The role of unstated mistrust and disparities in scientific capacity

- examples from Brazil

Myanna Lahsen
Gunilla Öberg

Linköpings universitet
SMHI

Centre for Climate Science and Policy Research
Centrum för klimatpolitisk forskning

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Preface

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Summary

The objective of this report is to illuminate the complex ways in which science is produced, used or otherwise of importance to Brazilian climate policies and politics and how it is interlinked with culture, power and politics, including the large number of factors that variously constrain or facilitate climate-related policy. It discusses arguments and evidence of how geopolitics, socio-cultural and political perspectives, and trust or lack thereof, shape – or are perceived to shape various lines of knowledge production, contestation and mobilization related to climate change and the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC). It argues for the need to understand the existence and consequences of distrust between the global North and South (i.e., industrialized countries and the developing countries) in climate related affairs, including the causes of mistrust and, in particular, connections between distrust and disparities in both power and national capacities to produce and frame the knowledge used in climate negotiations.

Many developing countries lack the knowledge and support offered by social and economic infrastructure, scientific and technological capability when facing international negotiation on climate change, and there are indications that this – in addition to equity and participation concerns – troubles leaders of such countries and affects general receptivity to agendas, processes and reports associated with the IPCC, the UNFCCC and associated institutions such as the Global Environmental Facility (GEF) under the direction of the World Bank. The report points out that it is necessary to investigate the role of such concerns on the part of Brazilian political leaders involved in the climate negotiations.

An important contribution lies in the mere fact of *documenting* climate-related knowledge, processes and politics in Brazil. By contrast to richer nations in the world, and perhaps also some less developed countries (LDCs), there is an astonishing small amount of actual documents produced by the Brazilian government about Brazil's climate science capacity, knowledge gaps, and policies. The reasons for this need to be understood in terms of technical as well as socio-cultural and political factors, as scarcity of studies and communication concerning such things as impact and vulnerability studies limits the mobilization of civil society on the issue of climate change, an important stimulus of social change and policy in Latin America (Alvarez, Dagnino and Escobar 1998; Checkel 1997; The Making of Social Movements in Latin America: Identity, Strategy, and Democracy 1992).

Premises

The present report takes its point of departure in the following five premises:

- Information is necessary to policy action on behalf of human-induced climate change, but availability of information does not necessarily translate into policy action; information must also be received, believed, found relevant and useful, and policy makers must subsequently make the choice to translate the information into action as well as the capacity to do so.

- Social relationships and trust are of fundamental importance to the advancement of climate negotiations and policy formation in international as well as national contexts. Social relationships and trust fundamentally shape both which scientific hypotheses, claims and assessments are believed or rejected as well as the attitudes among actors to political negotiations.
- Lack of recognition of the connections between science, culture, power and politics is hindering international negotiations and policy action on behalf of climate change. Since the play of politics in climate science and related assessment processes are widely perceived, denying or glossing over this reality has a weakening effect on international policy action on behalf of human-induced climate change. Thus:
    - New, more nuanced and critically informed ways of (a) thinking and talking about science and of (b) integrating science into international environmental negotiations need to be developed.
    - Scientific knowledge of importance to political discussions must itself be subjected to critical analysis in order to identify how it relates to (how it reflects and impacts) socio-cultural and economic assumptions and realities.
    - Governments' efforts to control science and assessments, and the dynamics of internal decision making processes, need to be better understood in order to improve environmental policy.
    - Improved understanding of the above depends centrally on empirical research, in particular interviews, supplemented by conference records as well as data and insight provided by scholarship in a variety of fields, including anthropology, political science, and the interdisciplinary fields of environmental and science studies (the latter also known Science and Technology Studies, or STS).

Knowledge Gaps

The science-policy interface

The design and dynamics of the science-policy interface is of fundamental importance for the effectiveness of assessments and of scientific information in general, and for national government's influence on the assessment process and, through that, on international politics more generally (Cash, et al. 2003; Cash and Moser 2000; Global Environmental Assessment Project 1997; Fogel 2002; Kandlikar and Sagar 1999; Miller 1998; Mitchell, et al. forthcoming; Pielke Jr. 1994; Siebenhüner 2003). Yet there is little consensus on how to bridge the gap between science and policy (McNie 2004; Smith and Kelly 2003). The "linear model" trumpeted by Vannevar Bush (U.S. President Roosevelt's science adviser around the second world war) is largely discredited by analysts, and information use and effectiveness is known to depend on multiple factors, including how the information is distributed and the nature of decision makers' interpretive frameworks and political agendas (Stern and Easterling 1999). However, a comprehensive conceptualization of the science-policy interface is not easily forthcoming because of an inadequate amount of investigation into how knowledge systems work and how they might be better integrated with decision making to facilitate sustainability (Cash, et al. 2003). Consequently, there is a need for the development of a "rigorous theoretic framework for robust policy" (Bradshaw and Borchers 2000).

This report argues that identification of obstacles and of means of improving the relationship between science and policy (and between scientists and policy makers) is necessary to improve present and future climate-related policy processes and outcomes at both national and international levels. Needed are detailed, ethnographically-informed diagnoses of both channels of influence and blockage points – analyses of how various types of knowledge connect or fail to connect with decision making, and of the reasons for failed connections between science and policy at the national level, as well as the resulting consequences.

The research gap concerning knowledge systems is particularly acute for less developed countries. As a function of this, the causes, dynamics and the full range of consequences of the "North-South divide" that characterizes global climate politics are insufficiently understood (Kandlikar and Sagar 1999; Liverman and O'Brien 2002). Though there are indications that the divide reflects disenfranchisement on the part of less developed countries due to inequity in the area of human, technological, financial and informational resources (Fisher and Green 2004), the causes, dimensions and consequences of this disenfranchisement also remain understudied. Overcoming this knowledge gap in particular may be of fundamental importance for both ethical and pragmatic reasons, as the gulf between the soc-called global "North" (developed countries) and "South" (less developed countries) has marked and in important respects undermined an international consensus regarding the global environment.

The above knowledge gap reflects a more general lack of critical, empirical investigation at the nexus of science, technology and politics in general and in environmental politics in particular (Jasanoff 1996; Jasanoff 2004). The knowledge gap is particularly acute when it comes to less developed countries. It is worth quoting at length Paul F. Steinberg's recent articulation of the problem:

> At present, environmental policymaking in developing countries is rarely studied and poorly understood. Social science research on global environmental problems has clustered at two levels of analysis – international cooperation and local resources management – leaving a gap where one would hope to find studies exploring the dynamics of national policy reform in the South. The burgeoning literature on transnational environmental advocacy (see, for example Wapner 1995; Keck and Sikkink 1998; Haas 1992) has taught us a great deal about the motivations and activities of nongovernmental actors operating across borders, but has paid less attention to the causal mechanisms through which transnational actors achieve (or fall short of) their goals. Moreover, works in this area have largely overlooked the role of environmental advocates in developing countries, focusing instead on the activities of highly visible multinational groups operating out of the United States and Europe. The result provides little guidance for understanding domestic-international linkages in the South, where most of the world's people, land, and species are found (p.5).

