

GLOBAL CLIMATE POLICY AND BRAZIL: 2005-2010

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This paper has five sections. In Section 1, it explores the links between the economic crisis and the climate crisis, and the recent dynamics - in terms of negotiating position and climate policies - of the three great climate powers - USA, China and European Union - and the ten middle climate powers - India, Russia, Brazil, Japan, Indonesia, Mexico, South Korea, Canada, South Africa and Saudi Arabia. Section 2 provides an overview of the evolution of climate policy in Brazil in the 2005-2008 period. Section 3 analyses how major changes in the positions of the governments of the Amazonian states, of a significant group of large Brazilian companies, and of governmental and civil society players, produced a major shift in climate foreign policy in the second half of 2009. Section 4 evaluates the outcome of COP 15 and its aftermath in the first half of 2010, when all major countries pledged to achieve the targets of the Copenhagen Agreement. Finally, Section 5 summarizes the deep changes that took place at the national and international level in 2009 and 2010 and speculates briefly about the coming year.

A POLÍTICA CLIMÁTICA GLOBAL E O BRASIL: 2005-2010

Este artigo possui cinco seções. Na seção 1, analisa-se a inter-relação entre a crise econômica e a crise climática, e a dinâmica recente – em termos de posição de negociação e políticas climáticas – das três grandes potências climáticas – Estados Unidos, China e União Europeia – e das dez potências climáticas médias – Índia, Rússia, Brasil, Japão, Indonésia, México, Coreia do Sul, Canadá, África do Sul e Arábia Saudita. Na seção 2, apresenta-se uma síntese da evolução da política climática brasileira no período 2005-2008. Na seção 3, analisa-se como mudanças importantes no posicionamento dos governos dos estados amazônicos, de um grupo significativo de grandes empresas brasileiras, de atores governamentais e da sociedade civil, produziu uma importante mudança na política externa climática no segundo semestre de 2009. Na seção 4, avalia-se o resultado da COP 15 e de seus desdobramentos no primeiro semestre de 2010, em que todos os principais países se associaram com metas ao Acordo de Copenhague. Por último, na seção 5, sintetizam-se as profundas transformações acontecidas no plano nacional e internacional durante 2009 e 2010 e especula-se brevemente sobre as perspectivas para os próximos anos.

1 CLIMATE CRISIS, ECONOMIC CRISIS AND RECENT EVOLUTION OF THE CLIMATE POWERS

Greenhouse gas emissions grew 3% during the first decade of this century. According to information from the Netherlands Environmental Assessment Agency,¹ including deforestation data from various partial sources for Brazil and Indonesia, the largest emitters in 2008 were: China accounting for 23% of the

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1. The most important institute producing data on GHG emissions in the world.

world total - and annual growth of 5%; USA with 20% of total emissions – and annual growth of 0.8%; European Union (27 countries) with 16% of the total – increasing 0.3% a year; India with 6% of the total - increasing 5% a year; Russia with 6% of the total and annual growth of 5%; Brazil accounting for 5% of the total - growing 4% a year until 2004, with a sharp reduction between 2005 and 2009, Indonesia with 4% - growing 5% a year; Japan with 3% - growing 0.4% a year; Mexico with 2.5% of the total - growing 2% a year, Canada with 2% of the total - growing 1.5% a year; South Africa with 1.5% of the total - growing 2% a year, South Korea with 1.5% of the total - increasing 0.7% a year, and Saudi Arabia with 1.5% of the total - growing 6% a year.

These 13 countries - considering the 27 European Union countries as a unit - are responsible for more than 80% of global emissions and are the two critical groups of great climate powers and middle climate powers. There are three great climate powers: the United States, China and the European Union, which add up to nearly 60% of global carbon emissions. No new agreement is possible without the full engagement of these countries, which have veto power over the whole or any part of a new agreement. In these three countries, there is currently a gap between the economic, political, military level on one side, and climate on the other. Indeed, there is an economic, political, military and cultural alliance between the United States and the European Union. Such alliance is not mirrored on the climate side - the European Union is isolated in the defense of an effective global architecture for a rapid transition to a low carbon economy. The United States and China are resisting a new effective global agreement, even though their rhetoric has changed in the last year. There are ten middle climate powers: India, Russia, Brazil, Indonesia, Japan, Mexico, Canada, South Africa, South Korea and Saudi Arabia. None of them in isolation or even in pairs - or even in groups of three or four, except for India, Russia, Brazil and Japan combined - has veto power over a new agreement, but the entire group of countries plays a key role in moving towards a new agreement.

Today, the main gap in the climate arena is not between developed and developing countries, as a large share of the media oversimplifies. In 2010, the reformist camp is made up of: European Union, Japan, South Korea and Mexico, and the conservative camp is composed of the United States, Canada, China, India, Russia, Indonesia and Saudi Arabia. In the middle are Brazil and South Africa, which are now in the reformist camp for their emission reduction targets, but are in the conservative camp for their international negotiation position, to the extent that they maintain their alliance with China and India (IBSAC) and their association with the G-77.²

2. The G-77 is a group of developing countries established in 1964 with the aim of coordinating the activities of developing countries in multilateral fora. Currently, the group has more than 130 participants, though it has kept the same name.

The dramatic deepening of the US financial crisis after the collapse of Lehman Brothers on September 15, 2008, and its rapid descent into the deepest global financial crisis in history, had multiple impacts on climate change mitigation prospects. The attention of the world's public opinion and elite decision-makers as regards the urgency and severity of climate change has partially decreased, and the severity of the economic crisis - particularly in the US, European Union and Japan - has created additional obstacles to the negotiation of a new climate change treaty (STERN, 2009b).

The severity of the economic crisis has opened a limited window of opportunity for the transformation of values in developed and developing countries towards the reduction of consumerism and immediacy, leading to increased perception of the severity of the climate issue (GORE, 2009). Since the economic crisis is systemic, the recovery process currently underway does not mean a return to a situation similar to that existing before September 2008.

Unlike what most economists and international observers would have imagined in mid-2008, a substantial part of the economic stimulus packages started in November 2008 in several key countries, was intended to drive the transition to a low carbon economy: 65% of the increased spending in South Korea, 35% in China; 20% in the UK, 20% in Germany and 15% in the US. (STERN, 2009b). However, Brazil, India, South Africa, Indonesia and Russia performed very poorly regarding this issue.

Below, we present an analysis of the climate policies of the great climate powers.

1.1 The United States

The United States remains the most important country for any agreement, as it is the second major emitter and still has the greatest global technological innovation potential towards low carbon (GUIDENS, 2009). The United States has a population of 305 million inhabitants, a gross domestic product (GDP) of US\$ 14.5 trillion and a per capita GDP of US\$47 thousand. The country emits 5.8 billion tonnes of carbon dioxide equivalent, representing 20% of total emissions, 19 tonnes per capita and 0.4 ton of carbon per thousand of GDP. It is one of the countries with the highest emissions per capita in the world, only surpassed by Australia, Canada, Luxembourg and the small oil-exporting countries of the Persian Gulf. It is an economy with relatively high energy efficiency and low carbon intensity overall, but it is among those of highest intensity among developed countries - surpassed only by Canada and Australia - due to the combination of energy sources based on coal and oil with high utilization of aircraft and individual automobiles for transport. The US emissions grew 0.8% a year this century. After leading the negotiation of the Kyoto Protocol with the European

Union, during the Clinton administration (1993-2000), the US government was extremely irresponsible during the Bush administration (2001-2008). The Democratic opposition to Bush was constantly critical of the Executive's position, although without significant impacts on the federal level. On the other hand, several states have implemented policies to reduce emissions, especially California and New England, which have already approved regional caps and trade systems³ (VIOLA, 2009).

The first four months of the Obama administration gave out clear signs that the new administration focused on the economic and climate crises as interrelated processes that should be addressed simultaneously, in a decisive move towards de-carbonizing the economy. The emergency economic program for short term recovery of the economy was compatible with the medium and long-term goals of Obama's platform: expansion of renewable energy; upgrading of the national electricity transmission network to increase efficiency and absorb the enormous aeolic potential of the North Dakota-Texas corridor; promotion of public transport - particularly high-speed trains - in metropolitan areas; and encouraging all economic sectors to create new "green" jobs. The emergency program was different from a classical public spending expansion program and was synergistic with the strategic aim of increasing energy security. The cabinet's entire energy area focuses on encouraging renewable energy and nuclear power (FRIEDMAN, 2008).

The supra-ministerial position of Carolyn Browner - linked to Al Gore - on climate issues guaranteed the submission of the caps and trade proposal to Congress early on in the new administration, deepening and ensuring national reach for the laws already in force in California and New England. As a clear indication of this, Obama signed an executive order allowing the states of New England and California to fully implement their state laws, which establish stricter energy efficiency standards for automobiles, reversing Bush's previous contrary order (SPETH, 2010).

