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Sub-National Climate-Friendly Governance Initiatives in the Developing World: a Case Study of the State of São Paulo, Brazil

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ABSTRACT

The divergence of interests among UN Climate Change Convention (UNFCCC) Parties is a crucial barrier to overcome, particularly in view of post-Kyoto negotiations and the growing understanding by the international community that the so-called key developing countries should accept mitigation commitments under the UNFCCC umbrella. Considering that most key developing countries -- inasmuch as they are national states -- are very reluctant to embark on the discussion of the principle of common but differentiated responsibility, it is imperative to envisage alternative environmental governance initiatives, particularly proactive local and regional policies. The aim of this paper is to present sub-national climate-friendly governance initiatives that are now being raised in the developing world, taking as a case study environmental policies that have been or are being implemented at the level of state governments in Brazil, particularly in the state of São Paulo. This paper addresses the following aspects of

this issue: [i] The reluctance of key developing countries to assume specific commitments under the UNFCCC umbrella, focusing on the case of the Brazilian federal government; [ii] the role of alternative environmental measures created by regional and local legislative bodies; and [iii] the climate-friendly governance actions promoted by the state of São Paulo under its environmental policy.
Keywords: climate change mitigation, developing countries contribution, environmental governance.

INTRODUCTION

The recognition of global environmental issues, such as climate change, along with other challenges that call for rapid and effective responses from society has turned the attention of policy makers to the international spheres of political decision-making. More and more nation-state governments are starting to incorporate actions aimed at reducing the impacts of climate change into their strategic decisions.

However, from the perspective of legitimacy and effectiveness, other challenges are added to that of the changing climate regime, in particular the complexity of international laws governing the adoption and implementation of effective measures to combat global warming, and the interaction that must prevail between international pro-climate policies and other governance spheres.

The goal of this article is to discuss the extent to which these two challenges can be understood as a factor watering down the perception of the legitimacy and effectiveness of the climate regime, and how the introduction of the concept of environmental governance could minimize this impact. In line with this aim, the present study focuses on the experience of the state of São Paulo, Brazil.

Section 2 discusses the role of developing countries in the evolution of the climate regime, pointing out the reluctance of major emitters in assuming broader commitments in the international climate regime. It is also argued that, in view of

the difficulty to develop the climate regime amid a lack of supportive climate-friendly attitudes by nation-states, thinking about alternative and complementary actions is probably a good idea.

Section 3 highlights the emergence of alternative environmental policy structures, mainly governmental measures originating from local and regional institutions. It shows that such initiatives could have important positive effects at the regional level, such as encouraging States to promote climate-friendly measures, taking on the role of centerpiece of environmental education and awareness-raising programs, influencing the position of nation-states, and exerting pressure at international forums and summits .

Section 4 shows that such structures can result in important benefits for the developing world, and discusses the experience of some Brazilian states, particularly the State of São Paulo. The position of Brazil within the context of climate change negotiations is outlined, and some climate-friendly measures that are currently in the process of implementation at regional levels are described in more details.

THE CHALLENGE OF CONSENSUS IN NEGOTIATIONS ON THE CLIMATE REGIME: TOWARDS POLICY AND POLITICS

The recognition that climate change is one of the most dramatic global environmental problems, intensified by anthropogenic emissions, has instigated the international community to work out measures commensurate with the issue. The United Nations Framework Convention on Climate Change (UNFCCC), along with the Kyoto Protocol, inaugurated an international legal regime aiming to achieve the stabilization of the greenhouse gas (GHG) concentration in the atmosphere at a level that would prevent dangerous human interference with the

climate system. In order to meet this goal, the climate regime adopted the principle of common but differentiated responsibilities, establishing quantified reduction targets for developed countries listed in Annex I of UNFCCC, to be accomplished in the period between 2008-2012 -- the so-called first commitment period -- after which new rules would be in force.

Ten years have gone by since its approval, and the GHG emission reduction targets imposed by the Kyoto Protocol still seem difficult to achieve for most countries. Even having assumed a legal obligation to advance toward their quantified targets, only a handful of the Annex I countries that have ratified the Kyoto Protocol can claim effective reductions. In the developing world, emission levels of the most populous and industrialized countries are cause for concern, particularly in China, India and Brazil. According to the UNFCCC database (2006a), China is the second largest GHG emitter, ranking just below the USA; Brazil and India are in 5th and 6th places.