This state of affairs has multiple causes. Important among them is the fact that the vast majority of the world's research funds are generated in the North and therefore tends to focus on problems most directly pertinent to the North. Academic traditions are also to blame, most centrally tendencies towards disciplinarity and insufficient linking of research to practical problems. Disciplinary approaches are ill-suited to the kind of broad-ranging, multi-level investigation necessary to understand the socio-political influences on science, and the latter's socio-political and practical impacts, not to mention factoring in the environment as well.

Important work has been undertaken that illuminates the ways in which science and technology produce life, culture and politics (Escobar 1995; Haraway 1989; Jasanoff, et al. 1995; Jasanoff and Wynne 1998; Latour 1993; Mukerji 1989; Nader 1996; Proctor 1998; Shapin and Schaffer 1985; Yearley 1996). Nevertheless, academic disciplinary inclinations have limited the amount of multi-scale scholarship at the nexus of science, geopolitics, and environmental policy.

A body of work is emerging that links science and technology studies with a focus on policy problems related to the global environment (see, among others, Agrawala, Broad and Guston 2001; Guston 1999; Jasanoff and Long Martello 2004; Miller 1998; Miller and Edwards 2001). Still, a limited number of studies explicitly focus on policy relevant problems and far too few studies link national and international level empirical studies in the area of the global environment. Such linking is precisely what is needed in order to understand less developed countries' participation in international environmental institutions such as the IPCC and the UNFCCC.

Sociologists and anthropologists with relevant ethnographic skills have produced little work in the area of international organizations and global environmental politics. This is most likely due to practical and methodological challenges involved with linking micro- and macro-processes (Fischer 2003; Marcus 1998) in combination with a preference in fields such as anthropology for studying the less privileged social groups (Gusterson 1997; Marcus 1983; Marcus & Hall 1992; Nader 1988). Multi-level analyses have been limited, especially at the

level of internal government processes. The latter remain vastly understudied, in stark contrast to the amount of research devoted to non-governmental organizations. This applies to anthropology and development studies (Dove 1999; Dove and Kammen 2001), as well as international relations (IR; Jakobsen 2000). Although the majority of studies on global environmental politics in the field of international relations focus on the state as the central agent, they have contributed little to actual empirical analysis of the state (Jakobsen 2000). Some important work has been done that fills part of this gap. Examples in the case of Brazil includes work such as that by Roberto Guimarães (1991), Susanne Jakobsen (2000) and Eduardo Viola (see, for instance, Viola 2004). However, as a whole, and especially in the developing countries, the state tends to remain a black box as far as the role of perceptual frameworks and the ways in which bureaucratic interests and other socio-cultural and political dynamics affect decision making processes related to the environment.

Empirical studies of perception-dependent factors such as mistrust are not prevalent in IR as IR scholars tend to prefer analyzing more objective, tangible and recognized factors impacting international politics (Litfin 2000). One of the exceptions is Joyeeta Gupta's 1995 study of the World Bank-coordinated Global Environmental Facility (GEF), which oversees funding for climate change related projects in developing countries. Gupta found the GEF to be the object of deep, if generally unstated, suspicion and resentment from developing countries because of its institutionalized power hierarchy that privileges developed countries (i.e donor countries). Significantly, given the general gap of research at the intra-governmental level, Gupta found that the most severe criticisms of the latter were expressed by developing country government officials (Gupta 1995). Studies focused on processes and participants associated with the IPCC and the UNFCCC suggest that Gupta's finding extend to climate-related institutions and processes in general, as suggested by emerging studies (Biermann 2001, 2002; Fogel 2002; Lahsen 2001, 2004; Sagar and Kandlikar 1999; Liverman and O'Brien 2002). Together, these studies underscore the need for more detailed, systematic investigation of the causes, foci, and impacts of developing country criticisms of intergovernmental institutions and processes such as the IPCC and the UNFCCC, with view of improving the structural problems they reflect and move along international environmental cooperation and policy in a more equitous conscientious and, perhaps also, efficient manner.

The Importance of Trust

Eagerness to advance protection of the global environment has resulted in unprecedented, broad-based and steadfast efforts to produce scientific assessments. The basic premise is that objective assessments of the threats posed by human-induced climate change are a prerequisite to successful international agreements to help avert or minimize the threats. Thousands of scientists worldwide have thus been engaged for almost fifteen years in the fast-paced, resource-intensive effort of producing a succession of lengthy scientific assessment reports under the Intergovernmental Panel on Climate Change (IPCC). Throughout this process, preciously little attention has been given to whether or not intended audiences of this information are receptive to the information being produced. The wisdom of the old saying that "you can take a horse to the water but you can't make it drink" is commonly ignored.

Lack of trust can

1. reflect healthy critical distance to processes dominated by those with the greatest human, technological, political and financial resources (see below).
2. reflect a lack of involvement and exposure to the knowledge producers, funders, and the validation processes that shape the knowledge in question.
3. be detrimental to the absorption of scientific information with the potential to improve environmental conditions, whether regionally or globally.

A fundamental premise of this report is that unawareness of the role of mistrust weakens international policy action on behalf of human-induced climate change. We need to know more precisely the causes and consequences of the distrust that characterizes various countries' participation in the climate regime in general and in assessment processes such as the IPCC and the negotiations under the UNFCCC in particular. The impact of distrust in climate-related knowledge on the part of non-annex 1 countries such as Brazil is likely to heighten rather than decrease in importance during the negotiations associated with the second commitment period of UNFCCC and the post 2012 period as a whole. Studies suggest that science is subjected to greater contestation as the perceived financial and political costs of accepting it increase and the post 2012 negotiations are expected to further intensify pressure on less developed countries to commit to emission reductions (Jasanoff 1990b). Increased contestation of science due to increasing perceived costs of policy action has, for example, been witnessed in Europe and the United States in climate negotiations and related processes.

It is thus very important to elucidate the perspectives and sentiments (trust or lack thereof) with which actors in developing countries receive scientific assessments such as those by the IPCC. Structural causes of the mistrust need to be identified and addressed, as part of the effort to improve both trust and equity in the knowledge and processes that underpin the climate negotiations.

