

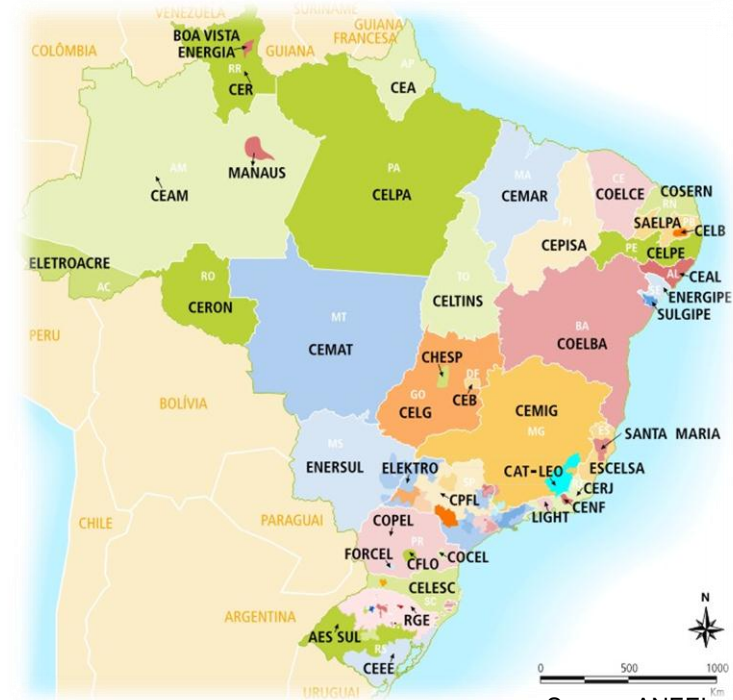
International Smart Grid Collaboration – the Brazilian perspective

ISGT 2012
Washington DC
January 2012

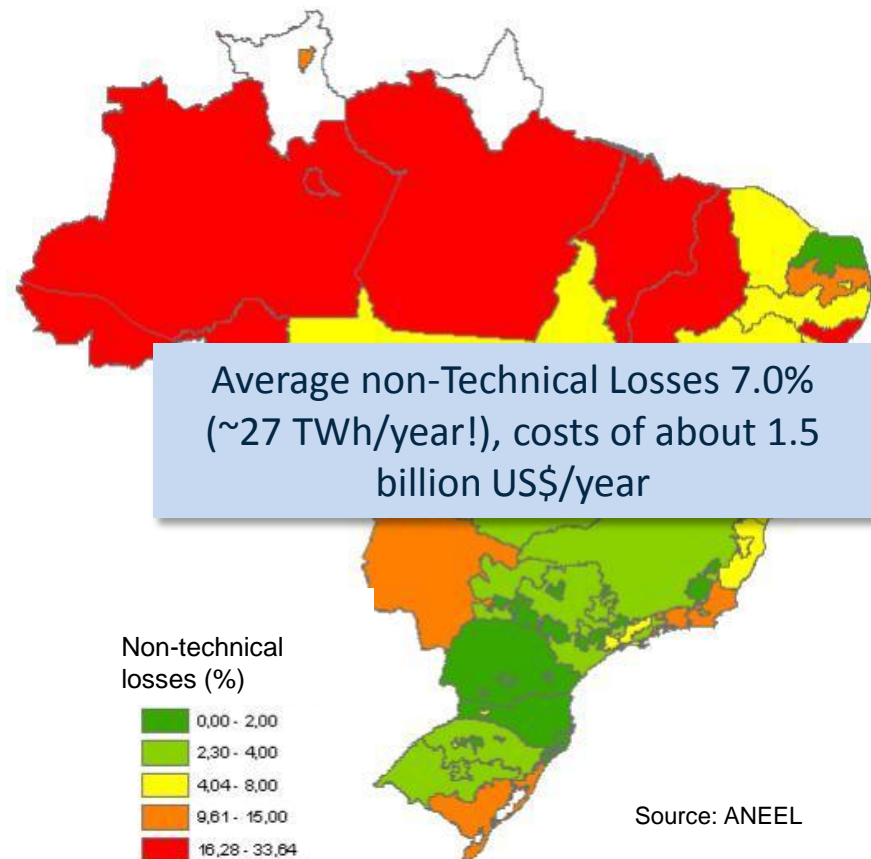
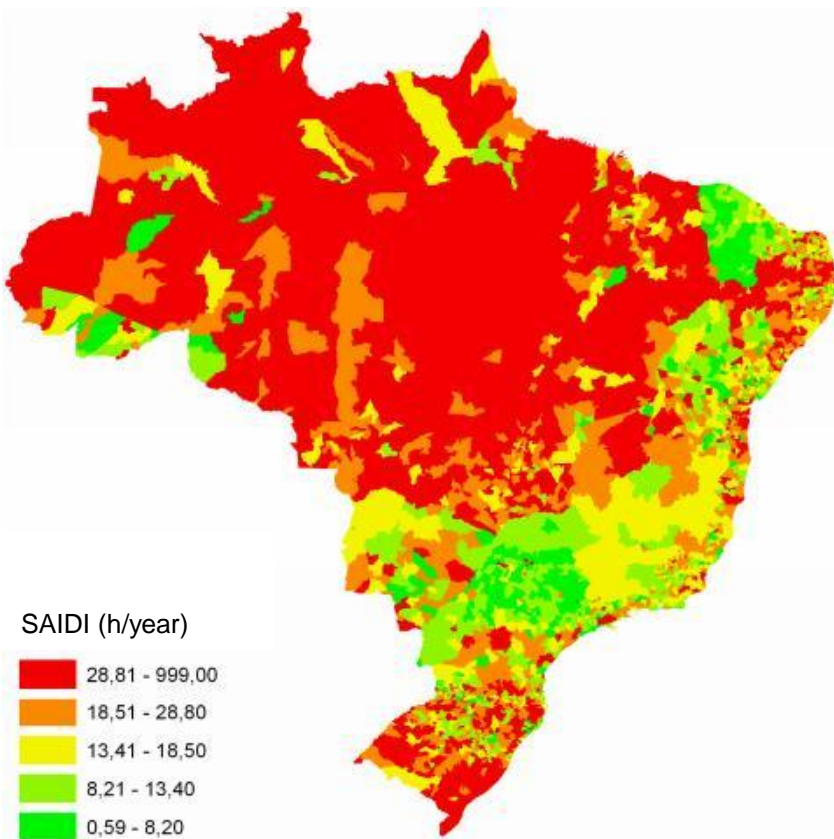
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The Brazilian system