For these reasons, the climate regime in general - and the Kyoto Protocol in particular - have been harshly criticized. For most authors (Browne, 2004, p.20, Aldy et al., 2003a and 2003b, Brouns & Ott, 2005), both the targets stipulated by the regime and the measures implemented by the countries proved insufficient to combat global warming effectively. For others, the problem lies in the need to conceive long-range goals, more appropriate to address the problem (Aldy et al., 2003a). Some authors point out that the lack of environmental effectiveness of the regime is, to a large extent, the result of the inadequate application of the equity criteria in apportioning responsibilities among countries, as it stipulated differentiated targets only to a group of countries rather than to all (Cooper, 1998, French, 1998).

The climate regime, and the Kyoto Protocol in particular, have nevertheless

been regarded as a first step toward effective and more efficient climate change combat actions (Annan, 2004, Ashton & Wang, 2003, Aldy et al., 2003a, Browne, 2004, Buchner & Carraro, 2005, Vaillancourt & Waab, 2004). There is a consensus that the regime, as established, is not sufficient to tackle climate change and that reforms are necessary, but at least mankind has a path to follow (Baumert & Kete, 2002).

Official discussions about the future climate regime were started during COP 11, in Montreal, Canada in 2005. As a result of the COP work, it was agreed that the negotiation should proceed simultaneously along two tracks: the Kyoto track, and the so-called "Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention" (Witteneben et al., 2005). Although on one hand the decision to conduct international negotiations of the post-2012 period along two tracks reinforces the role of international institutions as the most adequate arena for international cooperative actions of nation-states to combat global environmental problems, on the other it is indicative of the possible fragility of this regime in dealing with the problem in a convincing way. The message brought by COP 11 is clear in the sense of recognizing the urgent need to implement measures that effectively address climate change (Müller, 2006), which implies the challenge of engaging all the world's major emitters, notably the USA and the so-called key developing countries (China, India and Brazil) in a long-term effort that fairly and effectively mobilizes resources needed to protect the global climate (Diringer, 2003).

From the perspective of the principle of common but differentiated responsibility, it is imperative that Annex I Parties take the lead in combating climate change, improving mitigation measures and assisting developing countries with capacity building and resources. But this principle does not exempt

developing Parties from the commitment to effectively face climate change causes and impacts. In fact, from the environmental perspective, a broader participation of the developing countries in international mitigation efforts is an important condition to make the climate regime an effective way to address climate change. This statement was reinforced after the announcement in 2007 of the IPCC's Fourth Assessment Report (IPCC 2007).

Even though it may take decades until the historically accumulated emissions from developing countries reach the levels of developed countries, from a long-term perspective the contribution to the greenhouse effect from developing countries will significantly increase (NAE, 2005, IPCC, 2001). This is particularly true in the case of countries such as China, India and Brazil, whose economic development patterns are increasingly demanding natural resources.

Moreover, it must be recognized that the economic aspect of the participation of the developing countries in the international regime is at the very basis of the position taken by one of the main actors in the negotiations: the United States (Müller, 2006). Suffice it to say that the American refusal to ratify the Kyoto Protocol was expressly founded on the fact that the entry of the USA into the regime of that treaty would have to be conditional on assigning mitigation goals to countries such as Brazil, China and India (Bang et al., 2005). After 10 years, a greater engagement of the key developing countries in the mitigation commitments continues to be seen as a factor that would put pressure on the USA to return to the Kyoto Protocol discussions, and thus lead to a better balance in the mitigation efforts among countries (Ashton and Wang, 2003).

In spite of growing pressure from Annex I countries, the developing countries, united around the G-77 and China, have almost unanimously held the position of refusing to discuss any specific mitigation commitments. In general

terms, they argue that their historic and current emissions are still much lower than those of developed countries (NAE, 2005). Furthermore, because of the vast diversity among them, and the socio-economic disparities which imply differences in their mitigation and adaptation capacity, there would be no way of assigning equitable reduction goals to each (IEA, no date).

Developing countries try to make their participation in the climatic regime conditional on the discussion about vulnerability, adaptation, promotion of sustainable development, resource and technology transfers, and capacity building (Girardin and Bouille, 2003). It should be recognized that because of their different adaptive abilities and geographic conditions, these countries are effectively more vulnerable to the impact of climate change. Another strong argument is the claim that developing countries have in fact implemented, to the best of their internal abilities, policies and programs with positive mitigation results (Girardin and Bouille, 2003, Baumert and Kete, 2002, Goldemberg and Reid, 1999).

