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Climate Change, Forests, and the *Reprimarization* of the Brazilian Economy

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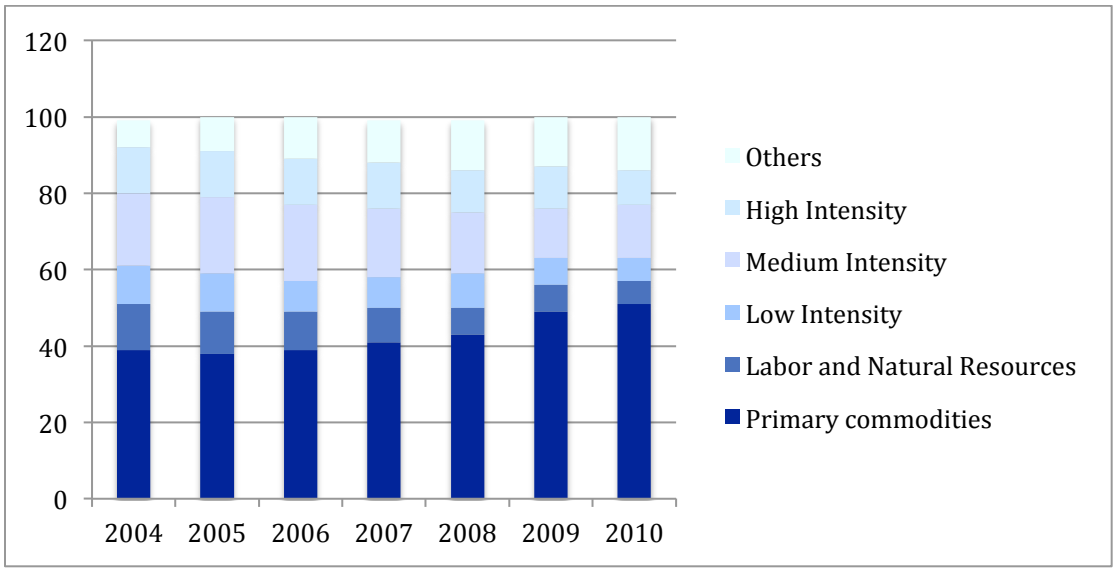
Between 2005 and 2010, Brazil reduced its GHG emissions by nearly 39%. In absolute numbers, this represents about twice the decrease in emissions achieved by the United States between 2005 and 2011. This impressive accomplishment was a direct result of Brazil's effort to curb deforestation in Amazonia. As a consequence of the success in anti-deforestation and climate policies, Brazil earned a fair degree of power and leadership in the international climate regime.

The main argument I present here is that despite these achievements, recent political decisions will make it increasingly difficult for the country to keep cutting carbon emissions. Brazil has adopted a route of *reprimarization* of its economy - investing heavily in mining, oil and gas drilling, agriculture, and hydroelectric power, in order to increase exports. To make things worse, civil society participation in environmental policies has been curtailed and land use legislation was relaxed in 2012. Those choices will likely cost the prestige Brazil recently gained in the international arena. In this paper I will present some relevant data and briefly discuss some of the points sketched above.

The *Reprimarization* of the Brazilian Economy

Reprimarization refers to the return to primary commodities as the main source of export revenues. Brazilian economic history is closely linked to commodity exports. The country was named after a native tree, source of a valuable red dye that the Portuguese shipped to Europe for some 200 years. After that, other commodity cycles followed: sugarcane, gold, and coffee. It was only in the 20th Century that the country diversified its economy and started large-scale industrialization. Increasingly, the country started exporting manufactured goods; by the end of the last Century, they accounted for over 50% of the value of the country's exports. Chart 1 shows that this trend reached an inflexion in 2004 and that commodities took the lead again in 2010. This was due to several factors: the growth of Chinese demand during the past two decades, the performance of giant Brazilian mining company Vale after its privatization, the expansion of soybean crops in the Brazilian Cerrado, and the increasing productivity of Brazilian agriculture.

Chart 1: Share of different groups of products in Brazilian exports, according to technology content, 2004 – 2010, (%)



