emissions of greenhouse gases, through the development of small-scale projects.

CITIES AS COMPLEX SYSTEMS AND HOW TO TACKLE GLOBAL WARMING

According to Hoornweg, Sugar and Gomez (2011), the cities are the most complex system created by mankind. This feature is also highlighted by the World Bank, for whom cities are complex systems where services depend on the infrastructure and social and political variables, which determine much of the success or failure of social and economic policies (World Bank, 2010).

According to Christofoletti (1999), the systemic approach has revitalized the basic organismic conceptions. This means that the units make up the reality of work in an integrated manner and tend to reach a steady state with respect for the conditions.

This view attributes to the society the search for understanding the characteristics and functioning of environmental systems (physical and socioeconomic), through a holistic approach and allowing it to introduce actions that do not cause the disruption of the balance, essential to their existence (Quaresma, 2013). When assigning a given phenomenon quality complex system, the level of difficulty in its understanding increases significantly, since they are composed of a large number of interacting variables that exchange information with its conditioning environment and adapt their internal structure as a consequence of these interactions. In addition, these systems have many constituents, have intrinsic structural disorder and asynchronous and random characteristics of the interactions result in chaotic behavior of processes (Crhistofoletti, 1999).

In the face of existing difficulties, it is necessary to point out that the holistic approach does not preclude the reductionist approach, considering that also fits as a basic research of complex systems (Quaresma, 2013).

One way to deal with the complexity of the city in relation to climate change is to build their resilience, which requires a systemic and integrated approach. Thus, among the major initiatives for building such resilience can be identified: a) Robust Decision-making, incorporating broader

reviews of cost and benefit, embracing social values, ecosystem services, risks and plans extended; b) support to essential infrastructure, such as improvements in the water system and electricity supply; c) concern for social inclusion, combating the pronounced differences between rich and poor; d) performing urban risk assessments, enabling the strategic collaboration between the governments of cities, the private sector and development agencies with ways to reduce urban vulnerability; e) emergency preparedness, determining risk locations and making it publicly available information; f) establishment of partnerships with other cities, agencies and governments; g) increasing the capacity of buildings and infrastructure to support the increased climate variability; h) reduction of social tensions; i) streamlining key services and infrastructure, wherever possible and cost-effective; j) protection and integration of essential ecosystem services (World Bank, 2010).

An effective policy on climate change for cities need to include systemically mitigation efforts and adaptation, thus enabling to avoid further climate change consequences and seek to readjust to reality imposed by climate change that may be inevitable. Therefore, the cities need to integrate such efforts to urban development by promoting improvements in infrastructure and services that enable greater adaptation to climate change and reducing their practices of greenhouse gases emissions (World Bank, 2010).

METHODS

According to Vergara (1998), a survey can be classified according to their objectives and means of investigation. In this sense, the research developed in this article can be classified as the goals as exploratory. "Exploratory studies tend to produce loose structures with the aim of discovering future research tasks" (Cooper; Schindler, 2008, p 128). The primary objective of exploration is, as a rule, to develop concepts more clearly, make better-outlined research problem or develop hypotheses for further research.

Gil (1999) points out that the exploratory research is developed in order to provide an overview about certain fact. So this type of research is carried out, especially when the theme chosen is little explored and it is difficult to provide accurate and actionable hypotheses. In exploratory research, the information is usually originated by bibliographic studies and data collection through interviews. According to Severino (2007), the exploratory research aims to identify the information pertaining to a particular subject, outlining the field of study and identifying the object under study conditions.

For this study, we adopted the bibliographical research and document analysis as research strategies. The literature is essential in any kind of research. In general, any information published (print or electronic) can become a source of information. According to Martins and Theóphilo (2009), the literature search is performed from the annotation printed earlier research, such as theses, articles, magazines, etc., being based on categories (theoretical or data) that have been worked by other researchers, duly registered.

In this sense, for this research were consulted the following sources of literature: specialized books; regulatory framework: laws, regulations and bills, mostly related to the issue of climate change; publications and manifestations of non-governmental organizations and social movements; government plans; meeting minutes; newspapers; websites; magazines and local periodicals; and institutional materials, setting up a database for analysis. The time frame covered the period from 2009 to 2015.

The document review stage aims to produce knowledge and create new ways of understanding the phenomena. The documentary research strategy is characteristic of studies using documents as a source of data, information and evidence. The documents are of all kinds, written or not, such as: daily, archived documents in public and private entities; recordings; photographs, maps, etc.

According to Severino (2007), the researcher must understand the data produced texts and condense the information, define trends and as far as possible, make the conclusion. Martins and Theóphilo (2009) state that the documents do not exist in isolation, but must be located in a theoretical framework so that its contents are understood. It is therefore essential effect at all stages of a desk review an evaluation of the historical context in which the document, the socio-political context of the author was produced.

