

Training Workshop on the National System for the
Greenhouse Gas Inventory

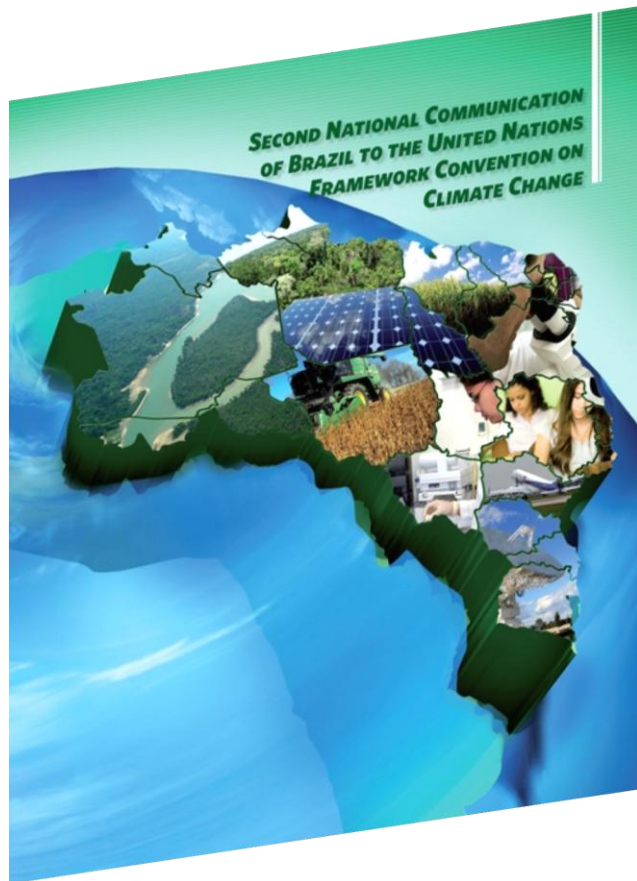
Institutional Arrangements for the Preparation of
the Brazilian National Communication

Rome, 27 January 2011



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Ministry of Science and Technology
General Coordination on Global Climate Change

Brazil has officially submitted its Second National Communication to the UNFCCC at COP-16 (November 29, 2010)



Available at: www.mct.gov.br/clima
In Portuguese, English and Spanish

Volume 1:

National Circunstances
Inventory

Volume 2:

Steps Taken to Implement the UNFCCC
Other Relevant Information
Constraints and Gaps

Second National Communication

- Inventory of Anthropogenic Emissions by Sources and Removals by Sinks of GHG not Controlled by the Montreal Protocol
 - Initial National Communication
 - Guidelines required year (1990 or 1994)
 - Inventory produced (yearly from 1990 to 1994)
 - Second National Communication
 - Guidelines required year (2000)
 - Inventory produced (yearly from 1990 to 2005)

Second National Communication

- Steps taken or envisaged in the country
 - Measures related to climate change mitigation
 - Measures to facilitate adequate adaptation to climate change
- Other information considered relevant to the achievement of the objective of the Convention
 - Transfer of technologies
 - Research and systematic observation
 - Education, training and public awareness
 - National and regional capacity building
 - Information and networking

General Institutional Arrangements

- The Ministry of Science and Technology has the responsibility of coordinating the implementation of the commitments of Brazil as a Party to the UNFCCC
- It is also the technical focal point for Climate Change in Brazil
- The General Coordination on Climate Change, inside the Ministry coordinates the elaboration of the Nacional Communications

General Institutional Arrangements

- Financing
 - In accordance with Article 12 of the Convention the financing of Non-Annex I National Communications is a commitment of Annex II Parties (at the full agreed costs)
 - For each a National Communication a project is established under GEF
- Co-financing
 - Ministry of Science and Technology
 - Ministry of Mines and Energy
 - Other institutions