The Waxman Act on climate and energy - which enforces a system of carbon emission caps and quotas - was passed by the House of Representatives in June 2009, but was paralyzed at the Senate in the second semester due the Obama administration's focus on the health reform. In the first half of 2010, prospects of the Senate passing the law gradually declined and were finally abandoned

3. The term «caps and trade» quickly became widespread in the area of climate change after the Kyoto Protocol, which set caps on emissions for 2008-2012 for industrialized countries (Annex 1 Countries). The Protocol also established trade in emission quotas among Annex 1 countries, i.e. companies in countries that have emissions below their cap for the period 2008-2012 would have carbon credits they could sell to companies in countries whose emissions exceed their cap. Something similar happens in the Clean Development Mechanism (CDM), under which companies that exceed their emission cap under national legislation for the sector can buy carbon credits from companies in non-Annex 1 countries that are reducing emissions beyond business as usual and that have no legal obligations to do so.

officially by the Democrats in July 2010. Several factors explain this failure: extreme bipartisan polarization of the US Congress resulting in legislative paralysis and a governance crisis; high unemployment rate eroding Obama's popularity; the Democratic Party's defeat in the elections for Massachusetts state senator in January 2010 and resulting loss of the 60% supermajority of senators; the Republican attack on the Intergovernmental Panel on Climate Change (IPCC) because of some mistakes in the 2007 report and dubious procedures in building consensus; wave of extreme cold in the winter of 2010 on the East Coast, which was demagogically used by the Republican Party as a "demonstration" of excesses in the assessment of the dangers of global warming; aggressive lobbying by oil, coal, cement, steel and electricity companies against passing of the law because it would allegedly lead to loss of competitiveness for the US industry; and several surveys showing strong growth of the share of American population that believes the risk of global warming is overstated.

The expectation in Europe at the beginning of Obama's administration was that the United States could play a shared leadership role with the European Union. This expectation seemed about to materialize in May 2009, but when finally the Waxman Act on energy and climate was approved by the Chamber of Representatives in June 2009, the scenario was less favorable, as the commitment undertaken was to reduce emissions by only 3% over the base year of 1990, well below the 20% of the European Union, and negligible compared to the 30% to 40% reduction demanded by the IPCC.

Significant resistance was expressed at the US Congress with respect to sharper reduction commitments, mostly derived from the lack of reduction commitments by large developing countries, particularly China. There is also more structural resistance led by economic sectors strongly associated with fossil energy sources: states that produce coal, oil, steel, and coal-based thermoelectric power plants. On the other hand, almost all large low-carbon companies support significant emission reductions: information and communication companies, such as Google, Apple, Microsoft, Oracle and CNN, biotechnology, renewable and nuclear power companies, such as General Electric and major retail chains such as Wal-Mart, producers of "green building" inputs etc.

The United States has an important margin for reducing emissions through: change of thermoelectric technology to "clean coal" (cleaner technologies) and use of "carbon capture and storage"; expansion of wind, solar, biofuel and nuclear energy; reduction in size and increased efficiency standards for cars; and modernization of the electric transmission network and setting of new green standards for construction - buildings and houses designed or renovated to reduce emissions (SACHS, 2008).

1.2 The European Union

The European Union (27 countries) has a population of 490 million inhabitants, a GDP of US\$ 17 trillion and a GDP per capita of US\$ 35 thousand. It emits 4.2 billion tonnes of carbon, accounting for 15% of the world total, 8 tonnes per capita and 0.3 ton of carbon per thousand of GDP. The EU is very heterogeneous, both in terms of per capita emissions - from 22 tonnes in Luxembourg to 4 tonnes in France and Portugal - and in carbon intensity: low in the Nordic countries, Germany, UK and France; average in Spain, Belgium and Italy, and high in Poland, Czech Republic, Romania, Bulgaria and the Baltic countries. The EU emissions grew 0.5% a year as a result of the nearly stable emissions of Germany, UK and Sweden, and the accelerated growth of emissions from Spain, Portugal, Greece and Eastern European countries - even though the latter are still below the 1990 baseline.

The main political leaders of the European Union in recent years have been in favor of strong action to mitigate global warming, particularly the governments and public opinions of the United Kingdom, Germany, Sweden, France and Denmark, followed - albeit with a lower profile - by the Netherlands, Belgium, Finland and Ireland. Attention should also be drawn to the recent change in Spain's position, recognizing the growth of its emissions over the last decade. In recent years, the British government took the lead in the European Union with the approval in parliament, in November 2008, of a law establishing the carbon budget, and the launch of the Transition Plan to a Low Carbon Economy, in July 2009. With this plan, the UK pledges to reduce emissions by 34% by 2020, considering the base year of 1990 (BRITISH GOVERNMENT, 2009). The plan sets out detailed measures and targets for all sectors of the economy, including a number of public policies that encourage important behavioral changes. In the new coalition government, which started in June 2010, the presence of the liberals ensures the policy's continuity, albeit at a slower pace due to the severity of the economic crisis.

1.3 China

China has a population of 1.3 billion people, a GDP of US\$ 4.5 trillion and a GDP per capita of US\$ 3.5 thousand. It emits 6.5 billion tonnes of carbon, corresponding to 23% of global emissions, 6 tonnes per capita and 1.5 ton of carbon per US\$ 1000 produced. This is a very carbon intensive economy, with an energy mix strongly based on coal and oil. Although its GDP has fallen 5% a year in the last decade, China still has a carbon intensity ten times higher than Japan and four times that of the United States. Contrary to common sense, per capita emissions from China are average and not low. China's total emissions grow at a startling rate of 8% a year. The cost of reducing emissions in China is high, if

the current model of industrialization is maintained, but it would be feasible if it shifted to a model based more on productivity growth rather than increase in gross production, and with international cooperation in technology from developed countries. In 2007, global emissions of greenhouse gases grew 3.3% in relation to 2006, and 50% of that growth occurred in China. In turn, two thirds of growth in China occurred because of the burning of coal. Reducing the burning of coal is more important for the world than reducing oil consumption, therefore, a drastic change is needed in the way Chinese - and Indian - coal is consumed. Carbon capture and storage, "clean coal" and nuclear power technologies are very important for China. The Chinese government's position - on its national climate and energy policies, as well as international negotiations - was slack until 2006, but since then there have been changes based on assessments of China's vulnerability to climate change. The government encouraged strong growth in wind and solar energy and announced its goal of reducing the growth rate of emissions. This goal was reflected in the National Plan for Climate Change and the anti-crisis economic stimulus package approved in November 2008, with a 35% share of public spending directed to the transition to a low carbon economy. There is a gap in China between globalist and nationalist forces, the power of the former growing continuously and becoming increasingly focused on shifting the Chinese position towards global responsibility.

However, the Chinese international negotiation position remained backward compared with its new energy policy. At the UN General Assembly in September 2009, President Hu Jintao announced that the country was willing to undertake concrete responsibilities in the fight against global warming, and announced a Chinese target to reduce the carbon intensity of its GDP by between 4% and 5% a year in the 2005-2020 period. However, China continues to refuse to make commitments with an emissions peak and a year of stabilization prior to 2020 - as demanded by the international scientific community and the European Union, the United States and Japan - which is a factor that increases the weight of conservatives in the US Congress. In the technological field, 2009 was a year of great technological advancement and efficiency and productivity gains of Taiwanese photovoltaic solar energy companies and the formation of joint ventures in China for massive investment in a broad program called low carbon cities. As of 2009, one can say there are two Chinas in terms of carbon: on the one hand, a strongly prevailing traditional China that is a carbon emission producer and exporter; on the other hand, a new low carbon China, still a minority, but growing at an extraordinary rate due to high savings and investment capacity of the country and that will create a new low carbon business sector with conflicting interests with traditional China.

1.4 The middle climate powers

In this subsection we will discuss the middle climate powers, with the exception of Brazil, which will be discussed in section 2.

Ranking fourth among the major emitters, India has a population of 1.1 billion people, a GDP of US\$ 1.4 trillion and a GDP per capita of \$1,200. The country emits 2.5 billion tonnes of carbon, corresponding to 6% of total global emissions, with 2.1 tonnes of carbon per capita and 1.8 tonnes per US\$ 1,000 of GDP. India is a country of great contrasts, being the second demographic giant, with 17% of the world's population, therefore it is key in all comparative statistics. However, it has a low rate of per capita emissions, since it is a country with low per capita income and high carbon intensity, owing to low energy efficiency and high share of coal and oil in its energy mix.

However, it has developed solar photovoltaic and wind power at rates well above those of Brazil, albeit lower than in China. India has partially developed ethanol production as the largest sugar producer in the world, although most of this production is intended for human consumption. India's emissions grew 8% annually, and the country, during this decade (2010), will replace China as first ranking in growth of percentage participation in total emissions. The Indian government's position has historically been negligent, as the Chinese, and has not changed until today (KASA, 2007). Some academics and government sectors in India have developed a conspiracy doctrine based on historical resentment against the West, particularly against the British, called *carbon colonialism*, under which the proposed carbon constraint in developing countries would be a means to keep the status quo of underdevelopment. Some comparisons should be made between India and China, as the behavior of their societies is crucial for the present and the future, due to the dramatic growth of their contributions to global warming (LEIS; VIOLA, 2008). India is much more vulnerable to climate change than China, considering that a key part of its population depends on water that springs in the Himalayas under Chinese sovereignty. China is increasingly tempted to divert rivers for the use of its huge population, and its glaciers are shrinking because of global warming. Moreover, India has a significant share of its population living in low lands subject to monsoons and devastating shocks between land and ocean atmospheric circulation.

