



GRUPO BANCO MUNDIAL

 **FGV CERI**

*Centro de Estudos
em Regulação e
Infraestrutura*

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;



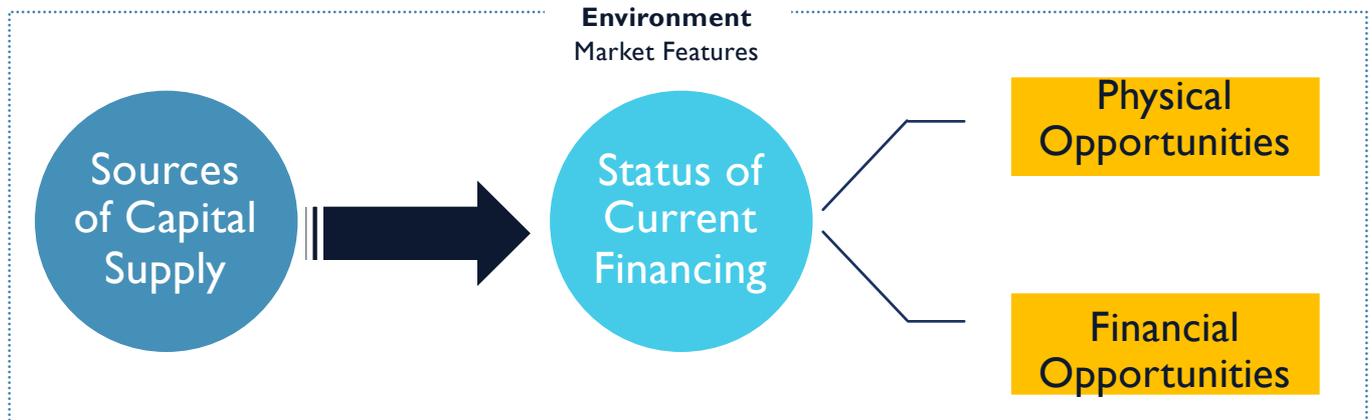
(Re)assess risk management attitude and mindset in existing “project financing” practices, identifying current allocation patterns and future trends to attract new capital (for example financial hedges, contract dollarization, tracking accounts, etc.).



THE APPROACH

The environment

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



ASSESSING THE MARKET FOR LONG TERM FINANCING

Transitional Arrangements

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

The Market we Would Expect



THE MARKET WE HAVE

SOURCES OF CAPITAL



MISSING MARKETS & MARKET DESIGN

Regulations and features of the markets combined with an analysis about supply and demand for both financial and physical assets.

Features of the Markets

Critical
regulations &
regulatory
bodies

Energy
commodities

Interest &
currency

Exchanges &
money
markets

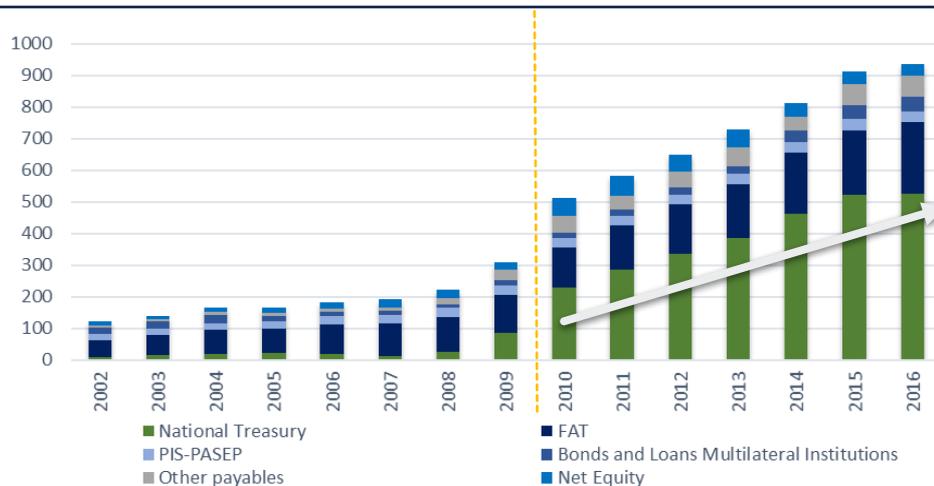
Derivatives

SOURCES OF CAPITAL



BNDES FUNDS AND ITS SOURCES

**BNDES FUNDS
AND
ITS SOURCES
(R\$ BILLION)**



Source: BNDES

THE SIZE OF BNDES

BNDES
DISBURSEMENTS
(R\$ BILLION)



