FGV CERI
CENTRO DE ESTUDOS EM REGULAÇÃO E INFRAESTRUTURA

HARMONIZING THE NATURAL GAS DISTRIBUTION REGULATION

IEA Brazil Gas Workshop 2019

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ROADMAP

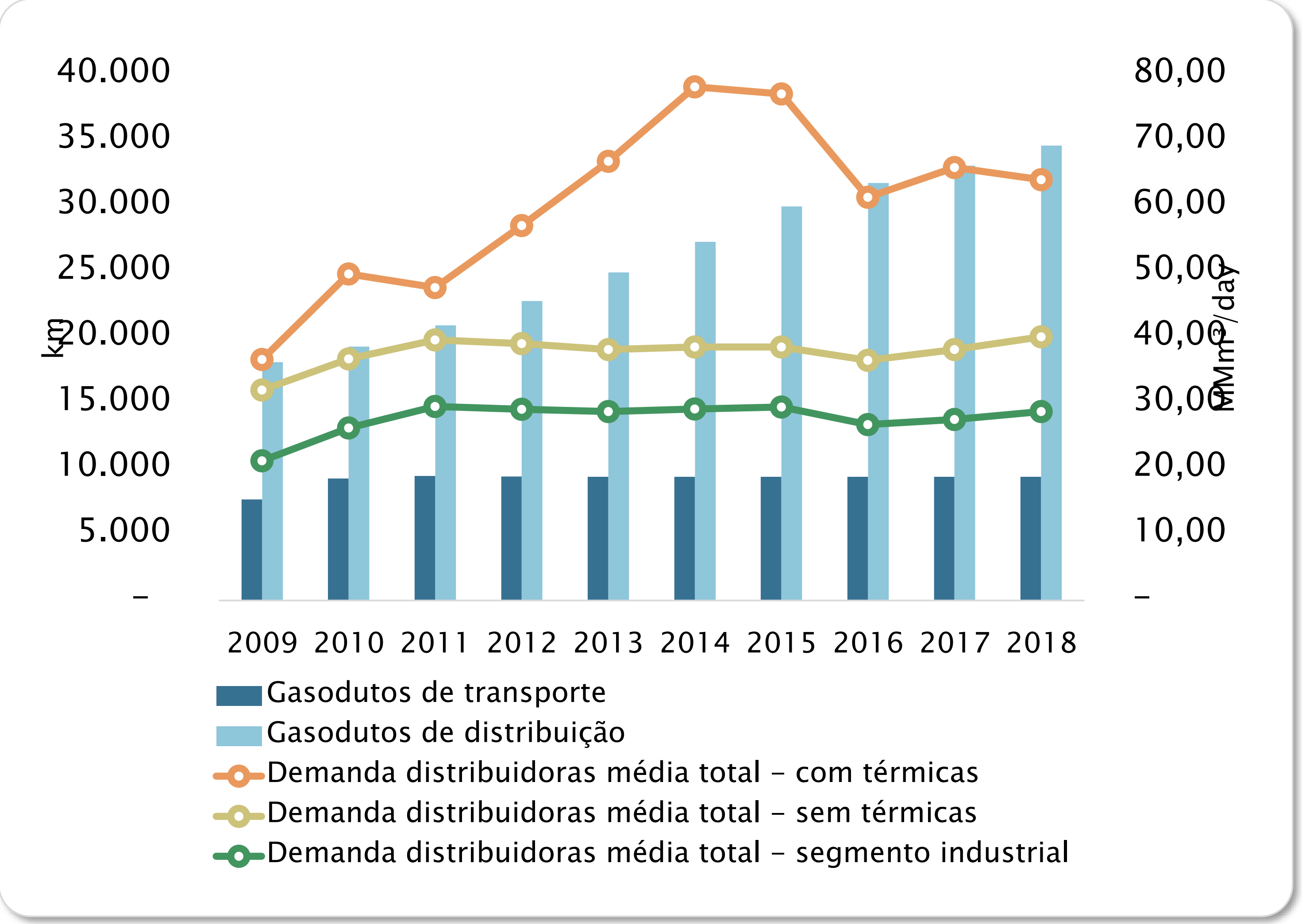
1

SETTING THE SCENE

DEMAND GROWTH AND DISTRIBUTION NETWORK EXPANSION

The distribution network has expanded considerably in the last 10 years.

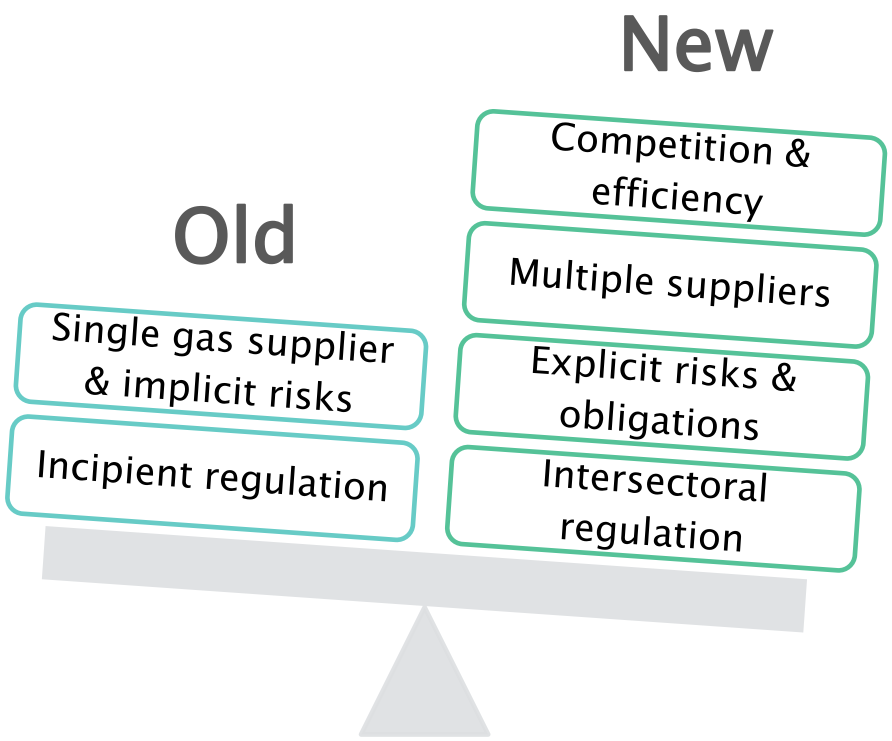
However, non-IPP demand of distributors did not follow this evolution.