Thus, the main challenge facing the international climate regime lies in reconciling the effectiveness of its measures with the assurance that equity is the presiding parameter in apportioning responsibilities among countries for the implementation of these measures. In practical terms, what matters most is distributing responsibilities for the major emitters, including the USA and the key developing countries, notably China, India and Brazil.

The problem is that the need for immediate action to prevent possible irreversible damage from climate change, on the one hand, and scientific uncertainties on the other, have the effect that decisions are permeated with value judgments, since they reflect the degree to which each society is prepared to deal with the problem. This, in turn, is influenced by several factors, such as the perception of climate change risk, the level of adaptive and mitigating capacity of

countries (which depends on national circumstances), and even very specific interests of power groups (GEC-CEC, 2004, p.41). In order to achieve an agreement able to embrace all these often conflicting factors, a complex political negotiation process is inevitable (Ott et al., 2004, p.57). The result does not always translate into policies really aiming at addressing the anthropogenic causes of climate change; instead, it is more often directed to establishing policies to meet specific interests of the States (Bodansky, 2003). As pointed out by Vogler (2005), international negotiations about global commons, such as climate, are frequently subordinated to the short-term economic and security priorities of governments.

Just as any other system governed by international law, the climate regime and its measures are defined by consensus deliberated by the States, which are thus understood to be the sole formal subjects of international law (Bodansky, 1999). From this perspective, the State emerges as the entity holding political and legal authority to sovereignly discuss and agree to international measures to face global environmental problems. Its role now is that of implementing policies and actions, previously agreed on in cooperation with other States, generally under the coordination of an international institution such as the UN (Frickel & Davidson, 2004).

However, in a context of complex and divergent positions of States regarding which measures to adopt to address global warming, the requirement of a consensus can be seen as a threat to the full legitimacy and effectiveness of the whole international climate regime. Attempting to achieve consensus is time-consuming and difficult, and runs against the urgency in implementing effective climate protection measures. Moreover, in many respects, particularly in the distribution of responsibilities among major emitters, reaching an agreement at all is nearly impossible; so, a consensus requirement in effect precludes collective

action, or allows little room for progress in determining deep mitigation efforts (Bodansky, 1999).

The process of international negotiation, having as its principle the respect for the sovereignty of States, inevitably depends on the voluntary cooperation among countries, and there are no mechanisms of positive law to compel a country to participate in a negotiation process, nor to accept or ratify a treaty. In the context of the post-2012 regime negotiations, this means that the possibility cannot be dismissed that important countries refuse to cooperate, or impose conditions to their adherence to the regime, or even participate in an ineffectual way (Höhne, 2003).

Effectiveness ultimately has to do with the ability of international regimes to solve the problems that prompted their establishment (Andresen and Hey, 2005). According to Bodansky (1999), the effectiveness of a regime is a factor that may contribute to a regime being perceived as legitimate. As shown, the difficulty of States in agreeing to ample measures to combat climate change, and the consequent adoption of minimal actions which do not always translate into practical results as expected, reduces the effectiveness required in the international regime. For these reasons, among others, the unanimity rule is recognized as incompatible with effective government (Bodansky, 1999). In this sense, the climate regime is perceived as weak, incapable to effectively face global warming.

Moreover, even when an agreement is achieved at the international level, there is a lack of domestic action. In many cases, national governments do not take internal measures capable of effectively facing global warming. Many factors may be at the root of this: lack of capacity building, lack of institutional coordination, or even lack of interest. This is particularly true in the developing world, where lack of economic resources and weak institutional frameworks, along with important

social-economic problems, force governments to focus their efforts on economic development priorities (Najam, 2005).

Just as the effectiveness of a regime is a parameter by which to evaluate its legitimacy, the reverse is also true. A regime regarded as legitimate is more likely to be effective, due to, among other factors, the compliance pull that it is likely to exert (Andresen and Hey, 2005). However, the international path, based as it is on agreements by consensus by sovereign States through international institutions, is subject to the direct influence of particular interests of States. In general, these interests are not consonant with the efforts required to face global environmental problems, since they have a short-term horizon or arise from predominantly economic or strategic perspectives, whereas environmental problems require long-range actions and a broad vision (Pershing & Tudela, 2003). That is what Bodansky (2003) calls the contradiction between policy and politics.

