LONG TERM FINANCE AND RISK ALLOCATION

ENHANCING ENERGY INFRASTRUCTURE AS AN ASSET-CLASS IN BRAZIL
LONG-TERM FINANCING AND RISK ALLOCATION
THE SCOPE OF OUR ANALYSIS

THIS POSITION PAPER WILL FOCUS ON ISSUES RELATED TO CREATING CONDITION FOR LONG TERM FINANCING AND RISKS AND SHOULD INCLUDE:

- Requirement to develop a robust financial market to support the long term development of the infrastructure sector in Brazil in a post-BNDES, using the power and gas sectors as pilot cases;

- Analyze additional financial products and facilities in support to long term financing in the power and gas sectors, such as guarantees and insurance products;

- (Re)assess risk management attitude and mindset in existing “project financing” practices, identifying current allocation patterns and future trends to attract new capital (for example financial hedges, contract dollarization, tracking accounts, etc.).
THE APPROACH

The environment
Supply and demand for both financial and physical assets combined with the underlying regulations and market features.

Sources of Capital Supply

Status of Current Financing

Environment
Market Features

Physical Opportunities

Financial Opportunities
ASSESSING THE MARKET FOR LONG TERM FINANCING

The Market we Have & the Environment

- Fiscal Constraints – Scarcity of public funds
- Basel III – Imposes additional penalties on banks for investments of term longer than 10 years
- BNDES – Limits to rely on the same model due to the scarcity government transfers (Treasury)
- Competition with Brazilian treasury bonds (NTN-B), e.g., higher yields

Transitional Arrangements

The Market we Would Expect
THE MARKET WE HAVE

SOURCES OF CAPITAL
Regulations and features of the markets combined with an analysis about supply and demand for both financial and physical assets.
Sources of Capital

- Federal Budget
- BNDES
- Savings Banks/CEF
- Commercial Lenders
- Institutional Investors
- Private Equity
- Individual Investors
- International Investors

Different risk perception, tenor, size and liquidity
BNDES FUNDS AND ITS SOURCES

Source: BNDES
THE SIZE OF BNDES

BNDES DISBURSEMENTS
(R$ BILLION)

Source: BNDES
## BASEL III & COMPULSORY RESERVES

### Basel III
- Imposes additional penalties on banks for investments of term longer than 10 years
  - Capital requirements are expected to increase from 11% to 15% until 2019.

### Compulsory Reserves
- Sum: R$ 400 billion
  - This requirement have already been used to stimulate investment – during the period between September 2008 and March 2010 they decreased to less than R$ 200 billion
  - In the long run (commercial) banks will probably diminish long term finance.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory Capital</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.0%</td>
<td>9.875%</td>
<td>9.25%</td>
<td>8.625%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Tier 1 Capital</td>
<td>5.5%</td>
<td>5.5%</td>
<td>6.0%</td>
<td>6.0%</td>
<td>6.0%</td>
<td>6.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Principal Capital</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Additional Principal Capital (ACP)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>[0.625% - 1.25%]</td>
<td>[1.25% - 3%]</td>
<td>[1.875% - 4.75%]</td>
<td>[2.5% - 7.7%]</td>
</tr>
<tr>
<td>Conservation ACP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.625%</td>
<td>1.25%</td>
<td>1.875%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Countercyclical ACP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.625%</td>
<td>1.25%</td>
<td>1.875%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Systemic Importance ACP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.5%</td>
<td>1.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>PR + Conservation</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.0%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
</tr>
<tr>
<td>PR + Conservation + Countercyclical</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.25%</td>
<td>11.75%</td>
<td>12.375%</td>
<td>13.0%</td>
</tr>
<tr>
<td>PR + Conservation + Countercyclical + Systemic Importance</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.25%</td>
<td>12.25%</td>
<td>13.375%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Principal Capital + Conservation</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>5.125%</td>
<td>5.75%</td>
<td>6.375%</td>
<td>7%</td>
</tr>
<tr>
<td>Principal Capital + Conservation + Countercyclical</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>5.75%</td>
<td>7%</td>
<td>8.25%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Principal Capital + Conservation + Countercyclical + Systemic Importance</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>5.75%</td>
<td>7.5%</td>
<td>9.25%</td>
<td>11.5%</td>
</tr>
</tbody>
</table>
THE COMPETITION FOR RESOURCES