In this work it was decided to use triangulation of data sources, by collecting multiple sources of information in order to corroborate the same facts, establishing converging lines of research.

RESULTS AND DISCUSSION

The political managers of cities seem willing to take steps to protect their cities against the phenomenon of global warming. That phenomenon may exacerbate urban pressures of rapid population growth, poverty and pollution. There will be another "knock-on" effects because of the concentrated and integrated economic activity of cities, highly complex infrastructure systems and social services and governance in several layers (Cortese, 2013).

In recent years, strategically emerged several alliances between the mayors of cities around the world, as described below:

I) Cities Climate Change Leadership Group (C40), launched in October 2005, comprises the 40 largest cities in the world and more than 40 associated cities. The C40 initiative's main objectives are to understand where the greatest opportunities exist to advance specific climate actions and the promotion of group actions between business, government and society, to combat climate change. C40 Cities are cooperating to set the agenda for a sustainable future.

II) WMCCC – World Mayors Council on Climate Change, is an alliance of committed local government leaders founded by the mayor of Kyoto in December 2005. There are over 80 members of the Council, representing a network of local governments working to reduce global greenhouse gas emissions (Figure 1).

Figure 1 – World Mayors Council on Climate Change Members

Source: http://www.worldmayorscouncil.org/members.html

Some cities have been especially proactive, for example, New York, which has gained considerable recognition for their sustainability plan, PlaNYC 2030 (New York City, 2011). And since 2014 they have the OneNYC – One New York: The Plan for a Strong and Just City – the roadmap that will preserve and enhance New York City's role as a leading global city (New York City, 2015). The goal of OneNYC is to minimize their environmental footprint, to reduce greenhouse gases by 80 percent by 2050 by expanding from buildings (as almost 80% of emissions come from New York buildings) to energy supply, transportation and solid waste. The city also committed to a goal of zero waste to landfills by 2030.

This concentration of political efforts demonstrates the urgency in the scientific community of new and timely research on how climate change will affect urban areas - including long-term trends, potential tipping points and surprise opportunities. Local leaders need to know what will happen in their cities and the most effective ways to combat the problems. There are important questions about how air pollution will interact with future temperatures in NY, so as to affect the health of the population. Ecosystems of the cities need to be studied, including the role of parks and leisure areas and softening the effects of heat islands; the effects of climate change on urban vector diseases such as rats or allergens like pollen. Scientists should investigate the combined effects of the migration patterns of population and climate change, aiming to estimate the response costs - especially for the poorest people and populations at risk.

Figure 2 – Goals of New York City

Source: http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf.

New York has expanded its climate resilience in accordance with the intensification of the risks that face the city. All this work is the result of a joint effort of the "New York City Panel on Climate Change" (NPCC), formed by a team of scientists and academics who evaluate new information and compare with projections made in the past. The result of this effort is the development of an assessment tool of the current and future climate risk faced by the city (New York City 2014).

It is essential that scientific research and the discovery of new technologies are applicable and regularly communicated to the actors of society - government, private sector and civil society - so that they can develop and implement effective public policies and that resonate positively in society. For example, discussions about the possibility of investing in renewable energy sources need to be connected to discussions on energy costs and environmental impacts of the installation and the generating power plant operations. Issues such as water supply and sustainable solutions for sewage treatment should be evaluated for its links with climate change concerns (Cortese and Natalini, 2013).

Research networks need to be expanded to include more and more cities around the world, both developed and developing countries, especially small and medium-sized cities, where limited resources should be used as efficiently as possible. To be effective, these efforts should be monitored consistently and regularly updated.

Other actors have been extremely active at the international level, promoting and questioning measures in the climate issue. One is the Organization for Economic Co-operation and Development - OECD, whose mission is to promote policies to improve the economic and social well being of people around the world. The OECD is a forum in which governments can work together to share experiences and seek solutions to common problems; understand what drives the economic, social and environmental change. Productivity and global trade and investment flows are measured, analyzed and compared the data to predict future trends (OECD, 2010).

There is also the international network of non-governmental organizations and other social movements, entitled "The Climate Action Network" - CAN. It brings together more than 950 organizations in more than 110 countries, in order to promote individual actions and governments to limit climate change to be considered sustainable levels (Biderman, 2010). The network operates through the exchange of information and development of coordinated strategies at the international, regional and national levels on climate issues. There are regional network offices in all parts of the world, such as Africa, Australia, Europe, Latin America, North America, South Asia and Southeast Asia.

The complex challenge for large cities in the management of climate change can be addressed by formulating local policy aimed to eliminate the risks to health and the environment, to collaborate in the mitigation of climate change related to human action and at the same time safeguarding effective social inclusion of significant parts of the population (Viola, 2002).

