4th International Conference on SF₆ and the Environment

International Climate Protection Policies and SF₆ Panel Discussion

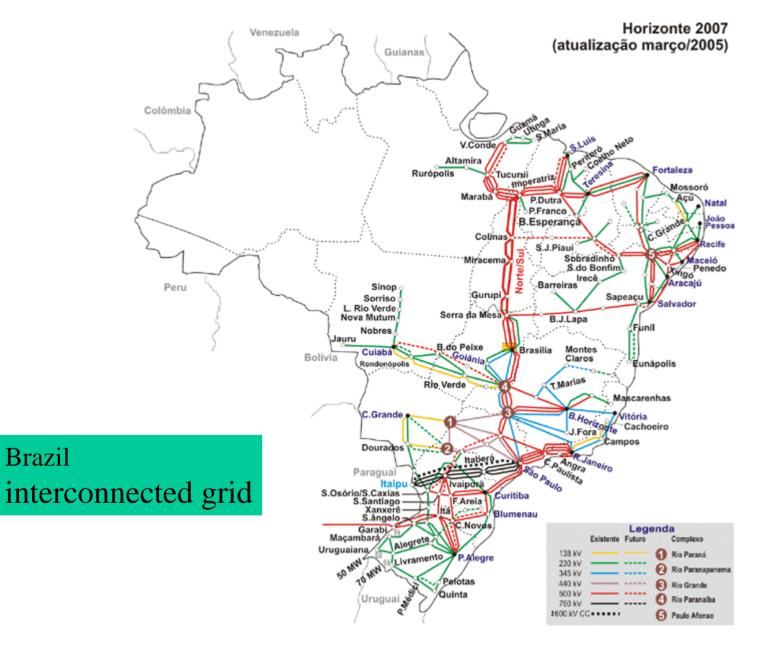
Newton Paciornik Ministry of Science and Technology

BRAZIL

San Antonio, Texas November 29, 2006

SF₆ in Brazil

- No SF₆ production
- No identified use in Electronic Industry
- No identified use in Magnesium Industry
- Used in Electric Power Systems
 - breakers
 - substations



Source: ONS

Brazilian Transmission System

Transmission lines (km)

	750kV	600kV	500kV	440kV	345kV	230kV	138kV	88/69kV
2005	2698	1612	27023	6785	8834	35140	61333	50861
2006/2015	5394	4900	19783	8	839	10203	10947	11808
2015	8092	6512	46806	6793	9673	45343	72280	62669

Source: EPE

Substations (MVA)

	750kV	500kV	440kV	345kV	230kV	138kV	88/69kV
2005	21000	63053	15252	27288	45164	44267	42357
2006/2015	16350	35552	6984	8466	21733	10604	8686
2015	37350	98605	22236	35754	66897	54871	51043

Source: EPE

SF₆ Information

- No regulation to keep and report information on SF_6
- Initial National Communication to the UNFCCC
 - Inventory of Anthropogenic Emissions and Removals of Greenhouse gases (1990-1994)
 - data based on survey study (Cigré/Eletrobrás)
 - Quantity of SF_6 stored in equipment (1991-1993): 207 553 kg
 - Leakage: 1800 kg/year

SF₆ Information

• Other data (SF_6 demand):

Year	Demand		
	(tonnes)		
1996	16.2		
1997	15.4		
1998	39.8		
1999	17.8		
2000	18.5		

SF₆ Information

- Plans for data collection
 - Second National Communication to the UNFCCC
 - GHG Inventory (1990-2000)
 - Independent survey study (cost X relevance)
 - Coordination with the Electric Energy National Agency (ANEEL)
 - Mandatory reporting?
 - Periodic survey?

SF₆ emission mitigation

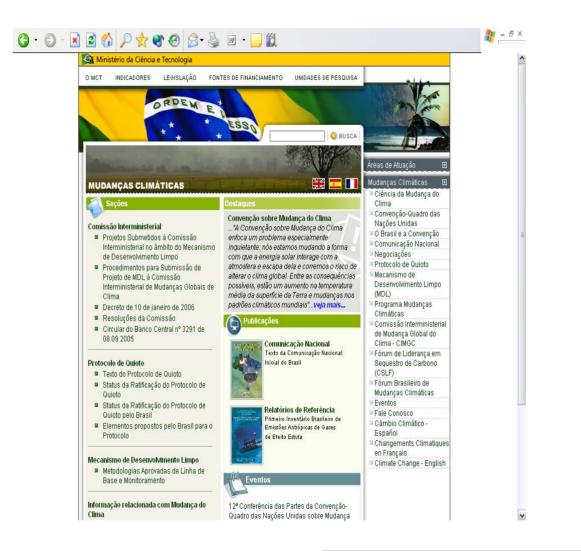
- Brazil, as developing country, has no GHG emission limitation commitment under the UNFCCC and under the Kyoto Protocol
- No government policy or program for reduction of SF₆ emissions

SF₆ emission mitigation

- Electrical companies environmental policies include monitoring and improvement of maintenance procedures
 - One utility claims to have avoided emissions of 360 kg SF_6 in 2005 through new maintenance equipment
- Clean development mechanism (CDM) of the Kyoto Protocol
 - Has shown to be an efficient way to reduce emissions in developing countries
 - good examples of abatement projects in industry (adipic acid, nitric acid)
 - One methodology already approved by the Executive Board of CDM
 - recycling and or reduction of SF_6 leaks

Conclusion

- Not an important source of GHG in 1994
 - May became relevant
 - new substations
 - equipment replacement
- Need to put in place procedures to collect better data
- Need to enhance mechanisms to reduce emissions of SF_6 through:
 - Utilities environmental friendly procedures for monitoring and maintenance
 - CDM projects



http://www.mct.gov.br/clima

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