Fonte: Elaboração FGV CERI com base em MME

NATURAL GAS MARKET OPENING

Market design



Key issues

- How to apply best practices already adopted by international standards?
- How to articulate federal regulations (CADE, ANP & ANEEL) with state regulations?
- What is the benchmark to be adopted to set allowed regulated returns?
- What are the transition arrangements for the new order?

2

GAS DISTRIBUTION – THE ROAD AHEAD

THE CHALLENGES AHEAD

Market Convergence

Gas & Electricity

Commodities & Services

Wholesale-retail & clusters

Reliability & resilience

Platformization & competition of disruptive technologies

Costs and Risks Disclosure

Beyond completion risks

Prices at different network points (different tariffs and agents)

Risk management

Compliance & stakeholder integrity

Prices and Financing

Gas prices reflecting market positions

Counterparty risk pricing

Implementation of Limited Recourse Finance

Strengthen Balance Sheets

Transition & Regulation

Technical training

Short transition with inherent uncertainties

Modern, articulated, coordinated and adaptive regulation

Increase in IPOs and M&A activities

GAP ANALYSIS OF THE LDC'S SAMPLE SHOWS LACK OF RISK MANAGEMENT DISCIPLINE

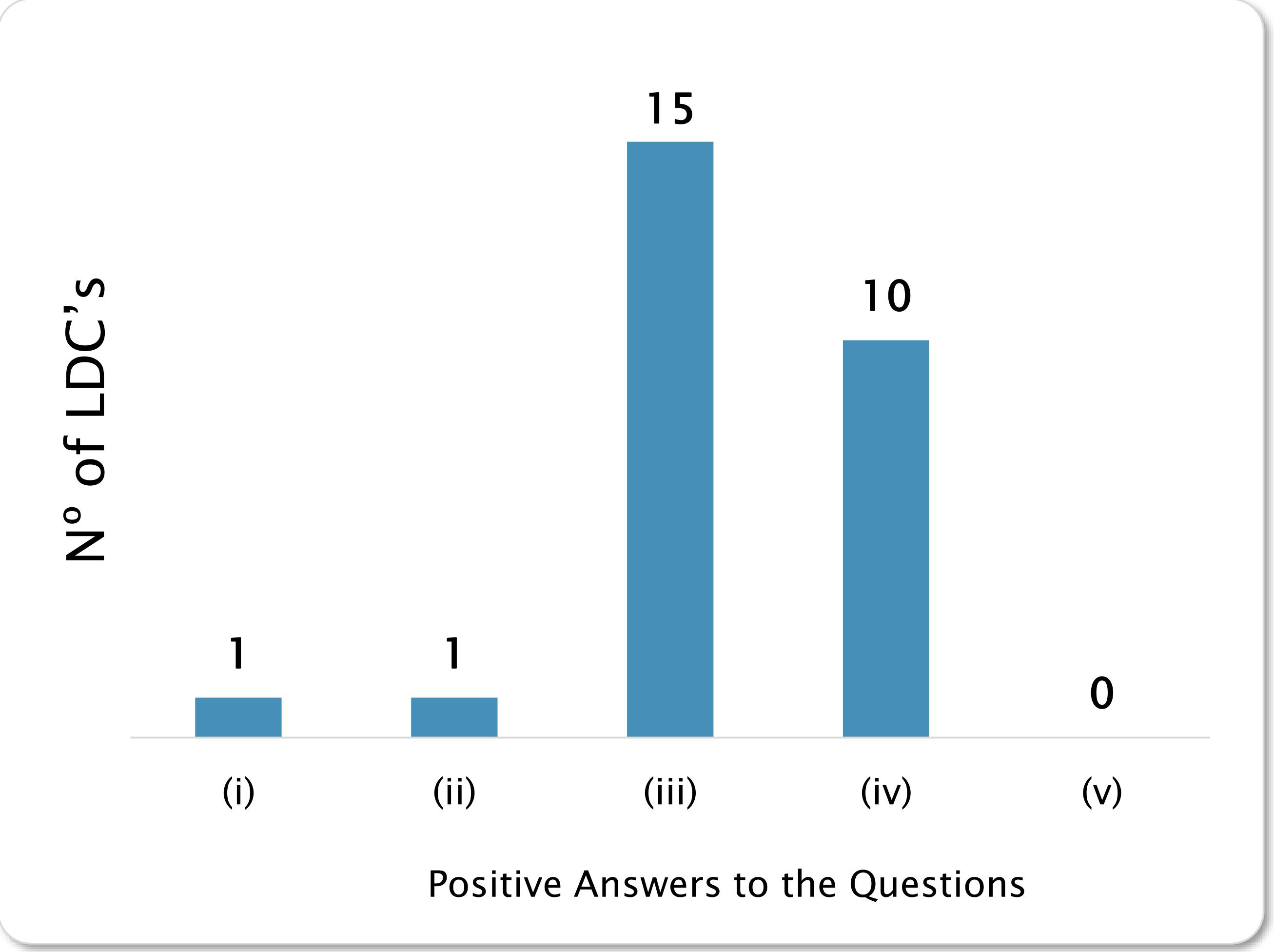
i. Is there a risk management area? Does it cover LDCs only?

ii. Governance – is the risk management area independent? Is it compliant with regulations? Is there a risk committee?

iii. Is risk information made available in the Financial Statements?

iv. Are there defined metrics?

v. Is there a process to evaluate those metrics?



Fonte: Elaboração FGV CERI com base nas demonstrações financeiras e relatórios publicamente disponíveis das distribuidoras

3

EVALUATING GAS DISTRIBUTION REGULATORY SYSTEMS

TWO IMPORTANT DIMENSIONS OF REGULATION: GOVERNANCE AND SUBSTANCE (BROWN ET AL., 2006)

Regulatory Governance (How)

- Autonomy, independence and accountability of the regulator.
- Relationship between the regulator and policymaker(s).
- Processes—formal and informal—by which decisions are made.
- Accessibility, predictability and transparency of decision-making by the regulator or other entities
- Organizational structure and resources available to the regulator.