Institutional reform and national participation in scientific assessment processes are commonly posited as means of securing legitimacy for assessments and agendas related to the global environment and hence render them effective (World Commission on Environment and Development 1987; Global Environmental Assessment Project 1997; Jasanoff and Wynne 1998; O'Riordan, Cooper and Jordan 1998). Therefore, counteracting the detrimental influence that the lack of trust may have (point 3 above) involves evaluating improvements in institutional, scientific and technical capacity in developing countries. Such an evaluation may enable trust building and commitment to the climate regime on the part of Brazilian political

leaders and, by extension, other countries similarly limited in these respects. Such efforts to build trust and commitment should be premised, however, on evidence of true equity in the processes and products affecting the policy outcome.

Scientific knowledge and the associated processes can reduce divisiveness; science can bring "much needed competence and critical intelligence" into a decision making processes that otherwise seem "all too vulnerable to the demands of politics" (Jasanoff 1990a (1994):1). Many therefore experience unease at the thought of unpacking the black box of science and understand it as a tool of power and politics. Contributing to this are cherished belief systems involving sanitized conceptualizations of science which also can be politically useful. Political leaders of liberal-democratic states have long looked to the authority of science as an allegedly independent means of legitimizing their actions (Ezrahi 1990; Mukerji 1989).

Science promises to provide a shared factual basis from which to discuss global environmental problems while minimizing divisiveness (Brooks 1964; Haas 1992; Evan 1981). Scientific knowledge and associated processes of validation and deliberation are indeed crucial to a successful transition to environmental sustainability (Cash, et al. 2003; Global Environmental Assessment Project 1997; Mitchell, et al. forthcoming). They are thus also central resources in efforts under the United Nations and international efforts to forge consensus and policy action on matters related to global environmental protection. However, common conceptualizations of science as intersubjective and objective obscure the less idealized dimensions of science. While it represents an exceptionally powerful way of disciplining knowledge production and reducing the play of subjective opinions, culture and power politics, science is also a social institution that is inextricably interwoven with culture, power and politics (Jasanoff 1996). Science does not always succeed in resolving international environmental issues by means of 'intersubjective understanding,' in addition the very use of the "(supposedly) universalistic" discourse of science to diagnose the globe's problems often exacerbates rather than alleviates existing suspicions of the North's interpretation of global interests (Lahsen 2001; Lahsen 2004; Yearley 1996:103). The commonly held view that science is intersubjective and objective may be damaging to trust and to international environmental negotiations to the extent that it denies the play of power politics and inequities in the production, use and legitimization of knowledge that negotiators themselves witness as they participate in processes associated with the IPCC and the UNFCCC.

Trust and Scientific Capacity

> If scientific knowledge is an important political tool, how can an equitable policy consensus be reached between North and South when the distribution of informational resources is so radically skewed? (Litfin 1994:192)
>
> Global inequity in governments' ability to produce science and direct research agendas has resulted in the emergence of an international climate change research enterprise that, when viewed from a Southern perspective, does not live up to its "global" label. Rather, it is primarily an activity of a selective transnational nature, headquartered in the North, comprised primarily of researchers in the North, dominated by Northern interests and agendas, and shaped by Northern perspectives. [….] This results in a colossal disparity between the analytical firepower that the North and the South can muster to protect their national interests in the international negotiations on climate (Kandlikar and Sagar 1999:133, 131).

Since the rise of global environmental politics, scientific capacity has also become a prerequisite for leaders of nations intent to defend their national interests on the world stage. Political theorists posit that the nature of power is changing in "post-international politics" because of the new status of "scientific proof" as a major political tool. They anticipate that the tendency to contest issues with alternative proofs is likely to grow as a central feature of world politics (Jasanoff 1990b; Litfin 1994; Rosenau 1990:203).

If science and technology are crucial sources of power in today's world, what does this mean for countries with less capacity in these areas? To what extent do such limitations disadvantage poor countries' ability to promote their perceived interests in climate negotiations, and with what consequences? The need and desire for scientific capacity has increased among developing countries since the emergence of global environmental problems. Comparison of the case of ozone depletion and climate change suggests that developing countries are growing more inclined to frame their positions in political arenas in terms of scientific knowledge.[1] This means that political consensus increasingly depends on shared interpretations related to techno-scientific matters such as emissions data, rates of deforestation, chemical properties of greenhouse gases, and the extent to which present or future climate changes are due to human actions.

One important reason why specificities of the science-policy interface in less developed countries' may be different from those of developed countries is the potential for trust between national scientists and policy makers to be complicated by the reality of foreign influences on domestic science agendas in developing countries.

[1] Karen Litfin (1994: 192) argues that developing countries have framed their position on climate change in terms of scientific knowledge more than they did in the negotiations on stratospheric ozone depletion.

According to the Global Environmental Assessment project, three basic variables determine whether or not assessments are effective, namely their salience, credibility and legitimacy in the eyes of decision makers (Global Environmental Assessment Project 1997; Mitchell, et al. forthcoming). Milind Kandlikar and Ambuj Sagar identify a variety of disparities that reduce the effectiveness of international efforts to assess and combat human-induced climate change. These disparities are, according to Kandlikar and Sagar (1999), visible in five different areas or "gaps":

1. Resource gap: availability of human and material resources
2. Relevance gap: in how relevant existing research is to issues faced by different countries and regions of the world
3. Participation gap: in the level of participation and input countries have in international scientific programs and processes
4. Perception gap: in perceptions of the role and dynamics of research, analysis, and assessment processes – of what is being done, why, and how
5. Policy-culture gap: in ability and approach to connect science and policy.

Kandlikar and Sagar posit that these gaps may have serious implications for whether or not international efforts at policy coordination succeed, and suggest that the gaps are particularly important for international assessment processes such as the IPCC (Kandlikar and Sagar 1999:136). They note that developing country participation and influence in the IPCC has been insufficient, and that it is unclear whether such countries have had any significant influence on the content and the process of the assessment. A majority of IPCC-involved actors interviewed by the authors in the Indian context expressed that they and other Southerners did not have much influence over the IPCC agenda (ibid., p. 134).

The IPCC's first chairman rightly claimed in the beginning stages of the IPCC that many countries, and especially developing countries, "simply do not trust assessments in which their scientists and policymakers have not participated" (quoted in Siebenhüner 2003:124). Fogel's interviews among less developed country representatives confirmed this point (Fogel 2002), which also has led IPCC architects and policy analysts to stress the importance of national scientific participation and capacity for national political leaders' trust and involvement in the associated political negotiations (Biermann 2000; Biermann 2002; Global Environmental Assessment Project 1997; Miller 1998; Mitchell, et al. forthcoming; Siebenhüner 2003).

The importance of national scientific capacity to secure national interests in international environmental arenas is often stressed by analysts:

> [I]ndigenous capacity to gather and analyze data, to build ones' own appropriate models, and 'deconstruct' those built by others is key to appropriately shaping international discussions and safeguarding national interests. Building internal capacity for knowledge generation and analysis in the South will be the first step in truly globalizing the climate discussions and feeding a variety of perspectives into the analytical efforts that are the basis of most policy considerations.