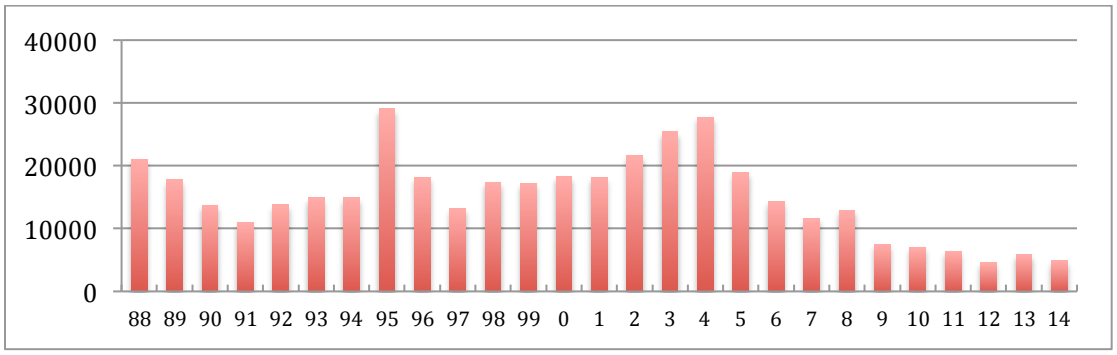
Success in Deforestation Control

Brazil has long been fighting, or at least been pressed to fight deforestation in Amazonia. Pressure became particularly fierce after the assassination of rubber tapper leader Chico Mendes, in 1988. In the next year, the Brazilian government created a new category of protected area (PA), the Reserva Extrativista, designed to protect the forest and the livelihoods of its traditional dwellers. Even though PAs became an important conservation tool, they were not able to contain deforestation. Although there was a reduction in annual rates between 1989 and 1995, in between 1995 and 1996 the region experienced an unprecedented destruction that reached 29 thousand km^2 (Chart 2).

At that point, the response form the government was to amend the main environmental legislation, the Forest Code. The new law made land use much more restrictive, particularly in Amazonia, where landowners had to set aside 80% of their properties for conservation. Within two years deforestation dropped to less than half, but soon started rising again, in part due to the difficulties to enforce the law. In 2005 numbers were back close to the 1995/1996 peak, and once again the government took emergency measures. This time the government created a vast network of PAs around deforestation hotspots, invested in a fire monitoring system, made access to credit harder for those who were not complying with environmental regulations, and created a "black list" of municipalities with the highest deforestation rates.

Together, credit restriction and the black list helped united the private sector and local governments to act together in order to decrease deforestation. Both feared that the penalties imposed by the federal government, as well as potential market sanctions, would depress the local economies and cause severe damage to their businesses.

Chart 2: Deforestation in Amazonia, 1988 - 2014, km2

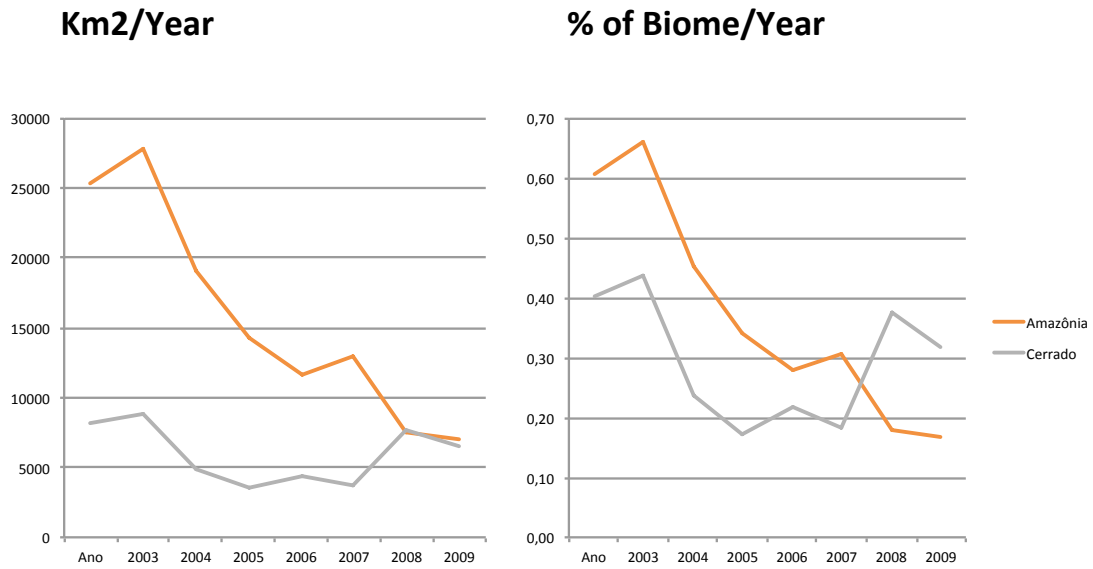


Limits to the Control of Deforestation

Despite the relative success of deforestation control, in 2012 Congress approved a new Forest Code, which, for many critics, was a setback in environmental regulations. The new code granted amnesty to landowners who had deforested illegally before 2008. That measure reduced by about 58% the extension of areas that landowners should recover at their own expense [1]. Perhaps even more significant than this figure is the symbolic victory of farmers and ranchers who still resort to illegal deforestation. They feel that whenever necessary the powerful rural caucus in Brazilian Congress will come to their help, and perhaps approve another amnesty. The fact is that in 2013, right after the approval of the new Code, deforestation in Amazonia increased again.