Regulatory Substance (What)

- Tariff levels and **structures**.
- Automatic and non-automatic cost pass-through mechanisms.
- Quality-of-service standards.
- Handling of consumer complaints.
- Investment and/or connection obligations and reviews.
- Network access conditions for new and existing customers.
- Accounting systems and periodic reporting requirements.
- Social obligations.

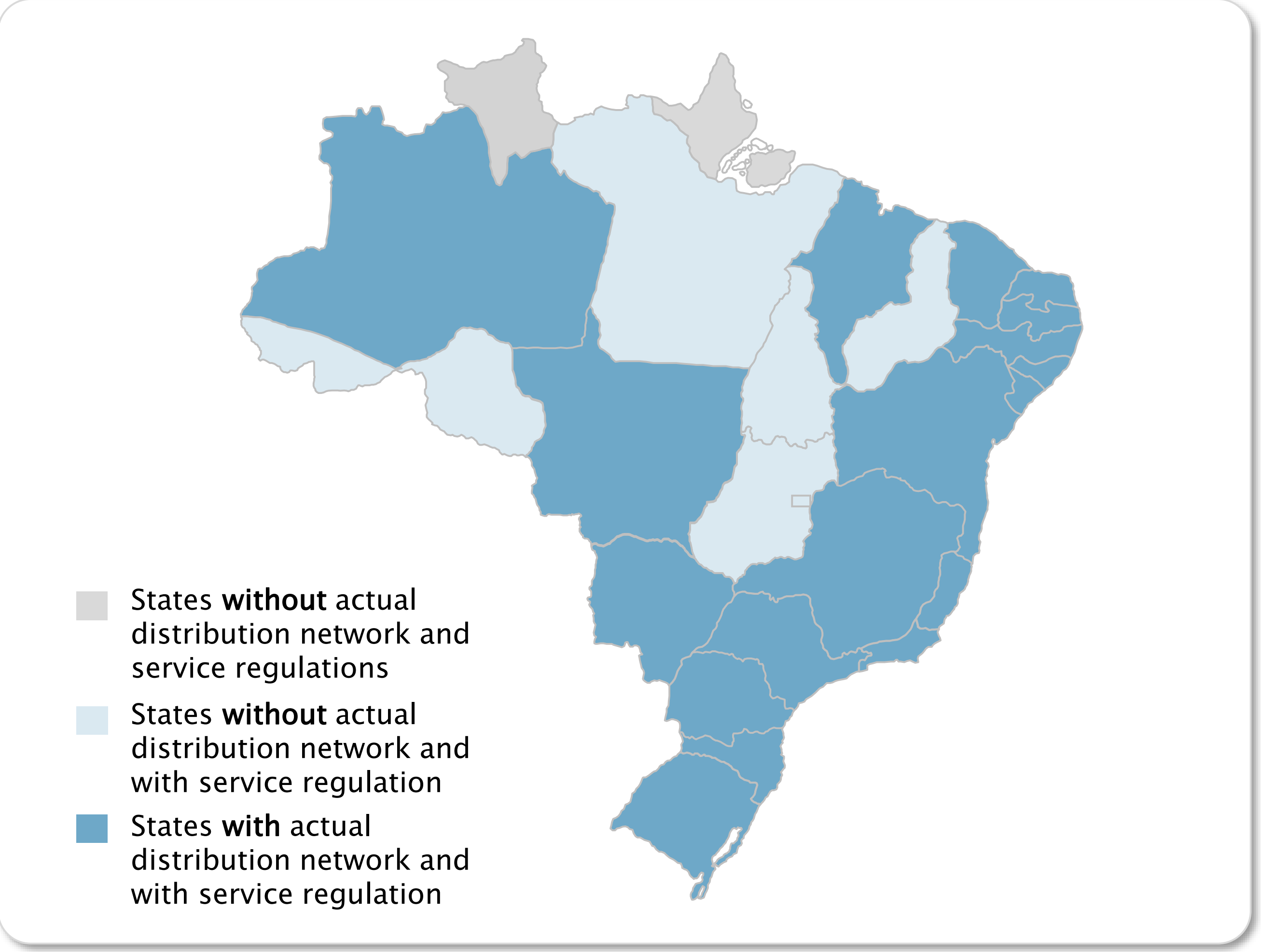
NATURAL GAS DISTRIBUTION REGULATION IN BRAZIL

The NG industry upstream and midstream businesses are regulated by ANP, while the distribution segment is subject to state laws and regulations.

- This structure highlights the conflict between the role of those agents.

In most cases, states are involved in policy making, regulation, and are the largest shareholders in some distributors.

- **Some states (AC, DF, GO, PA, PI e RO) have** created LDCs and regulatory agencies, without having NG supply.
- Length of the network distribution amounts to more than **35,000 km serving 3.5 million** users.
- The average demand reached **64 million m³/day** in 2018.



