I. INTRODUCTION

The purpose of this paper is to present an analysis of certain aspects relating to wind power financing in Brazil. It aims at presenting general historical facts of the industry, overview of specific requirements from the National Bank for Economic and Social Development (“BNDES”) for financing such projects, funding alternatives, and general risks associated with the sector that are relevant for both project owners and financiers.

II. BRIEF BACKGROUND AND POTENTIAL OF THE SECTOR

Wind power energy in Brazil had its first indication in the year of 1992, with the beginning of commercial transaction of the first wind turbine in Brazil, as a result of the partnership established by the Brazilian Center of Wind Power Energy and The Energy Company of the State of Pernambuco, by means of the financing granted by the Danish research institute named Folkecenter. Such wind turbine, with 225 Kilowatts (KW) capacity, was the first to start its operation in South America, and it is located in the archipelago of Fernando de Noronha.

Early in the 2000’s, federal government implemented programs to stimulate the development of the industry more broadly. During the energy crisis on 2001, the Emergency Program of Wind Power was first implemented and then replaced by the Incentive Program for Alternative Sources of Energy (“Proinfa”). Proinfa was created by federal law and is the starting point for all government actions for purposes of developing renewable energy in Brazil in larger scale. Such program aimed at strengthening the Brazilian option for supporting renewable energy development by means of a system which is similar to a feed-in tariff system.

Among the advantages of wind power, it is possible to mention: (i) the contribution to the sustainable development of the energy sector, (ii) diversification of the Brazilian energy matrix and the mitigation of the hydrological risk, (iii) decrease of the dependency of fossil fuels, (iv) reduction of environmental impacts and pollutant emission, (v) attraction of foreign investment in the manufacturing of equipment, (vi) reduction of the implementation deadline with decrease of over cost risk, among others.

The Brazilian cumulative wind power capacity on December of 2014 was 4,945 MW, divided in the respective states: (i) Rio Grande do Norte 1,723 MW, (ii) Ceará 1,201 MW, (iii) Bahia 842 MW.
During the remainder of 2015, the positive tendency of growth for the wind power energy sector is expected to continue. One energy auction (auction of alternative energy sources) was already conducted on April, 2015, and three further energy auctions are expected to take place which will include wind power energy. One auction (A-3 type, new energy auction) is already scheduled to be carried out on July 2015.

III. BNDES SPECIFIC REQUIREMENTS

Wind power project developers have interesting line of financing from the BNDES. In order to qualify for such subsidized financing, owners need to purchase wind turbines ascertained by the BNDES as having a minimum percentage of local content in its manufacturing, which would be conducted by the manufacturer through a specific verification procedure. For 2014 auctions, BNDES coverage is be limited to 80% of the financed items amount (in case of medium-large enterprises, large enterprises, public administration entities, the BNDES participation may be extended to 90%).

a) COMMON CORPORATE STRUCTURE

Following the requirements of certain recent ACR auctions held on 2015 and 2014, there are certain entities that are generally authorized to participate in the auction of alternative energy sources, as sellers. Further, whenever (i) a foreign legal entity individually competes in the auction process, or competes in consortium with a local entity (in which case the latter shall be the leader of the consortium), or (ii) a consortium is formed by a private equity investment fund (“FIP”) and/or complementary welfare companies to also compete in the auction process, specific purpose entities (“SPES”) shall be incorporated in order to be granted with the authorization to sell energy. In any event, despite the requirement set out in the applicable bidding documents, it is common to have an SPE being incorporated to be the entity to be granted with the relevant regulatory authorization, and to ultimately execute the relevant purchase power contract, all project documents (including the EPC and O&M contracts), lease or purchase of the real estate, be issued all applicable licenses, and contract the respective financing.

b) SECURITY PACKAGE:

BNDES financings are usually granted under a solid security package, which may vary depending on the actual structure of the transaction with the BNDES (in the case of direct financings) or the accredited financial institutions (in the case of indirect financings through onlending of funds, issuance of bank guarantees etc).

