



## Power Transmission: The Missing Link Between Investors and Infrastructure in Brazil Has Been Found

Brazil has just entered a new era of investments in power transmission. The stakes are high for investors, and the matter is urgent for the country, making the segment a rare opportunity.

Two years into its greatest recession, the Brazilian economy is slowly resuming growth. With President Michel Temer taking over, there are fewer uncertainties. Structural economic measures are being implemented to position the country on a growth track.

Economists believe investment is the engine of growth for emerging economies such as Brazil. With Brazilian unemployment skyrocketing in the past two years, the recovery will not come from a new wave of consumption stimuli, but rather from investments — most likely in infrastructure, which supports other productive activities and contributes to higher productivity for the economy as a whole.

Consistent with that rationale, the electric power sector has been one of the first to resume investments, with the transmission segment being the first priority. It requires investments of R\$70 billion (~US\$22 billion) in the next three to five years to meet three main systemic needs: (i) connecting consumption centers to power produced by new generation assets located in increasingly distant regions (Figure 1 illustrates

the need for additional interconnection); (ii) fully integrating the national grid, which will reduce the risk profile of the power supply and reduce the overall systemic cost; and (iii) recurrent upgrading and renovation of old assets.

### April 2017— key month for transmission investments

The auction in April 2017 is a highly attractive window into the new era of power transmission investments. At that time, 18% of the US\$22 billion investments will be auctioned in the form of 34 lots of assets ranging from US\$14 million to US\$350 million in required CapEx. Moreover, the April auction will reflect a new regulatory mentality — one more focused on balancing benefits and costs for all stakeholders than on forcing the private sector to accept low revenues.

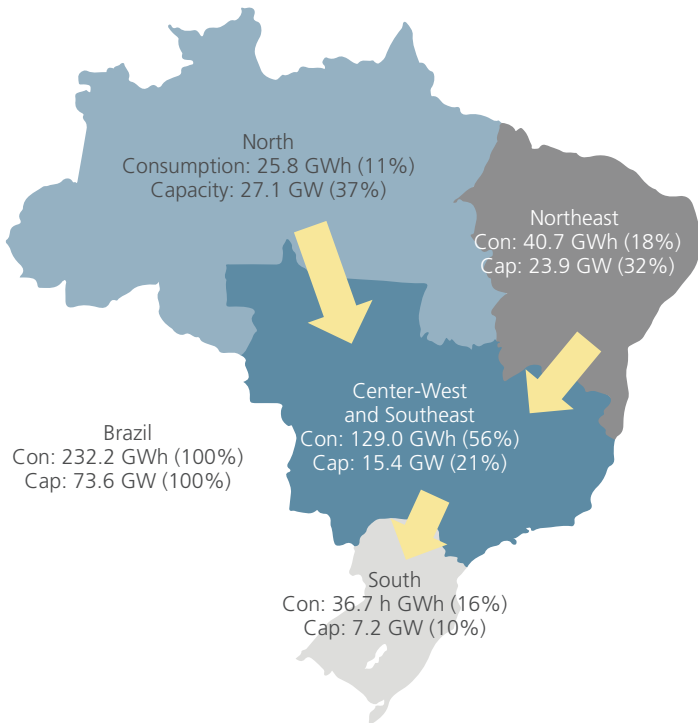
Winners of the upcoming auctions will experience the benefits of a healthy bond-like risk-return profile (in fact, revenues/CapEx ratios are steadily improving — see Figure 2), with plenty of space to improve returns depending on their own merit (i.e., subject to their financial engineering and implementation capabilities). Beyond that, the business model for the segment offers no risk of revenue collection, because the system revenue pools guarantee revenues according to performance.

*Power Transmission: The Missing Link Between Investors and Infrastructure in Brazil Has Been Found* was written by **Paulo Vador**, Managing Director, and **Fabio Zaffalon**, Principal, in L.E.K. Consulting's Energy & Environment practice.