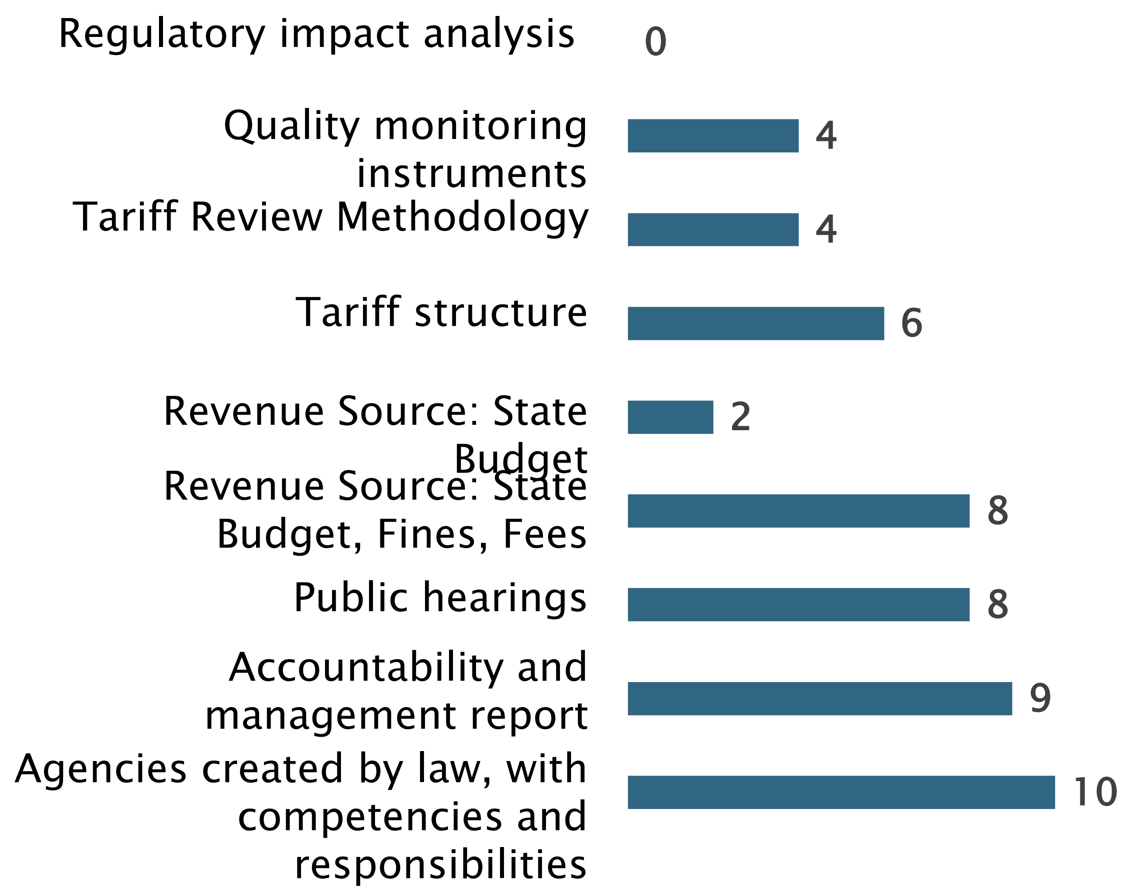
Fonte: Elaboração FGV CERI com base em MME, ABEGÁS e sites das distribuidoras e reguladores de gás natural canalizado. Dados de 2018.

DIVERSITY OF GOVERNANCE IN REGULATORY AGENCIES

INFORMATION ON THE 10 LARGEST NATURAL GAS MARKETS

Regulator	Type	Regulated Company (LDC)
Agenersa (RJ)	Regulatory Agency	Private
Arsesp (SP)	Regulatory Agency	Private
Arpe (PE)	Regulatory Agency	Semi-public
Arsam (AM)	Regulatory Agency	Semi-public
Mob (MA)	Regulatory Agency	Semi-public
Agerba (BA)	Regulatory Agency	Semi-public
Sede (MG)	State Secretary	Public
Arsp (ES)	Regulatory Agency	Semi-public
Sema (RS)	State Secretary	Semi-public
Aresc (SC)	Regulatory Agency	Semi-public

Fonte: FGV CERI elaboration based on regulatory agency websites



CONTRACTS AND ALLOWED RATE OF RETURN IN THE NATURAL GAS DISTRIBUTION

States	AL, BA, CE, PE, MS, PB, RS, SE	RJ	ES[1], MG, SC[2], SP[3]
Frequency of reviews	Anual	Quinquenal	Quinquenal
Regulatory regime	*Cost plus*	*Price cap*	*Price cap*
Concession signing year	1992 a 2003	1997	1993 a 1999
Concession tenor	30 a 50 anos	30 anos	30 a 50 anos
Rate of return (CAPEX)	Fixed	CAPM	WACC*
	20%	9,76%	9,17%
Rate of Return (OPEX)	Fixed	–	–
	20%		
Demand Forecast for Distribution Tariff Setting	80%	100%	100%

[1] Based on state law nº 10.955/2018

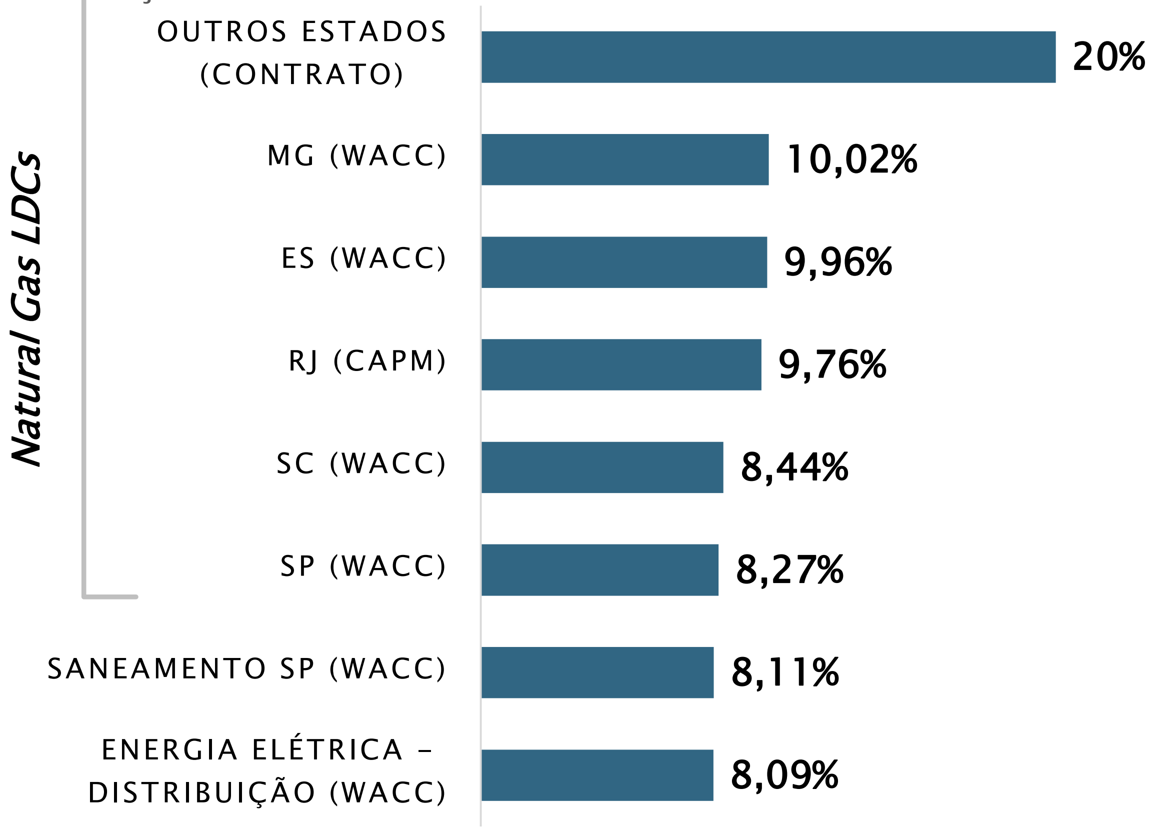
[2] Aresc released tariff revision methodology, but there was no update of the concession agreement.