Generally, the following guarantees / securities may be established depending on the status of each project: (i) pledge / fiduciary assignment of shares, (ii) mortgage / fiduciary assignment of real estate, (iii) pledge / fiduciary assignment / conditional assignment of receivables and project documents (including the power purchase contract, EPC contracts, O&M contracts, lease agreements, insurance policies, contractors’ guarantees, performance bonds), (iv) pledge / fiduciary assignment of bank accounts, assets and equipment, and (v) accounts control and
management mechanism (including the creation of Debt Service Reserve Account, O&M Reserve Account etc). Also, during pre-operational phases, it is common to see parent company guarantees, bank guarantees and/or equity support (to cover project costs and/or debt) being granted.

c) GENERAL TERMS AND CONDITIONS

For 2014 auctions, BNDES is authorized to grant direct or indirect financings. In case of direct financing, applicable rates will be composed by (i) financial cost, which minimum amount is established by the Long Term Interest Rate (“TJLP”), a quarterly interest rate which is equivalent to 6% (from April/2015 to June/2015), (ii) BNDES basic remuneration from 1.0% year, and (iii) credit risk fee, equivalent to until 2.87% year, according to the credit risk of the borrower. On the other hand, in case of indirect financing, rates will incorporate (a) financial cost, which minimum amount is established by the TJLP, a quarterly interest rate which is equivalent to 6% (from April/2015 to June/2015), (b) BNDES basic remuneration from 1.0% year, (c) financial intermediation fee which may vary from 0.1% year to 0.5% year, and (d) remuneration of the accredited institutions which will be determined among the financial institution and the borrower. In both situations, other fees may be charged under BNDES criteria. The financing shall be paid in at least 16 years. The interest rate may be capitalized during the grace period, which will be limited to 6 months as from the start of the commercial operation of the project.

<table>
<thead>
<tr>
<th>Project</th>
<th>Asa Branca</th>
<th>Alto Sertão</th>
<th>Santa Vitória do Palmar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party (holding or SPEs)</td>
<td>SPEs</td>
<td>Holding</td>
<td>Holding (Debentures)</td>
</tr>
<tr>
<td>Installed capacity</td>
<td>160 MW</td>
<td>386.1 MW</td>
<td>258 MW</td>
</tr>
<tr>
<td>Sponsor</td>
<td>Contour Global</td>
<td>Renova Eólica Participações S.A.</td>
<td>Eletrobras Eletrosul and FIP Rio Bravo Energia I</td>
</tr>
<tr>
<td>Structure</td>
<td>- Long Term Loan BNDES</td>
<td>- Infrastructure Debentures</td>
<td>- Infrastructure Debentures</td>
</tr>
<tr>
<td>Total Value</td>
<td>R$ 450 million</td>
<td>R$ 146 million</td>
<td>Infrastructure Debentures: R$ 90 million</td>
</tr>
</tbody>
</table>

In April 2015, the Federal Government, BNDES and the Brazilian Association of Financial and Capital Markets (“ANBIMA”) announced a package of measures in order to promote the Brazilian capital markets, primarily for companies with a minimum rating “AA” and transaction with a minimum amount of R$ 50 million, with an agreed term of maturity of over 48 months. Such announcement anticipated an expected reduction of subsidized credits being granted by the BNDES. Companies which combine the raising of funds from BNDES with an infrastructure debentures issuance will be enable to reduce the cost of their BNDES funding. The benefit would also apply to companies that first raise funds from the capital markets (by means of the
issuance of debentures) and then decide to complement its funding from a BNDES credit line. It is estimated that the credit cost of the financed company may decrease from 1 to 2 percentage points per year, compared with the structure without the corresponding issuance.

Another measure indicated by the government includes the creation of a fund for the purposes of guaranteeing the payment of interests relating to certain debentures (for a maximum period of two years) arising from transactions entered into with BNDES. This measure aims to expand the guarantees for investors that intend to acquire infrastructure debentures. Therefore, in case of delay relating to interest payments by the issuer, the BNDES shall honor such payment and become creditor of the issuer.

IV. OTHER FORMS OF FINANCING WIND POWER PROJECTS

a) PUBLIC BANKS AND/OR FINANCIAL INSTITUTIONS

Despite BNDES’s lead role, other governmental entities, multilaterals and institutional investors are also active in Brazil’s project finance initiatives. A relevant player to consider is Caixa Economica Federal (“Caixa”), a financial institution held by the Federal Government. Banco do Nordeste do Brasil (“BNB”), also controlled by the Federal Government but focused on the northeast region, has provided loans to infrastructure and energy projects on terms that could be more favorable than those offered by BNDES. Recent examples are a major road system concession and the country’s first hospital public private partnership (PPP), both in the northeastern State of Bahia. Many wind power energy generation projects, for instance, have favorable interest rates and capital structures that can achieve as much as a 90 per cent debt-to-equity ratio.