India has a democratic system - even though it is of low quality due to the caste legacy - with the presence of a major environmental movement, which challenges, with ambivalence to this day, the official position. The average Indian population has a less materialistic orientation than the Chinese because of religion and is therefore more sensitive in terms of values related to the state of the planet. India's government is highly fragmented and inefficient, making a shift towards

less carbon intensive than China much less likely. About 18 ministries act directly on issues relating to climate change, without any clear leadership. In mid 2009, internal divisions within the Indian government became public and a significant number of decision makers began to openly question the traditional view of the Indian government. They did so always remembering rightly that India, with 2.1 tonnes of carbon per capita, should not be pressured internationally to the same extent as China - 6 tonnes per capita - and Brazil - 8 tonnes per capita - so there is still significant carbon space to be occupied at the expense of developed countries and middle income countries.

Russia has a population of 142 million inhabitants, a GDP of US\$ 1.4 trillion and a GDP per capita of US\$ 10 000. It emits 1.4 billion tonnes of carbon, representing 5.5% of global emissions, 10 tonnes per capita and a ton of carbon per US\$ 1,000 of GDP. It has an economy with high per capita emissions and high carbon intensity, giving it a unique profile among the world's major economies. It is a society that has become much richer in the last seven years, but it has low energy efficiency and an energy mix heavily based on fossil fuels, and is a major exporter of oil and gas. Russia has a very particular position in the global framework for the following reasons: *i*) the architecture of the Kyoto protocol totally favors it in terms of emission parameters because, in the base year of 1990, the Soviet Union was a high-carbon economy with very low energy efficiency, *ii*) as an economy whose main asset is the abundance of fossil fuels, it sees itself as losing in the transition to low carbon intensity, and *iii*) among all major emitters, it is the only country where an important part of the elites and opinion leaders realize - at least until the extremely hot summer of 2010 - that global warming could be favorable for the country because it would dramatically increase farmlands and *iv*) it is favored by the Kyoto architecture and will tend to strongly oppose an agreement that restricts the use of fossil fuels in the world.

Japan has a population of 127 million inhabitants, a GDP of US\$ 5 trillion and a GDP per capita of US\$ 39 thousand. It emits 1.4 billion tonnes of carbon, corresponding to 3.5% of world total, with 10 tonnes per capita and 0.15 ton of carbon per US\$1,000 of GDP. Japan is - together with European Union countries such as France, Sweden and Denmark - the economy with the lower carbon intensity in the world due to high energy efficiency and the key role of nuclear energy in its electricity generation. Japan's public opinion and a significant part of its business sector - Honda and Toyota - are in favor of mitigating climate change, but the country's leadership role in the international arena is unfulfilled due to its low profile foreign policy and its special relationship with the United States. The plan Cooling the Earth 2050, launched by Japan in 2007, is the first approved by the government of an important country to show a consistent and comprehensive path for a country to transition to a low carbon economy. The historic victory of

the Democratic Party in Japan in August 2009 and the formation of the new Japanese government changed the country's position in the international system by announcing a commitment to reduce emissions by 20% to 25% over the base year of 1990.

Indonesia increased its emissions during the first decade of the 21st century, due to widespread deforestation of peat forests with high carbon stock. The country developed a rather inconsistent plan to reduce emissions by 2020, conditional on hypothetical large-scale international aid that is unfeasible even if developed countries behaved highly responsibly. Canada has the worst performance among the developed countries that signed the Kyoto Protocol and is far short of meeting its commitments. The government declared in 2009 his wish to withdraw from the Kyoto Protocol, if the United States did not sign and developing countries did not undertake commitments. The large growth in oil production in Alberta - and the fact that the exploitation of natural resources is regulated at the provincial and not federal level - is the main reason for Canada's setback. Mexico adopted an advanced national plan for climate change in 2007 under President Calderón, and took a leading international position, as opposed to Fox's conservative administration. South Africa announced stabilization and emission peak targets in 2008, taking the lead among the big emerging countries of the G-77. South Korea has maintained throughout the decade the most reformist profile among countries not belonging to Annex 1 of the Kyoto Protocol.

1.5 Recent developments

As a product of the combination of economic and climate crises, uncertainty in the international system has become quite high and comparable to other crucial moments in history, such as the oil shock and stagflation started in 1973 and the collapse of communism in 1989-1991 (GORE, 2009). There are powerful forces moving in opposite directions: on the one hand, traditional economic interests influence national governments to protect various economic sectors from the risk of collapse and call for measures that may have an indirect effect of trade protectionism and stagnation of globalization (MABEY, 2008; KEOHANE; RAUSTILA, 2008).

On the other hand, innovative economic, social and cultural forces seek to influence governments to implement deep reforms of the international system, developing global governance and restricting carbon emissions in order to initiate the transition into the low carbon economy (BIERMANN, 2007; HURRELL, 2007; TICKELL, 2008; BARRET, 2010).

In short, on the one hand, stagnation of globalization and increased conflicts in the international system, and on the other hand, reform and increased

governance of globalization. Until November 2009, the crisis pushed towards the latter: the constitution of the G-20 as a global governance structure, continuous coordination of the monetary authorities of major countries, the expansion of the G-8 to G-14. However, since December 2009, expressions of conflict in the international system have increased: greater pressure from major countries for China to let its currency float and the conflict between US and Chinese officials at the Copenhagen conference.

The core issue in the international scenario in 2009, from the perspective of the Copenhagen conference, was the ability of the United States, European Union and Japan to undertake ambitious emission reduction targets for 2020 and persuade other major emitters - China, Brazil, India, Russia and Indonesia - to accept the establishment of different emission peaks and years of stabilization - before 2020 for middle-income countries like Brazil, Russia, China and Mexico (TIMMONS, PARKS, 2007; STERN, 2009a). Towards the end of the second half of 2009 it became apparent that this scenario will not happen because of Obama's inability to substantially change the US negotiating position, due to internal resistance.

2 ECONOMIC AND POLITICAL FORCES FAVORABLE TO A TRANSITION TO LOW CARBON IN BRAZIL

Brazil has a population of 190 million inhabitants, a GDP of US\$ 1.7 trillion and a GDP per capita of US\$ 8 thousand. It emits about 1.8 billion tonnes of carbon, corresponding to approximately 5% of global emissions, 9 tonnes per capita and 1.1 ton of carbon per US\$ 1,000 of GDP. Brazil's emissions in the 2005-2009 period dropped sharply in relation to 2001-2004, owing to the dramatic fall in the rate of deforestation in the Amazon, from an annual average of 20,000 km² to an average of 12,000 km², reaching a very low figure in 2009 (7,000 km²).

Calculations of emissions in Brazil are among the most complex of the biggest emitters because of the high proportion of carbon dioxide emissions from deforestation in the Amazon - Cerrado and the importance of emissions from livestock, whose calculation is much more complex than emissions from energy, industry and transportation. At the same time, the system for calculating emissions in Brazil is more reliable than other emerging countries - China, India and Indonesia - because Brazil is a consolidated democracy and has a strong scientific community (LEIS; VIOLA, 2008). Brazil's carbon emissions - according to the first national communication officially made in 2004 - were of 1.4 billion tonnes of carbon in 1994.

2.1 Brazilian policies in the recent past

Until mid 2009, public policies for mitigation and adaptation to climate change were very limited. The resources allocated to the Ministry of Science and Technology (MCT) and the Ministry of Environment (MMA) to address the issue have been minimal. The 2007 Multiyear Plan (PPA) has not allocated significant resources to mitigation and adaptation. It was only in 2007 that a secretariat on climate change was established in the MMA, with very limited capacity and restricted budget. In June 2008, the Executive sent to Congress a draft Climate Change Bill that did not internalize the issue of climate change in the Brazilian legal architecture, as some developed countries have done. Internalizing climate change in the legal framework means to clearly define greenhouse gases as pollutants, even if they are different from other local impact pollutants that affect human health.

The 2001 electricity blackout generated a huge increase in energy efficiency in Brazil - about 20%, according to best estimates - and public awareness regarding energy conservation. Unfortunately, this gain has not been absorbed in public policy as part of a larger framework to reduce carbon emissions. The small and necessary diversification of the electricity mix promoted in recent years as a result of the blackout leaned towards fossil fuel power plants, rather than biomass power plants and wind and solar networks.

On the positive side, there has been a reduction of deforestation in the Amazon and the emergence of the ethanol diplomacy. Brazil was extremely successful in the significant reduction in Amazon deforestation during the 2005-2009 period, compared to the 2001-2004 period, which had maintained the high pace of deforestation of the previous decade. The average annual deforestation dropped from 20,000 km² to an average of 12,000 km². This produced a dramatic reduction in emissions from Brazil between 2004 and 2009, of approximately 25% of the total (MOUTINHO, 2009).

There is no other case of emission reductions of such magnitude, except in Eastern Europe and the former Soviet Union in the first half of the 1990s, but in this case, there was a collapse of economic activity. In the Brazilian case, the emission reduction occurred in a context of economic growth of 3.5%, higher than the historical average of the previous two decades.