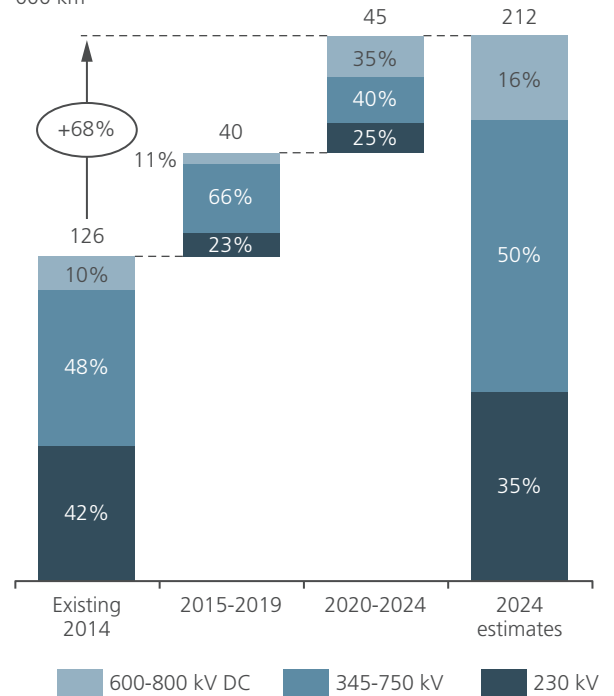
For more information, contact [strategy@lek.com](mailto:strategy@lek.com).

Figure 1  
Power supply and demand in Brazil

Additional power supply and demand forecasts (2014-2024)  
Consumption in GWh; installed capacity in GW



Required transmission grid per level of tension  
(2014-2024)  
000 km



Source: ANEEL, ONS, EPE, L.E.K. Consulting

In addition, few of the incumbent players in the transmission segment are in a position to make new investments. Large Brazilian state-owned companies — Eletronorte, Eletrosul and CHESF, to name a few — are under severe investment restrictions and are unlikely to participate unless specific assets are critical for business generation. This is not the case for most assets. Experienced foreign infrastructure operators have also been in financial distress, and they are either forbidden to participate or discouraged from doing so (e.g., Isolux, Abengoa). That makes the auction significantly more attractive for middle-market infrastructure investors, or even for generation players that want to diversify their asset portfolios.

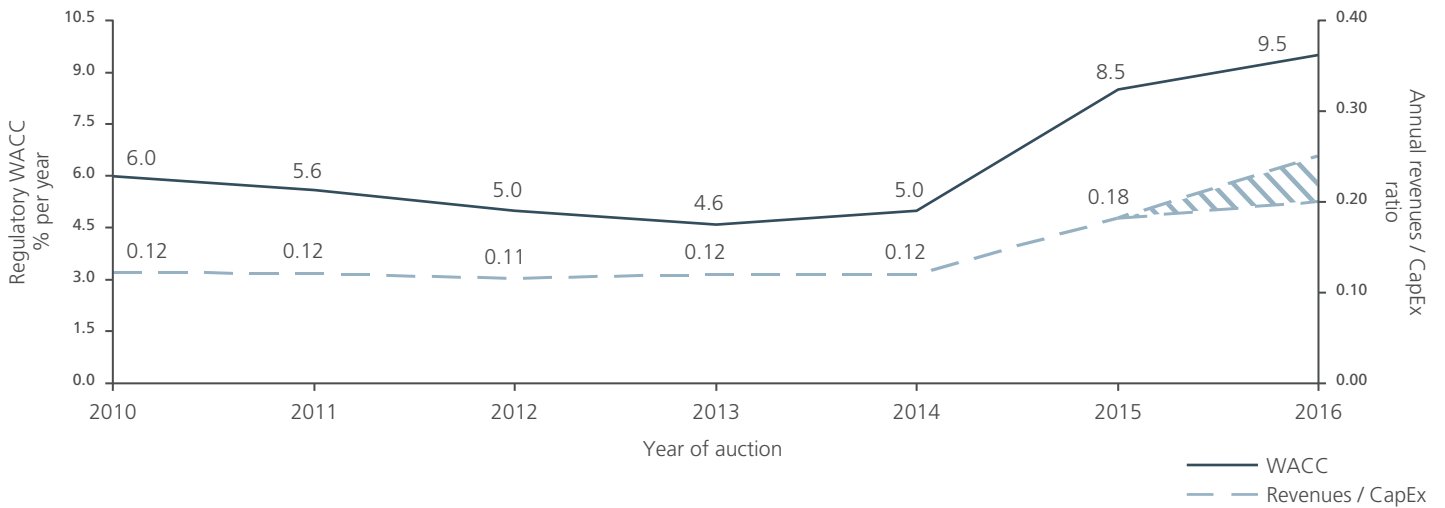
### There will be clear winners and losers in April 2017

