LCS Scenarios for Brazil

In October 2010 the Brazilian Government presented the results of the second Brazilian GHG emissions inventory for the period from 1990 to 2005. Few months after, during COP16, the government published the Federal Decree 7,390 which regulates the Law 12,187 regarding the final figures of the voluntary goals for the amount of avoided GHG emissions in 2020.

The Brazilian GDP was approximately US$ 1,576.9 billion in 2009. Its GDP per capita was about US$ 8,234. Brazil's population was over 191 million inhabitants. The average population growth for the period 2000-2009 was of 1.31%. Concerning the energy sector, 47% of all energy consumed came from renewable sources. Sugar cane products represented the second major source of primary energy (18%), only behind oil and its byproducts (38%). Hydropower was the third more important source, accounting for 15% of all energy consumed. In that same year, hydropower accounted for more than 76% of all electricity generated. Thermal sources of electricity accounted only with 12% of the total. In 2010, the carbon content of the electricity in Brazil was only 0.0511 ton CO_2/MWh.

Brazil's GHG emissions reached 2,192 $MtCO_2eq$ in 2005, an increase of 58% compared to 1990. Table 1 summarizes the results for the years 1990, 1994, 2000 and 2005.

Table 1 – GHG EMISSIONS IN BRAZIL, 1990 - 2005

Emissions ($MtCO_2$ eq)	**1990**	**1994**	**2000**	**2005**	**Var % 90/05**	**Share (%) 1990**	**Share (%) 2005**
Land use change	813	883	1328	1329	63%	58.61%	60.63%
Agriculture/Husbandry	304	329	348	415	36%	21.92%	18.93%
Energy	191	217	301	329	72%	13.77%	15.01%
IPPU	51	57	71	78	53%	3.68%	3.56%
Waste	28	32	39	41	46%	2.02%	1.87%
TOTAL	**1387**	**1518**	**2087**	**2192**	**58%**	**100 %**	**100 %**

Source: MCT, 2010

The Decree no 7,390 is a step towards detailing the voluntary mitigation goals established by the government in Law no 12,187, but still leaves a lot of flexibility to the actual way of achieving these goals. The decree does not establish a full mitigation scenario with voluntary goals for each main source of emissions .

Only the energy sector has already established the amount of avoided GHG emissions in 2020, because the government considers the current 10-year energy plan as a mitigation scenario, as it includes a number of efforts to increase the role of renewables, nuclear and energy efficiency in the energy policy. For the other sectors, the decree refers to four other sectoral mitigation plans already elaborated:

- Plan of Action for Prevention and Control of Deforestation in the Amazon (PPCDAm): Reduction in 80% of the annual deforestation surface in the Amazon, compared to the historical average in the period 1996-2005;
- Plan of Action for Prevention and Control of Deforestation and Fires in the Savannahs (PPCerrado): Reduction in 40% of the annual deforestation surface in the savannahs, compared to the historical average in the period 1999-2008;

- Plan for Consolidation of a Low Carbon Emission Economy in Agriculture: ;

- Plan of Emission Reduction in the Steel sector: increase steel manufacturing using charcoal from planted forests and improve the efficiency of charcoal kilns.

Table 2 – BRAZIL'S GHG EMISSIONS AND MITIGATION ACTIONS IN 2020

Emissions ($MtCO_2eq$)	1990	2005	Var. 90-05	BAU2020	Var. 05-20	Avoided Emissions
LUC	813	1,329	63%	1,404	5.6%	
Amazon				948		
Savannahs				323		
Others				133		
Agriculture/Husbandry	304	415	36%	730	76%	
Energy	191	329	72%	868	164%	234
IP PU/Waste	79	119	51%	234	96%	
TOTAL	**1,387**	**2,192**	**58%**	**3,236**	**47%**	**1,168-1,259**

Source: MCT, 2010; Federal Decree n° 7390, 2010

Total emissions in 2020: from 47.6% growth in BAU to 5.6-8.9% decrease compared to 2005; from 133% to 44-50% increase compared with 1990. The Decree foresees the publication of annual estimates of emissions of GHG in Brazil for the purpose of monitoring compliance with the objectives of action plans for prevention and control of deforestation in the biomes and sectoral plans for mitigation and adaptation to climate change, starting in 2012.

Deadline of 15 December 2011 for the elaboration of additional sectoral mitigation plans for those sectors included in the 2009 law (*e.g.* Public urban transportation, Interstate transport of cargo and passengers, Chemical industry, Pulp and paper industry, Mining, etc.). These plans must include: emission reductions in 2020, with milestones for every three-year period; mitigation actions to be implemented; establishment of indicators for monitoring of performance and assessment of effectiveness; proposal of tools and incentives to be adopted in the implementation of the plans; sectoral studies of cost estimates and implications for competitiveness.

Brazil's CO_2 emission per capita is low. Even in the BAU scenario it is projected to continue low. Besides that, after a peak observed in 2004, deforestation levels are consistently reducing over the last 5 years. However, the share of fossil fuels in the energy matrix is growing. Thus, emissions due to the use of fossil fuels in the country will be 75% higher in the mitigation scenario compared to 2005 emissions. It will be required the implementation of public policy tools capable of stimulating the substitution of fossil fuels for the use of renewable energy sources.