INVESTMENT FUNDS – PER ASSET CLASSES JULY/2016 (R$ MILLION)

Source: Anbima
ALLOCATION FOR PENSION FUNDS

PORTFOLIO ALLOCATION FOR PENSION FUNDS - JULY/2016
(R$ MILLION)

- Stock: R$70,779,39 (14.3%)
- Multimarket: R$136,730,03 (27.6%)
- Fixed-income: R$274,174,54 (55.3%)
- Off Shore: R$ (0.0%)
- Cambial: R$ (0.0%)
- Social Security: R$185,05 (0.0%)
- FIDC: R$802,54 (0.2%)
- ETF: R$1,116,93 (0.2%)
- FII: R$804,48 (0.2%)
- FIP: R$10,855,05 (2.2%)

Source: Anbima
PORTFOLIO ALLOCATION FOR INVESTMENT FUNDS, INSURERS AND PENSION FUNDS

- Portfolio allocation of Brazilian investment funds
  - Concentration on Fixed Income funds & Federal Government Bonds – about 50% of the resources on funds with low tenor and high credit quality

- Considering all investment funds, 45.4% of the resources are allocated on federal government bonds
  - 39.5% on LFT’s, 14.9% on LTN’s and 33% on NTN-B’s

- Insurance firms have 77.1% on fixed income funds – 42% on LFT’s, 23% on LTN’s and 26% on NTN-B’s

- Pension funds have allocated 55.3% of their resources on fixed income funds – 29% on LFT’s, 15% on LTN’s and 38% on NTN-B’s

- The most “popular” LFT has tenor of 6 years – considering the same case for LTN’s we have 2 years only
  - For NTN-B’s we have 40 years and for NTN-F’s 11 years
We have been unable to identify regulatory constraints that could explain the concentration of investments in the portfolio of those institutional investors.

The concentration on Treasury Notes can be explained by higher yields and no regulatory restrictions to invest in such assets.
THE MARKET WE HAVE

FINANCIAL ASSETS OPPORTUNITIES TO INVEST
CURRENT FINANCIAL ASSETS OPPORTUNITIES TO INVEST

- Treasury Notes
- Savings Accounts
- Listed Companies
- Corporate Bonds
- Debentures

DIFFERENT RISK PERCEPTION, TENOR, SIZE AND MARKET LIQUIDITY
ASSESSMENT ON ASSET CLASSES & REGULATIONS

There are no significant differences between Project Bonds traded in countries like Canada and Australia and the Brazilian Infrastructure Debentures Brazil.

In turn, the legislation in Brazil limits the ability of Municipalities to place capital market instruments (e.g., The Federal Responsibility - Law 101/2000).

Equities / Specific Investment Funds – attention to the case of infrastructure FIP´s.
THE MARKET WE HAVE

PHYSICAL OPPORTUNITIES TO INVEST
PHYSICAL OPPORTUNITIES TO INVEST

**Commodities**
- Large Hydro
- Gas IPP
- Renewable Energy

**Networks**
- Electricity Transmission
- Electricity LDC
- Gas Pipelines
- International Pipelines
- Gas LDC
- LNG import outlets

DIFERENT RISK PERCEPTION, TENOR, SIZE AND MARKET LIQUIDITY

GRUPO BANCO MUNDIAL

FGV CERI
FRUSTRATED ASSET CONTRACTING IN RISK IN ENERGY INFRASTRUCTURE ASSETS

COMPETITION IN RECENT TRANSMISSION AUCTIONS

Source: BM&FBOvespa Stock Exchange.
THE MARKET WE WOULD EXPECT

INTRODUCING AN ENERGY ASSET-CLASS GUARANTOR: A NEW ROLE FOR BNDES & THE MARKET
ASSESSING THE MARKET FOR LONG TERM FINANCING

The Market we Have & the Environment

- Fiscal Constraints – Scarcity of public funds
- Basel III – Imposes additional penalties on banks for investments of term longer than 10 years
- BNDES – Limits to rely on the same model due to the scarcity government transfers (Treasury)
- Competition with Brazilian treasury bonds (NTN-B), e.g., higher yields

Transitional Arrangements

The Market we Would Expect

- Term Structure for 10-year IOUs
- New role for BNDES through insurance and capital markets
- Enhancing (Energy) Infrastructures as asset classes markets
- Introducing Energy-related financial products
- Energy Funds through substitution

