



Centro Clima
CENTRO DE ESTUDOS INTEGRADOS SOBRE
MEIO AMBIENTE E MUDANÇAS CLIMÁTICAS

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Residential and Transportation scenario for LCS study Brazil Case Report of last year's activity

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Overall assumptions in 2007

- Focus on ESS model utilization - rather than 'polishing up' data
- Simple and basic settings
 - Little knowledge of model
 - Poor data on residential and transport (house hold appliances passenger-km)
- Main drivers considered for mitigation
 - Efficiency
 - Biomass and Solar energy
 - Transportation modal shift from individual to mass

Key information - 2007

	2000	2006
Population, total	173.9 million	188.7 million
Population growth (annual %)	1.5	1.2
GNI per capita, Atlas method (current US\$)	3,870.0	4,730.0
GDP (current US\$)	644.5 billion	1.1 trillion
GDP growth (annual %)	4.3	3.7
Inflation, GDP deflator (annual %)	6.2	4.3
Agriculture, value added (% of GDP)	5.6	5.1
Industry, value added (% of GDP)	27.7	30.9
Services, etc., value added (% of GDP)	66.7	64.0

Source: World Development Indicators database, April 2007

Key issues

Economic Data

- skewed income distribution – Getting better
- informal economy – Getting better

Specificities of National Circumstances

- energy resources endowment: relevance of hydropower (250,000 MW, only 20% tapped) and of biomass (30% of total energy supply in 2004)
- relevance of emissions from land-use change : deforestation is the most important source in the short term

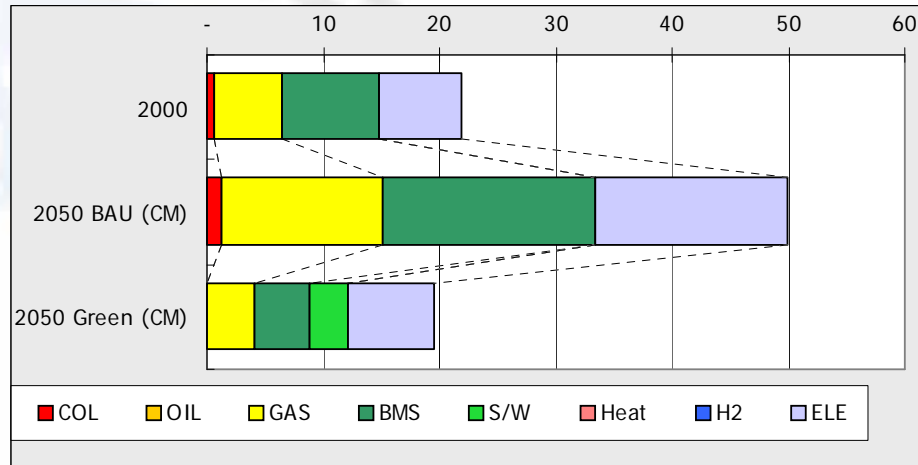
Agricultural land availability:

- Land used by agriculture sector: 50 million ha;
- Land used by sugar cane crops: 5 million ha;
- Estimated land for ethanol production: 2.5 million ha;
- Total Brazilian agricultural land: 140 million ha ;
- Land still available for agriculture: 90 million ha. (not considering the amazon region)

Key Residential parameters used

- 118% increase in **number of households** – demographic drive -> choice to present BAU scenario
- 10 to 20% **hold rate** increase in main services
- 10 to 25% **service loss** decrease in main services
- Average 2x **performance increase** in energy efficiency
- Shift to biomass and solar