The year 2013 may have been was an outlier, as numbers went down again in 2014. What is clear, however, is that deforestation outside Amazonia was not under control during the 2000s. By 2008, as much forest was being converted into farmland and pastures in the Cerrado as it was in Amazonia (Chart 3).

Chart 3- Deforestation in Amazonia and the Cerrado, 2003- 2009



Source: INPE, MMA, ICMBIO

Market forces seem to have been the sole driver of land conversion during this period in the Cerrado, for the federal government did not issue any specific policy for the region. For instance, one of the most effective conservation tools deployed in Amazonia, Protected Areas [2], (Table 1), cover 14.1% of Amazonia, but only 2.97% of the Cerrado. Table 1 also shows that almost 40% (in extension) of the existing PAs in 2013 was created after 2005, when the federal government launched its policies aimed at controlling deforestation. In the Cerrado, the corresponding figure is just above 3%.

Indigenous homelands are not PAs *de jure*, but are very effective in stopping the agricultural frontier[3]. When we contrast the size of those lands in the two regions, it becomes even more evident how the Brazilian government has not treated the Cerrado as a conservation priority: in 2013, 38.6% of the Amazon was under the protection afforded by PAs and indigenous homelands, whereas the Cerrado had only 7.7% of its territory protected (Table 2).

Table 1: Area of PAs Created in Amazonia and the Cerrado, before and after 2005, in km^2

	Total	% of the region	Before 2005	2005-2013
Cerrado	60,712	2.97	58,819	1,893
			96.88%	3.12%
Amazonia	593,438	14.1	36,243	23,100
			61.07%	38.93%

Table 2: Area of PAs and Indigenous Lands in Amazonia and the Cerrado

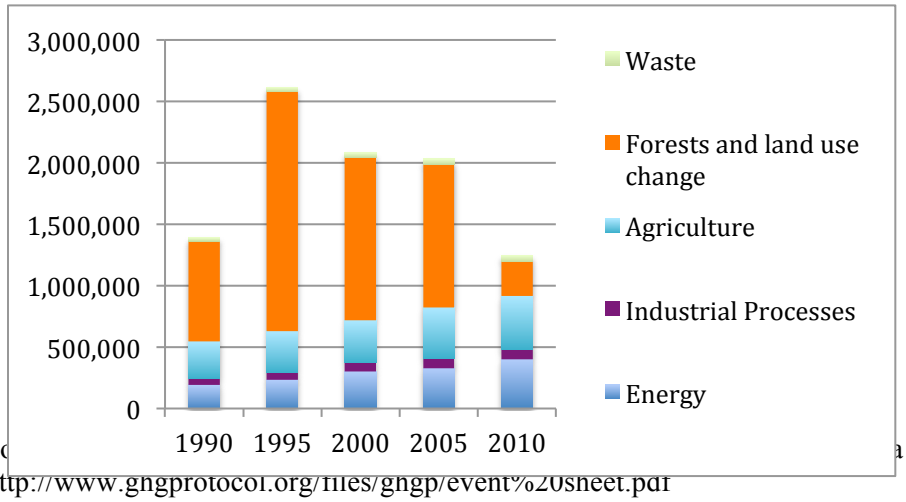
	Amazonia	Cerrado
PA (km^2)	593,438	60,712
Indigenous Lands (km^2)	1,028,643	96,416
Biome Area	4,199,000	2,040,040
% under protection	38.6	7.7

GHG Emissions

The fight against deforestation had a direct impact on Brazil's GHG emissions. According to the country's inventory, between 2005 and 2010, emissions were reduced by 39%. Land use changes and forestry alone were responsible for that decrease. In all other categories, there was an increase in emissions, including agriculture and cattle ranching, the main drivers of deforestation in Brazil (Chart 3). This means that even if Brazil keeps doing its good work in reducing deforestation, agricultural intensification will likely offset a fraction of those gains.

A more serious threat, however, is energy. It was the sector responsible for the highest growth of emissions during this period (21%). Within energy, transportation stands out as the main source of GHG (47%), due to Brazil's heavy reliance on road transportation. The country has serious difficulties to deal with this issue. The federal government has been subsidizing diesel oil consumption for decades, through tax breaks, which were also partially extended to gasoline in 2008, as a response to increases in international oil prices. At the same time, the Federal Government abandoned its ambitious ethanol program; even after former President Lula announced that the country would become the Saudi Arabia of ethanol.