By ignoring that climate balance is a common good, and by prioritizing short-term interests often corresponding to specific economic interests, the positions of States in international negotiations fail to reflect that of the societies they represent, resulting in a loss of authority. As Litfin (2000) clarifies, political authority is generally conceived as the recognized right to make rules or to wield power legitimately. A State's authority depends on its citizens believing in the legitimacy of its institutions, which involves a close association with state-society relations. Thus, crucial to authority is the social perception of legitimacy.

As a key component to authority, the legitimacy of a nation-state is dependent upon the perception among its citizen that the state is performing its ascribed roles (Frickel and Davidson, 2004). Thus, legitimacy requires a reflective subject capable of judging whether an action, rule, or proposal is in accordance either with its interests or else with established rules or principles (Litfin, 2000).

Legitimation largely represents state responses to rapidly fluctuating pressures and priorities defined by interest groups in civil society (Frickel and Davidson, 2004). Legitimacy reflects a focus on ongoing systems of governance - on the institutions that issue directives and the processes by which they do so, rather than on the legitimacy of particular directives (Bodansky, 1999).

Thus, in a context of inherently complex political decisions requiring consensus, and of prevalence of diverging interests of the States, implementation of the climate regime raises issues of legitimacy and effectiveness. These issues may surface also in a context of weak domestic actions developed by federal governments, where citizens cannot see consistency between official talk and real governance, and where there is a lack of public policies focused on mitigation and adaptation to climate change, or these policies do not lead to concrete results. In view of this, it is to be expected that alternative and complementary mechanisms will emerge as more legitimate ways to effectively address the global environmental problem.

Indeed, these mechanisms have been arising in the inter-state sphere through the formation of networks among non-governmental organizations and among regional and local government agents, and in the infra-state sphere by the initiative of regional and local agents, or still as purely domestic initiatives.

NEW FORMS OF ADDRESSING CLIMATE CHANGE AND THEIR ROLE IN THE DEVELOPING WORLD

By ignoring state barriers, global environmental problems such as climate change give rise to the need for effective cooperation, leading to the understanding that such problems are ultimately those of a global common (Bulkeley, 2005), concretely felt in infra-state levels (Bodansky, 1999). When contrasted with the

complexity of a response through the action of States within the framework of international law, the idea of global commons inculcates a sense of intergenerational responsibility at all levels of social organization (Litfin, 2000), signifying the emergence of new and complementary structures to face global environmental problems.

These new structures originate from the recognition that facing global environmental issues requires the cooperative and coordinated action of governance systems based on several levels (state, supra-state, infra-state and inter-state) and comprising state and infra-state (regional and local) actors, as well as non-governmental actors, each performing a variety of roles (Bulkeley, 2005). In this way, these networks become embedded in a logic that demands coordination, solidarity, definition of common objectives, and reduction of friction and conflicts, making the integration of demands a horizontal process (Jacobi, 2000).

Such initiatives, when established within the structure of States whose environmental actions are ineffective or lack flexibility, and when taking proactive steps in infra-state spheres - even if driven by demands from abroad - have two values. First, they become a means to press against the inertia of States, and according to Bulkeley (2005) the significance of non-state or infra-state actors lies in the extent to which they shape, facilitate or change the behavior of nation-states within international regimes. And second, they constitute an alternative path to face environmental problems: regional initiatives are deemed more responsive to pressures of inter-locality economic competition and continuous policy innovation, on the one hand, and citizen demands for pro-active measures, on the other (Jonas and Pincetl, 2006).

The idea of environmental governance has been initially fostered by the call in Agenda 21 (Bulkeley, 2005). In the domain of climatic change, infra-national

governance initiatives began to gain strength as international negotiations, performed under the coordination of the UN and carried out by national States, became increasingly complex, leading to ineffective practical results and falling short of the requirements for a real combat of climate change. In addition to the emergence of essentially scientific networks, which yield a strong influence over international decisions, and to the expansion of the activities of non-governmental organizations, regional and local governance initiatives have emerged as new forms of reinforcing the legitimation and effectiveness of climate-friendly measures.

The common aspect about these local and regional actions is to rescale climate change as an issue with local causes and consequences, while at the same time reframing issues which are institutionalized and imagined as local and regional, when in fact they also have global dimensions. In doing so, these initiatives increase the importance of regional and local institutions and practices as an arena of influence, and reduce the role of international and national scales of governance, giving them the opportunity to highlight the role of local and regional authorities in addressing climate change (Bulkeley, 2005).