Key Residential Results

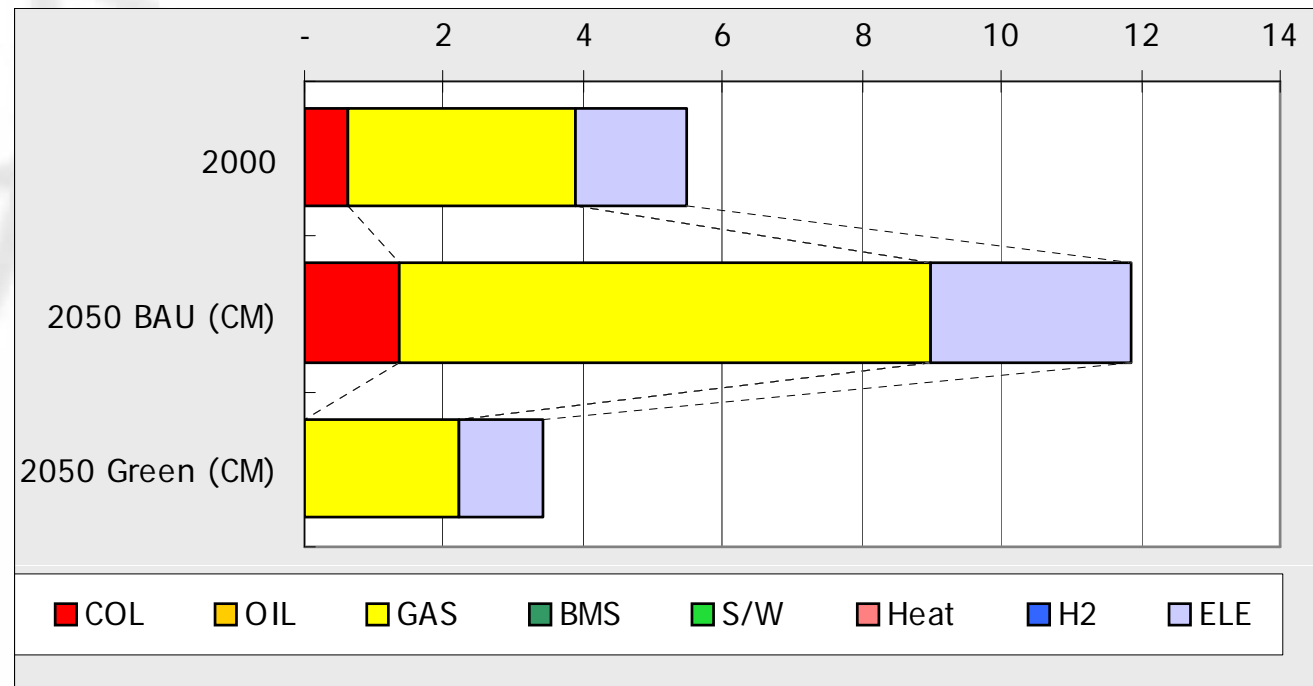


Total Energy consumption reduction

- 61% from BAU
- 11% from base year

Total CO2 emission reduction

- 71% from BAU
- 38% from base year



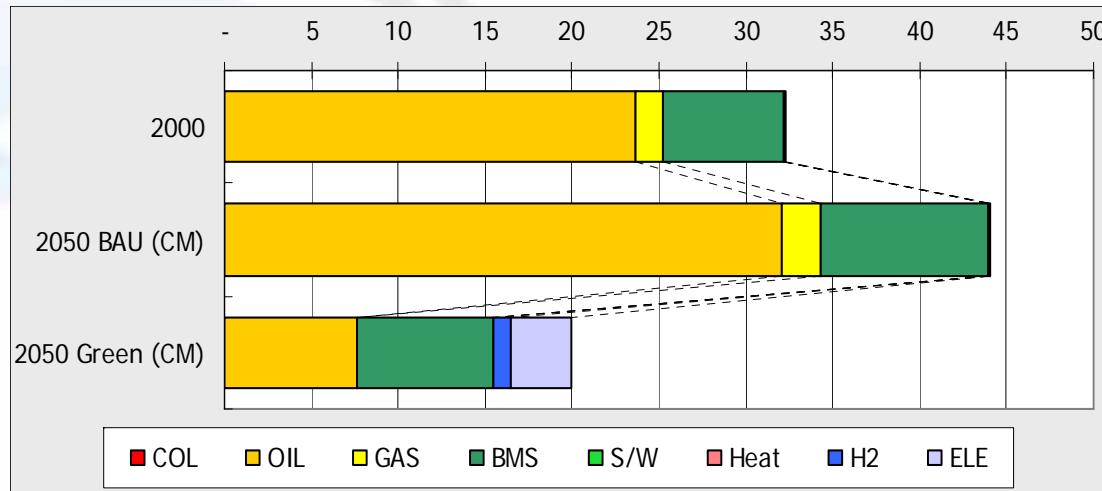
Key Passenger Transportation parameters used