Deforestation reduction had five main drivers:

1. Increased institutional capacity and implementation of the law by the national government through the coordinated activity of monitoring, enforcement and repression agencies.
2. Creation of large protected areas – national parks, ecological stations, ecological reserves, etc. – mainly by the federal government between 2002 and 2007, but also by some state governments.

3. The presence of large non-government organizations (NGOs) and national organizations that conducted an intensive awareness raising campaign on public opinion and among the importers and traders of developed countries. One of the outcomes of this campaign was the moratorium on Amazon soybean purchases and a moratorium on the purchase of cattle from areas deforested by large meat processing companies, the latter with less success than the former.
4. Gradual cooperation of several state governments in the Amazon with the federal government on control of deforestation, albeit heterogeneously.
5. Some periods of decline in soybean and beef prices helped reduce the deforested area, but the reduction was maintained later when prices started to increase; there was a break from the historical correlation between deforestation and the price of soybeans and beef.

Reducing deforestation broke two myths in Brazil: the myth of powerlessness in relation to Brazilian society's ability to control deforestation in the Amazon and the inevitability of immediacy in the use of natural resources, originated in the almost total destruction of the Atlantic and Araucaria forests in the twentieth century. Beyond the exaggerated propaganda around this reduction by the national government, it will probably have deep and favorable long-term consequences, ending the "curse" of national impotence in the Amazon.

On the other hand, since 2006, President Lula has understood how strategic the establishment of a global economy of biofuels is for Brazil. The ethanol diplomacy is advanced from the standpoint of national interest, but it contradicts Brazil's position as ally of China, India and Indonesia in climate change negotiations. What Brazil needs in order to consolidate the ethanol policy is to assure the world that the transition to biofuels in Brazil, with global effects, it will not take place through deforestation.

This demonstration is relatively easy when it comes to ethanol, but it is much more difficult with respect to biodiesel, since soybean is one of its key raw materials, and its cultivation has expanded considerably in the Amazon. Brazil has vast arable land and does not need to clear any land at all for ethanol. But many Europeans argue that increased ethanol production in the Midwest and Southeast pushes the soybean and cattle frontier towards the Amazon. It is therefore crucial for Brazil to make significant progress in reducing deforestation in the Amazon. This is a necessary requirement, but not enough, to turn ethanol into a global commodity.

The announcement of the pre-salt oil find in late 2007 produced, at first, a narrow triumphant attitude in the Brazilian government. In this view, Brazil

would become a major exporter of oil, which would have a central place in the country's economy. But this attitude is not linked to the issue of transition to a low carbon economy advocated by the ethanol diplomacy. More recently, the government's discourse has been raising - focally in the MMA - that pre-salt oil should be exploited with state-of-the-art technology that includes carbon capture and storage (CCS).

2.2 The National Plan for Climate Change

The National Plan for Climate Change, announced in December 2008 on the eve of the Poznan Conference (COP 14), had an ambiguous meaning. On the one hand, it did not result from focused and consistent effort of key ministries to centrally internalize climate change mitigation and adaptation in their policies. Neither does it propose the creation of a unified "Climate and Energy" Ministry as has occurred in several countries, indicating that this will be the prevailing trend of the future. On the other hand, it means a break from the historical discourse of the Brazilian state with regard to the Amazon, in proposing measurable deforestation reduction targets and an implementation schedule.

The plan was greeted enthusiastically in the international community and with many doubts in the Brazilian climate community, since it was announced at the last minute and only after its first version suffering heavy national and international pressure and criticism. Minister Carlos Minc, who led the advances in the plan, is committed with it, but the government core showed resistance and, like President Lula himself, had a history of low sensitivity to the issue.

The MCT is responsible for producing the national emissions report, a basic tool for defining a national climate policy. For a variety of reasons, the production of the second emissions report was slow – considering how important the climate policy had become in Brazil and the country's relevance in international negotiations – as other middle-income countries submitted their reports in 2007 or 2008 - for example, Argentina, where the climate policy has very little relevance, submitted its report in 2007. The reasons for the delay are numerous: *i*) the MCT's limited budget for this item;⁴ *ii*) conflict with the MMA with respect to certain methodological issues; *iii*) formal deadline in the Convention Secretariat ends only in 2010, which means that, from a formal point of view, the country was still on schedule; *iv*) informal agreement with China and India to submit the report on the same date, as happened in 2004, despite the Brazilian report being substantially completed in 2002; and *v*) pressure from more conservative sectors of government to delay delivery due to the high growth in emissions between 1994 and 2004.

4. Amazingly, much of the funding for the Brazilian inventory has come from developed countries, since the Brazilian government has not allocated sufficient funds for such a strategic task for the country.

Due to this delay, two initiatives concluded in October 2009, one by the University of São Paulo (USP) and other by the Ministry of Environment, produced estimates for 2005 (the first) and 2007 (the second). In fact, the MMA estimates were based, fundamentally, on provisional data accumulated by the work of the MCT, complemented by some academic institutions. According to the estimates produced by the team led by Carlos Cerri, emissions in 2005 were of 2.020 billion tonnes of CO₂ equivalent distributed as follows: 1.140 billion tonnes of CO₂ attributable to deforestation and changing land use (54.5%); 467 million tonnes generated by agriculture (23.1%); 354 million attributable to energy (17.5%) and 37 million to the industry (1.9%).⁵

According to the USP estimate, Brazil still has very unique emission profile, since approximately half its emissions are derived from deforestation in the Amazon and the Cerrado, something unusual for middle-income countries (CERRI, 2009). This profile is due to an energy mix of low carbon intensity, high proportion of hydropower in electricity generation, and the growing importance of biofuels, particularly the substitution of gasoline for ethanol. Moreover, the regional distribution of emissions is very unbalanced, with Amazon states representing approximately 40% of emissions, with 12% of the population and only about 7% of GDP. The rest of Brazil has 60% of emissions, 88% of the population and 93% of GDP. The asymmetry of the regional distribution of emissions in Brazil is one of the largest in the world. Emissions per capita and carbon intensity of the Amazon region are among the highest in the world.

Between 15% and 18% of global carbon emissions come from deforestation and land use change, and the Amazon plays a key role in the global carbon cycle.⁶ With approximately 2% of global emissions from that source, Brazil is the second largest emitter due to deforestation and land use change after Indonesia - which accounts for about 4% of global emissions from the same source. A very unfavorable aspect for Brazil is that its per capita income is US\$ 8000, while Indonesia's is US\$ 2000.

Much of the fixed capital that will be in place in Brazil in 2050 has not been built yet and that means a huge opportunity in terms of the key dimensions of

5. Carlos Cerri is head professor at the Center for Nuclear Energy in Agriculture (Cena), University of São Paulo. A few weeks after the release of the Brazilian emissions report, Professor Cerri won the Ernesto Illy Trieste Science Prize. The prestigious award is the highest offered jointly by the Academy of Sciences for the Developing World (TWAS) and the company Illycaffè, acknowledging outstanding scientists from developing countries.

6. The world's leading source on the role of emissions from deforestation is the 2006 Stern Report, which estimated them at 18%. The Brazilian government has questioned the validity of this data by proposing an alternative estimate of total emissions of about 11%, arguing that Stern overestimates, with political motivation, the role of deforestation in global warming. However, most of the Brazilian scientific community tends to agree with an estimated weight of deforestation of between 15% and 18%. Anyway, this is an area where data are poor and precarious, since a significant number of deforesting countries are poor and/or on the brink of bankruptcy. Brazilian data on deforestation are now of excellent quality compared to the rest of the world, except for Costa Rica.

climate change mitigation and adaptation: urban planning that promotes public transportation and avoids development in vulnerable areas - slopes or too close to beaches; road and rail infrastructure resilient to climate extremes; ethanol duct network; hydroelectric plants that take into account rainfall changes generated by global warming; and agricultural varieties more resistant to pests. These processes are still rarely discussed, and there is a general lack of public awareness regarding the critical importance of climate risk studies. Brazil⁷ is planning to produce a new wave of hydroelectric plants without having included the impact of climate change on rainfall regimes in the feasibility studies. Thus, a fixed capital designed to last a century can have a significantly drop in productivity in three or four decades.

Between 1994 and 2009, the industrial structure of production and transportation of commodities went through enormous changes. Emissions in 1994 were 1.4 billion tonnes of CO₂ equivalent, with 75% of these emissions caused by deforestation in the Amazon. According to calculations by the Ministry of Environment announced in October 2009, emissions from energy, industry, agriculture and waste increased 40% between 1994 and 2007, while emissions from deforestation decreased by 20%, amounting to 1.8 billion tonnes of CO₂ equivalent in 2007.

2.3 Brazil's advantages and disadvantages for the transition

Monetary stabilization, trade liberalization and privatization in the 1994-1999 period caused a first wave of structural change. With the consolidation of the new macroeconomic tripod as of 2000, based on inflation targeting, floating exchange rates and primary fiscal surplus, there was a new round of structural change and expansion. Automobile production grew 220% between 1994 and 2008. The production of commodities exploded with the expansion of international trade, with a negative impact on deforestation rates in the 2000-2005 period. The changes introduced in the energy mix by the Lula administration, with a significant increase of fossil fuel-based electricity generation, changed the carbon intensity of the energy mix. The decline in deforestation between 2005 and 2009 changed the composition of the carbon intensity of GDP, significantly reducing the carbon intensity of the amazon's GDP and increasing the carbon intensity of non-Amazon GDP. However, the latter is still lower than that of all middle and low income countries – in most of the latter, carbon intensity is very high due to low energy efficiency.