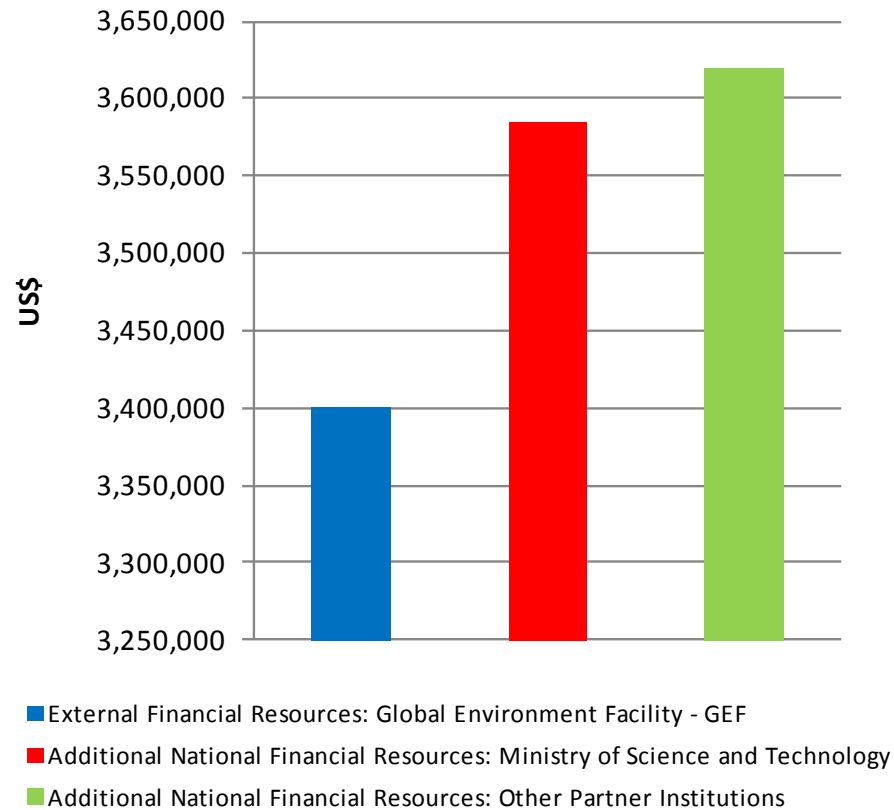
Constraints and gaps

Exchange rate



Constraints and gaps

Final budget



General Institutional Arrangements

- Elaboration
 - Implementing institutions
 - Government (ministries and agencies)
 - Public and Private companies
 - Universities and Research Institutes
 - Industry associations
 - Non-governmental organizations
 - Consultants
 - Under contract or in kind
 - Initial National Communication (2004)
 - 150 institutions, 700 experts
 - Second National Communication (2010)
 - 600 institutions, 1200 experts

General Institutional Arrangements

- Quality Control
 - Two coordinating offices
 - Inventory
 - Other parts of the NC
 - Tasks
 - Terms of reference
 - Technical support
 - Quality control procedures
 - Analysis of products
 - Final compilation
- Quality Assurance
 - Public consultation
 - Independent expert review (usually in kind)

The National Inventory: Organization

- **General Coordination: CGMC/MCT**
 - Methodological support
 - Quality control
 - In house complementing studies for some sub-categories
 - Data management and archiving
- **Sectoral Coordinating Entities**
 - Emissions and removals calculation
 - Transparent background reports (18)
- **Quality Assurance Procedures**
 - Review by experts not involved in inventory development
 - Public consultation through MCT's website

The National Inventory: Coordinating Institutions



Energy



E&E and MME



Agriculture



EMBRAPA



Land Use



FUNCATE / INPE



Waste



CETESB



Industrial



**ABIQUIM, ABAL
SNIC, IABr, etc.**

processes



ANEEL (SF₆)

The National Inventory: Guidelines

- **UNFCCC Guidelines: 17/CP.8**
 - 2000 -> 1990 to 2005
 - CO₂e emissions not presented
- **IPPC Guidelines**
 - 1996 Revised Guidelines
 - Good Practice Guidance 2000
 - Good Practice Guidance LULUCF 2003
 - Information from 2006 Guidelines