<table>
<thead>
<tr>
<th>Project</th>
<th>Parque Eólico Alegria</th>
<th>Projeto Ceará I (Parques Eólicos Praias de Parajurú, Praia do Morgado e Volta do Rio)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed capacity</td>
<td>151.9 MW</td>
<td>100 MW</td>
</tr>
<tr>
<td>Sponsor</td>
<td>New Energy Options Geração de Energia S.A</td>
<td>Indústrias Metalúrgicas Pescarmona S.A. (“IMPSA”) and Energy Company of the State of Minas Gerais (CEMIG)</td>
</tr>
<tr>
<td>Structure</td>
<td>Long Term Financing BNB</td>
<td>Long term Financing Caixa</td>
</tr>
<tr>
<td>Total Value</td>
<td>R$ 820 million</td>
<td>R$ 376 million</td>
</tr>
</tbody>
</table>

b) INFRASTRUCTURE DEBENTURES

Another funding alternative that tends to become more popular, especially with the recent public announcements by the Federal Government, is infrastructure debentures. Created by Law 12,431, such financing option came with a relevant tax incentive with a view at fomenting the secondary market for local debt capital markets instruments.
In order to be entitled to such benefits, the relevant debentures issuance must be public (either with broad or limited distribution efforts) and generally observe the following terms: (i) pre-fixed interest rate, linked to a price index or the reference rate (TR), considering that the post-fixed interest rate is not allowed; (ii) weighted average maturity higher than 4 years; (iii) no repurchase by the issuer or by a related-party within the first two years after its issuance, or redeemed or prepaid (except as otherwise regulated by National Monetary Council); (iv) no resale commitment by the buyer; (v) interest paid in intervals of at least of 180 days; (vi) registered in a registration system duly authorized by the Central Bank of Brazil or by the Brazilian Securities Exchange Commission (“CVM”); and (vii) use of proceeds in the future payment or reimbursement of costs, expenses or debts related to investment projects, including those focused on Research & Development (R&D), provided that reimbursements shall be limited to certain cases and to costs, expenses or debts incurred up to 24 months prior to the closing of the relevant issuance.

Also, as a means to qualify such issuance to the relevant tax benefits, an investment project must be approved as a priority project by the relevant Ministry, in the following infrastructure areas: (a) logistics and transportation; (b) public mobility; (c) energy; (d) telecommunications; (e) radio communications; (f) basic sanitation; and (g) irrigation. The process for obtaining such approval may vary depending on the relevant Ministry. Such processes tend, though, to require demonstration of the connection of the project to a certain public concession, permission, authorization, lease etc. Entities authorized to issue such debentures include concessionaires, permitted entities, authorized entities or lessees, as well as the controlling company of any such entity, to the extent that they are incorporated as corporations.

| List of Main Wind Energy Projects relating to the issuance of debentures ICVM 476 |
|----------------------------------|------------------|------------------|
| Project                         | Renova           | Santa Vitória do Palmar Holding S.A. |
| Sponsors                         | Renova Eólica Participações S.A | Eletrobras Eletrosul and FIP Rio Bravo Energia I |
| Date of emission                 | November 15, 2014 | June 15, 2014 |
| Date of distribution             | December 29, 2014 | October 31, 2014 |
| Total volume                     | Two issuances of R$73 million (total: R$146 million) | R$90 million |
| Term of validity                 | December 15, 2025 | June 15, 2028 |
| Interest                         | National Wide Consumer Price Index (IPCA) | National Wide Consumer Price Index (IPCA) |
| Issuance fee                     | 7,6054 and 7,8707, respectively, regarding the two issuances | 7,9435 |

Source: Anbima’s website

**c) RISKS AND MITIGATION ACTIONS**

(i) Construction, transportation and logistics risks
On-site construction may not be a very relevant factor in wind power projects when compared to other power plants, especially in turbines with steel towers. There is, though, still the risk associated with the construction of the turbine itself, transportation to the site and logistics (both at the factory, during transportation and on-site). Transportation and logistics difficulties include: (i) condition of the roads, which is the most relevant way for transporting wind power generators and other components within Brazil (particularly closer to the locations of many sites where road conditions are inadequate); (ii) traffic restrictions for long length trucks and complications involving reinforcement of road structures, change of signs throughout the route etc, and (iii) construction or improvement of storage infrastructure both on-site and throughout the route (including in the ports involved).

In order to mitigate the risk of construction in general, such projects tend to involve the contracting of turnkey engineering, procurement and construction (“EPC”) contracts with strong and clear provisions as to the liabilities of the EPC contractor and applicable indemnities and warranties. They also require the hiring of specific insurance policies considering the entire chain of construction or supply (either by the contractor or the owner), as well as the monitoring of the company by a specialized engineering company. Parent company guarantees by the project owner and EPC contractors could also be implemented as a general mitigating factor. Depending on the size of the project, creation of separate portfolios could also mitigate the risks associated within the project.