In evaluating the advantages and disadvantages of the country's transition to a low carbon economy, it is important to think of the potential of various

7. Brazil has, among certain elites, some insight into the problem, and has recently been encouraged by its competitiveness in biofuels, both in terms of natural advantages and technological development.

sectors of the Brazilian economy. The leaders of several of these important sectors demonstrate potential and interest in the transition to a low carbon economy:

1. Hydroelectricity generation companies and related companies, as well as the entire chain of the construction industry and capital goods connected to it; and electricity distribution companies that do not depend on fossil fuel-based electricity generation.
2. Nuclear power plants and the entire production chain linked to the construction and operation of nuclear facilities and uranium enrichment. In recent years, the nuclear sector in Brazil has been used systematically and extensively the issue of climate change to influence public opinion and decision makers in their favor.
3. The ethanol production chain: sugar producers, alcohol plants, municipalities whose economic activity is focused on ethanol, public bureaucracies associated with the regulation of ethanol and scientific-technical community linked to research on first and second generation ethanol - from cellulose.
4. The public transportation productive chain: bus assembly companies, railway and subway cars; urban reform companies and related services. In general, it is estimated that those who use individual cars emit 15 times more than those who use public transportation. The issue of climate change compounds the public transportation deficit, which has historically been a major problem in Brazil in terms of well-being of the population and traffic congestion. The industry has strong lobbying in several cities. In the Brazilian metropolitan areas, traffic and transportation have become less and less efficient. The issue of slow traffic tends to intensify the issues of urban pollution and carbon emissions, tipping the scale towards public transportation. It is clear today that solutions such as rotation, implemented in Sao Paulo, are precarious and short lived.
5. The incipient wind power complex, including the final producers and in particular equipment producers; producers of rotor blades, a sector in which Brazil is a major world exporter.
6. The sector related to planted forests, both the highly developed complex sector for the production of pulp and paper as the incipient sector for production of charcoal.
7. The eco-tourism industry that attracts people with a post-materialist orientation and willingness to pay to reduce their climate footprint, could expand with improved public security. But this sector is contradictory because, on the other hand, it uses the air transportation, which is very

intensive in emissions. Tourism is the sector that has the greatest growth potential in the world.

8. The steel sector is a potential winner in the transition to a low carbon economy, due to the potential for lower carbon intensity of the entire Brazilian production chain compared to the rest of the world: electricity from hydropower; very favorable iron ore transportation and logistics; and more favorable proportions of charcoal and coal. A key issue here is the replacement of native forests with planted forests in steel production. This is a clear case of a sector whose business leaders have so far been rather conservative and have had many difficulties in realizing the potential advantages of their industry.
9. The food and beverage production sectors that are less carbon intensive, are more rational in the use of water and are energy efficient. Associated with these, there are more modern and efficient retail chains in terms of logistics, transportation and energy efficiency.
10. Export sectors that concentrate their exports in mature markets where there is growing differentiation of consumer preferences depending on carbon intensity of the product production chain. In these markets, there will be increasing pressure for the establishment of customs barriers against carbon-intensive imports. The Brazilian exporters would gain doubly from a change in Brazil's position, with increased competitiveness and resulting technological modernity in terms of image among consumers.
11. The information and communication sector and parts of the service sectors related to education and health, all strongly "tuned" to the newest trends in the world, realize the comparative advantage of Brazil's transition to a low carbon economy. The case of the cosmetics company Natura is a very advanced example of internalization of the transition to a low carbon economy.
12. Some banks, led by HSBC and Real - now absorbed by Santander - have created several products associated with the economics of sustainability and transition to low carbon.
13. The production sector of aluminum from recycling and more generally all the producers of aluminum for export, since it has comparative international advantages in terms of carbon intensity due to the use of hydroelectric power.
14. The whole recycling sector in Brazil, a major absorber of unskilled labor.
15. The automobile industry has, in general, a conservative approach and promotes the expansion of car sales, regardless of their energy efficiency,

as was clearly shown in the pressure for tax cuts in late 2008. But in this sector, Honda, Toyota and Renault-Nissan stand out for producing more efficient cars, following the policy of their respective headquarters.

16. Overall, the more modern and internationalized economic agents, both subsidiaries of multinational and domestic companies, started in the last two years a process of internalizing the issue of carbon intensity of production chains in their decision making processes and planning.

The sectors that are more resistant - although to varying degrees - to the transition to a low carbon economy are:

1. The entire illegal and semilegal economic sector associated with logging in the Amazon.
2. Electricity producing or distributing companies that depends on coal and oil.
3. Coal producing companies.
4. Companies associated with the production of oil, in spite of their reformist discourse, mostly resist the transition to low carbon. Petrobras has a conservative position, even though there are reformist minorities in it that favor the use of CCS.
5. The cattle raising industry, and particularly beef processing companies and retailers that buy meat from illegally deforested areas in the Amazon.

By combining two variables - carbon intensity of economic activity and type of mentality - and their high or low manifestation, we have four major groups of companies regarding the transition to a low carbon economy. First, at one end we have companies that have high carbon intensity and a conservative mentality of their directors, constituting the *conservative* group. Most companies linked to the oil, coal, cement and beef processing chains are in this group.

Secondly, there are companies that have potential for low carbon intensity and a conservative mentality of their directors, comprising the *moderately conservative* group. Steel producing companies are in this group.

Thirdly, we have companies that have high carbon intensity, but with reform-minded directors, constituting the *reformist* group of companies. Examples include: Vale, Shell and ArcelorMittal.

Fourthly, on the other end, we have companies that are low carbon intensity and have reform-minded directors, being the *forefront* group of companies. Examples of this group are: Natura, Brazil AES, CPFL, Light, Klabin, Walmart, HSBS and Santander.

3 RECENT CHANGES IN THE BRAZILIAN CLIMATE POLICY

During 2009, there were many relevant facts in the climate area. A law on land tenure in the Amazon, quickly prepared by the Secretariat for Strategic Affairs, was passed by Congress and signed by the president. The law, which legalizes, to different degrees, ownership of land and illegal deforestation in the Amazon until 2005, generated strong resistance from the environmental movement, which considers it an award to economic agents that violated the law - particularly in the period after 1999, when the legal framework began to severely restrict deforestation - and an incentive for continued illegal logging. However, other economic agents and analysts consider that, if combined with a strict and severe punishment of illegal logging by government agencies, the law could establish a broad coalition of economic agents that are legal owners of property and therefore favorable to full rule of law in the Amazon. The coming years will provide an answer to this question.

3.1 Various alliances formed in 2009

The governments of the Amazon states - under the leadership of Amazonas and Mato Grosso and supported by the Strategic Affairs Secretariat of the federal government - formed the Amazon Forum and requested, in July 2009, a change of Brazil's position in relation to forests, more specifically acceptance on the part of Brazil that avoided deforestation become part of the Clean Development Mechanism or any other new market mechanism - such as Reducing Emissions from Deforestation and Degradation (REDD) - involving carbon credits that could emerge from negotiations in the next COPs. This request - which refers to the fundamentals of the Brazilian position since Kyoto - is supported by the MMA and strengthens the capacity of the Ministry of Foreign Affairs and the MCT to continue defining Brazil's foreign policy on climate.

In the months from June to September, three business coalitions were formed demanding changes in the Brazilian climate policy. They differ in the combination of sectors coming together and the degree of reform proposed for the domestic and external energy and climate policy. Several companies belong to two coalitions and a couple of them belong to the three coalitions.

The first coalition of Brazilian Companies Alliance for Climate is very heterogeneous, bringing together federations and associations of agribusiness companies that have very different carbon intensities and managerial mindsets. This is the least reformist of the three coalitions, and basically it demands a reduction of deforestation in the Amazon and acceptance of market mechanisms for avoided deforestation. In terms of the four groups defined above, companies in this alliance belong to the conservative and moderately conservative group, which are only interested in obtaining international resources to shift their productive

activities. However, three associations of this coalition – Bracelpa, Unica and Brazilian Association of Planted Forest Producers (ABRAF) – are formed by leading or reformist companies that also belong to the second and/or third coalitions.

The second coalition is Open Letter to Brazil on Climate Change, led by Vale, Instituto Ethos, Pão de Açúcar and CPFL, comprising 22 large national companies, and is the largest in terms of weight in national GDP. Its proposal is a formal commitment of the country in climate negotiations and consistent policies for reducing the emission growth curve, emphasizing energy efficiency, control of deforestation, reforestation of degraded areas and acceptance of market mechanisms for avoided deforestation with offsets for emissions of developed countries. The companies of this alliance are committed to publishing annually an inventory of greenhouse gas (GHG) emissions and include the choice of investment options that promote GHG emission reduction in processes, products and services as a strategic guideline in investment decision making. Another fundamental commitment of this alliance is to work with the supply chain to reduce emissions of suppliers and customers. It should be noted that the carbon-intensive and polluting supply chain with illegal components in terms of deforestation is a point of vulnerability for many large Brazilian companies.