- 75% hydroelectric
- Load growth: $\sim 5\%/year$
- 63 distribution companies
 - 69 million consumers
 - Low per capita consumption
- Large dimension & diversity
 - Consumption
 - Consumer density & concession area
 - Quality of service
 - Technical & non-technical losses



Diversity of quality of service & non-technical losses



Source: ANEEL

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Different drivers for Smart Grids

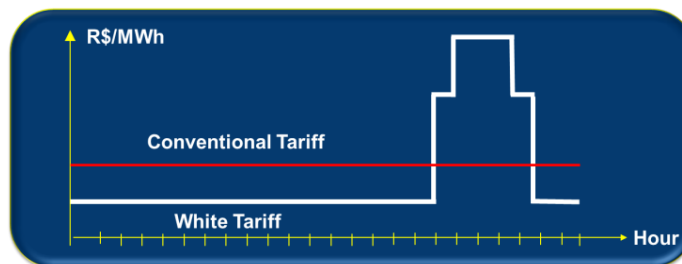
- Electricity matrix is already clean
- Little room (if any) for consumption reduction
- Drivers for smart grids in Brazil
 - Non-technical losses reduction
 - Improve distribution management
 - Improve reliability and quality of the service
 - Efficient use of the system's resources
 - Reduce cost of electricity to final consumer

Current activities: electricity regulator (Aneel) being very active to promote smart grid initiatives & pilots

- Analysis of smart grid international experiences
- Analysis of international experiences with pre-paid electricity consumption plans
- Smart Metering: deployment plan to be defined
- Proposal of regulation of net metering for small scale renewable DG (up to 1 MW)
- Regulatory impact analysis
- Power Line Communication regulation issued
- Public hearings have been the main forum for debates

Example: Time of Use (ToU) tariffs for low voltage, captive consumers

- Mechanisms approved in Nov/2011 (to be tested during 2013, implemented in 2014)
- Electricity tariff structure altered to incorporate economic signals for low-voltage consumers
 - **White Tariff:** (optional) ToU tariff for low-voltage consumers (depends on smart meters, whose chronogram is currently under analysis).