Guidelines for Inventories: **Principles**

Comparability (common methods)

Consistency (time series)

Completeness (all gases and sectors)

Transparency (methods and data)

Accuracy

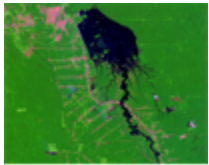
Quality Control / Quality Assurance

Inventory of Anthropogenic emissions by sources and removals by sinks of GHG

- Specifically for LULUCF Sector
 - FUNCATE /INPE (National Institute for Space Research)
- Contributions
 - Ministry of Environment/IBAMA
 - IBGE (National Statistics Institute)
 - INPA (National Amazon Research Institute)
 - USP/CENA (University of São Paulo)
 - EMBRAPA (Ministry of Agriculture)
 - BRACELPA (Pulp and Paper Association)

LULUCF Sector

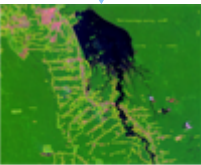
- IPCC Good Practice for LULUCF (2003)
 - Relevance of the LULUCF sector for Brazil (75% of the total CO₂ net emissions in 1994 (Initial inventory))
 - Approach 3 for land representation (spatially explicit land use and land-use change)
 - Forest land (primary forest, secondary forests, reforestation, selective logging)
 - Grassland (native grassland, pasture)
 - Cropland (annual and perennial crops)
 - Wetlands (natural and reservoirs)
 - Settlements
 - Other land (dunes, mining)



IMAGES



GEOREFERENCING



VISUAL IMAGE PROCESSING



429 images
years: 1994, 2002

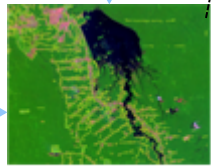




IMAGES



GEOREFERENCING



VISUAL IMAGE
PROCESSING

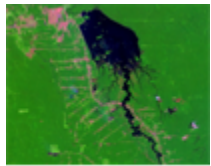


LULUCF Sector

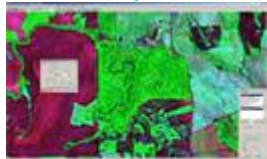
- Transition matrices between inventory times generated for each biome and for the national territory, identifying
 - Areas remaining under a same land category
 - Areas converted to other land-use categories
- Need additional information for estimating carbon stock changes for every pool
 - living biomass (above and below ground)
 - dead organic matter
 - soil carbon

LULUCF Sector

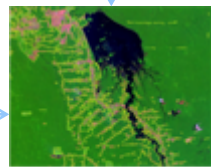
- Integration of several information layers
 - Land use maps for 1994 and 2002
 - based on analysis of satellite imagery of adequate spatial resolution (Landsat, CBERS – 25 – 30 metres spatial resolution) and other auxiliary data
 - Biome
 - Municipality boundaries
 - Vegetation Map (original vegetation cover)
 - Soil Map



IMAGES



GEOREFERENCING



VISUAL IMAGE PROCESSING



BIOME MAP



CARBON VEGETATION



SOIL MAP



1994



2002

	2002														
1994	FNM	FM	FSec	Ref	CS	GNM	GM	GSec	Ap	Ac	S	A	Res	O	NO
FNM															
FM															
FSec															
Ref															
CS															
GNM															
GM															
GSec															
Ap															
Ac															
S															
A															
Res															
O															
NO															



CARBON SOIL MAP



ORIGINAL VEGETATION

LULUCF Sector

- Entire territory stratified in 7.5 million polygons
- Carbon stocks and other parameters
 - values dependent of land use, land-use change, biome, vegetation, biomass carbon pool, soil
 - Mix of tiers, from use of more complex modeling approaches to IPCC default values
- Emission estimates can be provided
 - per biome
 - per municipality
 - per land-use category