Studies by Milind Kandlikar and Ambuj Sagar (1999) and others (Biermann 2001; Fogel 2002; Siebenhüner 2003) show that poorer nations' limited scientific capacity and associated weak participation and influence in political and scientific processes under the UNFCCC leave their scientists and political leaders alienated and less inclined to trust the reports and

the alleged concerns propelling them (Fogel 2002; Kandlikar and Sagar 1999). These studies underscore the fundamental need to attend to how IPCC and UNFCCC processes and reports are perceived and to study the consequences and the structural causes of inequities in scientific capacity, representation and influence within these forums.

Participation is indeed of fundamental importance and recognition of this is reflected in the present design of the IPCC and the governmental approval mechanism (Siebenhüner 2003:124-5). However, increased participation by developing countries has not significantly altered the basic structural dimensions that empower richer nations over poorer nations in science-related processes under the IPCC and the UNFCCC (Fogel 2002). Overcoming some of the knowledge gaps identified by Sagar and Kandlikar and others, can consequently not be presumed to increase trust and effectiveness. An increase in trust is unlikely to happen, if the structural conditions that the knowledge gaps reflect remain unchanged. Improvement in capacity and participation, everything else being equal, might consequently even increase negative impressions and mistrust rather than the opposite (for discussion on the unpredictable outcome of enhanced capacity and participation, see Jasanoff and Wynne 1998).

Those emphasizing participation commonly ignore complexities in the relationships between scientists and policy makers. For example, the dependence on foreign donors and national scientists' acculturation in Northern dominated science and associated interpretive frameworks are not unproblematic. Hence, internal relationships in countries with limited means to direct national science agendas may to a considerable extent be characterized by *lack of trust*. There are indications that at least some less developed country decision makers maintain critical distance to national scientists because they consider the latter entrained into particular, value-laden ways of thinking due to their foreign educations and networks, their participation in international science, and their frequent, partial dependence on foreign research funds (Lahsen forthcoming; Lahsen 2005b).

Understanding the practical impact of knowledge may thus be a more effective step towards enhanced international environmental cooperation than more science and assessment reports. Such work would help provide a basis for necessary political discussions presently too often eclipsed by scientific and technological discussions. Substituting political discussions related to climate change with technical discussions disadvantages those with fewer means in science and international affairs and might encourage rather than avert policy gridlock.[2]

Despite the enormous suggestiveness of the preliminary set of the above empirical studies of the role of scientific and technical inequities and associated distrust in North-South relations under the IPCC and UNFCCC, empirical studies of these dimensions in less developed countries remain few. There is a need for greater attention to this issue area, including the interplay of science and politics in international institutions such as the IPCC and UNFCCC.

[2] For examples of the latter in the US context, see Sarewitz & Pielke (2000).

Brazil and climate change

Brazil is an important country in the international discussions about human-induced climate change. The country produces around 2.5 percent of world carbon and its economy – ranked somewhere between the 9th and 14th largest in the world – is strong and expected to grow at an increased speed in coming decades (Hogan 2001:17). Brazil is the fifth largest country in the world, and its population of about 178 million emits about 1.5 metric tones per capita – that is significantly less than developed countries but above the average of middle income countries. Brazil is also important because it harbors around 20 percent of the world terrestrial biodiversity and subsumes 5.5 million square kilometers of forests, which are deforested at a rate of 0.5 percent a year (Viola 2004). Land-use changes account for about two thirds of Brazil's greenhouse gas emissions, according to official estimates. Other estimates are even higher (Fearnside 2003; Houghton, et al. 2000; Persson and Azar 2004; Schroeder and Siebert 2002). Carbon emissions associated with tropical deforestation is one of the largest sources of uncertainty in present knowledge of the global carbon cycle (Potter et al. 2001; DeFries et al. 2002, both cited in Persson and Azar 2004)

Climate change is also very important to Brazil. Brazil has a large stake in the international negotiations around human-induced climate change because national economic and social developmental plans, in addition to some security concerns, depend on growth in its energy sector and on development of the Amazon. The conflict between the latter and human-induced climate change is that the main source of greenhouse gas emissions in Brazil is due to land-use changes (deforestation) caused by the expansion of agriculture and cattle-raising mainly in the Amazon region. Deforestation aside, Brazil has a very good profile in terms of its emissions of greenhouse gases and could thus have a position of strength in the international negotiations. The share of non-fossil fuel renewable energy in the national energy balance has been kept above 60 percent since the 1970s (La Rovere 2000). Brazil's comparatively clean energy matrix is partly due to the "Proálcool" program, which developed transportation fuel based on sugar cane. The program was developed in the 1970s and constituted an innovative solution not only to the oil crises of that decade but also to problems experienced within Brazil's important sugar-cane industry.

Brazil also has a stake in the international negotiations around human-induced climate change because of potential deleterious impacts of anticipated climate change. Unavailability of sufficient impact studies in Brazil limits estimates of actual and future consequences of climate change in Brazil. Although uncertain, preliminary studies that do exist foresee dramatic ecological changes, such as the loss of the Amazon rainforest through increased warming and subsequent drying of the region (Cox et al. 2000).

Because of its stakes in human-induced climate change and because of its international prominence, Brazil has taken a leadership position in the international negotiations, co-leading the G77 with China. National diplomats have stressed mitigation measures in international negotiations and, it appears, focused almost exclusively on mitigation measures in national-level discussions and activities as well.

Brazil's official position on global environmental issues when they emerged on international agendas in the 1970s reflected its economic profile; it reflected a commitment to economic growth and a view of development and poverty reduction as means to improved environmental protection. At the Environment Conference of Stockholm in 1972, Brazil and China lead the coalition of Third World countries against the environmental paradigm on the basis of three principles: unrestricted national sovereignty over the use of natural resources,

high per capita income is a prerequisite for environmental protection, and rich countries alone must shoulder the costs associated with protecting the global environment (Viola 1997).

To this day, the primary objective of policymakers in the developing world is to raise the standard of living of their populations, and economic growth is considered imperative to alleviate poverty. During the Fourth Session of the Intergovernmental Negotiating Committee on Climate Change, the G-77 coalition of over 120 developing countries jointly forwarded the 'Principles of G-77 and China on the climate convention.' One of the central principles serving as a basis for their participation in the climate negotiations is the 'right to development,' which they define as an "inalienable human right" and as a prerequisite for adopting measures to address climate change (Hyder 1992). Policy makers from these countries consider it unfair and unrealistic to argue for the reduction of energy consumption and of greenhouse gases emissions in the developing countries, especially CO_2 (Shih 2000). Developing countries' need for growth has been recognized in the FCCC but some more developed countries, and especially the United States, have been arguing that less developed countries should make substantial commitments to reduce greenhouse gas emissions, especially on the part of countries projected to become major future emitters.