Source: BNDES

BASEL III & COMPULSORY RESERVES

	2013	2014	2015	2016	2017	2018	2019
Regulatory Capital	11,0%	11,0%	11,0%	9,875%	9,25%	8,625%	8,0%
Tier 1 Capital	5,5%	5,5%	6,0%	6,0%	6,0%	6,0%	6,0%
Principal Capital	4,5%	4,5%	4,5%	4,5%	4,5%	4,5%	4,5%
Additional Principal Capital (ACP)	-	-	-	[0,625% - 1,25%]	[1,25% - 3%]	[1,875% - 4,75%]	[2,5% - 7%]
Conservation ACP	-	-	-	0,625%	1,25%	1,875%	2,5%
Coutercyclical ACP	-	-	-	0,625%	1,25%	1,875%	2,5%
Systemic Importance ACP	-	-	-	-	0,5%	1,0%	2,0%
PR + Conservation	11,0%	11,0%	11,0%	10,5%	10,5%	10,5%	10,5%
PR + Conservation + Coutercyclical	11,0%	11,0%	11,0%	11,125%	11,75%	12,375%	13,0%
PR + Conservation + Coutercyclical + Systemic Importance	11,0%	11,0%	11,0%	11,125%	12,25%	13,375%	15,0%
Principal Capital + Conservation	4,5%	4,5%	4,5%	5,125%	5,75%	6,375%	7%
Principal Capital + Conservation + Coutercyclical	4,5%	4,5%	4,5%	5,75%	7%	8,25%	9,5%
Principal Capital + Conservation + Coutercyclical + Systemic Importance	4,5%	4,5%	4,5%	5,75%	7,5%	9,25%	11,50%

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.

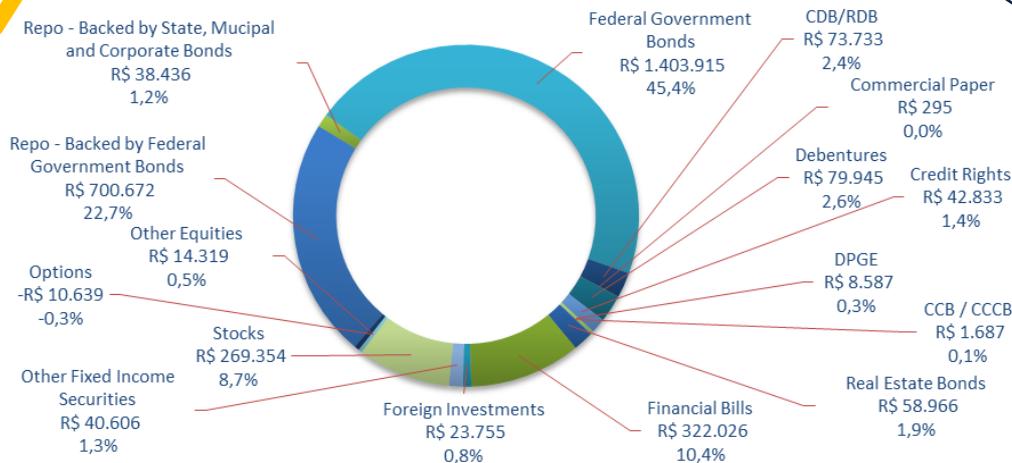
Compulsory Reserves sum R\$ 400 billion

- 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.