[3] WACC of SP is 8.27%, determined by Arsesp Public Consultation No. 10/2018.

* WACC average

Fonte: FGV CERI based on ABRACE, information on concession agreements of natural gas LDC, LDC websites and regulatory agencies.

TAXAS DE REMUNERAÇÃO DO SERVIÇO



INFORMATION ABOUT NATURAL GAS LDC'S

LDC	Grid Extension (km)	# Customers	Volume Traded (MMm³/day)	# Tariff Segments	Free Market	% Industrial Consumption	% Residencial Consumption	% Thermal Power Consumption
AL	513	49.979	0,6	5	No	80,6%	1,7%	–
AM	117	98	4,2	11	Yes	2,2%	–	91,5%
BA	949	55.714	3,7	7	under implementation	55,0%	0,5%	0,3%
CE	473	14.647	0,6	7	No	44,3%	0,5%	48,9%
DF	0	2	0,0	–	No	–	–	–
ES	452	53.667	2,4	8	Yes	65,0%	0,5%	39,2%
GO	0	1	0,0	–	No	–	–	–
MA	0	4	3,8	1	Yes	–	–	99,3%
MG	1.185	42.301	3,0	8	Yes	79,3%	0,6%	13,6%
MS	314	8.305	1,2	5	Yes	46,5%	0,2%	–
PB	326	18.012	0,3	7	No	63,2%	1,4%	–
PE	792	37.230	4,8	9	Yes	56,4%	0,2%	37,5%
PR	825	43.938	1,2	6	Yes	57,9%	2,6%	0,1%
RJ (Naturgy/Ceg)	4.684	940.298	11,5	17	Yes	10,3%	2,4%	66,9%
RJ (Naturgy/Ceg Rio)	1.341	73.825	5,7	22	Yes	20,9%	0,2%	71,6%
RN	416	22.875	0,3	6	No	46,5%	1,6%	–
RS	1.146	50.139	2,1	12	Under Analysis	56,4%	0,8%	–
SC	1.157	13.492	1,9	8	Yes	81,4%	0,2%	–
SE	236	28.821	0,2	11	Yes	56,6%	2,5%	–
SP (Comgás)	16.790	1.791.226	14,2	20	Yes	79,0%	6,0%	–
SP (GasBrasiliano)	1.050	22.882	0,7	14	Yes	94,4%	0,8%	–
SP (Naturgy/GNSPS)	1.789	75.584	1,1	13	Yes	93,6%	1,5%	–

Fonte: FGV CERI elaboration based on MME, ABEGÁS and LDC websites. Values of 2018.

4

CONCLUDING REMARKS

GAS MARKET LIBERALIZATION IS OF ESSENCE

The gas market reform is pushing LDCs to embrace new business models.
This transformation makes transparent risks and rewards embedded in the current BM in which LDCs are at the same time network service providers and gas suppliers.

The NG market liberalization is beneficial for stakeholders.
The results from our studies point out players in the value chain and consumers are the beneficiaries of the reform.

Regulation should adapt to the NGM. Regulatory harmonization shall **include state regulators** as entities responsible for setting tariff and standards of service (distribution grid code).
The speed and depth of retail market opening needs to be articulated and implemented in close cooperation with states and ANP.

Wholesale competition is fundamental to benefit consumers. There must be non-discriminatory access to essential infrastructure and transport network, and legal unbundling of the dominant player and LDCs (network services and supply).

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IMPACTS OF NATURAL GAS MARKET LIBERALIZATION

IMPACT EVALUATION OF THE BRAZILIAN NATURAL GAS MARKET LIBERALIZATION

NG Industry today

- E&P / transmission / commercialization
  FEDERAL REGULATION
- State distribution
  MONOPOLY COMPANIES PROVIDE O&M AND SALES SERVICES
- Access restrictions to essential infrastructures and transmission