From the perspective of the developing world, these initiatives could be viewed as an alternative way to address climate change challenges where the official position of nation-states is still one of reluctance to take early action. As previously mentioned, these initiatives could bring important positive effects at the regional level: encouraging states to promote climate-friendly measures, influencing the position of nation- states, and putting pressure at the international negotiations arena, particularly on the developing world.

However, the legitimacy and effectiveness of infra-national initiatives in tackling climate change depends, to a large extent, on how the interaction between

the global problem of climate change and the regional and local problems and environmental impacts is dealt with. Assuming that the main anthropogenic sources of GHG are also at the basis of important regional and local environmental problems, mitigation and adaptation measures that acknowledge global-local relationship have better chances of succeeding, not only because they lead to real global and regional/local environmental benefits, but also because they place the issue of global warming on a level closer to the everyday reality of people. The common citizen begins to see more easily the correlation between his or her direct actions and the global environmental problems (Bulkeley and Betsill, 2003). Environmental governance, in this sense, means to conjugate the causes and consequences of environmental problems, and their construction as such, with practices and policies taking place at a multitude of sites and scales of governance (Bulkeley, 2005).

If, on the contrary, actions to combat global environmental problems, such as climate change, focus exclusively on the state/global perspective, ignoring regional/local effects of such measures, then other economic, environmental and social problems may arise on these levels. A conflict between global-local solutions can bring about a lack of effectiveness and a diminished perception of the legitimacy of those measures.

The experience of Brazil is a case in point. Considering the reluctant position of Brazil's federal government in taking early action to protect the climate, many possible proactive measures in the state sphere have been contemplated. The positive results of such measures, and their ensuing legitimacy and effectiveness, depend on whether they will be implemented as part of an environmental governance focus.

CLIMATE-FRIENDLY GOVERNANCE INITIATIVES AT THE STATE LEVEL IN BRAZIL

Federal reluctance versus regional proactive action

Brazil has played a decisive role in international negotiations, putting forward important proposals within the context of the Kyoto Protocol framework relative to further regulations, in addition to advocating the general interests of other developing countries[1]. The Brazilian government shares the same viewpoint of other developing countries, raising the same basic arguments stating that incentives are necessary and should encompass the provision of new and additional financial resources and technology transference, as well as capacity building. As stated in the UNFCCC Dialogue working paper submitted by the Brazilian government: "the Federal Government of Brazil believes that efforts undertaken by developing countries to reduce emissions in different sectors within their territories can only be characterized as voluntary and, therefore, cannot be linked or associated to goals, targets or timeframes" (UNFCCC, 2006b).

The reluctance to assume more specific commitments under the climate regime might be due to the fact that Brazil is currently one of the major emitters in the world: it currently holds 19th position in the ranking of CO_2 emissions from the energy sector. However, since its main emission source is deforestation, which accounts for 75% of all domestic CO_2 emissions (MCT, 2004), the country's position in a total emission ranking is actually much higher: it occupies the fifth place (UNFCCC, 2006a).

Although the Brazil´s Federal Government is still reluctant to advance in the international discussion, the challenge to act at a national level to reduce climate change persists. Even considering the efforts of federal government, it is not possible to know for sure whether the reduction in deforestation rates recorded

over the past three years is the result of governmental policies or a consequence of low or declining international market prices for agricultural products, including both staple foods and export crops (Salati et al., 2006). Moreover, the reinforcement of existing energy efficiency and renewable energy programs such as PROCEL[2] and PROINFA[3] has not yet led to effective results. Consequently, domestic emissions are expected to continue growing. Furthermore, extreme climate events that occurred in the last few years, such as the drought in the Amazon Region in 2005 and the Catarina cyclone that hit the southern states of Brazil in 2004, demonstrated that the extent of Brazil´s vulnerability to climate change is actually still unknown.

In response to international pressure, the Brazilian Federal Government created in 2007 the Interministerial Climate Change Committee (Comitê Interministerial de Mudança do Clima - CIM). The main goal of this Committee is to create, implement and monitor a National Climate Change Plan focusing on four main fields: (1) mitigation; (2) vulnerability, impact and adaptation; (3) research and development; and (4) capacity building and dissemination (MMA, 2008). The Brazilian Ministry of Environmental Affairs coordinates the preparation of the Plan, in collaboration with the Brazilian Forum on Climate Change (Fórum Brasileiro de Mudanças Climáticas - FBMC). FBMC was created in 2000 as an arena for discussion and dialogue about climate change with direct and active participation of different sectors of civil society (FBMC, 2008).