THE COMPETITION FOR RESOURCES

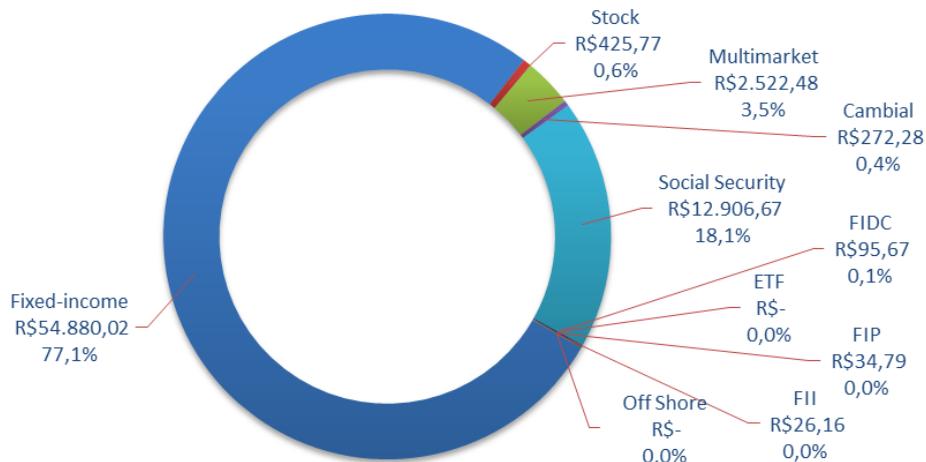
INVESTMENT FUNDS – PER ASSET CLASSES JULY/2016 (R\$ MILLION)



Source: Anbima

ALLOCATION OF INSURERS

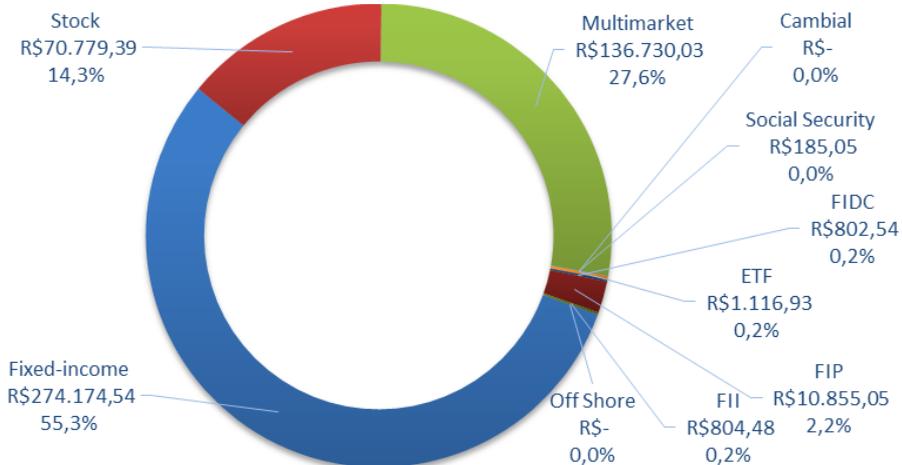
PORTFOLIO
ALLOCATION
OF INSURERS
JULY/2016
(R\$ MILLION)



Source: Anbima

ALLOCATION FOR PENSION FUNDS

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



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

ASSESSMENT ON PENSION FUNDS & INSURANCE REGULATIONS

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

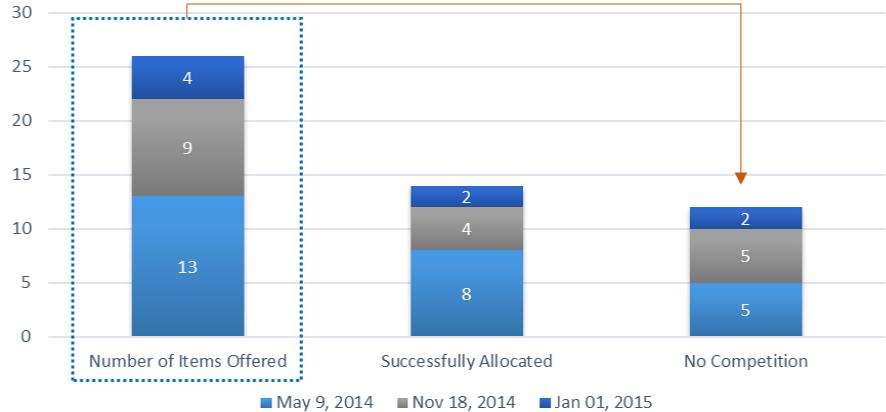
Networks

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

← DIFFERENT RISK PERCEPTION, TENOR, SIZE AND MARKET LIQUIDITY →

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

Transitional Arrangements

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

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



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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*