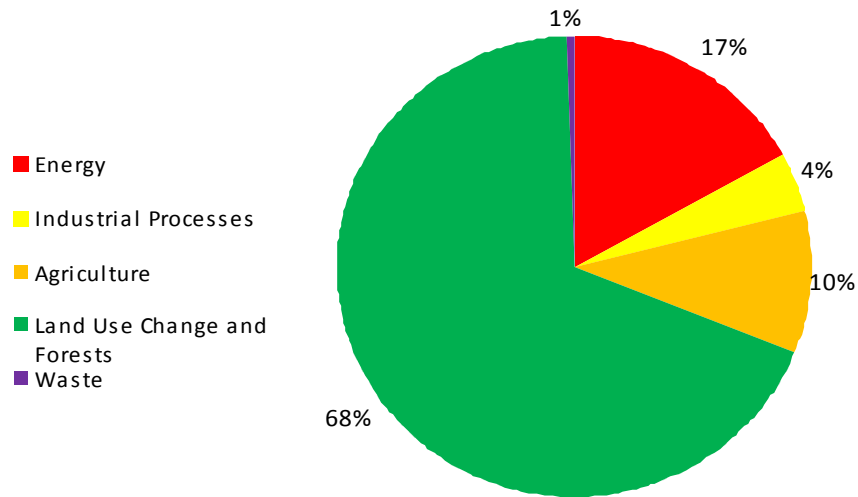
Emissions in CO₂e using different metrics

- Brazil presents its emissions and removals in mass units of each gas in a transparent manner
- The presentation of total net emissions in CO₂e depends on the choice of conversion metric
- The usual metric (GWP-100) does not correctly represents the contribution to climate change of the different gases as it overestimates the contribution of short-lived gases, like methane
- Brazil included in its Second National Communication the results using both the GWP-100 and GTP-100 showing the difference between the results

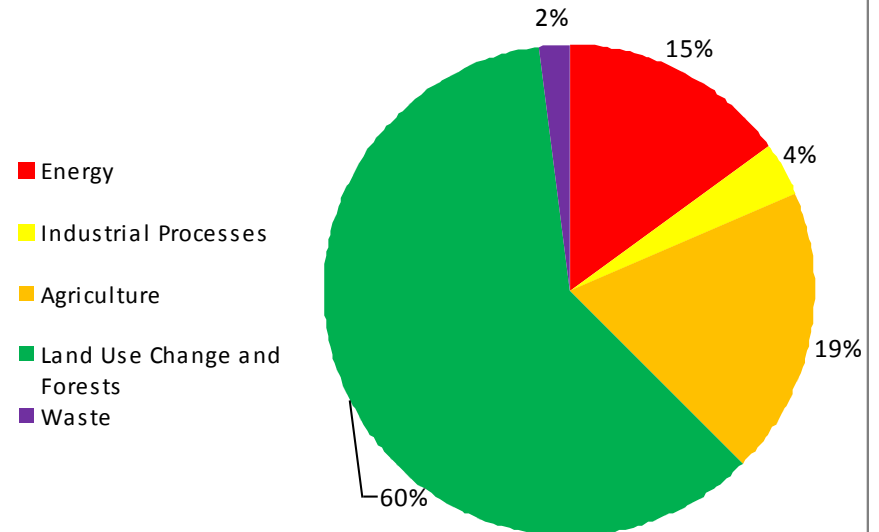
Net emissions in CO₂e with different metrics