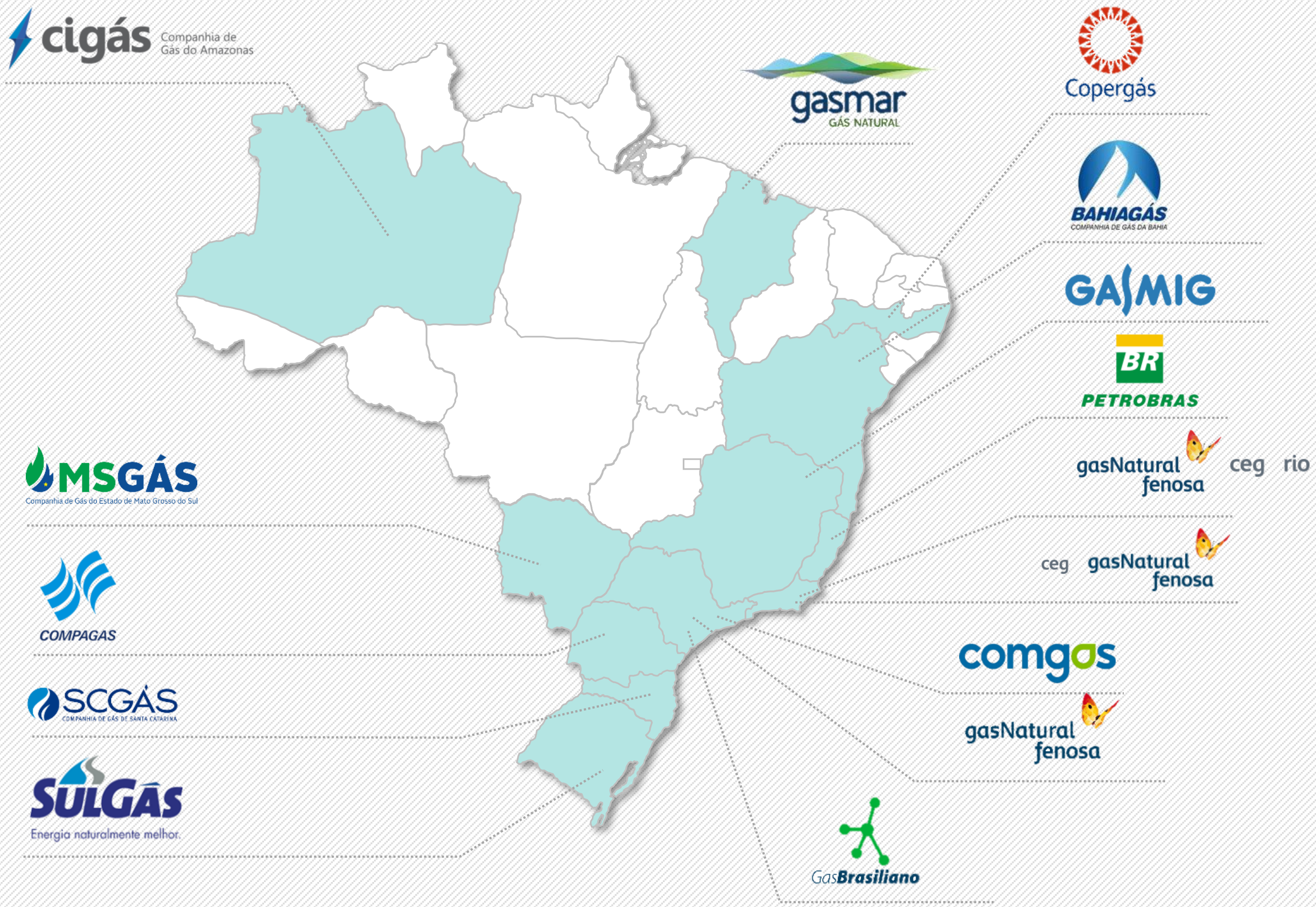
Recent developments and proposed reform

- Petrobras' repositioning and divestments
- Non-discriminatory access to infrastructures
- Regulatory harmonization and separation between distribution and commercialization

- Harmonization of federal regulation on NG commercialization leads to efficiency increase, competitiveness and regional development
- **Some distributors resist the opening of the market due to its possible impacts on the companies' profitability.**
- The study assessed the effects of liberalization through the development of models and projections by 2027 from the following perspectives:

State Economy and Public Finances	Distribution companies	Risk Management

LOCAL DISTRIBUTION COMPANIES (LDC'S) SELECTED IN 12 STATES



ASSESSING THE IMPACT OF THE NATURAL GAS REFORM IN ALTERNATIVE SCENARIOS

1

BUSINESS AS USUAL

Marke Development under the Current Regulatory Framework

- Dysfunctional Regulatory Framework
- Incumbent companies

2

MODERATED

LDC's privatization brings efficiency gains, despite the maintenance of the current regulatory framework

- Dysfunctional Regulatory Framework
- Shareholding control change

3

ACCELERATED

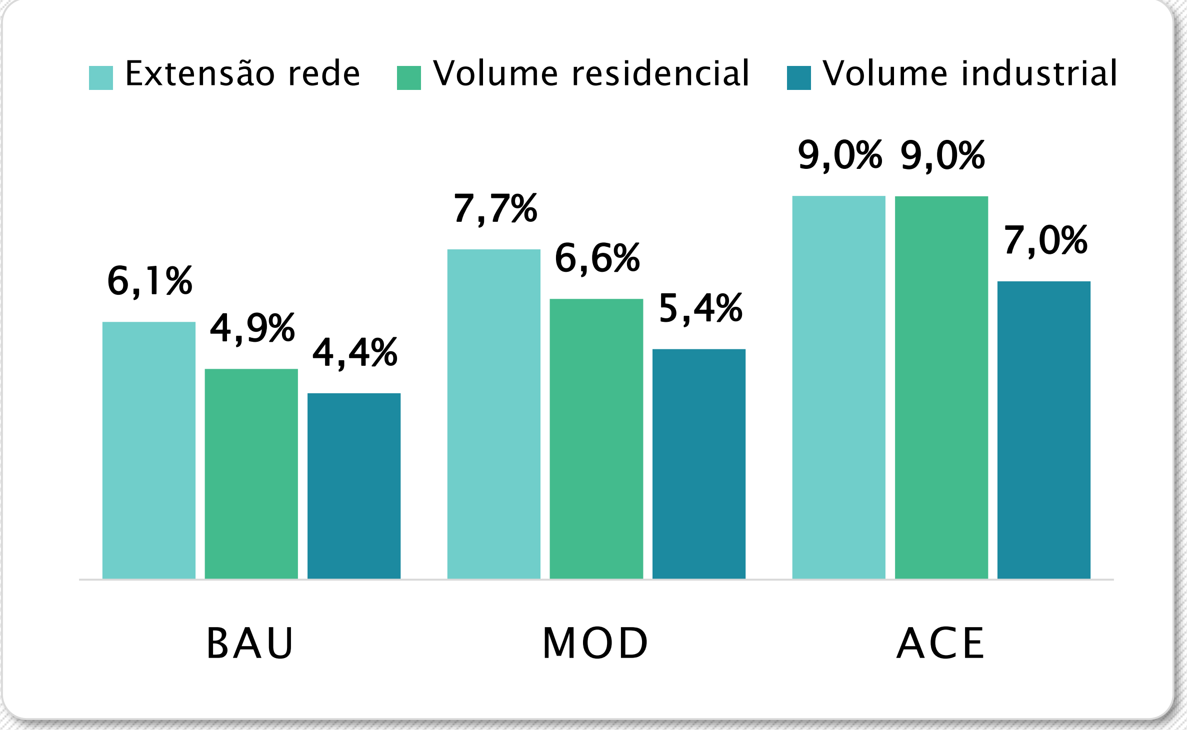
Reform achieves its main goal, there is competition and migration to the free market