GRUPO BANCO MUNDIAL

FGV CERI
MOBILIZING CAPITAL THROUGH GUARANTEE PRODUCTS

**Financial guarantee**
- Debt Guarantees - guarantees on debt related obligations of projects
- Payment Guarantees - Guarantees on non-debt related payment obligations of projects

**Insurance guarantee**
- Debt Guarantees – insurance on debt related obligations of projects
- Equity Guarantees – insurance on equity related rights of projects

Payment on demand, subject to schedule of obligations

Payment subject to “arbitration” of contractual obligations
# World Bank Group Experience: Capital Mobilized Through Guarantee Products

<table>
<thead>
<tr>
<th>Guarantees Committed</th>
<th>Direct Private Financing Mobilized</th>
<th>Investments Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4B</td>
<td>$12.6B</td>
<td>$31.2B</td>
</tr>
<tr>
<td>IBRD/IDA</td>
<td>Private Financing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$31.2B</td>
<td></td>
</tr>
</tbody>
</table>

**Financial Guarantee**

- Total Capital: $42.7B
- Total Private Financing: $10.6B

**Insurance Guarantee**

- MIGA: $0.65M
- Total Private Financing: $10.6B

---

**WORLD BANK GROUP EXPERIENCE: CAPITAL MOBILIZED THROUGH GUARANTEE PRODUCTS**

**Total Private Financing:**
- $12.6B
- $10.6B
- $0.65M
- $42.7B

---

**Financial Guarantee**

- $4B
- $12.6B
- $31.2B

**Insurance Guarantee**

- $0.65M
- $10.6B
- $42.7B
INTERNATIONAL EXPERIENCE: COMBINED FINANCIAL AND INSURANCE GUARANTEES

- **Project:** Development, construction and operation of a 459 MW open-cycle gas power plant
- 20 year PPA with the Nigerian Bulk Electricity Trader backed by a Put/Call Option (PCOA) Agreement with FGN
- Cover for equity, commercial debt, and hedging instruments
  - Amount: $492 m
  - Tenor: 12-15 years
  - PRI Agent: Standard Chartered Bank
  - Issued: Dec. 2015
FINANCIAL AND INSURANCE GUARANTEES: DISTRIBUTION AND APPLICATION OF INSTRUMENTS

**Financial Guarantee**
- Funding sources
  - Market placement of long term IOUs
  - Balance Sheet value release
  - Realignment of transfers
- Guarantor
  - Structuring of financial guarantees
  - Risk analysis
  - Issuance/syndication of financing & refinancing guarantees
- Energy Asset-Class
  - Energy – debt and supply contract payments
  - Network – debt and transport/ancillary services contract payments

**Insurance Guarantee**
- Funding sources
  - Reinsurance in the insurance market
  - Balance Sheet value release
- Guarantor/Insurers
  - Structuring of insurance guarantees
  - Risk analysis
  - Issuance/syndication of insurance guarantees
- Energy Asset-Class/Investor
  - Energy – equity & debt
  - Network – equity & debt
TRANSITIONAL ARRANGEMENTS
DE-RISKING ENERGY INFRASTRUCTURE INvestment THROUGH BETTER RISK ALLOCATION
ASSESSING THE MARKET FOR LONG TERM FINANCING

The Market we Have & the Environment
- Fiscal Constraints – Scarcity of public funds
- Basel III – Imposes additional penalties on banks for investments of term longer than 10 years
- BNDES – Limits to rely on the same model due to the scarcity government transfers (Treasury)
- Competition with Brazilian treasury bonds (NTN-B); e.g., higher yields

TRANSITIONAL ARRANGEMENTS
- De-risk Investments in Energy infrastructure
- Commit to Best Practices in Risk Assessment and Allocation
- Incentivizing asset allocation by Institutional Investors (e.g., Pension Funds & Insurance Firms)
- Introducing new products into the financial market (e.g., Compass)
- Mobilize available funds to investments in infrastructure assets (e.g., FGTS)

The Market we Would Expect
- Term Structure for 10-year IOUs
- New role for BNDES through insurance and capital markets
- Enhancing (Energy) Infrastructures as asset classes markets
- Introducing Energy-related financial products
- Funds by substitute

FGV CERI
“DE-RISKING” ENERGY INFRASTRUCTURE ASSET-CLASSES

- Assets in network industries like Electricity Transmission, Electricity Distribution and Gas Pipelines present characteristics of natural monopolies, often subject to economic regulation.