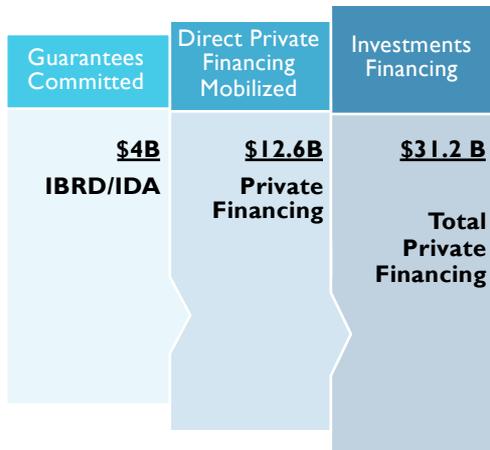
Payment on demand, subject to schedule of obligations

Insurance guarantee

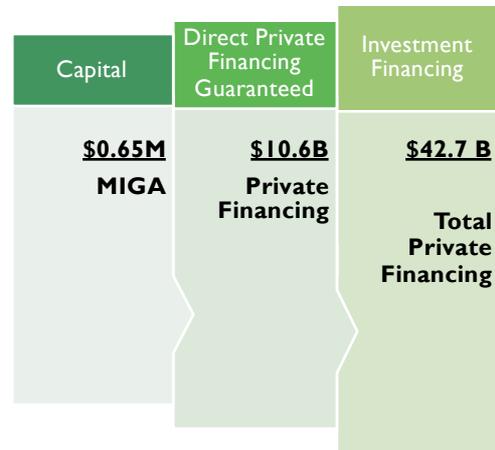
- Debt Guarantees – *insurance on debt related obligations of projects*
- Equity Guarantees – *insurance on equity related rights of projects*