Share by sector

CO₂e Emissions in 2005
GTP

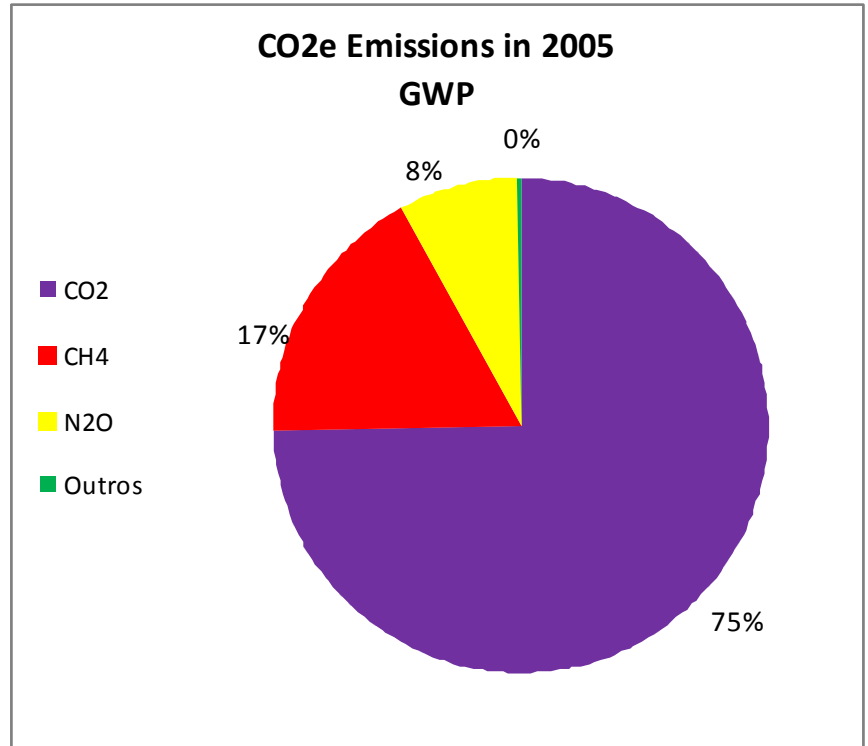
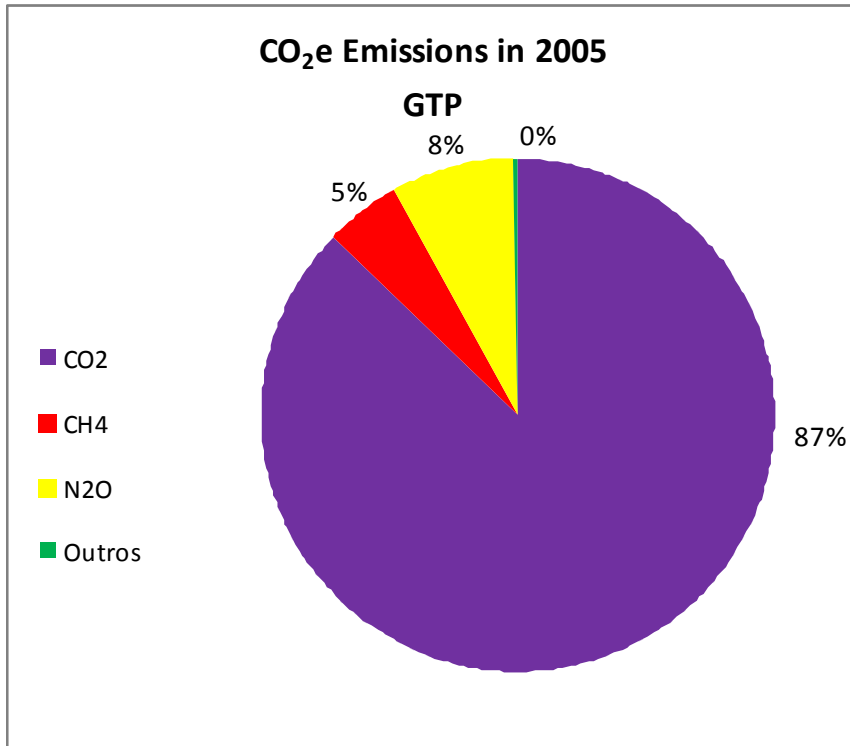