- **8% trip generation** reduction
- **37% increase in number of trips** – demographic drive -> choice to present BAU scenario
- **Modal shift from individual to mass transportation**

Scenario	Share %				
	Car	Bus	Railway	Maritime	Aviation
BAU	40,4%	38,6%	0,9%	0,1%	1,2%
Green	20,0%	41,0%	10,0%	5,0%	5,0%

- **Average 2x performance increase** in energy efficiency
- **Shift to biomass, electric and little H2**

Key Passenger Transportation Results

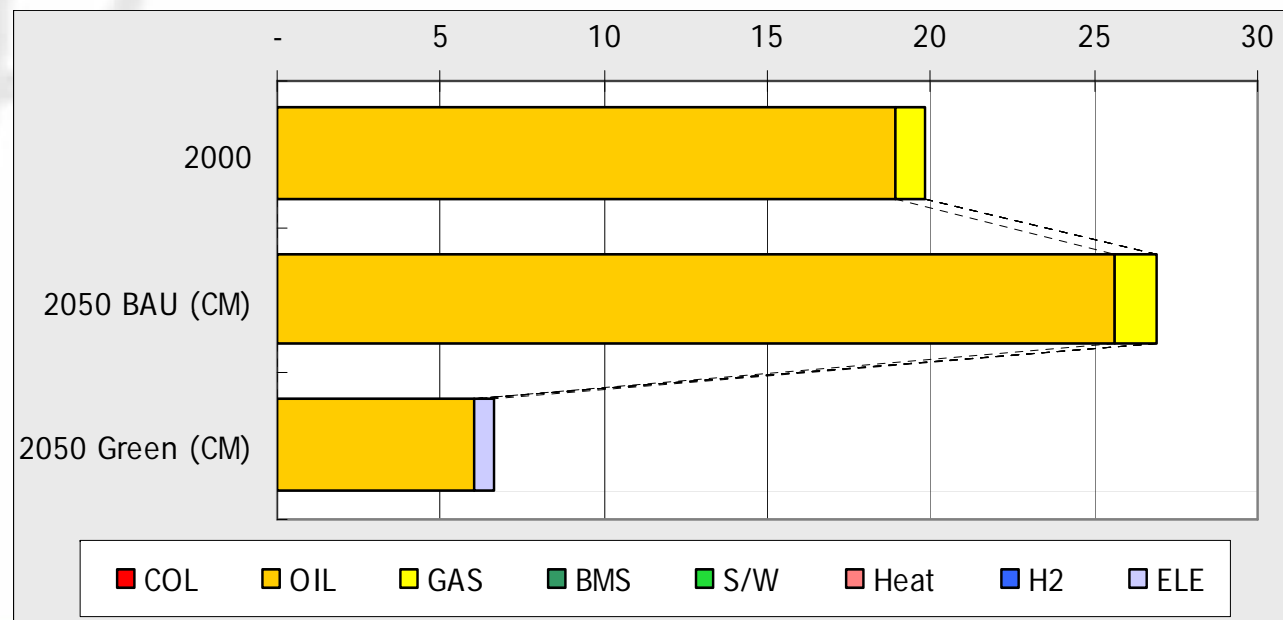


Total Energy consumption reduction

- 55% from BAU
- 38% from base year

Total CO2 emission reduction

- 75% from BAU
- 67% from base year



Interesting LCS Activities from last year

Brasil:

- Flex Cars sales increase – reaching 90% of new sales
- Big increase in ethanol production – 30% increase from 2006 to 2007
- Light vehicles labeling program – starts next month

Other Initiatives:

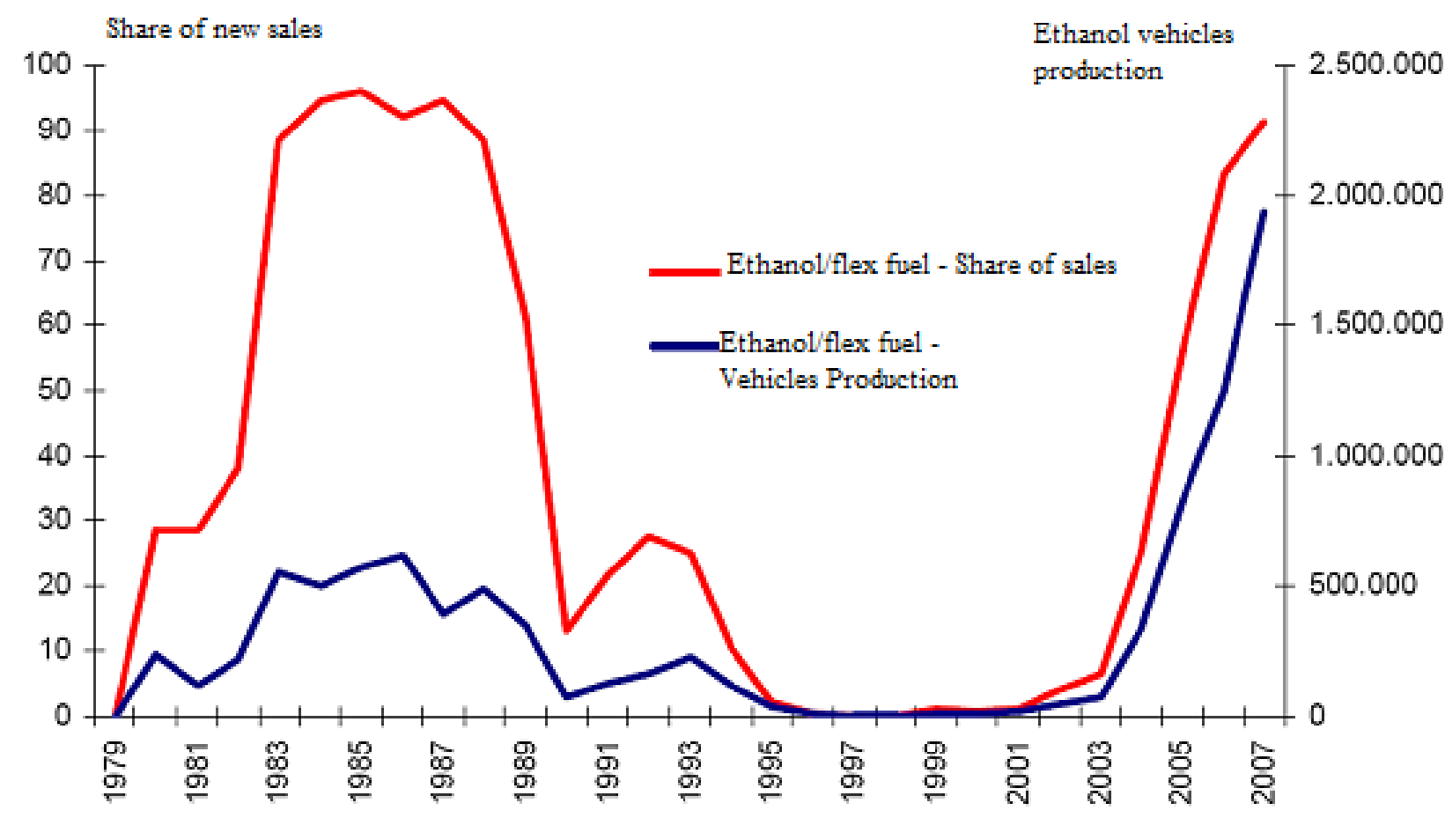
Minas Gerais State Opportunities – State inventory – Centro Clima, 2008 (UFRJ)

- Power generation using sugar cane bagasse
- Production of renewable charcoal - Iron and Steel industries.