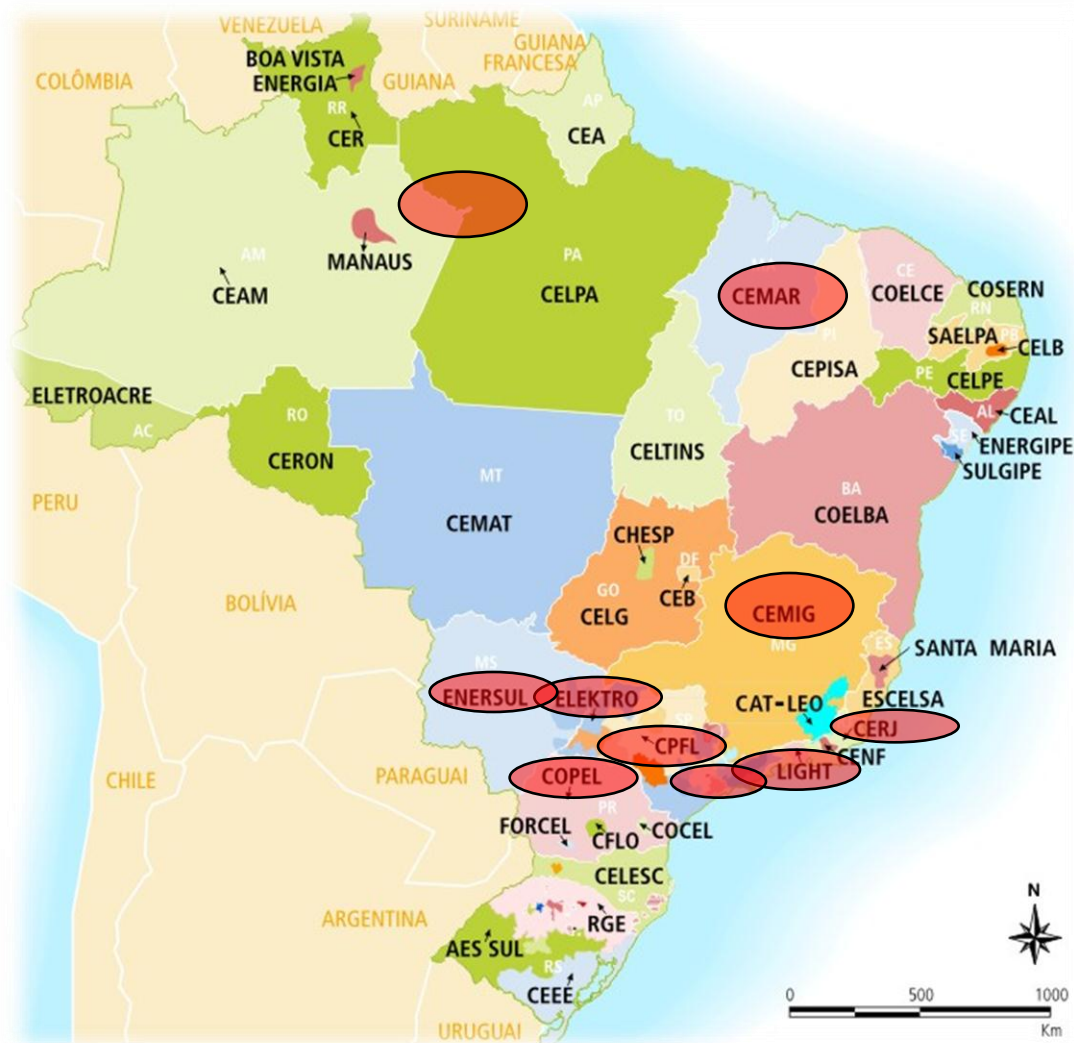


TOU tariff for low-voltage consumers

Source: ANEEL

- **Tariff Flags:** additive monthly-varying economic signal related to the electricity spot price and incorporated in the retail consumers tariff

Current activities: utilities have also been developing their smart grid pilots



Smart Grid Collaboration

- Fertile environment for smart grid collaboration (local & international)
- Major goals:
 - Creation of knowledge and formation of workforce
 - Support for the regulator
 - Support for distribution companies' implementation strategy
 - To understand new technologies and to identify those that have potential for growth
 - To understand where smart grids makes its major impacts
 - Examples of successful implementations
 - Transfer (and adaptation) of know-how from international holdings to their subsidiaries in Brazil

Examples of smart grid **local** collaboration

- 185 ongoing R&D projects
- Most significant one: Smart Grid joint Strategic R&D Program
 - 37 companies & 7 research institutions working together
 - Objective is to develop a draft of a Smart Grid National Plan
 - 1-year project: Jan – Dec/2011, dissemination of results from 03/2012
 - Main areas:
 - distribution automation
 - smart metering
 - communication systems & IT
 - electrical vehicles
 - DG and public policy

Examples of smart grid **international** collaboration

- Brazil & US: feasibility study for the smart grid pilot implementation strategy: grant from the USTDA
 - Assistance in the deployment of smart grid technologies within the Cemig (Minas Gerais state) and Light (Rio de Janeiro state) networks
 - Integrated Smart Grid Platform, AMI planning & implementation
 - Demand Response
 - Real-time distribution grid management (substation automation)
 - Integration of renewable, distributed storage and EV in distribution
- Brazil & UK: grants from UK Foreign & Commonwealth office
 - Support to the regulator: analysis & simulation impacts of time-of-use tariffs on revenues of distribution companies
- There are other examples involving universities & research centers

Conclusion

- As the restructuring of the electricity industry has shown, there is no one-size-fits-all model
- Countries should learn with international experiences to design their own: it is time for innovation
- There are more questions than answers: local & international collaboration is essential
- Some critical policy questions regarding Smart Grids that could benefit from future collaborations
 - Control of, and access to, customer specific information
 - Access to grid & market information
 - Standardization and interoperability
 - Meter ownership, control & billing
 - Cost allocation & asset depreciation

To learn more...

Smart Grids in Latin America: Opportunities, Developments and Trends

18 January, 03:00 PM - 05:00 PM

← Tomorrow @ 3pm (room: Thurgood Marshall North)



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Rodrigo Palma



Rafael Ferreira

Chair:

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Panelists:

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