A highly positive outcome awaits those that move quickly to seize the opportunities in the auction; for laggards, competition will be tough. Winners of this and other 2017 auctions will benefit from

improved economic conditions. The regulatory framework for the auction is consistent with the intent to promote a healthier environment for investors. It considers higher rates of return within the regulatory parameters that guide the auction — regulatory weighted average cost of capital, for instance, has increased 350 basis points in the past five years.

Under such conditions, foreign investors are better positioned to compete. While the intrinsic economics of the auction have improved, two major effects will make foreign investors more competitive. The first is that exchange rates are depreciated, making strong currency-denominated capital more competitive. Second, Banco Nacional de Desenvolvimento Econômico e Social, which has been a key player in financing infrastructure in the country, has restricted conditions for funding new projects; from lowering the limits of its stakes in individual new projects

Figure 2  
Revenue/CapEx ratios



Notes: The group of incumbents considered for the analysis consists of CHESF, Eletronorte, Eletrosul, Furnas, CEEE, CELG, CEMIG GT, COPEL GT and CTEEP  
Sources: ANEEL, L.E.K. Consulting

to limiting the total disbursements to pumping its interest rates, it has made itself a less attractive financing alternative for Brazilian players.

More specifically, increased competitive appetite, less availability of funding and the worsening cash situation of the state-owned giants make a clear case for new entrants in these transmission auctions (see Figure 3).

The next auctions will be tougher, however. Companies that wait for future opportunities will still find an intrinsically attractive environment, but will also likely find a higher concentration of high-voltage assets, which are more expensive to build and therefore require more capital investment. Those assets are a clear sweet spot for giant players such as State Grid. Ultimately, this means middle-market infrastructure funds or smaller corporations will have to compete for a narrower set of assets.

However, to be successful, investors need a deep understanding of the market conditions, from several perspectives.

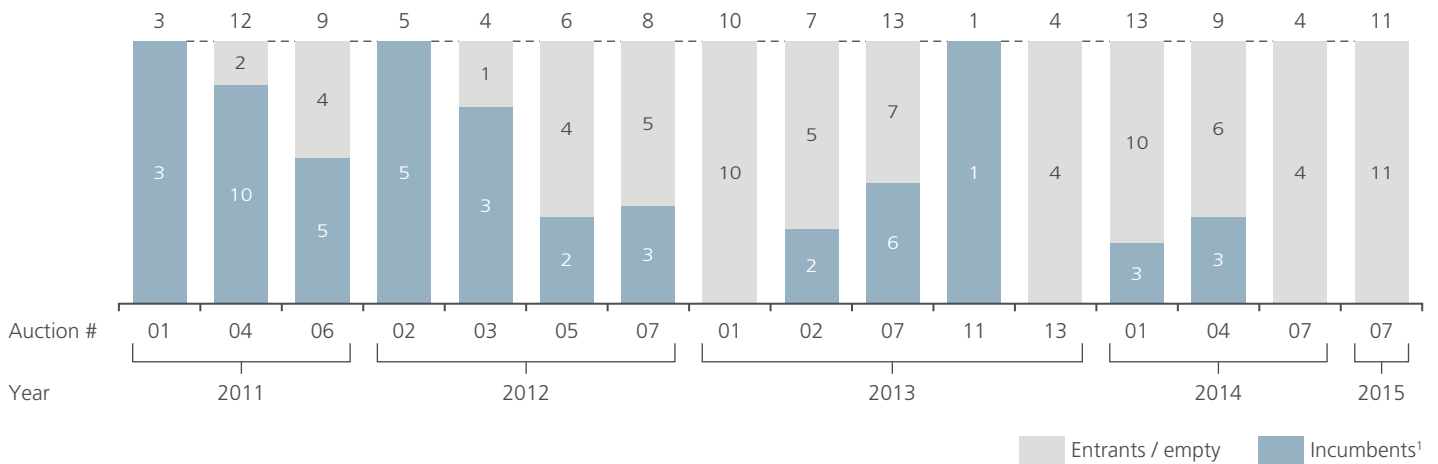
**In the fog of war, a clear overview of Brazil's macroeconomic and political environment will help.** From the macro perspective, this is key for any investor. In the flood of news, it is often hard to tell myth from reality, and having a clear perspective is fundamental to making well-informed investment decisions.

