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**The Institutional Reform of the  
Brazilian Power Sector:  
Implications for  
transformation, inclusion and  
sustainability**

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## Introduction

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- Main findings on the institutional reform of Brazilian power sector of a broader research on the sustainability of Brazilian energy system (Newborne et al, 2014).
- Access to affordable, reliable and clean electricity is a key requirement of sustainable development.
- Reform aim: increasing the economic efficiency of supply through market transformation.
- Undesirable social effects and a power shortage have led to a “reform of the reform”.
- Lessons learned from this experience of energy regulation on the right balance between state and market in the energy sector.



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## Brazilian Power Sector Institutional Reform 1994-2000

### Pre-Reform

- A few state-owned companies;
- Vertically bundled industry;
- Regional/state monopolies for generation, transmission and distribution;
- Ban on foreign investors;
- Centralized planning;
- Equalization of tariffs;
- Captive market.

### Post-reform

- Privatization and a large number of agents;
- Vertical unbundling of the industry;
- Competitive generation, regulated monopoly on transmission systems and shared distribution;
- Restrictions on foreign investors lifted;
- Indicative planning;
- Regulated prices and tariffs;
- Gradual easing of restrictions on consumers.



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## Power Sector Institutional Reform in the 1990s

- Unbundling and selling off state-owned electricity transmission and distribution companies;
- Establishing technical bodies to regulate the sector at arm's length from government (ANEEL as the federal regulatory board);
- Power crisis of 2000/2001: electricity was rationed (20% cut imposed on households, smaller cuts on commerce, services and industry)
- Failure to generate incentives for the private sector to undertake the investment required to meet growing demand.;
- Electricity price increases not sufficient to foster investment on hydropower (high upfront costs, long construction times, long-term returns on investment): hydropower share in power generation down from 90% to 80% between 1990 and 2000;
- Too fast ( 5 years x 15 years in the UK);
- Heavier financial burden on low-income classes;
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# Social Impacts of the Power Sector Reform

Electricity consumption of households:  
Selected indicators: pre x post reform

Indicator	1994 (Pre-reform)	2000 (Post-reform)
Average electrification levels	92%	95%
Rural areas	68%	74%
Urban areas	98.5%	99.2%
Average electricity consumption	442 kWh/year	499 kWh/year
Rural areas		440 kWh/year
Urban areas		576 kWh/year
Average tariffs (US\$/MWh)	98 (in 1996)	179
Connection fees & charges (US\$/connection)	810	972 (in 2002)



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## The “Reform of the Reforms” in the 2000s

- Stopping privatization of the sector (not extended to power generation);
- State directive planning (replacing indicative planning): creation of EPE in 2004 as the research and planning arm of the Ministry of Energy;
- EPE determines the overall electricity mix through auctions for each source; allows for rational hydropower development and fast increase of wind power;
- EPE makes the inventory of hydropower potential of river basins and decides upon the key sites that will be developed for hydropower generation;
- Stronger role of public funding through BNDES (National Development Bank) and state-owned power generation utilities in public-private partnerships to build new large hydropower plants: hydropower share in power generation has stabilised at 80% between 1990 and 2000;
- Stronger role of ANEEL in setting conditions for holders of electricity concessions, notably in control of tariffs increase and requiring a specified number of new electricity connections;
- Faster expansion of households access to electricity: creation of the *LpT - Luz para Todos* (‘Light for All’) programme, replacing the previous *Luz no Campo* (“Light in the Countryside”).



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## Expansion of electricity access

Brazilian Government programmes  
to expand household electricity access

Indicator	1990s (Luz no Campo)	2000 s (Luz para Todos)
Main target households	Close to the grid	Wider coverage
Investment (US\$ billion) % of GDP	1.48 0.25% (in 1999)	8.9 0.37% (in 2010)
Number of household connections	0.419 million	2.5 million
Connection fees & charges	Paid by households	Free for eligible households
Access of rural households (%)	74% (in 2000)	90% (in 2010)



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## Lessons learnt and policy recommendations

- Danger of automatic translating international regulatory trends for managing public utilities to a national context and need to address domestic circumstances and specificities (e.g. natural resources endowment, electricity access and affordability);
- Relevance of adaptive policy learning to re-design the regulatory system to respond to changing policy context;
- Brazil's electricity regulatory environment moved over the 20 years of study from a state-led to a much more market-driven system, and then back to a kind of 'middle way' involving greater state-led planning, but a mixed economy of provision;
- Illustrative case of building an independent and wide-ranging regulatory system that strikes a balance between government and market-based regulation;
- Illustration of a range of government levers that can help deliver electricity access, as part of wider poverty reduction programmes.