Chart 3 – Brazilian sectorial GHG emissions 1990 – 2010, in Gg CO_2eq



Sc a no Brasil. Available in http://www.ghgprotocol.org/files/ghgp/event%20sheet.pdf

Civil Society Participation
For years, Brazil opposed the inclusion of forest conservation in the Kyoto Protocol, based on the principle of common but differentiated responsibilities. The Ministry of Foreign Affairs always regarded those issues as a matter of sovereignty, and as a key to the country's economic growth. Also, developing countries – Brazil included – and environmental NGOs feared that the inclusion of forest conservation could lead to a leakage of GHG emissions from developed to developing countries. However, as Brazil successfully engaged in reducing deforestation, it became clear that foreign and domestic environmental policies should be coherent. Moreover, in the late 2000s discussions on compensations for avoided deforestation (REDD) were gaining momentum, and created the expectation that the country could benefit from deforestation control. Governors of Amazonian states covered by extensive forests were the most enthusiastic domestic actors pressing the federal government to change its position.

Progress in REDD negotiations was in part a result of the efforts made by knowledge networks, in which Brazilian scientists and activists had prominent positions[4]. Part of that set of actors also participated in the creation of some of the environmental policies launched after 2003, including those that successfully reduced deforestation. Participation took place by means of a continuous dialogue between government and civil society. Also, scientists and activists came to occupy upper-echelon offices in the Ministry of Environment and related agencies. The expertise and previous experience of some of those officials helped turn the Ministry itself in a relevant player in the workings of the climate regime.

State-society relations have been souring since former Minister of the Environment Marina Silva left office, in 2008. She was responsible for opening new spaces of participation for NGOs and grassroots organizations. However, participation was increasingly off set by the Ministry's loss of power. Among other policies, the Federal Government approved the use and trade of GMOs and engaged in a controversial inter-basin water transfer in the Northeast. Other ministers publicly scolded the Brazilian environmental agency (IBAMA) for taking too long to grant environmental licenses for large-scale infrastructure projects. Former president Lula himself said that Brazil would not quit its plans to build a hydroelectric dam in the Amazon region on account of "a few little catfish". After Marina Silva's resignation, licensing became more expedited and, according to critics, less judicious from an environmental standpoint.

Forest Concessions and Forest Management
In 2006, the federal government passed the Public Forests Management Law (Law 11.284/2006), which regulates the use of public forests pertaining to the Union, states and municipalities. States and Municipalities were required to pass specific legislation if they wished to manage their public forests. The law considers three options for forest management: direct management by public entities; forests set aside for local communities; and forest concessions to private companies. This was considered a great opportunity to develop the forest sector in Amazonia, which was mostly illegal, or dependent on timber taken from legally deforested areas. The main obstacle to forest management then was land tenure. Even if logging companies had the means to purchase land, and many did, they would find it difficult to find areas large enough and with legal entitlement. Conflicting title claims are abundant in the region, and the federal government owns most of the land, so licensing public lands made sense at that time.

There are 32 national forests in the Amazon, covering over 14 million ha. So far, the government has only granted concession rights in four of them. Analysts say that concessions cover a total of 460,000 ha (3% of total) and have a potential production of approximately 306,000 m^3 per year, which is less than 2 percent of current demand [5]. This slow start of concessions is due to the complexity (legal, bureaucratic, and technical) of the system, and to a fair degree of resistance within and outside the government. In order to appease critics, and create a transparent and corruption-safe system, legislators created an institutional arrangement that includes three governmental agencies. That alone was a source of inefficiency and high transaction costs that hindered the system. Getting licenses for clear-cutting smaller forest plots is still cheaper and faster than investing in forest management. Also, unless law enforcement raises the costs of illegal logging, there will be little incentive for forest management in Amazonia.

Final Remarks
Brazil saw its prestige grow within international environmental regimes as a consequence of some sound environmental policies implemented during the 2000s. In the case of climate, it is remarkable that Brazil, a non-Annex 1 country in the UNFCCC made dramatic reductions in GHG emissions voluntarily. The country became a role model for climate negotiations: it was a big part of the problem, and all of sudden became a big part of the solution. Moreover, it abandoned

an old-fashioned discourse, but never preached that other developing countries should follow its example. On the contrary, the Brazilian government engaged in a more pragmatic discussion to create international funding to help other developing countries protect their forests.

The country still enjoys this prestige, but it is no longer delivering impressive results from its environmental politics. We have pointed out here that some of those policies had limitations from the onset. Others have lost political support or just became ineffective to stop or at least to counterbalance the externalities of the conservative model of economic growth promoted by the federal government. Chances are that the government is going to push this model even further, considering the investments already made in energy and agriculture and the increasing power of the rural caucus in Congress. In that case, the loss of international prestige will be the least of the worries for environmental activists and policy-makers.

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