Public discussion of the Plan has shown that it primarily focuses adaptation measures, with mitigation measures mostly directed toward support of MDL activities. This course of action is consistent with the Federal government's position against commitment to and participation in international mitigation goals. This fact is clear evidence of the Federal government's attitude towards climate change.

As pointed out above, although on one hand the federal government's reluctance is seen as an obstacle to taking early action against climate change, on the other it has spurred a reaction from society at both local and regional levels. Such is the case in some Brazilian states.

In the last three years, perception of the importance of climate change in Brazilian society has grown considerably. At both regional and local levels, this perception translates into proactive actions by civil society organizations or individuals, and also by state and local governments. The range of these actions is extensive, and although not always fully implemented, they can at least be regarded as a valid point of departure.

At least eight of the 27 Brazilian states (Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Minas Gerais, Rio de Janeiro, Espírito Santo and Bahia) have already instituted a climate change forum composed of representatives of government institutions, civil society organizations, universities and private sector companies and/or membership organizations. The idea behind these initiatives is to turn the forum into an arena for the exchange and discussion of experiences and good practices related to climate change mitigation and adaptation. In some states, São Paulo included, the efforts have evolved to include the preparation of a GHG emissions inventory by source, vulnerability studies, as well as the implementation of economic instruments to improve mitigation measures[4].

Climate-friendly governance initiatives in the State of São Paulo

The state of São Paulo, located in the Southeast of Brazil, is the most populous and urbanized in the country: it has a population of 41 million, or 21% of the country's entire population (IBGE, 2008). The state has the largest economy of Brazil, representing 31% of the total national GDP (US$ 235 billion in 2003) and

with strong participation of industry and service sectors (IBGE, 2008). As a result of its economic profile, in 2000 the energy consumption of São Paulo accounted to 27% of the national consumption (SMA, 2002). In 2005, the industrial and transport sectors were the most significant energy consumers, with 39% and 26% of the state total, respectively. Most of the energy consumed by the industrial sector comes from biomass (44%), particularly sugarcane bagasse (36.5%); this is due to the high concentration of sugarcane industry in the São Paulo. In contrast, the major energy sources of the transport sector were fossil fuels, especially diesel (44%) (BEESP, 2006).

Due to the energy matrix in São Paulo, the transport and industrial sectors are the most important sources of CO_2 emissions in the state, accounting for 45.8% and 37.3% of the total of 67.9 x 10^6 tCO_2 emitted in 2005 (BEESP, 2006). If ranked alongside nations on the basis of CO_2 emissions (excluding land use change), the state would be the 39th-largest source of net GHG emissions in the world (SMA, 2005).

Aware of its role as the main contributor to Brazil's energy emissions, the state of São Paulo began to pay attention to climate change as far back as 1995, when the state government enacted its Climate Change Prevention Program - PROCLIMA. Under this program, the state created a special administrative department, the Global Issues Division, with the tasks of producing information for the general public regarding climate change, promoting seminars and conferences to introduce the problem and discuss mitigation alternatives, promoting capacity development, and cooperating with federal climate change activities (SMA, 2008). The PROCLIMA team is one of the main technical bodies responsible for preparing Brazil's National Communication strategy and Action Plan.

In 2002, the state published its Agenda 21, in which climate change figures prominently. In the same year, the state government and other regional authorities launched the Network of Regional Governments for Sustainable Development (NRG4SD), with the purpose of sharing climate mitigation and other sustainable development experiences, and acting as the main vehicle of representative participation in international negotiations (NRG4SD, 2008). The state is also an active member of ABEMA – the Brazilian association congregating state environmental agencies (ABEMA, 2008).

In 2005, the São Paulo State Forum on Global Climate Change and Biodiversity (Fórum Paulista de Mudanças Climáticas Globais e de Biodiversidade - FPMC) was created in order to raise awareness and mobilize society to discuss and take a stance about climate change, acting as forum for all stakeholders in society. FPMC includes representatives of the state government, civil society organizations and also, as invited participants, representatives of the federal government, of the municipalities of São Paulo state, the state legislature and the Brazilian Climate Change Forum (FBMC, 2008).

Also in 2005 the state government signed a cooperation agreement with the state of California/USA to identify and implement actions that can further reduce GHG emissions, increase energy efficiency, and reduce emissions of other pollutants (SMA, 2008).

In the beginning of 2007, the state of São Paulo launched a wide portfolio of environmental projects. Adding up to 21, these initiatives include a future environmental scenario study. The main goals are: evaluation of climate change impacts at a regional level, improvement of deforestation control mechanisms, reforestation activities in riparian areas, and measures to control the demand for illegal wood (SMA, 2008).