Brazil's environmental nationalism lessened in the 1990s. Despite the emphasis on the need and right to develop, national leaders supported and participated in all treaties signed in the 1990s that relate to the global environment – treaties or amendments to treaties concerned with controlling international trade in hazardous waste and preserving the ozone layer, the integrity of Antarctica, and biodiversity. Brazil also supported the creation and later expansion of the Global Environment Facility in the early 1990s and the Protocol on Biosafety in 2000 (Viola 2004). Brazil played a leading role in the development of the Convention on Biodiversity, a function of the fact that it is the richest country in the world in terms of biodiversity (Viola and Leis 2001).

In the climate regime, however, Brazil has emphatically stressed the notion of common but differentiated responsibilities, and has been opposed to binding commitments for non-Annex 1 countries. Modifying somewhat the country's past dogged insistence on development over environmental protection, Brazilian leaders and social actors have increasingly become aware of the potential to use the Kyoto Protocol to secure financial and environmental benefits at the national level. Brazil proposed the idea of a Clean Development Fund whereby rich countries whose emissions exceeded their emission reduction commitments would pay penalties which subsequently would be used to nurture sustainable development in poorer countries. Despite strong support for this "Brazilian proposal," it was defeated due to objections from rich countries. However, Brazil and the United States worked together to create the Clean Development Mechanism (CDM). Substituting the idea of fines with voluntary action, the CDM allows industrialized ("Annex 1") countries to compensate for their emissions by financing emission reduction activities in non-industrialized ("Annex 2") countries such as Brazil that do not have commitments under the Protocol.

Brazilian decision makers' rejected the inclusion of standing forests on the list of activities fundable through the CDM. Some describe Brazil's position as "puzzling," off-hand, because the Brazilian Amazon holds "enormous potential" for industrialized countries to invest in forest-preservation projects (Johnson 2001). Bolivia, Costa Rica and Columbia, three other Latin American countries with extensive tropical forests, have seized upon this potential by selling emissions credits to foreign companies interested in financing forest-preservation projects in their countries (ibid.).The government explained the decision in terms of legitimate technical difficulties of verifying and quantifying sequestration activities and avoiding perverse effects and so-called "leakage" (i.e., mere transference of deforestation activities to neighboring areas). However, the problem of leakage apply to reforestation and afforestation

as well, which the Brazilian government chose to support as fundable under the CDM Additional concerns about the issue of deforestation in the Amazon appear to underpin the government's opposition to including preservation of standing forests under the CDM, including often unstated concern to maintain control over the Amazon for both economic and national security reasons.

Brazilian actors – a gradual mobilization

The Ministry of External Relations (Itamaraty) is most centrally responsible for Brazil's official position on climate change. Responsibility fell to the Itamaraty and the Ministry of Science and Technology (MCT) rather than the Ministry of the Environment because the issue of climate change first appeared within the Brazilian political purview in international forums in which the Brazilian government found itself pressured by foreign governments on the issue of deforestation. In practice, two persons in the MCT were in charge of the issue until around 2000, after which the Itamaraty began to involve itself relatively more with the issue, along with other actors. The MCT is responsible for coordinating Brazil's commitments under the FCCC, most centrally the national inventories of greenhouse gas emissions. The Ministry of the Environment, created in 1992, has been less centrally involved and in charge of climate affairs. It is institutionally weaker and came into being only after climate change already had become an issue of international concern.

Until around 2001, the Ministry of the Environment and most other parts of the government had little interest in climate change,. This left the MCT and Itamaraty with uncontested control of the country's official position on climate change in the international negotiations. As a result, the latter was marked by these institutions' overarching commitment to national security and development, and the associated tendency to avoid discussion of forest conservation in the climate negotiations.The Itamaraty's position on forest issues under the heading of climate change is shaped by the military, with which the Itamaraty worked to develop the country's foreign policy stance related to national deforestation before climate change emerged as an important issue in international arenas developing the. The primacy of the military's agenda in this area reflects its general control over things related to the Amazon (Jakobsen 2000; Zirker 2001).

The creation of the CDM triggered greater involvement of other parts of the Brazilian government and society. The Brazilian congress continues to participate little in shaping Brazilian policies related to climate change. However, an Inter-Ministerial Commission on Climate Change was created in 1999 to coordinate matters related to the FCCC, including the CDM. The Commission is cross-sectorial, including representatives of all relevant ministries.

The Ministry of the Environment continues to play a lesser role in shaping the country's position in the international negotiations. However, it has sought to enhance its involvement, in part by boosting its technical capacity on the issue through staff additions and the creation of the Centre for Integrated studies on Climate Change and the Environment (Centro Clima) at the Federal University of Rio de Janeiro.

More parts of Brazil's civil society have involved themselves with climate change. In 2000, President Cardoso established the Brazilian Forum for Climate Change (BFCC) to facilitate communication between decision makers at the federal, state and municipal levels and various stakeholders in Brazil, including representatives from environmental non-governmental organizations, academia and industry. The creation of the Brazilian Forum for Climate Change was a response to complaints that civil society had too little voice in governmental decision making processes and thus was not allowed to participate adequately in the

Interministerial Commission on Climate Change. Though it appears to be revitalizing itself under new directorship after 2005, the BFCC suffered from a lack of support and direction during the first years of the administration of President Luíz Ignácio Lula da Silva ("Lula"). The BFCC is also weakened by the fact that its executive directors receive no financial remuneration.

Non-governmental organizations (NGOs) mobilized on their own in the early 2000s after initially showing little interest in the climate issue. In 2002, a coalition of over 25 NGOs in Brazil launched the Climate Observatory, conceiving of climate change as an opportunity to strengthen forest conservation efforts through the CDM. The central objective of the coalition is to push the issue of deforestation to the center of climate discussions in Brazil, an agenda in conflict with important parts of the government. .

Until the present, industry groups in Brazil have had no significant role in shaping Brazil's responses to climate change. Brazil's lack of commitment under the FCCC's first commitment period has created little incentive for industries to concern themselves with the issue. The few industries that have mobilized around climate change have done so with the notion of benefiting financially for projects under the CDM. However, many believe that Brazil will have to commit to some emission reductions for the second commitment period. If this happens, industry interests, perspectives and reactions will likely begin to weigh in on national decision makers. Two main sectors that would be the target of efforts to reduce emissions in Brazil are transportation and industry. In the case of transportation, the main stakeholder is the government; the government is responsible for legislation and regulations such as Corporate Average Fuel Economy (CAFE) standards for vehicles. At present, Brazil has no such standards. The second sector is industry, within which manufacturers of iron & steel, pulp and paper, chemicals and cement are the major stakeholders because these are the most dependent on intensive consumption of fossil fuels.