The purpose of the present work is to demonstrate that, faced with a troubling and urgent climate reality, local governments have taken responsibility and have been working in the formulation of public policies with the participation of various actors in society.

FROM GLOBAL TO LOCAL

In these circumstances, therefore, it is important to emphasize that the city of São Paulo, given the need for a policy set by the society through its representatives, has gained visibility and global relevance in the context of municipal public policy discussions on climate change, which can be identified by your choice to join the steering committee of the international C40 network. São Paulo stands out in the international debate as one of the urban centers that are experiencing the problem and providing concrete solutions.

São Paulo was also the first city in Latin America to join the Cities campaign by the International Council for Local Climate Protection Environmental Initiatives - ICLEI. ICLEI Members are able to drive innovative and transformative urban development. The campaign is based on an innovative performance structure through five milestones with which local governments are committed (ICLEI, 2010): Mark 1 – To build an inventory of emissions and prognostic patterns. Based on energy consumption and waste generation, the city calculates emissions for a base year and forecast year; Mark 2 – To adopt emission reduction targets for the year prognosis. The city sets emissions reduction targets; Mark 3 - Developing Local Action Plan. Through process involving stakeholders, the city developed a Local Action Plan that describes which local government policies and measures will be taken to reduce emissions and achieve the reduction targets; Mark 4 – To implement policies and measures; Mark 5 - Monitoring results. Monitoring and verification of progress in implementing measures to reduce or avoid emissions of greenhouse gases is an ongoing process.

These milestones allow local governments to understand the relationship between decisions at the municipal level and how these affect energy use and how they can help to mitigate climate change while improving the community's quality of life (Cortese, 2013).

In the specific case of São Paulo, was instrumental in the process of decision-making to develop and implement a Municipal Policy on Climate Change - PMMC, and the participation of the Municipality of São Paulo in public debates and consultations. The draft bill of that public policy was developed for approximately one and a half year, including the draft formulation, review and comments by experts, researchers, government agencies of other spheres, organized civil society and consultation to all instances of the municipal government relevant to the matter.

The formulation of the PMMC began in March 2007 and ended in late 2008, when the draft bill was referred, as a legislative initiative of the Executive, for consideration of the City Council of São Paulo. There was express direction of the Mayor for the development of the law be guided by consultation with all relevant stakeholders, through consultations within the City Council, even before the formal presentation of the draft bill. Thus, it was sought to anticipate issues that could prove to be controversial in, or even map interests and eventually locate faults not detected by the formulator group of the draft bill.

There is a clear link between the actions of the cities about climate change and the larger goals of being a low-carbon economy, poverty eradication and global environmental governance. The role of cities in this new institutional architecture, as defined by the UN, is a unique opportunity for cooperation. Shares of cities serve as a catalyst for national governments, aiming to provide support to public policies, creating a virtuous circle (C40, 2010).

THE MEGACITY SÃO PAULO

The city of São Paulo is a pioneer in Latin America, in the formulation and adoption of Municipal Law nº 14.933 of 05 June 2009, establishing a Municipal Policy on Climate Change - PMMC - and shows that it is possible to face this issue in a political and technical way.

São Paulo is, according to the concept established by the United Nations, a megacity. The process of urbanization and climate change interact and generate impacts that can be separated into two categories: the impacts that originate in urban areas and have negative effects on climate change; and climate change that have negative effects on urban areas (Schneider, 2006).

Considering the rapid process of urban sprawl and the delay in the implementation of adequate infrastructure at the rate of growth of cities, they are not prepared for the effects of climate change. This is the case of the Metropolitan Region of São Paulo.

The question of adapting cities to climate certainly requires time, financial resources and large amount of materials, making urgent conducting studies which contribute to the management decision-making processes in general and guide the society about the risks associated with social and environmental problems and investment priorities for coping (Agopyan and John, 2011).

Currently the city's population is 11,453,996 inhabitants (IBGE, 2010) and the population of the metropolitan area is almost 21 million inhabitants. It was the first climate strategy of a local government in Latin America. To guide the formulation of this policy was used as a reference the Inventory Gas Emissions Greenhouse in São Paulo, prepared in accordance with the rules of the

Intergovernmental Panel on Climate Change – IPCC and the United Nations – UN. Figure 3 demonstrates that the City issued about 15 million tons of carbon dioxide per year (Sao Paulo, 2013).