The government is also working together with the private sector to define emission targets for the industries with the highest emissions in the state. The first action was to prepare and publicize a state inventory of CO_2 emissions from specific industrial sources. This inventory was based on information on fuel consumption and industrial processes obtained from questionnaires (371 sent; 329 or 89% answered) (SMA, 2008).

The state government also started, through the State Department of Environmental Protection, the formulation of a State Policy for Climate Change. In early 2008 its proposals were submitted to public opinion on the internet, and the government promoted public discussion involving different sectors of civil society: universities, private companies, and civil society organizations. FPMC had an important role in this process, acting as a coalescing forum for the discussions. Until recently (July 2008) the government proposal was being revised in order to take into account the results of public discussion and consultation (SMA, 2008).

This State Policy for Climate Change proposal might be seen as innovative in the context of the developing countries, since it establishes that the state of São Paulo shall define real, measurable and verifiable actions to reduce its GHG emissions by adopting: (1) emission reduction targets, both individually and in cooperation with other regions of the country and the world; (2) sector efficiency targets, based on GHG emissions; and (3) additional mechanisms to exchange acquired rights. The proposed Policy also requires the state to update and improve its GHG Communication practices every five years (including an inventory in accordance with IPCC guidelines), and to create and maintain a Public Register of Emissions in order to establish measurable criteria and transparent monitoring of the results of GHG mitigation measures.

All the above mentioned activities in the state of São Paulo are carried out to

a greater or lesser extent through a number of coordinated actions both inside and outside the state. Within the state, the work of the FPMC is gaining relevance. It promotes public discussions about climate change across all sectors of society, and not only amalgamates different perspectives on the matter but also acts as a channel to bring them to the decision forums, making it a center of pro-climate pressure. Its multi-sector composition adds legitimacy to its work, allowing it to cross state frontiers. Therefore, FPMC is part of the Brazilian Forum of Climate Change, with direct participation in the preparation of the National Climate Change Plan.

As a forum for the exchange of experiences on environmental and climatic matters at the infra-national level of different countries, NRG4SD has been acting both as a channel to exert pressure on the states and as a means of international insertion of those states with a more proactive behavior in climatic and environmental matters. The participation of states in NRG4SD also increases their prominence in the international arena, that is positive for both the environment and economic competitiveness. In global markets the incorporation of pro-climate strategies has been gaining importance as an opportunity for companies to do business and survive in the market (Hamilton, 2006).

This market perspective may also be regarded as a contribution to larger negotiation flexibility and the incorporation of pro-climate measures by the state government. Whereas in most of the country deforestation is the main emission source, in the state of São Paulo the primary GHG emission sources are the industrial and transport sectors. Therefore, the main mitigation actions should be directed towards efficient energy use in factories, modernization of industrial process, and changes in urban mobility planning and systems.

The GHG emission profile of the state of São Paulo is similar to that of

developed countries, and the state is the home of many industrial manufacturing units in the country, most of them owned and operated by transnational companies. Taken together, these facts have facilitated the adoption of mitigation actions by these companies, reinforcing governmental actions.

Contrasting once more with the Federal Government's neutral attitude concerning the encouragement of CDM projects in Brazil, mitigation actions and proposals from the state of São Paulo reinforce the state's role as a forum to encourage such activities, a fact that has an influence on the international carbon market. Commercial opportunities are also behind bilateral agreements formalized by the state. The São Paulo - California agreement is an example of this: their effective cooperation will be aimed at developing more efficient technology transfer mechanisms and, probably in the future, also at launching joint initiatives on the carbon market.

The pro-climate actions undertaken within the state boundaries have found resonance in other parts of the country, mainly as a result of state government's proactive role as an ABEMA member. This association has served as a forum for the exchange of pro-climate experiences among Brazilian states, stimulating coordinated action at the infra-national level, helping fill the void left by the federal government's position at international climate negotiation table.

The state of São Paulo has been flexible and successful in developing co-operative pro-climate arrangements and measures in consonance with the needs and potentialities of both the public and private sectors (including those of the economic sphere) at the state and interstate levels, but not at the federal level. At the level of the federal government, the role of São Paulo state remains limited to the providing of technical support, the preparation of the national GHG emission inventory through PROCLIMA, and acting as a technical advisor to the Brazilian

delegation at international negotiation meetings.