- According to the economic literature, these features have financial implications, especially considering the decisions that may be performed by long-term investors.

- These assets are able to grant or deliver a good and flat expected rate of return coupled with a low risk, mainly as a result of regulation by independent agencies. In Brazil, however, these of assets have not been able to attract long-term investors.

- Recent results in transmission auctions, the lack of competitors willing to participate in the privatization auction of CELG, the distribution company of the state of Goias, illustrate the challenges of investing in such assets.

- Government interference in the sector (discussed in a companion paper) coupled with a fragile and adverse macroeconomic situation, adds to the perception of regulatory risk. Therefore, solving regulatory risk question is crucial for making attractive these assets again.
# DE-RISKING ENERGY INFRASTRUCTURE ASSETS

<table>
<thead>
<tr>
<th>Stage</th>
<th>Risk/Risk</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
<td>Environmental and Social</td>
<td>The risk of damage to the environment or adverse impact on local communities</td>
</tr>
<tr>
<td></td>
<td>Land Purchase and Site</td>
<td>The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.</td>
</tr>
<tr>
<td></td>
<td>Design</td>
<td>The project has not been designed adequately for the purpose required</td>
</tr>
<tr>
<td><strong>Build</strong></td>
<td>Resource or Input</td>
<td>Interruption or cost overrun in the supply of the required resources.</td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>Labour disputes, commissioning damages, quality assurance standards, defective materials, subcontractor disputes/insolvency, cost overruns where no compensation/relief event applies.</td>
</tr>
<tr>
<td></td>
<td>Performance/price</td>
<td>Risk that the asset is able to achieve the output specification metrics and the price of doing so.</td>
</tr>
<tr>
<td></td>
<td>Completion</td>
<td>Risk of commissioning the asset on time and on budget and the consequences of meeting either criteria.</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Force Majeure</td>
<td>Unexpected events beyond the parties’ control, delays or prohibit performance.</td>
</tr>
<tr>
<td></td>
<td>Strategic</td>
<td>Change or conflicts in shareholding of private partner.</td>
</tr>
<tr>
<td></td>
<td>Inflation</td>
<td>Unexpected increase in the project costs.</td>
</tr>
<tr>
<td></td>
<td>Disruptive Technology</td>
<td>Displacement by a new technology.</td>
</tr>
<tr>
<td></td>
<td>Regulatory/change in law</td>
<td>Law changes that affect the ability of the project to perform, including price to comply with the new law and changes in taxation.</td>
</tr>
<tr>
<td></td>
<td>Political</td>
<td>Government intervention, discrimination, asset seizure or expropriation. Public sector budgeting.</td>
</tr>
<tr>
<td></td>
<td>Insurance</td>
<td>Unavailability in insurance for a particular risk.</td>
</tr>
<tr>
<td></td>
<td>Exchange and Interest rate</td>
<td>Fluctuations in currency and interest rates over the life of a project.</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td>Maintaining the asset complying with appropriate and regulatory standards.</td>
</tr>
<tr>
<td></td>
<td>Demand</td>
<td>Availability by both volume and quality of the resource as well as the demand for the product or service.</td>
</tr>
</tbody>
</table>
# De-Risking Energy Infrastructure Assets - Example

## Exchange Rate Risk Allocation

<table>
<thead>
<tr>
<th>Project</th>
<th>Developed</th>
<th>Emerging</th>
<th>Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro Power Plant - BOOT</td>
<td></td>
<td></td>
<td>?????</td>
</tr>
<tr>
<td>Wind Power Plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Transmission - BOOT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas Distribution - ROT</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. (...) in particular it is common practice to index a portion of operating costs to movements in foreign currencies, hedging whenever possible.
## DE-RISKING ENERGY INFRASTRUCTURE ASSETS – WIND POWER PLANT

- The purpose of focusing on deviations between the contracted risk allocation and the observed one is that the larger the differences in patterns are the lower the ability to attract funds to the sector due to an increase in the perception of regulatory risk.

- The selected case studies show significant deviations, both regarding the references proposed by GIH as with respect to the initially established in the contracts.

- Hence, we have evidence that a more robust process for the definition of risk matrices and their allocation is necessary, with the potential to improve the attractiveness of the projects for private capital.