This raises questions regarding how Brazil's climate policies and politics might change in the future, should Brazil commit to emissions reduction targets. For example, are Brazilian industries likely to fight the new measures, a strategy adopted by an important subset of highly fossil fuel dependent industries in the U.S. (Gelbspan 1995; Gelbspan 1997; Lahsen 1998; Lahsen 2005, forthcoming), or do they show greater tendency towards the reaction of European industries, which have been more inclined to accept new regulations and make the latter work in their favor (Moore 1994)?

Trend away from national control over science and technology policy

In the 1970s, science and technology policy in Brazil mirrored the import substitution policies that shaped national development policy. Brazil sought to develop scientific capacity in all fields while protecting them from international scientific competition. Throughout this time, Brazil appreciated the importance of participation in international science and it did not attempt to develop a "national science." However, Brazil engaged less with international science compared to other small national scientific communities, and it protected its scientific research programs and institutions from evaluations that used international standards of quality as their measuring stock (Schwartzman, et al. 1995:18).

National protection programs have more recently given way to the view that "there is no room for second rate, protected basic science in the current world scientific environment" (ibid., p. ix). Today, even small national scientific communities are expected to be up to international standards, and to be an integral part of international scientific networks.

In the realm of technology, the national strategy was to invest in a few large projects deemed of strategic importance and to avoid "the technological encirclement of foreign governments and multinational firms" (ibid., p. viii). This led to the development of a few ambitious high technology projects such as the nuclear and space programs and to a quite large number of graduate programs and research institutions, not all of equal quality. The trend now is away from that pattern towards a small but highly qualified research establishment. This is accompanied by a trend away from centralized decision making regarding science and technological projects, to enable greater flexibility and responsiveness to changing circumstances and opportunities (ibid., pp. viii-ix)

Today, Brazilian scientists' careers increasingly depend on their ability to participate in international science (Lahsen 2004). Institutions increasingly evaluate scientists and base promotion decisions on scientists' publication records, giving greater weight to international publications. Brazilian scientists are thus motivated to connect with international science by learning English and establishing international collaborative networks. Brazilian scientists success now depends in large part on their ability to focus research and writing on issues of international (Northern-dominated) concern; doing so positions them better for obtaining needed research funds from abroad (i.e. from Northern-based or Northern-dominated institutions) and for having their work published in the international journals. Scientists and science administrators thus lobby for government support of international science collaborations.

Nationalism in Brazil and its manifestations in Brazilian science policy and in the context of the Amazon region

By some evaluations, Brazil is "Latin America's most nationalist country," even during "sell out periods" (Adler 1987:201). One scholar has defined Brazil as

> one of those countries which, in spite of its liberal rhetoric and its rhetoric in favor of foreign capital, has systematically used its bargaining power, i.e. the bargaining power of its dominant classes, of its government technocracy, and of its national entrepreneurs, to resist. [...] Even if the national technocrats consider themselves transatlantic, consider themselves liberals, in practice they have increased State intervention, have increased the strength of State enterprises augmenting Brazil's political control" (Maria da Conceicao Taveres, in Adler 1987: 201).

Such nationalism has in the past led "subversive elites" to push and promote an anti-dependency ideology in Brazil (Adler 1987). As described above, anti-dependency also marked Brazil's science and technology policy in the 1970s.

Nationalism continues to mark discourses related to the Amazon, as reflected in the slogan by former president Sarney "A Amazônia é nossa" ("The Amazon is ours") and its contemporary reincarnations.[3] This framing communicates that the Amazon is Brazilian and a territory about

[3] For instance, the president of Brazil's national development bank in 2003 explicitly evoked ex-President Sarney's nationalistic slogan when announcing the bank's contract with the Brazilian government to reactivate the Projeto Calha Norte (Gockel 2003). Of interest to this report's attention to the role of trust and national scientific capacity, the bank president used the expression to communicate the national importance of the country's researchers, saying: "We will defend our

which only Brazilians decide. It also reflects resistance in Brazil to globalizing discourses, in particular the "life-boat" rhetoric associated with global environmental problems. Such framings and resistance persists today. Brazilian leaders have long looked to the Amazon as a means of advancing the country's developmentalist agenda and its ambitions to become a superpower. As a result, important segments of Brazil's political leadership and broader society interpret rising environmental concerns as antithetical to Brazilian national interests (Guimarães 1991a; Barbosa 1993; Becker 2001a; Schmink and Wood 1992; Wood and Schmink 1993) and as pretexts by means of which foreign governments seek to keep Brazil in a state of dependence and underdevelopment. Such perceptions shaped decision makers' stance on the issues related to forest preservation, in addition to tensions related to trade, resentment about Northern hegemony, and perceptions of injustice and of hypocrisy on the part of rich countries who have sacrificed their own forests for economic development (Hurrell 1992). There is a very widespread belief that foreigners, and in particular Americans, are planning or wanting to annex the Amazon or bring it under international control. While some of this concern about internationalization of the Amazon is founded on fictitious data and at times can appear paranoid, historical data does provide a foundation for some of these fears about foreign interests in the Amazon (Persson and Azar 2004:33; Román 1998).

Environmentalism and foreign interests

Brazil's government disclosed in April 2005 that 23,750 square kilometers (9,170 square miles) of Amazon forest were felled between August 2002 and August 2003, the second-worst on record.This bad environmental news is the dark side of the best economic news for the country in years due to Brazil's extraordinary performance as an exporter of commodities. Foreign demands for beef and soy products are spurring their production in Brazil, a key driver of deforestation in the Amazon. Brazil's agricultural performance has caused widespread concern among US farmers (Romero 2004) but have helped Brazil change its trade deficit of 8 billion dollars in 1998 to a surplus of 23 billion in 2003 (Viola 2004).

The fact that Brazil recently started out-competing the US as the world's largest exporter of some of agricultural products has only further spurred perceptions in Brazil that economic self-interest form an ulterior motive behind foreign – and especially U.S. – expressions of concern about deforestation. For instance, the Brazilian Ministry of Agriculture, Cattle-Raising and Supplies published an article this year expressing perceptions of such ulterior motives:

> The more Brazilian agribusiness shows high performance and projects itself on the world scene, the more foreign non-governmental organizations and the international media publish reports linking the growth of the sector, principally soy and cattle-raising, to deforestation in the Amazon […] There are strong indications that much of this material has, as its foundation, the objective of harming the competitive image of Brazilian agro-business throughout the world […] the inevitable suspicion is that such reporting reflects the inconvenience that the growth of Brazilian agro-business is causing its international competitors (Ministério da Agricultura 2004)

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territory with the arms of our soldiers and the books of our researchers. This is a clear way of saying that the Amazon is ours" (ibid.).

