

# Agriculture and Cattle Raising in the Context of a Low Carbon Economy

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**In the agricultural sector** it is undeniable that greenhouse gas (GHG) emissions arise both from the consumption of fossil fuels and the biogenic process, including anaerobic decomposition processes. Agriculture can also contribute to soil degradation and deforestation of natural ecosystems when poorly managed. As such, GHG emissions from this sector are not only associated with the energy-intensive consumption of fossil fuels but are also intrinsically related to the nature of practices in the sector.

The *2nd Brazilian Inventory of Greenhouse Gases*, published in 2010 with data up to 2005, shows that the agricultural sector has been the second largest sector in terms of GHG emissions in Brazil for over 16 years (see Figure). During this period, emissions from the agricultural sector were at their highest in relative terms in 1991, representing 24.75 per cent of total GHG emissions.

In terms of net emissions, the agricultural sector has systematically increased its GHG emissions over the past few years. Given the strong trend of emissions reductions in the forestry sector, it is natural that the relative importance of every other sector, including agriculture, may increase over the next few years.

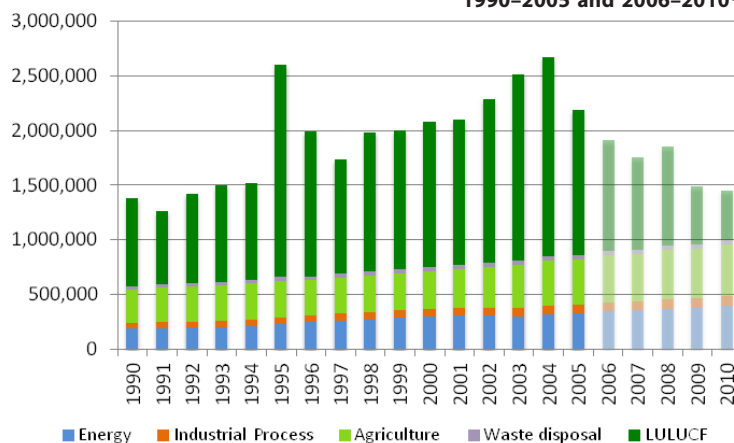
Comparing the deforestation trend (data provided by INPE up to 2010) to an extrapolation of sectoral increases in GHG emissions compatible with their historical trends would result in a shift by 2010, making the agricultural sector the largest in terms of GHG emissions.

The level of GHG emissions from the agricultural sector has not been constant over the past decade, with observed annual rates below 10,000 tons of CO<sub>2</sub>eq between 1990 and 1999. Between 2000 and 2003 there was a significant increase in GHG emissions, reaching a peak of 21,994 tons of CO<sub>2</sub>eq in 2003. Between 2003 and 2005, a reversal was observed in the pressure to increase emissions in the sector, reducing emissions by 2005 (6,559 tons of CO<sub>2</sub>eq) to a level observed during the 1990s.

The strategic relevance of the agricultural sector for climate change lies in the fact that there is an unquestionable need for expanded production to meet current and future demands in food supply. It is also understood that this expansion should not contribute negatively by increasing current levels of emissions, and nor should it be achieved through processes that result in the loss of native vegetation or compromise environmental sustainability.

Thus, there is no simple solution, and a joint effort on several fronts is required, combining the increase in sustainable production of food and energy with concerns about climate change. For the agricultural sector, getting involved in the transition process to a new global economic model

**Brazilian Net Emissions in Carbon Dioxide Equivalent (CO<sub>2</sub>eq) 1990–2005 and 2006–2010\***



Source: Ministério da Ciência, Tecnologia e Inovação (MCTI – Brazilian Ministry of Science Technology and Innovation). *2nd Brazilian Inventory of Greenhouse Gases, 2010*.

Note: \*Extrapolation of sectoral emissions compared to land use coverage data provided by Instituto Nacional de Pesquisas Espaciais (INPE – National Institute for Space Research), 2010.

focused on productivity and sustainability is not optional but, rather, a necessary condition. Investments must be secured, and technologies that contribute to systemically increasing the resilience of the sector, improving crop resistance to temperature and hydric stress, must be developed and disseminated.

New opportunities will arise in the transition process from an energy-intensive economy to an environmentally aware economy focused on efficiency solutions. It is feasible that the quantification of the environmental liability resulting from agricultural practices will, in a few years, be consolidated into international trade through the concept of 'carbon footprint'—i.e. the impact that a particular activity generates in terms of contributions to global warming. Thus, the higher the carbon footprint of a particular activity, the greater the climate liability it generates.

## References:

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Mozzer, G. B. (2011). 'Agriculture and cattle raising in the context of a low carbon economy' in R. S. Motta, J. Hargrave, G. Luedemann and M. B. S. Gutierrez, (eds), *Climate Change in Brazil: Economic, Social and Regulatory Aspects*. Brasília, IPEA: 107–122.

Publication: *Climate Change in Brazil: Economic, Social and Regulatory Aspects*, available at: <[http://www.ipea.gov.br/portal/images/stories/PDFs/livros/livros/livro\\_climatechange\\_ingles.pdf](http://www.ipea.gov.br/portal/images/stories/PDFs/livros/livros/livro_climatechange_ingles.pdf)>.