### Developed vs. Emerging vs. Brazil

<table>
<thead>
<tr>
<th>Risks</th>
<th>Developed</th>
<th>Emerging</th>
<th>Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Force majeure risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory/change in law risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disruptive technology risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early termination (including any compensation) risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land purchase and site risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental and social risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion (including delay and cost overrun) risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance/ price risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource or input risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange and interest rate risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic risk</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TRANSITIONAL ARRANGEMENTS
DE-RISKING ENERGY INFRASTRUCTURE INVESTMENT THROUGH RISK MANAGEMENT
MATCHING THE UNDERLYING ENERGY ASSET-CLASS WITH PROFILE OF INVESTORS

Step I
Auction

Step II
Design

Step III
Construction

Energy Asset-Class Long Term Financing & Mitigation Products

Traditional Investor/Developer

Venture Capital

Private Equity

Institutional Investor

Guarantor

Guarantor

Guarantor

FGV CERI

GRUPO BANCO MUNDIAL
RISK MANAGEMENT: APPLYING A FOUR-STAGE PROCESS

Step 1
- Financial closure Risks

Step 2
- Refinancing Risks

Step 3
- Non-performance Risks

RESIDUAL RISK
TRANSITIONAL ARRANGEMENTS
DE-RISKING ENERGY INFRASTRUCTURE INVESTMENT THROUGH FINANCIAL PRODUCTS
EARLY STAGES IN ENERGY TRADING, GOOD NEWS IN ENERGY FINANCIAL PRODUCTS

- Similarly to other markets, the creation of an organized environment for energy trading based on free Market environment - an energy exchange - could potentially increase efficiency in the sector in Brazil.

- Stock Exchanges or derivatives exchanges help to create markets. Through the provision of services related to custody, clearing, settlement and risk management, such trading platforms can add transparency, improving the price formation process.

- Also, transparency on price formation leads to increases in efficiency and better decisions by investors interested on energy assets. Exchanges also have to comply with minimum corporate governance principles, according to local jurisdictions and securities Commissions (like CVM in Brazil).

- Recently, Compass, a trading company, registered the first financial agreement of energy in BM&FBovespa Exchange. The firm had already closed the first financial agreement of energy of the country’s power Market in December 2015, registered at Cetip
PP3 - LONG TERM FINANCE AND RISK ALLOCATION

KEY MESSAGES
The unfavorable macroeconomic environment clearly distorts relative rates of return. Despite the rules for institutional investors, including pension funds and insurance companies included, it is important not to restrict the classes of available assets, that is today highly concentrated in Brazilian government securities.

Brazilian private banks have low participation in infrastructure financing or long-term assets. This situation can become even worse from the implementation of Basel III, negatively impacting the state owned banks such as Caixa Economica Federal, BNDES and Banco do Brasil.

Considering financial instruments and products, we did not identify deficiencies relative to international standards. Recent initiatives like “debentures de infraestrutura” are similar to those implemented in other countries, including tax features – project bonds. Local financial markets also already have interesting structures that could be used in a more efficient way – good examples are the infrastructure FIP’s.

The role of BNDES should be reassessed, investigating assuming alternative roles such as market maker or guarantor might be desirable, leaving more room to the private sector act.

The development bank can act as a facilitator for the placement of long-term bonds in the market, acting as an advisor for companies and projects and also for the public sector at various levels. Conditioned to the provisions of the fiscal responsibility law, the bank could help, for example, on the issuance of municipal bonds to fund sanitation and water projects, services provided by the municipalities.
Recent discussions and news about how to improve trading environment in the free market in order to create a power exchange are also welcome. This process probably will induce improved governance adding transparency in price formation, with positive impacts on investment decisions within the sector.

In addition to the inevitable adjustments in macroeconomics, the process of modeling and risk allocation in attribution processes – concessions, privatizations and PPP’s - should be improved in order to reach a better relative profitability (risk adjusted) for the projects in comparison with the competitors (government bonds and other financial assets).

The evidence presented, together with case studies about risk matrices of selected recent Brazilian projects, indicate that there is room for significant improvement and we can look to successful experiences in other countries about methodologies and alternative designs - Canada, Australia and Chile are good examples.

Finally, with the goal of turning energy infrastructure projects in an asset classes, Brazilian government should contribute to mitigate regulatory risk. Recent interventions in the sector have been undermining the expected returns on assets that would typically be attractive for long term investors - power distribution provides some evidence, with assets changing from "cash cows" to "dogs".
THANK YOU!