Brazil's environmental nationalism was more strident until the late 1980s and 1990s, at which point its stridency in international arenas softened in response to pressures from transnational NGOs and economic pressures exerted through multi-lateral institutions such as the World Bank and the Inter-American Development Bank (Barbosa 1993; Hurrell 1992)

Allotment of money for mitigation versus adaptation and impact assessments

According to Carlos Nobre, one of Brazil's most prominent environmental scientists and until recently the long-standing director of Brazil's climate research center (CPTEC), Brazil is "way behind" when it comes to adaptation measures and vulnerability and impact assessments. Nobre claims that Brazil's knowledge of future impacts of climate change is very rudimentary, even compared to knowledge produced by other LDCs, some of which have much fewer resources and scientific capacity compared to Brazil. If Nobre's claim is true, the reasons for this need to be understood and remedied. The stakes are great: even successful completion of the presently planned mitigation measures under the UNFCCC are insufficient to make a real dent in the projected human-induced climate changes and hence also in the impacts future climate change are feared to have, so societies need to prepare for the possibility of human-induced climate change. The general lack of adaptation measures is also consequential given the important benefits such measures can offer in terms of enhancing societal resilience to climate variation in general, whether natural human in origin (Intergovernmental Panel on Climate Change 2001; Sarewitz and Pielke Jr. 2000).

In this regard, it is also interesting to note that in the same interview in which the above mentioned policy maker expressed resistance to pressures for Brazil to produce impact assessments, he argued that Brazil would have to enhance national capacity in the area of climate modeling before it would be able to produce information of sufficient reliability for policy decisions. Interviews with Brazilian scientists also suggested that the government office coordinating national scientific efforts related to the UNFCCC insisted that the science had to be able to produce output with much greater levels of certainty before it could yield policy relevant impact studies. A reliable source (a scientist) said that a central policy maker had explicitly demanded projections "without uncertainty," claiming that projections in their current state were "junk science." This stance could appear to reflect a common, cross-cultural inclination on the part of decision makers to demand more science in order to avoid difficult policy processes and decisions, even when more science is at best a questionable solution (Pielke Jr. 1994; Pielke Jr. 1997; Sarewitz and Pielke 1999). Some Brazilian scientists interviewed suspected that Brazilian policy makers use lacking scientific capacity as a pretext by which to avoid activities which they consider disadvantageous for political reasons, and that they have deliberately avoided commissioning new studies in this area for that reason. According to them, improved climate modeling capacity is advantageous but not essential for the production of impact and vulnerability assessments useful to prudent adaptation measures. Carlos Nobre judges that countries without capacity to generate scenarios (i.e., less developed countries throughout the world) can and should rely on IPCC scenarios and start impact studies and adaptation policies.

Independent study ought to examine the foundation for the various views, as well as the role of the role of trust – and distrust - in less developed country policy makers' attitudes towards "international science" (e.g., IPCC scenarios) and the extent to which they consider enhanced national scientific capacity imperative – and why – before policy action can be taken. Such attitudes need to be mapped and understood in cross-cultural perspective to probe, among

other things, the representativeness of the views of the above Brazilian policy maker on the issue of uncertainty and scenario and impact studies, both within Brazil and among policy makers in other less developed countries?

The inventory and associated estimates of deforestation and emission rates

The Brazilian government produces annual estimates of deforestation. Their estimates have been continually challenged by groups of scientists both within and beyond Brazil. For instance, government deforestation estimates were challenged in a 1999 peer-reviewed paper co-authored by American and Brazilian scientists which was published in the prestigious, international journal *Nature* (Nepstad, et al. 1999). The authors of the article argued that the government's methodology for estimating deforestation rates relied on techniques that overlooked a large part of the deforestation occurring in the Amazon. Officials within the government at the time were angered by the article. However, they did not express their anger publicly in a concerted manner, and never in peer-reviewed format. When asked why, one of these officials – herself a scientist – explained in a 2002 interview that the scientific journal's requirements were too restrictive and difficult to meet, especially given her other responsibilities within the government. This suggests that limited scientific capacity can undermine governments' ability to defend perceived interests in the face of the power of peer-reviewed science. In what instances, if any, do nations attempt and manage to counter that power? Studies are needed to answer such questions and thus shed light on the struggle between alternative sources of authority and legitimization available to political leaders, scientists, and activists (for theoretical discussion related to such power "polycentrism" in today's world, see (Litfin 1993; Litfin 2000; Rosenau 1990; Rosenau 1997).

NGOs and socio-political change in Brazil

Issues of trust also affect the Brazilian government's relation with civil society in Brazil, in part because of the foreign ties of national environmental NGOs. In the face of governments' reluctance or inability to undertake the necessary reforms to prioritize environmental concerns over economic considerations, non-governmental organizations have become an important vehicle for social change (Price 1994). As described above, this is the case in Brazil at the domestic level.

Research NGOs, in particular, are becoming "an important new constituency" in the climate negotiations (Earth Negotiations Bulletin 2003: 18) and were officially recognized as such at the Ninth Conference of the Parties (COP-9). The International Institute for Sustainable Development posits that the "independent research and analysis" undertaken by these organizations "will inevitably strengthen the research elements of the climate process" (ibid.).

Since the end of the 21-year-long military dictatorship in Brazil in 1985, NGOs became an important force for social change in Brazil. These new NGO actors on the national scene have pressed for more meaningful citizenship, equality, and democracy (Landim 1993b). In doing so, they have been presented with considerable obstacles, however. Brazil's transition from military to civilian rule was gradual and uneven, and in some aspects, the process of democratization is still incomplete and subject to "significant failings" (Friedman and Hochstetler 2002). "Authoritarian inclinations in democratic day dress" remains a central challenge to democracy in Brazil as elsewhere in Latin America (Hurrell 2005:78).

Brazil is a cooptive democracy, that is, its democracy is characterized by high levels of state control coupled with high levels of institutionalized participation in which citizens have access to government elites but in ways circumscribed and defined by those elites (Friedman and Hochstetler 2002). As a cooperative democracy, state actors in Brazil generally exert heavy control over the nature and extent of civil society organizations' access to government. Another common term for this is corporatism. Policy formation in corporatist states involves identification of national goals in a top-down, non-participatory manner. It is guided by a notion that a central core of political leaders are best equipped to identify the national interest, and hence policies, in relative isolation from the expressed opinions of broader segments of the population, which are dismissed for their perceived partiality. Conceptualizing themselves as above politics and as disposing of a purview enjoyed only by a privileged few, political leaders shaped by the corporatist tradition tend to isolate themselves from interest groups, devaluing the latter. The associated arrangements tend to persist in spite of changes in presidents and associated administrations, and they favor different civil society organizations differently, including some, excluding others at the discretion of the state actors (ibid.). Latin American governments as a whole "still face the burden of proof to show that they are willing to accept actors from civil society as partners at home and abroad" (Friedman, Hochstetler and Clark 2001).