CO₂e Emissions in 2005
GWP



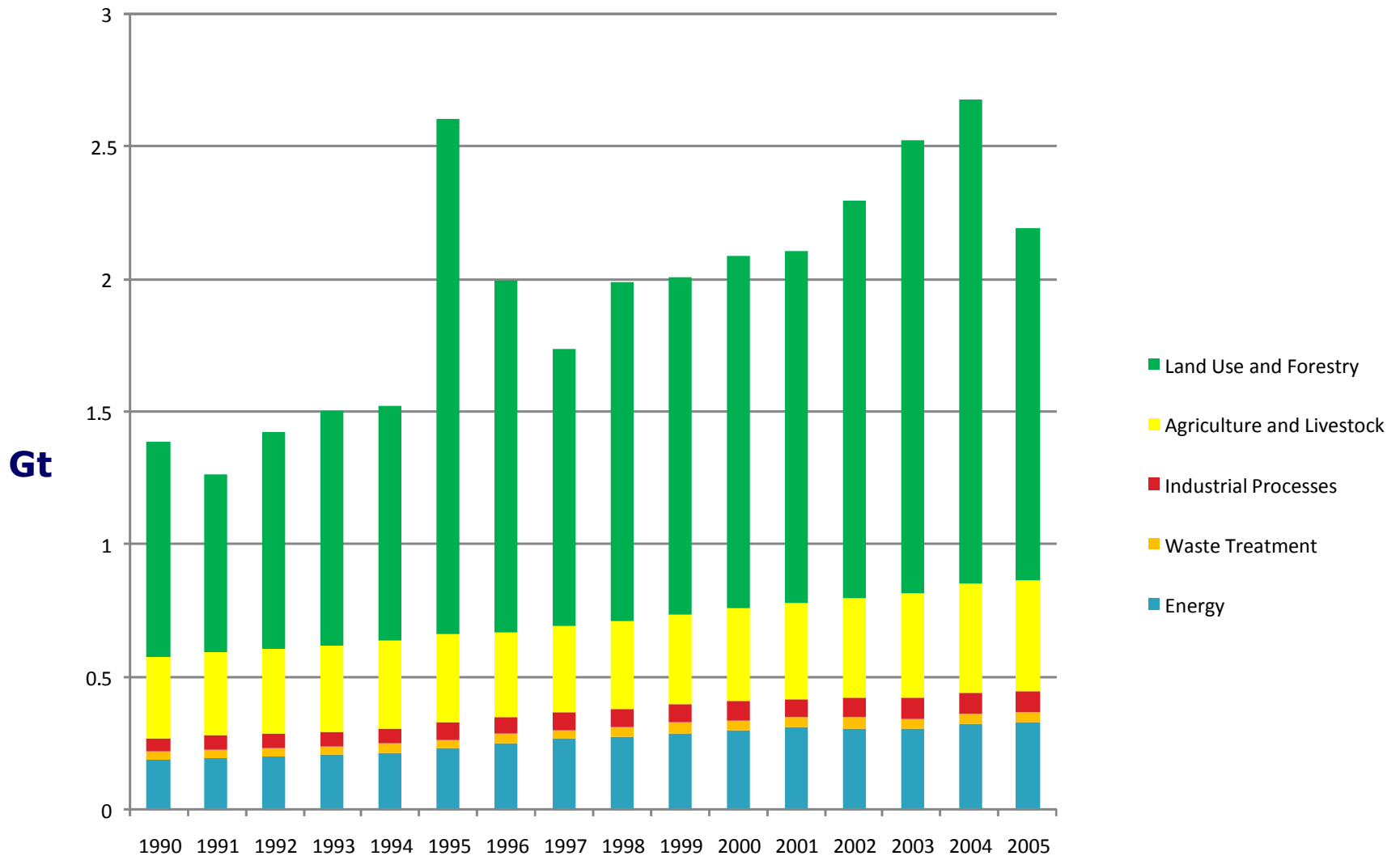
Net emissions in CO₂e using different metrics