Figure 3 – Greenhouse gases emissions in the City of São Paulo
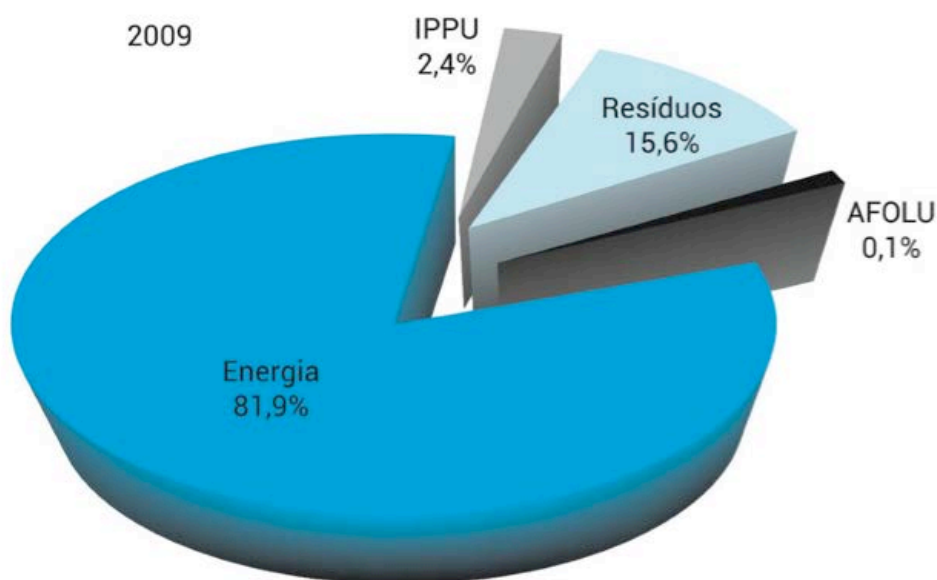
Source: http://www.prefeitura.sp.gov.br/cidade/secretarias/upload/meio_ambiente/arquivos/SE_INVEMI. pdf

According to the figure above, emissions from burning fossil fuels account for 81,9% and 15,6% of the emissions originate from waste. The other 2,4% of emissions comes from industrial processes and 0.1 % comes from agriculture and other land uses. The inventory of the emissions of a municipality identifies the main sectors and gases involved and improve management in the place of issue (Sao Paulo, 2013).

The PMMC is to ensure the contribution of São Paulo to the fulfillment of the United Nations Framework Convention on Climate Change purposes - UNFCCC; and achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, in sufficient time to allow ecosystems to adapt naturally to climate change (Brazil, 2009).

To achieve this goal, the mentioned law provides for the reduction of emissions in 30% in 2012 compared to the expressed level in the inventory held by the City of São Paulo in 2003.

In proposing a law with this target, the municipal administration seems to have understood that mere voluntary compliance would not be enough, positioning which placed as an advocate for a cutting-edge vision in the climate agenda. And maybe, with this initiative, demonstrate the possibilities for the federal and state governments to support and follow.

But what is happening is the increase in emissions, which was not higher due to the share of ethanol in fuel composition used in the city's fleet of vehicles (Sao Paulo, 2013). For the city to comply with the law will require efforts to reduce the negative impacts of energy and waste sectors, major emitters.

One of the major difficulties encountered during the preparation of the inventory was the time lag of the information obtained. For the inventory to be effective, it is necessary to quantify the city emissions annually. And in order to improve future inventories, creating a record practice, control and systematization of data that support the definition of public policies is needed.

Unfortunately, the discussion on climate change is still restricted to academic, political and market means. A major challenge is to translate for ordinary citizens like climate change affect you on a daily basis and which part of the responsibilities incumbent on it. Measures involving behavior change require membership of the population. For this, you need knowledge. According to the guidelines of the Program of Education for Sustainable Societies, WWF-Brazil, the role of environmental education is to help people understand the problem and engage in practical, everyday projects. Examples include recycling projects, reforestation, sustainable consumption, reduced carbon footprint, among others (WWF Brazil, 2003).

CONCLUSIONS

Any significant change has positive and negative outcomes for those who implement them. The important thing is to have conviction and send it to the society, that this change is necessary and will improve your life.

The information described here is to demonstrate that local governments are not waiting for the command of federal or state laws or decisions from international treaties such as the Kyoto Protocol, to act in favor of the global climate balance. Municipalities have acted in defiance of the traditional distinctions between local environmental policy, national and global, pressing from the bottom up, adopting urgent and concrete measures, without waiting the dictates of international standards whose definition walking at a slow pace and relies on a set of interests that combines aspects of international trade, geopolitics and security, among others (Bulkeley and Betsill, 2010).

It is essential that there is coordination through different mechanisms available in São Paulo, to ensure synergistic action with other levels of government. In addition to federal regulations, it is necessary to pay attention to the legal framework of the state of São Paulo, under which the municipality is located, with which SP must act in a coordinated manner.

The importance of advancing knowledge on environmental management and its interface in promoting public health, social justice and economic viability in urban areas is indisputable. Always having transparency as a permanent principle.

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