The Brazilian government's relationship to NGOs is complex. It bears important imprints of corporatism, but at the same time there is considerable interaction between them. In the environmental realm, NGOs with foreign ties are especially subject to suspicions of serving foreign rather than Brazilian interests. But they can nevertheless exert significant influence. A case in point is IPAM (Instituto de Pesquisa Ambiental da Amazônia – the Institute of Environmental Research in the Amazon), the first environmental *research* NGO in Brazil. Since its creation in 1995, it has been joined, in the climate-related arena, by IMAZON (the Amazon Institute of People and the Environment). Think tanks are a recent and still poorly institutionalized phenomenon in Brazil, where knowledge production has traditionally been under government auspices and subject to top-down control. Until the emergence of research NGOs, the state subsumed – and in important ways controlled – all science production in Brazil.

IPAM is an especially important actor in Brazilian climate politics (Persson and Azar 2004:3). It is one of the research NGOs present at the COP meetings and it was one of the first NGOs to mobilize around the issue of climate change in Brazil. It played a leading role in mobilizing other NGOs in Brazil around climate change, resulting in the creation of the Observatório do Clima, the above-mentioned "Climate Observatory" which has pushed to place forests at the center of international negotiations on climate change. Its staff of PhD and MA scientists and activists carry out outreach and research projects related to land- and resource use in the Amazon. It organizes and educates communities about climate change, fire prevention and sustainable land management in the Amazon in general. It also produces a bimonthly newsletter which is widely circulated, also within the government.

Within the government, IPAM's influence is mixed. Through its newsletter and other means, IPAM is said to have stimulated recent efforts of a small group of Brazilian decision makers to produce new legislation on behalf of climate change outside of any commitments under the Kyoto Protocol. However, large parts of Brazilian government are said to maintain a distant relationship to IPAM. Brazil's corporatist tradition appears to be a factor in this. At least, I encountered discourses among policymakers in the ministries of foreign relations and science and technology which justified critical distance to scientists and environmental NGOs on the grounds that they are motivated by narrowly-conceived political agendas and financial

motives (i.e., the need to find finding for research), and as having limited understanding of the political game into which they want to inject themselves (Lahsen, forthcoming).

IPAM's foreign ties are also a cause of concern among Brazilian decision makers. IPAM is often referred to as an Amazonian institution, and it is indeed located in the Amazon (two of its offices in the state of Pará, another in Acre). However, as is the case with IMAZON, IPAM was first created by a group of American scientists. It now includes Brazilians in important leadership positions, but it continues to receive the vast majority of its – by Brazilian standards impressive – funding mainly from abroad, particularly the U.S. (more specifically, the Agency of International Aid (US AID), the National Science Foundation, NASA and foundation such as the Packard and Ford foundations). In this, IPAM is not different from other Brazilian NGOs, which as a whole receive a large part of their funding from abroad, contributing to perceptions among some that NGOs in Latin America are planted by foreign powers, most centrally the US, and that they are designed to serve the self-serving interests of their foreign donors (Price 1994).

IPAM's political agenda has also brought it into tensions with the Brazilian government. Looking to climate change as an opportunity to strengthen forest conservation efforts through the CDM, IPAM and other members of the Climate Observatory pushed to place the issue of deforestation at the center of climate discussions in Brazil already during discussions related to the first commitment period under the Kyoto Protocol. This strategy pitches these activist organizations against central political architects of Brazil's official position in the negotiations, whose long-standing strategy is to avoid linking climate discussions with the problem of deforestation (Jakobsen 2000). The issue of whether or not to include avoided deforestation as an activity fundable under the CDM has divided NGOs internationally and nationally within Brazil (Fearnside 2001; Fearnside 2003), and has been a source of major contention in the climate negotiations (Lövbrand forthcoming; Persson and Azar 2004). Research questions in this context concern the role of scientific capacity in Brazilian ecopolitics. To what extent and in which arenas, does scientific capacity translate into influence? Who accepts their cognitive authority, who rejects it, and on what grounds and with what consequence, for whom and for what?

As NGOs developed in Latin America, the United States and, to a lesser extent, other developed countries looked to them as a means of expanding its influence in the region (Price 1994). This has led some to assert that Latin American environmental NGOs to a large extent came into being as a response to US desires for their services (Meyer 1993 p. 203, cited in Price 1994). Such renditions often do injustice to the complexity Latin American NGOs subsume and the agency they exercise; the approaches of Latin American NGOs are also, as a whole, marked by their location in the global South (Price 1994). For instance, although their agendas may favour global issues out of proportion to local issues, reflecting northern influences, they also tend to integrate a "third world ecologism" that emphasizes the need to integrate environmental concerns with development needs (García 1992, in Price 1994). Nevertheless, perceptions of NGOs as puppets for Northern governments, combined with prevalent fears of foreign invasion and usurpation of Amazonian natural resources under the pretext of environmental concern (Lahsen 2005b), render development through environmental NGOs a delicate affair in Brazil. Knowledge of such organizations' motivations, agendas and funding sources, and of their strengths and weaknesses, successes and failures, can help weed out unfounded fears and illuminate how best to target development aid intended to promote sustainability and climate policies in Brazil. Studies should also probe the extent to which, and the areas in which, climate policy preferences of environmental NGOs, local and federal government officials, and broader Brazilian society overlap or contrast with one another, providing a basis for identifying which political actors best represent public opinion.

Transformations in Brazil's engagement with the issue of climate change, in particular the rapid broadening of stakeholder involvement in the country's climate-related politics and policies, are part of a broader democratization of Brazilian society after the authoritarian regime that officially ended in the mid-1980s. As one Brazilian analyst's comment suggests, the stakes are high:

> Brazil is going through a profound social transition that is changing the shape of the country and raising a new set of social and economic issues that were not on the agenda just a few years ago. The new agenda is a reflection not only of existing problems but also of the perspectives, values, and interests of different social groups. The question of **who sets the agenda has important consequences for the issues tackled, their priority, and the likelihood of their failure or success.**
>
> Simon Schwartzman (2000) [emphasis added]

It is thus crucial to reveal who sets the agenda for climate science and policy in Brazil and with what consequences, and to identify ways of linking Brazil's aspirations for development and enhanced democracy with the international agenda to develop effective climate policies. Only with that knowledge can decision making related to climate change - and the environment more broadly conceived - be understood, anticipated and improved, and policy gridlocks overcome in ways respectful of democratic principles.

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