**A deep understanding of the regulatory framework, business model and associated risks is key to decision-making.** From the regulatory perspective, Brazilian rules for participating in the auctions, implementing the project and operating the asset are intricate, even though they are robust. The reverse auction is structured such that several factors determine the attractiveness of each asset (for instance, the interrelations among assets for sale, existing players, and financing conditions determine the risk or profitability of an asset). Beyond that, there is a well-structured but not-so-simple way to calculate regulatory revenues and CapEx, and to estimate the useful lifetime of each asset component.

**There are assets and then there are assets.** As for competition, investors need to understand that some assets are more suitable to some investors. A proper screening of assets is critical, because boundary conditions such as proportions of lines to substations, medium to high voltage, surrounding assets, etc., will configure a set of assets that may be more or less suitable, for instance, for current transmission operators or for new investors and equipment manufacturers. An understanding of the factors that drive each competitor's advantages for each asset of the auction is critical.

**In a 30-year investment, details matter.** From the technical perspective, two main factors impact the investment throughout the investment cycle, and may reduce rates of return if not carefully considered. The first comes up during implementation and

Figure 3  
Brazilian power transmission auctions  
Number of lots won by type of player in past auctions



<sup>1</sup>The group of incumbents considered for the analysis consists of CHESF, Eletronorte, Eletrosul, Furnas, CEEE, CELG, CEMIG GT, COPEL GT and CTEEP  
Source: ANEEL, Instituto Acende Brasil, L.E.K. Consulting

has its roots in the socioenvironmental risks to licensing: Brazil has strict environmental permit regulations. It is a continental country, and indigenous communities, archeological and environmental obstacles, and various technical difficulties can result in project

delays, ultimately impacting revenues. The second factor is the operational cost; in a 30-year maturity investment, OpEx is as relevant as CapEx (which is deployed in a five-year time frame).

## About the Authors



Industrial Equipment.

Paulo Vandor is a Managing Director, Partner and co-head of L.E.K. Consulting's São Paulo office. He has more than 15 years of experience advising organizations on corporate and competitive growth strategies, organizational transformation and operational restructuring in several capital-intensive sectors, including Energy, Oil & Gas, Pulp & Paper, Cement, Mining, Construction and



successful bid in a auction for electricity supply.

Fabio Zaffalon is a Principal in L.E.K. Consulting's São Paulo office. He has nearly 20 years of experience and specializes in corporate finance, operations, M&A, CapEx projects and corporate strategy. Previous work for clients includes the acquisition of Brazilian electric power generation assets by a German firm and investment in a new power generation plant in Brazil, leading to a

## About L.E.K. Consulting

L.E.K. Consulting is a global management consulting firm that uses deep industry expertise and rigorous analysis to help business leaders achieve practical results with real impact. We are uncompromising in our approach to helping clients consistently make better decisions, deliver improved business performance and create greater shareholder returns. The firm advises and supports global companies that are leaders in their industries — including the largest private and public sector organizations, private equity firms, and emerging entrepreneurial businesses. Founded more than 30 years ago, L.E.K. employs more than 1,200 professionals across the Americas, Asia-Pacific and Europe. For more information, go to [www.lek.com](http://www.lek.com).

L.E.K. Consulting is a registered trademark of L.E.K. Consulting LLC. All other products and brands mentioned in this document are properties of their respective owners.  
© 2017 L.E.K. Consulting LLC