In spite of their modest scope so far, climate change mitigation measures at a regional level can be regarded as examples of attempts to implement environmental governance actions. In the process of formulation and implementation of these programs there has been direct participation of the third sector and other social actors. Whether as a strategy to gain wider adherence and social acceptance among the population (legitimacy), or as a means to make such programs economically viable, the partnership initiatives between public authorities citizen groups and other social sectors is already an established reality.

However, it must be noted that the many proactive measures at the state level in Brazil cannot be taken as a sign of robust mitigation and adaptation results. Just as in any other sector of the Brazilian public administration, sufficient financial and technical capability resources do not back the deployment of environmental initiatives by governments.

From the perspective of effectiveness and legitimacy, all the proactive state measures mentioned above must be seen as sub-national initiatives capable of introducing the climate change issue into the regional decision-making agenda, and thus allowing the development of public policies more in tune with regional and local realities. Moreover, these initiatives gain importance when perceived in the context of the federal government's reluctance to effectively develop national climate change mitigation and adaptation policies and take on a proactive position in the international arena.

CONCLUSIONS

The facts and plans compiled in this paper suggest that, even though nation-states may remain reluctant to assume early climate change mitigation measures,

thus making the international arena a complex and difficult path for the convergence of climate-friendly initiatives, there is enough scope for alternative structures and approaches in both developing and developed countries.

Local and regional initiatives, though praiseworthy, can hardly gain access to the international agenda of the climate change regime and show their contribution, because international relations are still the prerogative of sovereign States. Nevertheless, the spread of environmental networks at local and regional levels is an interesting example of governance, which legitimates regional climate-friendly actions, enhancing closer inter-regional cooperation and acting as a vital voice capable of positive impact at the national and international level. Implementing climate-friendly measures and publicizing their benefits can be used to pressurize nation-states to change their positions.

Such alternative environmental instruments are particularly important to the developing world. Countries like Brazil, China and India are already among the major GHG emitters, and thus their broader participation in the international climate regime is necessary in order to achieve more effective results in fighting climate change. However, the reluctance of these nation-states, including Brazil, to take on formal international mitigation obligations may be seen as a factor that reduces the effectiveness of international environmental law. In such context, infra-national and regional proactive initiatives within these countries not only can contribute effective results against global warming, but can also be legitimate alternatives to face this global environmental problem.

The experience of the State of São Paulo illustrates the fact that early action towards mitigation of the impacts of climate change can yield good results -- and this is particularly meaningful regarding developing countries. In spite of their still modest scope, climate change mitigation measures implemented and/or

encouraged at state level can be looked upon as examples of attempts to implement, on a regional level, particularly in the transport sector.

END NOTES

[1] During the discussion of Kyoto Protocol, the Brazilian delegation presented two proposals: the Clean Development Fund, later transformed into the Clean Development Mechanism, and a quantification method to determine the common but differentiated responsibilities, which came to be known as the "Brazilian Proposal".

[2] The Brazilian National Electricity Conservation Program (PROCEL) was launched in 1985 as a foundation in charge of coordinating energy efficiency projects. The main focus of the program was to disseminate information, promote utility demand-side management programs and to implement measures aimed at increasing efficiency, in addition to providing technical support. In 1991 the program was officially transformed into a Government Program and regulated in 2001, laying down maximum levels for specific energy consumption patterns or minimum energy efficiency levels for equipment, engines and machines manufactured or marketed in the national territory.

[3] Aiming to increase the share of electricity generated from biomass, wind and by small hydroelectric power plants (SHP), supplied to the national electrical grid, the government launched PROINFA (Renewable Electricity Incentive Program). The program is structured in two phases. In the first phase the public utility company Eletrobrás contracted the purchase of renewable energy produced by power plants with a total installed production capacity of 3,300 MW, i.e. 1,100 MW for each of the above-mentioned renewable energy sources. In the second phase, the program

will be developed in order to allow renewable energy sources (except large hydro) to account for at least 10% of the total amount of electric power consumed in the country. Eletrobrás purchases the energy generated on the basis of a source-specific price, considering characteristics of each kind of renewable energy.

[4] The State of Amazonas, in the northern part of Brazil, is a case to be highlighted. In 2007, the state legislature approved the State Climate Change, Environmental Conservation and Sustainable Development Policy, proposed by the state government. This policy contemplates, among other measures, an inventory of GHG emissions and biodiversity, economic tools aimed at promoting deforestation reduction activities and CDM capacity building (Government of Amazonas, 2007).

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