The Business Climate Coalition – led by AES Brazil, Shell, AmBev and the Brazilian Foundation for Sustainable Development – has made similar demands as the second coalition, but with greater depth and precision, suggesting that Brazil should make a defined commitment to reduce emissions in 2020 with the base year of 2007, and not only reducing the emissions growth curve as in the case of the second coalition.

Despite the advanced positions of the second and third coalition, the Federation of Industries of São Paulo (FIESP) and the National Confederation of Industry (CNI) spoke out in October against Brazil undertaking quantifiable commitments before other major emitters do so. The agribusiness coalition, CNI and FIESP called for a change in the Brazilian position, but did not recommend that the country take a leadership position in the negotiations. FIESP and CNI are traditional associative structures in which the position of the institution tends to be given by the positions of its more conservative members. However, there was a change recently in May 2010, when the CNI presented its proposals, of which one of the pillars is low carbon, to the presidential candidates.

The Open Letter to Brazil on Climate Change calls for a substantial change and for Brazil to take the lead in negotiations, while the Business Coalition for Climate demand a radical change, included Brazil's incisive leadership in the negotiations. For this coalition, Brazil should fully support the transition to a low carbon economy because the vast majority of its economic agents would benefit.

In October 2009, the Center for Sustainability Studies, Getulio Vargas Foundation, launched the Business Platform for Climate, designed to create the regulatory bases in the process of internalizing climate change mitigation and adaptation. The program provides to participants tools and guidelines for GHG emission management practices and sustainability for business. By joining the platform, companies commit to publish their GHG inventories in accordance with the methodology of the Brazilian Program GHG Protocol, and develop policies and GHG management plans that ensure competitiveness and innovation, while encouraging a position in favor of a low carbon economy in the country. Twenty-eight large companies had joined the platform by the end of 2009.

3.2 The change in the Brazilian official position

In August 2009, for the first time in history, statements from leading Brazilian decision makers and negotiators - Ambassador Sergio Serra, Minister Luis Figueroa, secretary Susan Kahn, ministers Minc and Amorim - indicated the possibility of Brazil undertaking emission reduction targets for 2020, conditional to developed countries undertaking ambitious targets.

The traditional position of the Brazilian government in negotiating climate was increasingly challenged by economic and social groups and interests, particularly in the South and Southeast. The inclusion of the climate issue in the agenda of the 2010 presidential elections tends to explain this trend.

In fact, until July 2009, it seemed that the climate issue would have no relevance in the 2010 presidential election campaign. On one side was the consolidation of the officialist candidature of Dilma Rousseff, whose performance in the Lula administration is characterized by low sensitivity to climate issues and preparation of a public investment program – the Growth Acceleration Program (PAC) – based on the carbon-intensive economic model. On the other hand, José Serra, the favorite candidate of the opposition, has greater sensitivity to the climate issue owing to his political and intellectual history and the fact that he is from a state where there is greater public awareness and sensitivity on this issue. In June 2009, the city of São Paulo sanctioned an advanced climate bill, which sets emission reduction targets for 2020. In November 2009, the Legislative Assembly of the State of São Paulo approved a climate bill from the Executive establishing an obligatory target of 20% emission reduction in 2020, considering 2005 as base year.

However, the axis of Serra's presidential platform was also an acceleration of economic growth, and his dispute with the officialist candidate would take place mainly in relation to managerial efficiency and questioning of the use of the state apparatus to meet partisan interests. In August 2009, a new development of

crucial importance took place with the announcement of the probable candidature of Marina Silva - former environment minister of Lula's administration - to the Presidency of the Republic by the Green Party. Just the announcement was enough to impact the election scenario, because it introduced a new player with a strong background in two issues that are important for the middle classes: ethics in politics and sustainable development. In addition, Marina Silva also has prestige among segments of the poor population.

The consolidation of the presidential candidature of Marina Silva, who is reaching 7% to 11% of voting intentions in several polls, has changed the content of the agenda of the election debate, raising the importance of sustainability issues and the transition to a low carbon economy. This new phenomenon in Brazilian politics has forced Lula and his candidate Dilma Rouseff to increase the importance of the climate issue in the national public debate. The change in the electoral scenario accelerated and intensified the movement towards a change of Brazil's official position in climate negotiations.

After significant efforts of the environmentalist bloc in parliament, the House of Representatives approved, in October 2009, the Climate Change Bill, an improved version over the original bill by the Executive, which partially internalizes climate change in the Brazilian legal framework, although it does not set emission targets. The bill was addressed in the Senate in November under the impact of changes in the Brazilian climate policy. Senator Marina Silva introduced an amendment establishing as mandatory the targets on diversion from the normal curve of emissions announced by the Brazilian government on November 13, 2009. The bill passed the Senate in early December 2009, but Marina Silva's amendment was rejected.

In October 2009, minister Carlos Minc has increased pressure to change the Brazilian position in the negotiations. After intense negotiations, in which the MRE and the MCT resisted such proposals, on November 13 the government's new position was announced. This presentation was made jointly by Ministers Minc and Rouseff, revealing the deep impact of Marina Silva's candidature had on the officialist candidature. It should be noted that minister Dilma Rouseff's opposition to various initiatives of the then Minister Marina Silva was the main reason for the latter's resignation from the Ministry of Environment in May 2008.

Brazil's commitment announced on November 13, 2009 has the following features:

1. It is voluntary and so far there is no express commitment to adopt this model in an international treaty.
2. It referred to the deviation of the growth curve of emissions in relation to

expected future emissions in a business as usual scenario and not a binding target with respect to the 1990 base year, as in existing commitments by the European Union, Japan, South Korea, Switzerland and Norway. Conservative members of government argued that Brazil is not obliged to undertake legally binding targets related to the 1990 base year.

3. Brazil has committed to reduce emissions by 36% to 39% in relation to expectations of projected emissions for 2020 in a business as usual scenario. In the latter expectation, it is assumed that Brazil's emissions in 2020 would be of 2.7 billion tonnes of CO₂ equivalent. In the voluntary commitment, these emissions are reduced to 1.6 billion, which would mean in effect a reduction of approximately 20% with respect to 2005 emissions and a reduction of approximately 10% compared to 2008 - that year's emissions were well below those of 2005 because of the dramatic drop in Amazon deforestation.

The government's technical experts made a projection of what would be Brazil's emissions in 2020 based on different periods for different sectors. The only clear basis for projection is deforestation in the Amazon, where emissions are derived from a base period that is the average of the 1996-2005 period, when emissions were extremely high because the annual deforestation rate was over 20,000 km². For other sectors there was not enough transparency with respect to the methodologies used, but there is the assumption that different base periods were used, which creates significant problems of consistency for the whole methodology.

In government projections, most of the reduction of the emission growth curve would result from a drop in deforestation - somewhere between 21% and 25%. The rest comes from other areas, particularly changes in agricultural production, through measures such as increased direct seeding - which reduces emissions derived from decomposition of organic material - reversal of the recent increase in thermoelectric power generation and greater emphasis on systemic energy efficiency.

Pressured by changes in the Brazilian position, the Minister of Science and Technology Sergio Rezende, officially announced a partial and interim emissions report at a Senate hearing on November 25, 2009. This report is largely coincident with that used by the Ministry of Environment to propose the Brazilian targets (BRAZIL, 2009).

The announcement of the Brazilian targets was the product of business and societal pressure on a government decision-making process lacking transparency in which the core of government - President Lula, Dilma Roussef and Minister Celso Amorim - opposed, until the month of July, the undertaking of quantifiable emission targets for 2020. Therefore there were no systematic and consistent studies to produce an appropriate and precise plan to reduce emissions.

It was unclear what proportion of the voluntary commitment would depend on funding by developed countries due to the different positions of the Ministry of Science and Technology, which conditions the Brazilian targets to substantial international funding, and the Ministry of Environment, which proposes that most targets could be met without international funding. This is a very important point, considering the inflated expectations of the government and Brazilian society in relation to the amount of funding that may be offered. Such estimates ignore the basic fact that the developed countries most willing to contribute intend to direct much of this funding to poor countries such as India and Indonesia, and not to middle-income countries like Brazil, Mexico and China.

Even with all the caveats and uncertainties that surrounded it, the announcement implied a fundamental change in the history of Brazil's foreign policy on climate and a strategic defeat of the two ministries that defined Brazil's position between 1996 and 2009 - the MRE and the MCT. On the other hand, it meant a victory for the MMA, which has been challenging the traditional position since 2006 and keeping a very incisive position since 2008.

4 THE CONTRADICTION MEANING OF COPENHAGEN

In the negotiations for COP 15 developed in Bonn (March, June and August 2009), Bangkok (September 2009) and Barcelona (November 2009) there was little progress. The European Union and Japan were the only relevant players that committed to significant emission reduction targets. In both cases, the reduction target of 20% in 2020 relative to 1990 base year are insufficient from the standpoint of the IPCC, which promotes a reduction of 30% to 40% for all developed countries.