Payment subject to “*arbitration*” of contractual obligations

WORLD BANK GROUP EXPERIENCE: CAPITAL MOBILIZED THROUGH GUARANTEE PRODUCTS



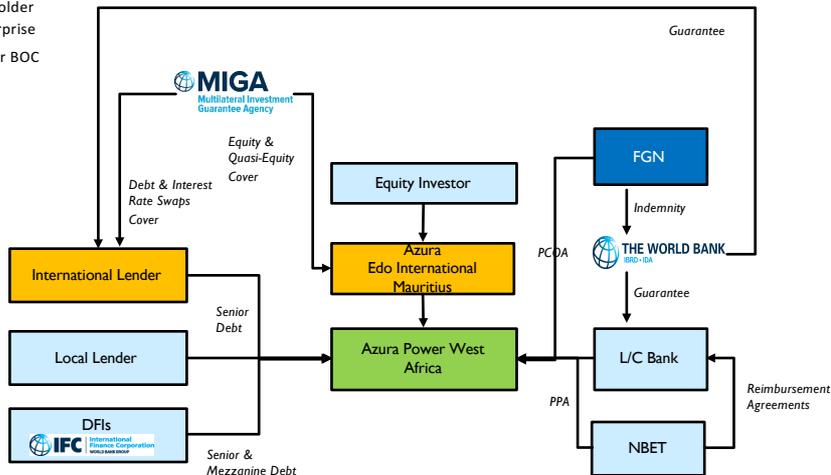
Financial Guarantee



Insurance Guarantee

INTERNATIONAL EXPERIENCE: COMBINED FINANCIAL AND INSURANCE GUARANTEES

█ Guarantee holder
█ Project enterprise
█ Obligor under BOC



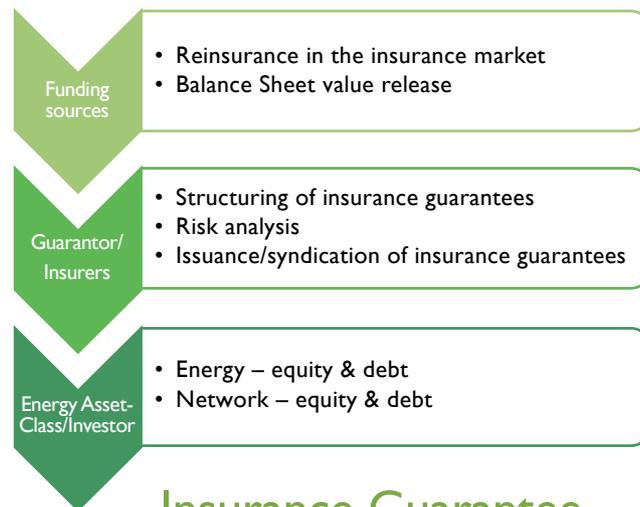
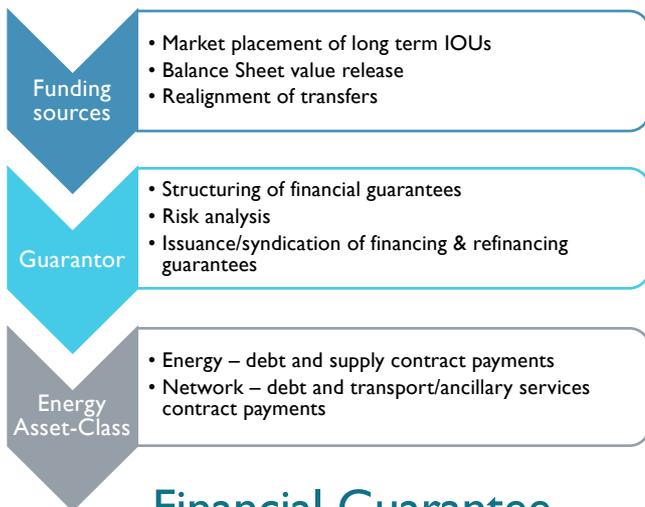
❖ **Project:** Development, construction and operation of a 459 MW open-cycle gas power plant

❖ 20 year PPA with the Nigerian Bulk Electricity Trader backed by a Put/Call Option (PCOA) Agreement with FGN

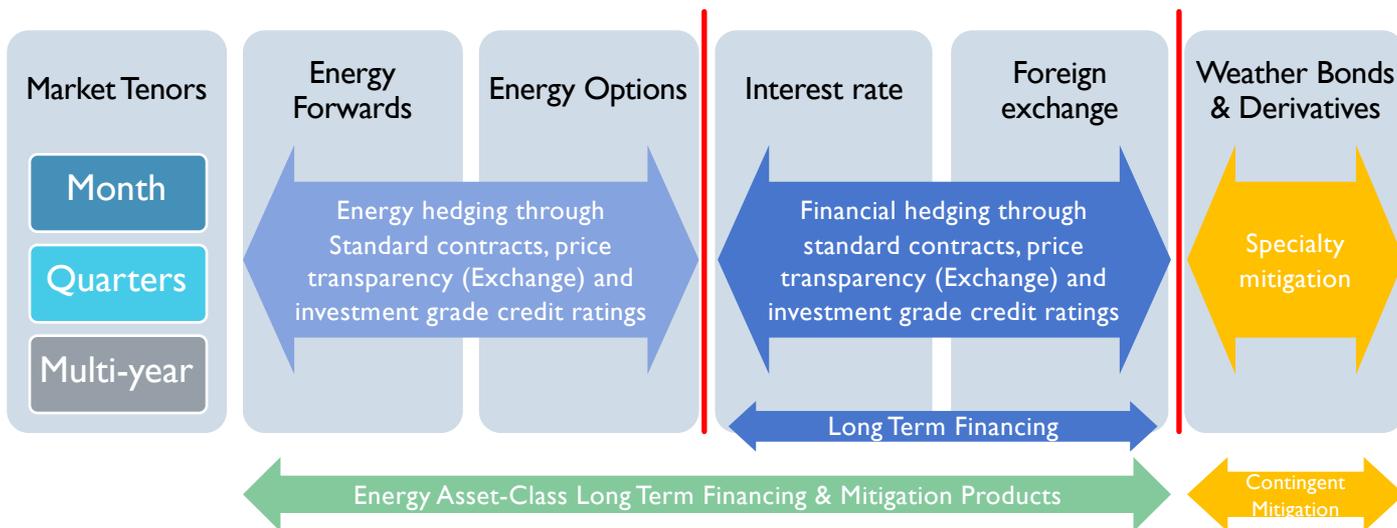
❖ Cover for equity, commercial debt, and hedging instruments