Share by gas



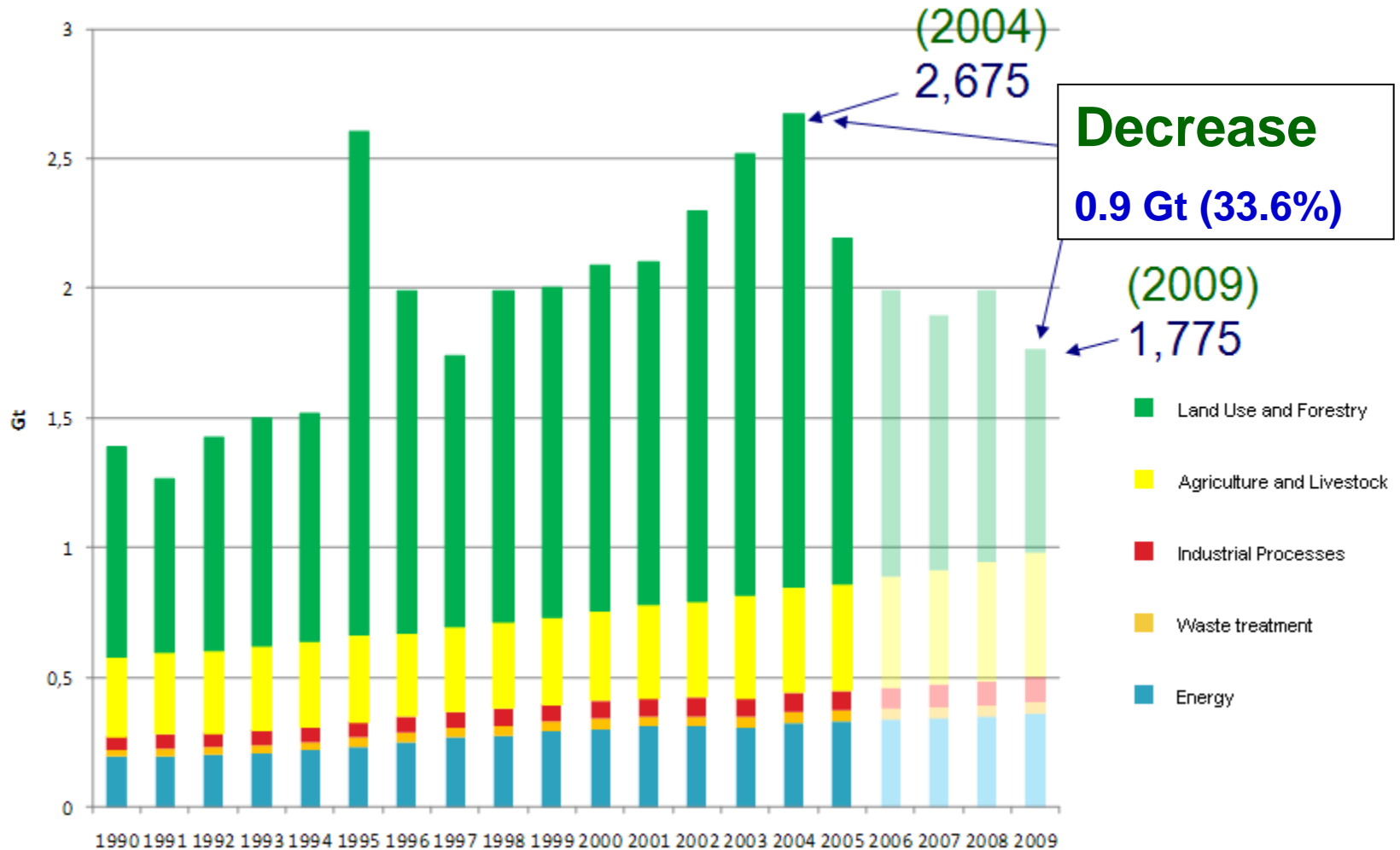
GHG emissions - evolution

Net emissions, in CO₂e



Not part of the 2nd National Communication

Net emissions, in CO₂e – projection for 2006-2009



The screenshot shows a Microsoft Internet Explorer browser window. The address bar contains the URL <http://www.mct.gov.br/index.php/content/view/3881.html>. The browser's menu bar includes 'Arquivo', 'Editar', 'Exibir', 'Favoritos', 'Ferramentas', and 'Ajuda'. The toolbar contains various icons for navigation and utility. The main content area displays the website for the 'Ministério da Ciência e Tecnologia'. The page header includes navigation links: 'O MCT', 'INDICADORES', 'LEGISLAÇÃO', 'FONTES DE FINANCIAMENTO', 'UNIDADES DE PESQUISA', and 'OUVIDORIA'. A search bar is present with the text 'BU SCA'. The main section is titled 'MUDANÇAS CLIMÁTICAS' and features a large image of the Brazilian flag. Below this, there are two columns of content. The left column, under the heading 'Seções', lists 'Comissão Interministerial' and 'Mecanismo de Desenvolvimento Limpo'. The right column, under 'Destques', lists several key documents and reports, including 'Contribuição do Brasil para Evitar a Mudança do Clima - White Paper Ano 2007' and 'Painel Intergovernamental sobre Mudança do Clima - Mudança do Clima 2007'. A right-hand sidebar contains a 'Áreas de Atuação' menu with various climate-related topics. The browser's status bar at the bottom shows 'Concluído' and the system tray includes icons for 'Iniciar', 'Gmail', 'Energy-Rel...', 'COP 10', 'orçamento...', 'Ministério...', 'Center For...', 'Apresenta...', and 'apresenta...', along with the time '19:09'.

Ministério da Ciência e Tecnologia

O MCT INDICADORES LEGISLAÇÃO FONTES DE FINANCIAMENTO UNIDADES DE PESQUISA OUVIDORIA

VERSÃO ACESSÍVEL

ORDEM E BISSO

BU SCA

MUDANÇAS CLIMÁTICAS