Shortly after the meeting in Barcelona on November 13, Brazil joined the group of major emitters with significant targets, which in an optimistic scenario can lead to emission reductions of 10% in 2020 compared to 2008. On

November 15, contradictory events took place at geographic ends of the world. On the positive side, France and Brazil announced, in Paris, a strategic partnership for a final effort towards a substantial agreement in Copenhagen, criticizing the conservative positions of the United States and China. This agreement between Lula and Sarkozy meant - for the second time in two days - a dramatic change of Brazil's position, indicating the end of the historic alliance with China and India and an alliance with the European Union.

Simultaneously, on the same day in Singapore, the countries of the Asia Pacific Economic Cooperation (APEC) – led by the United States and China – together with Denmark's prime minister – rejected the commitment to sign a legally binding emission reduction treaty in Copenhagen, because they considered it unrealistic. On the one hand, Denmark moved away from the European Union and submitted to the conservative logic of the United States, China and India. On the opposite side, Brazil held out the possibility of joining the responsible reformist positions of the European Union.

The Singapore declaration generated a strong negative reaction from European governments and several non-Annex 1 countries, in global civil society and in the important segment of transnational corporations. As a result, there was a setback in the following days and finally a cascading announcement of emission reduction targets that would be taken to Copenhagen by several of the largest emitters.

In late November, the United States announced a reduction target of 4% in 2020 compared to the 1990 base year, even though said target is still pending Senate approval. China committed to reducing carbon intensity of GDP by 40% to 45% between 2005 and 2020, but continued to refuse to establish an emissions peak and a stabilization year. For influential leaders of the US Senate, China's reduction of carbon intensity of GDP will still allow it to continue to increase its emissions significantly for at least 15 years. India said it would increase its efficiency, but continued to refuse to undertake any kind of commitment. Russia announced a commitment to increase energy efficiency, but refused to undertake emission reduction. South Africa has set 2025 as the year for stabilization of its emissions. Mexico has proposed that all developed countries undertake reduction targets of 40% in 2020 and that emerging middle income countries commit to stabilization years before 2020, but undertook only a diffuse commitment regarding its own emissions. Indonesia indicated an unrealistic commitment of 20% emission reduction compared to 2007, conditional on massive financial assistance from developed countries, which is very unlikely.

Earlier in 2009, South Korea announced the most advanced position among non-Annex 1 countries - emission reduction of 10% in 2020 with base year of

2008. The UK - whose target is diluted in the European Union average - is the only country whose commitment corresponds to the IPCC - emissions reduction of 34% in 2020 with 1990 base year.

On the eve of COP 15, on November 28, representatives from Brazil, China, India, South Africa and Sudan - President of the G-77 - met in Beijing to establish a common and uncompromising position, based on four essential points: rejection of mandatory emission reduction targets, refusal to submit their climate policies to international scrutiny if they are not funded by developed countries, rejection of the definition of a peak for growth of their emissions and rejection of the imposition by developed countries of any climate-related tax on their exports. With this, Brazil began to backtrack in its commitment undertaken on November 13 and its strategic partnership with France. The meeting in Beijing means the victory of conservative forces within the large emerging countries, and particularly a victory for China, India and Sudan over Brazil and South Africa

Since the beginning of the final phase of negotiations in Copenhagen in the first week of December, it became clear how difficult it would be to achieve a substantive legally binding agreement to mitigate climate change. Of the three great climate powers - US, China and European Union - only the last supported the agreement with targets that would have significant impact for mitigation, even if insufficient from the standpoint of the IPCC. The Obama administration needed to obtain significant concession from China in terms of peak of emissions and stabilization year in order to improve prospects for success in the battle led by Kerry and Graham in the Senate and improve the targets approved by the Chamber of Representatives in June.

China proved to be intransigent both with respect to consistent targets and with respect to international verification of compliance. This mirrored the typical behavior of Soviet communism on the major issues of disarmament during the Cold War - refusal to submit to international verification of compliance with the agreements. This verification is a sine qua non condition of credibility in international treaties. On the US side behavior was timid, frustrating the European Union's expectations of a bold position that could change the balance of power among the great climate powers and compel China to change its position. Obama's timidity can be explained by US domestic policy: an increased proportion of the population believes the risk of climate change is exaggerated; aggressive conservative lobbying by fossil fuel-intensive companies; fear of rising unemployment and declining competitiveness of the US industry against the Chinese industry; loss of popularity of Obama and his government; and priority to health care reform and reform of the financial system.

COP 15 culminated on December 19, 2009, after two days of difficult and confusing discussions among leaders of great climate powers and middle climate powers, and the presence of around a hundred leaders of limited relevance. Of the three great climate powers, only one, the European Union, took a clear position to promote an effective agreement, while the other two - the United States and China - were resistant. Obama's government was timid, unable to create the conditions for an agreement: ambitious targets of the European Union and the United States that would force China to establish an emission peak and a year of stabilization. Canada, India, Russia, Indonesia and South Africa maintained conservative positions. Brazil partially toned down its conservative position, when Lula announced that Brazil would contribute to a fund to help the poorest and most vulnerable countries in the adaptation process (VIOLA; MACHADO FILHO, 2010).

In addition to the superficial last minute negotiations, in Copenhagen, the European Union, Japan and South Korea were on one side with national targets and negotiating positions that favored a substantial agreement, and China, United States, Canada, India, Russia, South Africa and Indonesia were on the opposite side, with national targets and negotiation policies that blocked an effective agreement; and in the middle were Brazil and Mexico with ambivalent positions. Brazil, with targets to reduce emissions that ostensibly placed it in the reform group and negotiating positions that were closer to the conservative group, albeit with some differentiation with respect to the most obstinate, for example, trying to persuade China to accept international inspection. Mexico has no clear national targets for reducing emissions, which placed it in the conservative camp, and an international negotiation position that placed it in the reformist camp.

During the conference, the G77 + China almost disintegrated due to the extremely divergent and contradictory behavior of three subgroups: the Alliance of Small Islands, IBSAC (Brazil, South Africa, India and China) and the African group. A historically unique meeting - for the way it started and for the behavior of participants - among members of IBSAC and the United States produced the Copenhagen Agreement. This agreement states that it is necessary to avoid an increase of more than two degrees in the average temperature of earth and leaves a blank final annex for countries to define, by the end of January 2010, what mitigation targets they would commit to. In an extremely conservative position, China flatly refused both to set a target of a 50% reduction of global emissions by 2050 and the setting of a specific target for developed countries to reduce emissions by 80% by 2050. In preparing the Copenhagen Agreement, China proved to be the most conservative and antagonistic player and among the great powers, which drew sharp criticism from the European Union, the United States and Japan, and tolerance on the part of middle-income countries like Brazil,

Mexico, South Korea and South Africa, which had a much more advanced position than the Chinese.

In early February 2010, United States, European Union, Canada, Japan, Mexico and South Korea joined the Copenhagen Agreement without reservation. Brazil and South Africa joined with reservations, emphasizing that the key would be the continuation of the Kyoto Protocol and China and India adhering, but not formally joining.

During the month of February, Brazil and South Africa clarified some questions about its adherence and explained that they were formally associated with the Copenhagen Agreement. This posed a challenge to China and India, which finally announced that they were formally associated in early March. Russia joined the agreement in late March this year.

The Copenhagen Agreement became, with these formal adhesions, the most representative global political agreement on climate since the entry into force of the 1994 Convention on Climate Change. In March 2010, the agreement was formally supported by about 110 countries, including all major carbon emitters in the world. The agreement represents approximately 80% of global GHG emissions. But it has no legal value, unlike the Kyoto Protocol, which has legal value and very limited effectiveness. The Copenhagen Agreement need not be ratified by any Parliament, and depends entirely on the fulfillment of what each country has pledged. It is a very unique and uncertain situation in the history of international treaties.

The United States emphasize that they never signed Kyoto because the agreement does not establish requirements for middle and low-income countries and support a new treaty which could be based on the Copenhagen agreement. IBSAC Countries feel very comfortable with Kyoto because it does not set any targets, emission peak or stabilization years for them. The Kyoto agreement in 2010 covers less than 20% of global GHG emissions - European Union, Japan and Canada - while the Copenhagen Agreement, supported by the United States, European Union, Japan, Canada, Australia, South Korea, China, India, Brazil, South Africa and Indonesia, covers approximately 80% of greenhouse gas emissions. It is not legally binding, but could become the basis for a new global agreement that places the entire planet under carbon constraints, albeit with some differentiation.

For those analysts who used only the word "failure" to characterize the Copenhagen Conference, the August 2010 framework appears to be much more complex. For the first time, the United States, Australia, China, Brazil, India, Indonesia, South Africa, Mexico and South Korea are undertaking a political commitment to reduce their emissions or the growth curve of their emissions,

and that commitment comes with figures attached. The targets that are being recorded are far below the levels required by science. In all, they involve a reduction of approximately 10% of emissions in 2020 compared to 1990 for developed countries and a 60% increase compared to 1990 by major low and middle income emitters. The agreement also involves the possibility of significant progress with respect to technology transfer and Reduction of Emissions from Deforestation and Degradation (LA VIÑA, 2010).