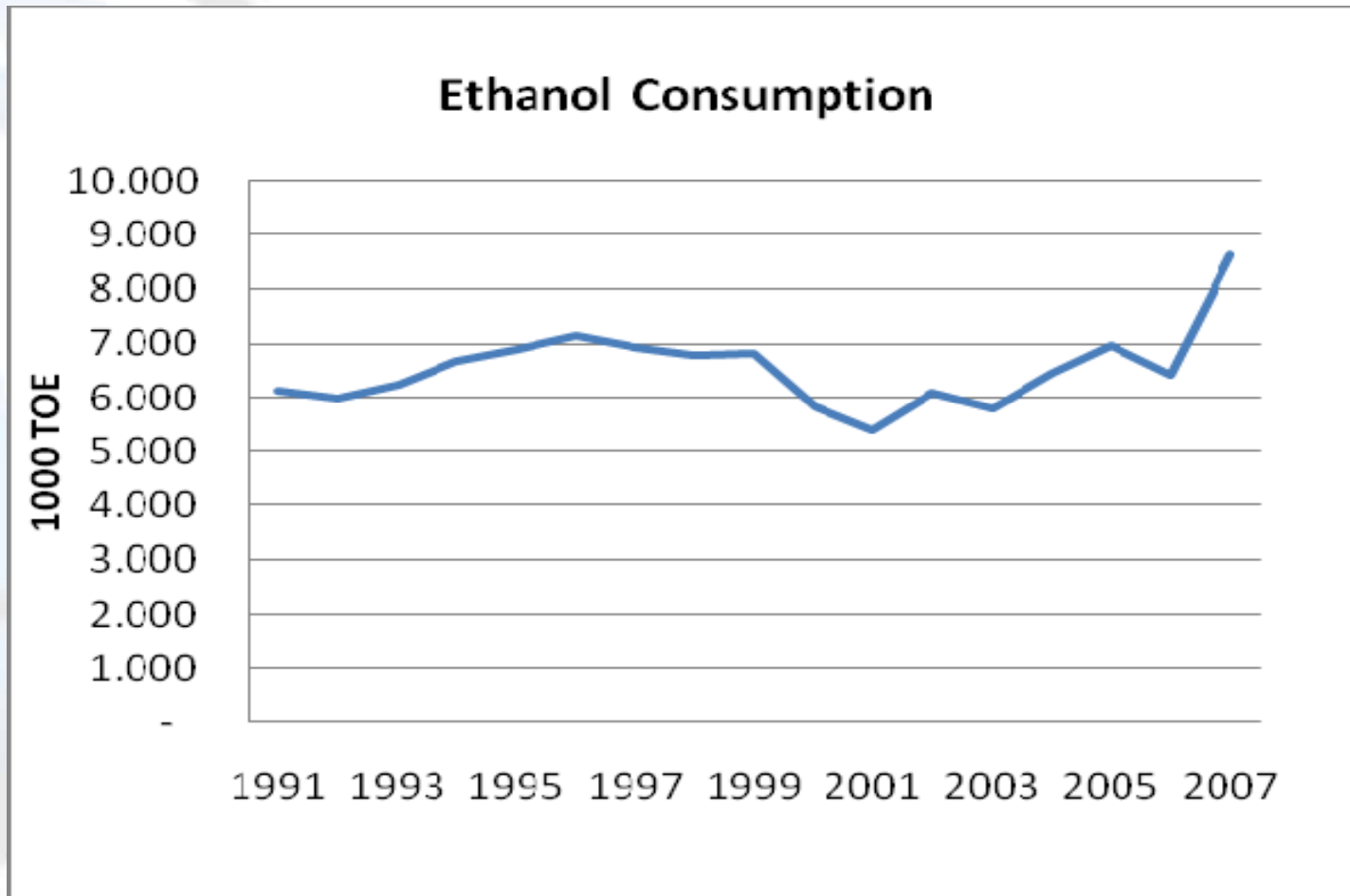
Rio de Janeiro State:

- Green buildings (3 floor +): neutralization of emissions during construction
- New fossil fuel power plants – compensation (renewables + efficiency):
 - Coal – 4% of installed power in renewable energy, and 1% in energy efficiency
 - Fuel oil – 4% of installed power in renewable energy, and 1% in energy efficiency
 - Natural gas – 2% of installed power in renewable energy, and 1% in energy efficiency

Interesting LCS Activities from last year



Interesting LCS Activities from last year



Activities for this year's report

- Check if there is new data available to update model;
- Check goals for energy efficiency in the National Energy Plan 2030;
- Try to implement new initiatives in Counter Measure scenario;
- Assess other important trends and put them in CM scenario.

Discussion Points

- Uncertainties;
- New technologies penetration: Hybrid or electric cars; solar energy, etc: more expensive technologies;
- Developing Countries:

How to reduce emissions while services are increasing quickly?