- Amount: \$492 m
- Tenor: 12-15 years
- PRI Agent: Standard Chartered Bank
- Issued: Dec. 2015

FINANCIAL AND INSURANCE GUARANTEES: DISTRIBUTION AND APPLICATION OF INSTRUMENTS



ENERGY FINANCIAL PRODUCTS FOR LONG TERM FINANCING RISK MITIGATION



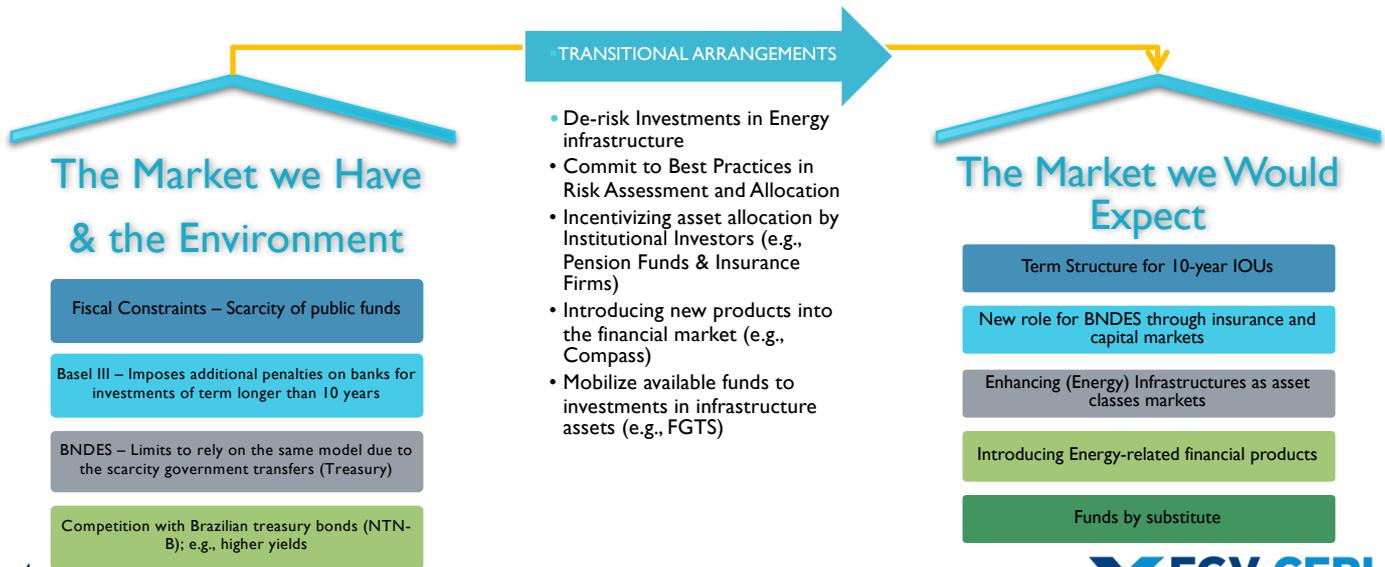


TRANSITIONAL ARRANGEMENTS

DE-RISKING ENERGY INFRASTRUCTURE INVESTMENT THROUGH BETTER RISK ALLOCATION



ASSESSING THE MARKET FOR LONG TERM FINANCING



“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 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 Goiás, 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 the regulatory risk question is crucial for making these assets attractive again.

DE-RISKING ENERGY INFRASTRUCTURE ASSETS

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



Risk Matrix Tool for De-risking Investments in Infrastructure



Assessing the most significant risks



Case Study - Risk Management Practices In Energy Investments

DE-RISKING ENERGY INFRASTRUCTURE ASSETS - EXAMPLE

EXCHANGE RATE RISK ALLOCATION

Project	Developed			Emerging			Brazil		
	Shared	Private	Public	Shared	Private	Public	Shared	Private	Public
Hydro Power Plant - BOOT		■		■					?????
Wind Power Plant		■			■			■	
Power Transmission - BOOT		■			■			■	
Natural Gas Distribution - ROT		■		■ ¹					?????