The law on climate change approved in the Brazilian Senate in early December 2009 was enacted in January 2010 with vetoes by President Lula, particularly to Article 10, which provided for incentives to renewable energy sources. Also eliminated was an important goal for the transition to a low carbon economy, which is the phasing out of fossil fuels. However, environmentalists have managed to reduce the ten vetoes requested by opponents of the law to just three. Some forces in the Lula government are resistant to this regulation. Therefore, the Ministry of Environment has adopted a strategy of modest and selective regulation, even at the expense of leaving various sections of the law without the possibility of enforcement due to lack of regulation. Until August 2010, there had been little or no progress regarding the regulation. The climate fund also needs to be regulated, which will be a complex process that is likely to be controversial and lengthy.

The Government of Brazil has informed the Secretariat of the Climate Convention - in a letter dated January 29, 2010 - the following “nationally appropriate mitigation actions” that it wishes to undertake:⁸

- Reduction of deforestation in the Amazon - estimated extent of reduction: 564 million tonnes of CO₂ equivalent in 2020.
- Reduction of deforestation in the Cerrado - estimated extent of reduction: 104 million tonnes of CO₂ equivalent in 2020.
- Recovery of pastures - estimated extent of reduction: 83 to 104 million tonnes of CO₂ equivalent in 2020.
- Crop-Livestock Integration (ILP) - estimated extent of reduction: 18 to 22 million tonnes of CO₂ equivalent in 2020.
- Direct seeding - estimated extent of reduction: 16 to 20 million tonnes of CO₂ equivalent in 2020.
- Biological fixation of N₂ - estimated extent of reduction: 16 to 20 million tonnes of CO₂ equivalent in 2020.

8. Available at: <http://unfccc.int/files/meetings/application/pdf/brazilcphaccord_app2.pdf>.

- Energy efficiency - estimated extent of reduction: 12 to 15 million tonnes of CO₂ equivalent in 2020.
- Increased use of biofuels - estimated extent of reduction: 48 to 60 million tonnes of CO₂ equivalent in 2020.
- Increased supply of energy by power plants - estimated extent of reduction: 79 to 99 million tonnes of CO₂ equivalent in 2020.
- Alternative energy sources - estimated extent of reduction: 26 to 33 million tonnes of CO₂ equivalent in 2020.
- Steel works - replacement of coal from deforestation for coal from planted forests - estimated extent of reduction: 8 to 10 million tonnes of CO₂ equivalent in 2020.

As indicated in the National Policy on Climate Change, adopted after the COP 15 in December 29, 2010, through Law 12.187/2010, it is estimated that the sum of these actions will lead to a reduction of approximately 36% to 39% with respect to Brazil's projected emissions in 2020.

Contrary to analysts' earlier forecasts, according to provisional deforestation data from August 2009 to July 2010, deforestation continues to decline in 2010. Yet the extraordinary increase of fires in August 2010 compared with the same month last year indicates a probable increase in the deforested area and hence an increase of emissions in 2011. In the areas of energy, transport, industry and agriculture, it is likely that emissions will increase significantly in 2010, while economic growth is estimated at around 7%. Considering that there was no economic growth in 2009 and there was a significant decline in deforestation in 2009 and 2010, Brazil had a significant reduction in emissions in 2009, contrasting with the limited decline in developed countries due to recession and the strong increase of emissions in China and India on account of continued high economic growth.

There are strong indications that in the years 2009 and 2010 Brazil will continue to have a very favorable performance in terms of emissions, probably the best in the world. However, Brazil's negotiating position changed only partially in Copenhagen and in the months immediately following it. The Lula administration, particularly the Foreign Ministry and the MCT, continues to value the alliance with IBSAC and misses an excellent opportunity to take on a position of global responsibility and co-leadership next to the European Union, Japan and South Korea. Brazilian emissions will tend to increase in 2011 because there is hardly room to keep up the decline in deforestation in the Amazon in the short term, and there will certainly be a significant increase in emissions from energy, transport, industry and agriculture.

So a crucial question about the future of the transition to a low carbon economy in Brazil has to do with the speed and consistency of the regulation and implementation of the climate change law in 2011.

5 FINAL CONSIDERATIONS

In 2009 deep changes took place in the international political economy of climate change. The legacy of Kyoto, which left the United States and major emerging countries outside the carbon constraint, crumbled (LADISLAW, 2010). The Copenhagen Agreement is extremely weak from a legal standpoint, but is almost universal in terms of constraints on carbon emissions. It is practically impossible to make progress towards a new comprehensive legally binding treaty - as some countries, particularly developed countries wish - before the United States passes a climate bill mandating quantified emission reductions. Given the current political dynamics, this is hardly likely, at best, before 2013, assuming Obama's re-election in November 2012. Another factor that concerns the prospects for a global agreement is the tension between the US and the EU on one side and China on the other, due to China's refusal to revalue the Yuan significantly.

The issue of revaluing the Yuan might be generating an anti-Chinese coalition by countries that consider themselves "invaded" by Chinese goods, thanks to the continuation or increase of its export capacity. Countries threatened by the Chinese export machine include most members of the G-20. Brazil, as a strong exporter of commodities to China is in an intermediate position: its mineral and food production industries are favored by Chinese dynamics, while its manufacturing sector suffers.

The dimensions of economy and security of the international system have a decisive impact on the climate dimension, and must be taken into account in any realistic analysis of the future of climate negotiations. Tensions between deficit and surplus countries in international trade, particularly in relation to China, may limit or even stop the progress of global economic governance in the G-20 during 2009. The international system may be reversing the dynamics of depolarization that took place in 2008 and 2009. If a moderate increase of conflict in the international system prevails in the coming years, this will be enough to halt progress towards a new international climate treaty, even if a consistent climate law is passed in the United States in 2013.

In this context, the global transition to a low carbon economy will be very slow and one of its main international instruments will be the establishment of barriers to trade in carbon-intensive products. In the case of Russia and India, most sectors would be threatened. In China's case, the scenario would be more complex, since the proportion of low-carbon products - which is far too low

today – would tend to increase rapidly in the portfolio of Chinese exports, owing to major advances in wind and solar power.

If a tendency towards cooperation and continued depolarization in the international system prevails over the next year, and Obama is reelected in 2012, is likely that the US position will change from that of great conservative power to great reformist power. It is also likely that in alliance with the European Union, Japan, Canada, South Korea, Brazil, Mexico and South Africa, the United States will manage to “persuade” China, Russia and India to establish emission peaks and different stabilization years - before 2020 for China and Russia and between 2025 and 2030 for India, given that Russia’s per capita emissions are almost twice those of China and five times larger than India’s, and China’s emissions are three times larger than India’s.

In an international system dominated by forces of convergence, China’s more globalist and de-carbonizing forces are favored. From the standpoint of low carbon technology, there are some small countries that will impact the world for being very technologically advanced: Israel, Taiwan, Singapore, Switzerland and Norway. The main trigger to increase cooperation and produce a de-carbonizing agreement in the international system is to increase intellectual property flexibility in the area of low carbon technologies. It is not a simple issue, since some emerging countries are in the forefront of low carbon technology in some areas. For example, China would need to increase flexibility in the field of nuclear energy and second-generation ethanol, but not in wind and solar power, where many middle and low-income countries need Chinese-Taiwanese technology transfer. Brazil would need more intellectual property flexibility in the areas of wind and photovoltaic solar energy, but would be at the forefront and transferring technology to of low and middle income countries in the areas of hydropower and first generation ethanol.

Alongside the international level, in 2009 there was a crucial change in the history of climate policy in Brazil. Amazonian governors, led by Amazonas and Mato Grosso and supported by the Strategic Affairs Secretariat, consistently worked for Brazil to support the inclusion of avoided deforestation in a new treaty, as a market mechanism and with right of offset by developed countries. A key part of the business community has formed three coalitions demanding changes in the Brazilian position, of which two call for a paradigm shift in the Brazilian climate policy.

Marina Silva’s arrival as a presidential candidate quickly brought the issue of transition to a low carbon economy to the agenda of the 2010 election campaign. The National Congress passed a more advanced climate bill than the one sent by the Executive in 2008, and that partially internalized the issue of climate

change in the national legal framework and established “voluntary” emission reduction targets. The Ministry of Environment has raised its profile consistently since August 2009, forcing greater awareness on the part of President Lula and his candidate Dilma, which led to a historic defeat of the Ministries of Foreign Affairs and Science and Technology, with the announcement of the change in Brazil’s position to include quantitative very important targets to reduce the curve of expected emissions in 2020, something that few analysts believed possible in June 2009.

There are still many questions about the future implementation of the reduction commitment in Brazil, but the new law and the targets set by the country in the Annex to the Copenhagen Agreement are a very important step for the future path of its foreign, economic, energy, agriculture, forestry and climate policies. A new and major question is how long the gap between climate policy with emission reduction targets and the negotiation position that maintains the country linked to China and India - which have a much more conservative climate policy - will last in Brazil. Depending on the interests and relative power of various economic sectors in Brazil and the dynamics of public opinion, it is likely that this gap will not last long and that Brazil’s negotiation position will converge with that of the European Union, Japan and South Korea.

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