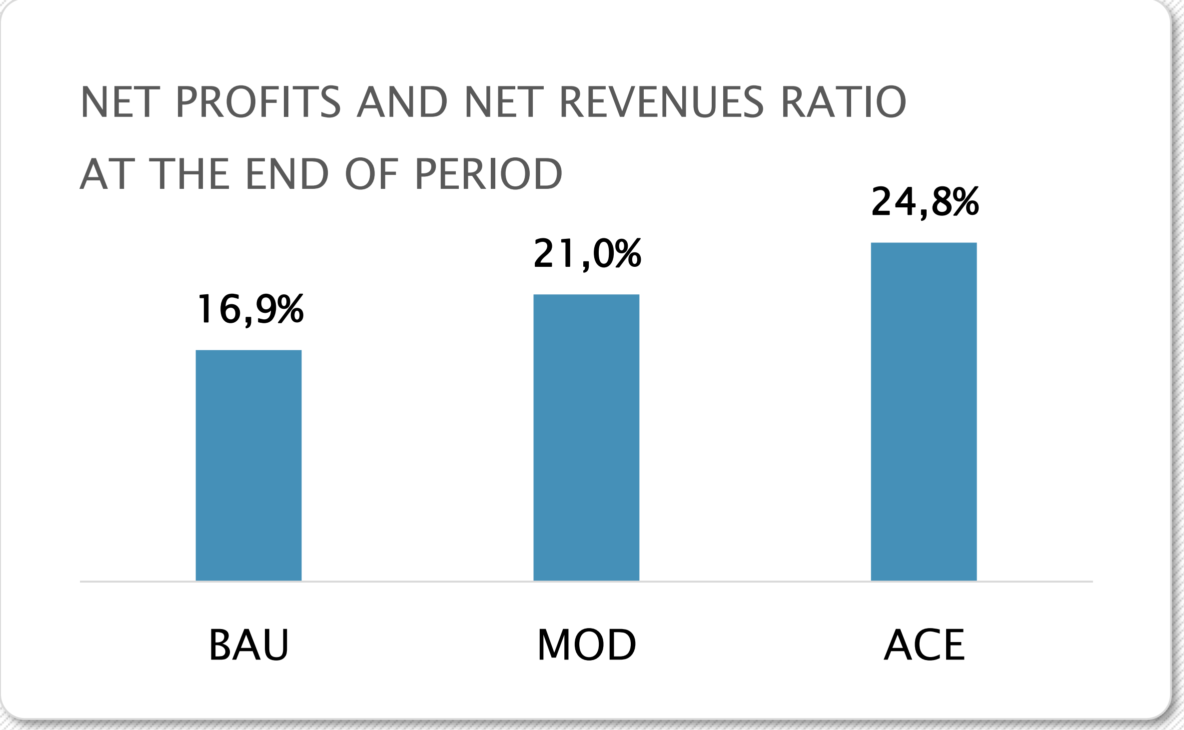
- Functional Regulatory Framework
- Shareholding control change
- Entrants

THERE ARE NET BENEFITS EMERGING FROM MARKET LIBERALIZATION LIBERALIZATION IS LIQUIDLY BENEFICIAL WHEN CONSIDERED IMPACTS ON CONSUMERS, LDC'S SHAREHOLDERS AND STATE GOVERNMENTS

LDC's perspective

Average growth rates (% p.a.)





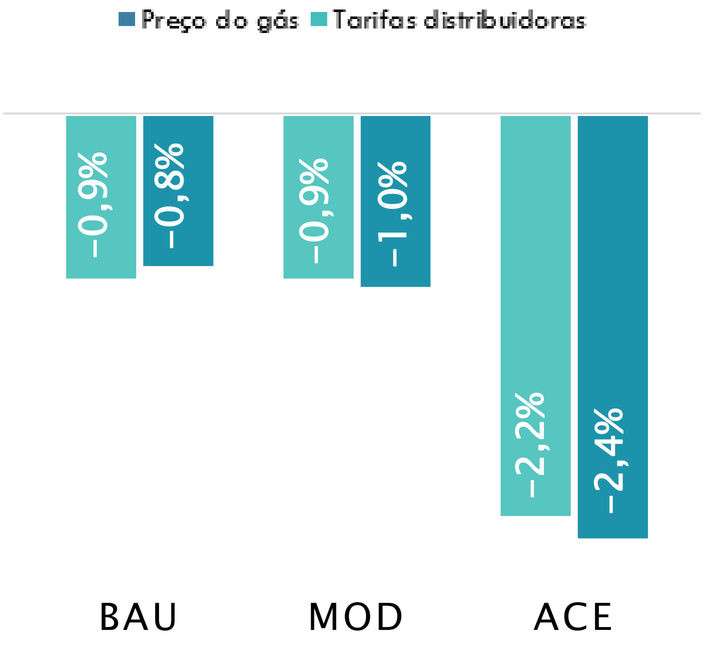
Observações: As taxas são reais. O Cenário BAU desconsidera distribuidoras já privatizadas. Os impactos estudados consideram apenas a abertura na **distribuição.** Análise *ceteris paribus*.

Fonte: Elaboração FGV CERI

LIBERALIZATION IS LIQUIDLY BENEFICIAL WHEN CONSIDERED IMPACTS ON CONSUMERS, LDC'S SHAREHOLDERS AND STATE GOVERNMENTS

Users' perspective

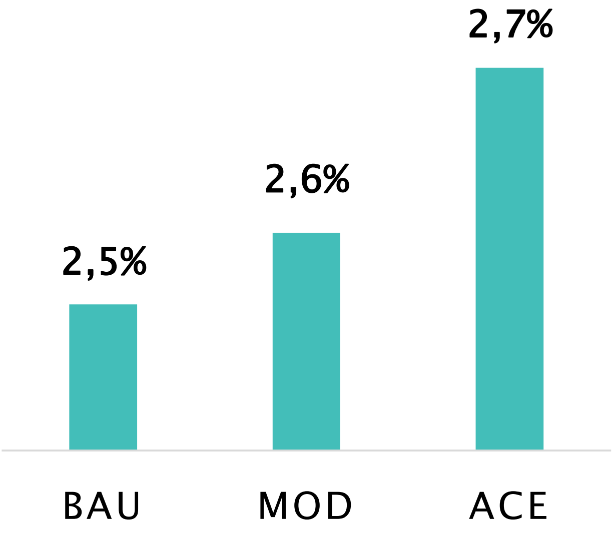
Average growth rates (% p.a.)