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

Risks	Developed			Emerging			Brazil		
	Shared	Private	Public	Shared	Private	Public	Shared	Private	Public
Demand risk									
Force majeure risk									
Political risk									
Regulatory/change in law risk									
Disruptive technology risk									
Early termination (including any compensation) risk									
Land purchase and site risk									
Environmental and social risk									
Design risk									
Construction risk									
Completion (including delay and cost overrun) risk									
Performance/ price risk									
Resource or input risk									
Maintenance risk									
Exchange and interest rate risk									
Insurance risk									
Inflation risk									
Strategic risk									

- 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.

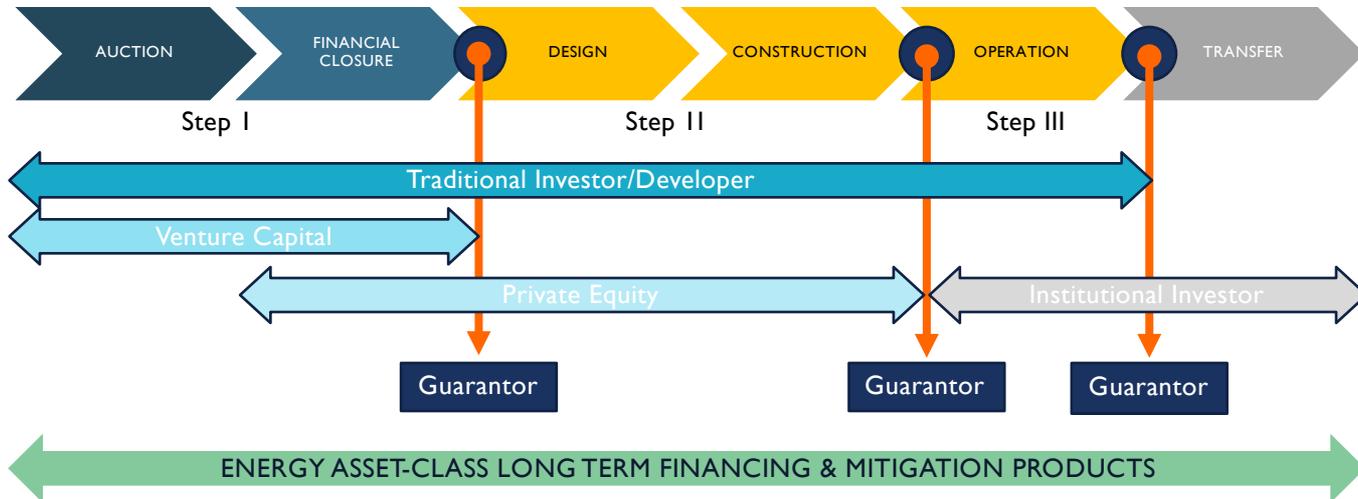


TRANSITIONAL ARRANGEMENTS

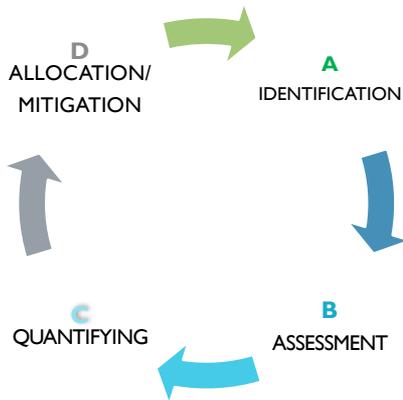
DE-RISKING ENERGY INFRASTRUCTURE INVESTMENT THROUGH RISK MANAGEMENT



MATCHING THE UNDERLYING ENERGY ASSET-CLASS WITH PROFILE OF INVESTORS



RISK MANAGEMENT: APPLYING A FOUR-STAGE PROCESS





TRANSITIONAL ARRANGEMENTS

DE-RISKING ENERGY INFRASTRUCTURE INVESTMENT THROUGH FINANCIAL PRODUCTS



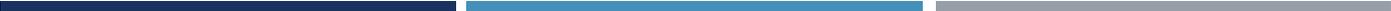
EARLY STAGES IN ENERGY TRADING, GOOD NEWS IN ENERGY FINANCIAL PRODUCTS

■ 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

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.



KEY MESSAGES (CONTD.)



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 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!