(ii) Environmental risks

Environmental risks associated with wind farm plants are relatively lower than with respect to other power plants. These projects could be classified as “low environmental damage ventures for environmental licensing purposes” by the National Environmental Council (Conama) Resolution No. 279/2001. Therefore, in some cases (depending on the singularities of each wind power energy project) it is possible to obtain advantages with respect to the deadlines or procedures relating to the obtainment of environmental licenses, upon the presentation of a simplified environmental report. Despite this, the noise originated by operating wind power turbines is still an ongoing complaint by individuals located close to the site.

In order to mitigate it, first it is important to identify the causes for the noise. They tend to be mechanical and aerodynamic. Aerodynamic noises are harder to prevent, especially as the turbines work in different times of the day depending on the wind flow, and concrete measures may include redesign of blades and distance among them. In general, this could be mitigated in sites that are not located close to conglomerates. Mechanical noises, though, could be prevented by proper maintenance of equipment, regular inspection by the supplier and O&M provider and replacement of parts.

(iii) Risk of negative deviations of generation

A relevant operational risk in wind power energy projects is the non delivery of energy in the volume established in the agreement, due to several reasons, the most relevant ones being (a) occurrence of winds with lower intensity than verified in the studies performed in the project stage, and (b) unavailability of wind turbines in the top level of the reference performance index. Power purchase contracts tend not to have exclusion of liabilities of the project owners in those events.
This demonstrates the relevance of hiring a specialized entity for performing studies on wind power capacity of a given site, location of turbines for achieving optimal performance, defining type of turbine and specifications for a certain location within the site, among others. Also, depending on the nature of the event which caused the relevant deviation, EPC contractors and insurance companies may cover the owner for the discrepancy.

(iv) **Operation and maintenance risks**

Appropriate operations and maintenance of the equipment is key to ensure its performance and delivery of the energy contracted throughout the years of the relevant power purchase contract. Given the various equipment specifications, warranties granted by the supplier (as well as its exclusions) and availability of replacing materials, it is common for project owners to hire specialized companies in operating and maintaining the relevant equipment with knowledge of its particularities. Such companies could also be part of the same group of the equipment supplier.

Mitigating factors for the adverse consequences that may pertain the operation and maintenance of a unit include the insertion, in the relevant O&M contract, of a minimum availability of power generation during the operation and maintenance or a certain unit and penalties applicable for defaults arising from the operators’ actions or from the non-availability of the equipment over a certain period of time. In specific cases and for a relevant high price it is possible to have the contracting of insurance for loss of profits.

(v) **Connection with the transmission network risk**

Issues relating to transmission and distribution of energy generated by wind power plants could be an obstacle to many project developers, especially those located in more remote areas.

For ACR contracts, it may be possible to justify a delay in the beginning of operations based on a third party’s fault (i.e., the one responsible for building the relevant transmission line) and ask for an extension of the obligation to being providing energy. For ACL contracts, although there is more flexibility for negotiating the terms and conditions for the providing of energy between the parties involved, project owners may face difficulties in renegotiating the terms of the relevant contract, especially the start-up date. Ultimately, the owner may need to claim indemnification from the entity responsible for the relevant transmission line and discuss the possibility of building the line itself.

(vi) **Real estate ownership risk**

Ownership of lands where the projects will be located could be an issue for certain developers. Discussions as to the actual title to the land, type of right that the project owner has on such land, competent real estate registry to consolidate all registrations pertaining to the property, existing liens, among others, may cause trouble during the implementation and operation of a certain project.

Ways to mitigate it include full due diligence on the land, competent registries within the region, the relevant landowners, as well as execution of proper documentation with all applicable formalities (including registration, when applicable) with the actual landowners.
V. CONCLUSIONS

Wind power energy projects have progressively increased their participation in the Brazilian energy matrix. The federal government has been encouraging this sector, either by the publication of new legal provisions or by creating new financing structures with incentives for the development of industry. While the BNDES still plays an important role in the financing of these projects, other financing sources (such as infrastructure debentures) tend to be further implemented and pursued by the relevant project owners. Specific requirements would apply to either financing structure, but the corresponding security package is likely to follow BNDES standards. Despite all advantages pertaining to the choice of wind power generation when compared to others, there are still certain risks involved which may be mitigated from the perspective of both the project owners and financiers. Among these risks, there are construction, logistics and transportation risks, environmental risk, deviations on generation, operation and maintenance, among others. There are ways to mitigate all of them depending on the particularities of each project, and the development of the sector tend to demonstrate innovative ways to do that.

VI. REFERENCES


BIOGRAPHIES


He is highly experienced in banking and corporate law, cross-border financial transactions, PPPs, administrative law and M&A related to regulated sectors and regulatory matters.

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