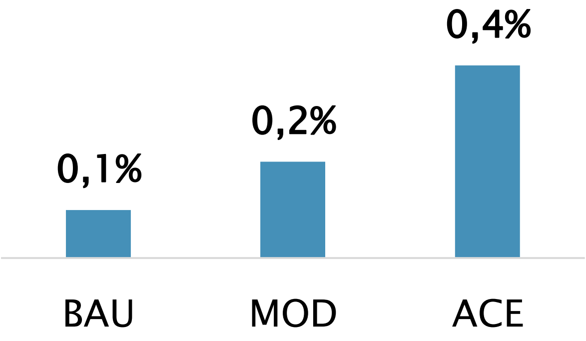
State Governments' Perspective

Average growth rates (% p.a.)

TAXES – ICMS



IMPACT ON STATES GDP AT THE END OF THE PERIOD



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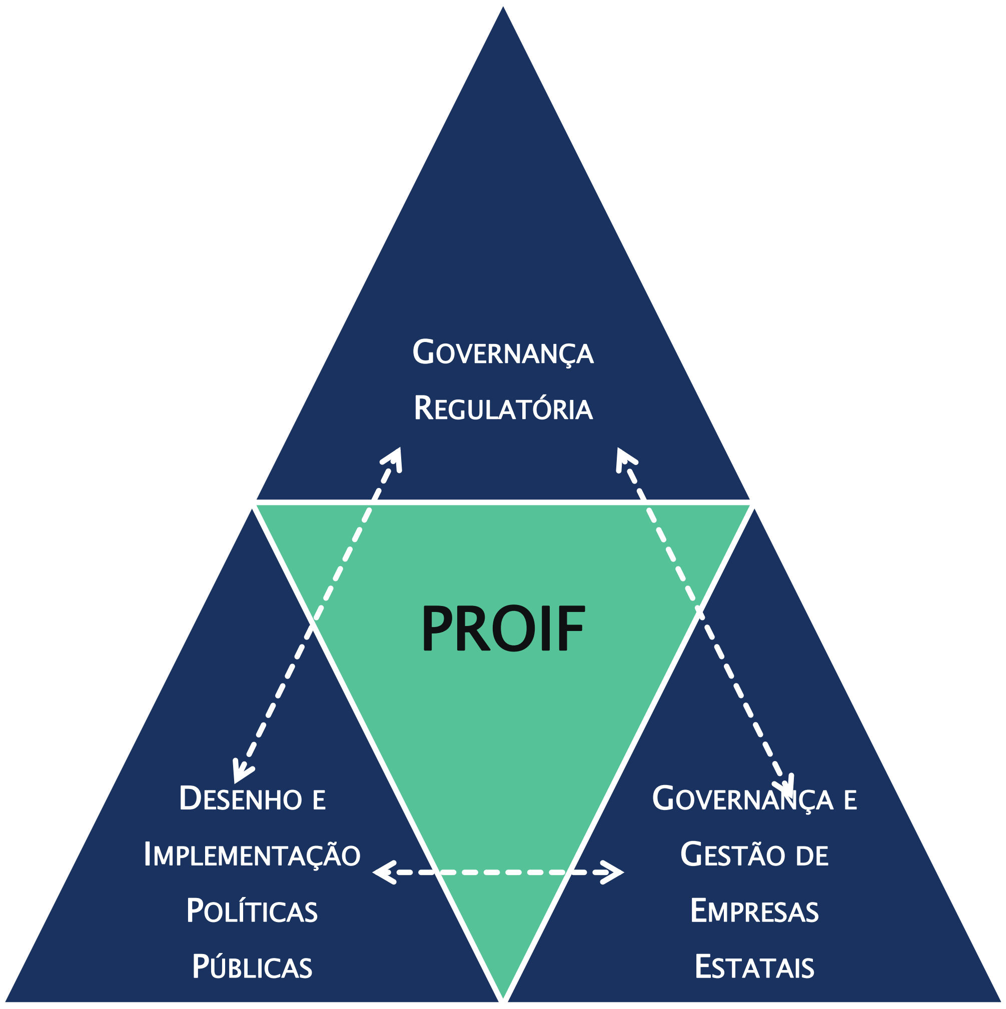
Fonte: Elaboração FGV CERI

AGENDA DE GOVERNANÇA NO CERI
PROGRAMA INSTITUIÇÕES DO SETOR INFRAESTRUTURA (PROIF)



COMPONENTES GOVERNANÇA AGÊNCIAS

1 Profissionalização das Diretorias

- Análise da composição das Diretorias de todas as agências federais desde que foram criadas
- Dados únicos, coletados de diferentes fontes de informação
- Medidas consideradas: 1) níveis educativos antes de assumir, 2) politização da posição anterior, 3) interino o sabatinado

2 Transparência e Participação no processo regulatório

- Análise dos processos de audiências e consultas públicas nas agência federais
- Coleta de dados desde que a agência foi criada (provavelmente a base de dados mais abrangente nessa área da América Latina)
- Variáveis: 1) temas considerados, 2) níveis de participação, 3) contribuição do AIR

3 Processo de Tomada de Decisões nas Agências

- Análise das atas das Diretorias de todas agências reguladoras federais do Brasil
- Dados únicos, coletados das páginas webs das agências
- Medidas consideradas: 1) níveis de discordância (maioria simples vs. unanimidade), 2) temas considerados, 3) autonomia

4 Impacto do Processo de Tomada de Decisões

- Análise das contribuições da tomada de decisões
- Medidas consideradas: 1) judicialização, 2) desempenho setorial
- Técnicas estatísticas: 1) analise de componentes principais, 2) regressões