Seções

Comissão Interministerial

- Projetos submetidos à Comissão Interministerial no âmbito do Mecanismo de Desenvolvimento Limpo
- Decreto de 7 de julho de 1999, alterado pelo Decreto de 10 de janeiro de 2006
- Resoluções da Comissão
- Circular do Banco Central nº 3291 de 08.09.2005

Mecanismo de Desenvolvimento Limpo

- Procedimentos para a submissão de projetos do MDL à Comissão Interministerial de Mudança Global do Clima
- Formulários para a elaboração do Documento de Concepção do Projeto do MDL (versão mais atual no site do Conselho Executivo do MDL)
- Metodologias de linha de base e...

Destques

- **Contribuição do Brasil para Evitar a Mudança do Clima - White Paper Ano 2007** *Veja mais...*
- **Painel Intergovernamental sobre Mudança do Clima - Mudança do Clima 2007 (Quarto Relatório de Avaliação do IPCC)**
 - [Sumário para os Formuladores de Políticas do Relatório Síntese \(versão preliminar em inglês\)](#)
 - [Sumário para os Formuladores de Políticas do Grupo I: a Base das Ciências Físicas](#)
 - [Sumário para os Formuladores de Políticas do Grupo II: Impactos da Mudança do Clima, Adaptação e Vulnerabilidade](#)
 - [Sumário para os Formuladores de Políticas do Grupo III: Mitigação da Mudança do Clima \(versão em revisão\)](#)
- **Status atual das atividades de projeto do**

Áreas de Atuação

- Mudanças Climáticas
 - ▶ Ciência da Mudança do Clima
 - ▶ Convenção-Quadro das Nações Unidas sobre Mudança do Clima
 - ▶ O Brasil e a Convenção
 - ▶ Comunicação Nacional
 - ▶ Negociações
 - ▶ Protocolo de Quioto
 - ▶ Mecanismo de Desenvolvimento Limpo (MDL)
 - ▶ Mudanças Climáticas - PPA
 - ▶ Comissão Interministerial de Mudança Global do Clima - CIMGC
 - ▶ Fórum de Liderança em Sequestro de Carbono (CSLF)
 - ▶ Fórum Brasileiro de Mudanças Climáticas
 - ▶ Metano para Mercados
 - ▶ Iniciativas das Maiores Economias