News Release

Japan Credit Rating Agency, Ltd.

21-D-0799
October 20, 2021

Evaluation Points for Wind Power Generation Project Finance

Japan Credit Rating Agency, Ltd. (JCR) hereby provides the summary of evaluation points for wind power generation project finance as follows.

1. Introduction

Decarbonization is now an important global common issue toward realizing a sustainable society. Agency for Natural Resources and Energy publicly notified in September 2020 a Basic Energy Plan (draft) to formulate the Sixth Basic Energy Plan, aiming to achieve carbon neutrality in 2050 (declared in October 2020), a 46% reduction in the fiscal 2030, and a new reduction target to continue to adjust with an aim of achieving the higher target of 50% (declared in April 2021, compared to the fiscal 2013 level). With regard to renewable energy, which is aimed to be a main power source, the Agency indicated that it would raise the composition ratio of power source from 18% in 2019 to 36-38%, as an ambitious target for 2030. In order to achieve the target, it is an important driving force to increase volume of solar power generation from 69 billion kWh at present to 129 billion - 146 billion kWh, onshore and offshore wind power generation from 7.7 billion kWh (7.7 billion kWh onshore) at present to 51 billion kWh (34 billion kWh for onshore and 17 billion kWh for offshore). Among them, onshore and off-shore power generation volumes need to be substantially increased compared to that of already implemented. Therefore, it is necessary to drastically accelerate the pace of investment.

Since investment size per project tends to expand due to prolongation of investment recovery by selling electricity, increased size of turbines, etc., therefore, a scheme of project financing will highly likely be adopted. JCR evaluates these projects based on the rating methodology of "Project Finance" (last updated August 28, 2012). JCR views that indicating specific viewpoints and evaluation points for onshore and offshore wind power generation would be beneficial for project-related parties to analyze projects hereafter; thereby we have published this document as a supplement to the rating methodology. While arrangers and investors are highly interested in wind power generation projects, identifying risks and a breakthrough in finance schemes will be necessary to realize the participation of a wide range of investors in this field. Project financing for wind power projects in Japan is still in its very early stage, and this document also remains in the initial stage of identifying necessary matters. However, JCR intends to have dialogues with project related parties and investors based on the document, and will actively involve in evaluation of project financing for wind power generation projects.

2. Key evaluation points for wind power projects

(1) Feasibility of business

As a basic mechanism, it is a wind turbine to generate electricity by rotating a rotor attached to the tip of a tower by wind power. In order to responding to change in wind sped and wind direction through continuously carrying out pitch control which adjusts rotation speed by changing the angle of the wind turbine called a blade, and yaw control which makes the direction of the rotor follow the wind direction; therefore, selecting suitable equipment for installation place and maintenance system are vitally important in addition to stable operation. As wind turbines become larger, their manufacturers are being concentrated to major manufacturers in Europe and the U.S. According to the Ministry of Economy, Trade and Industry's Procurement Price Calculation Committee, capital expenditure for wind power generation facilities (initial costs) are in the latter half of 200,000 yen range for onshore power generation and in the middle of 500,000 yen range for offshore power generation per kW of capacity, and annual operating and maintenance costs (running costs) are slightly less than 10,000 yen and slightly more than 20,000 yen per kW of capacity respectively. Compared to the solar power generation projects, which is also renewable energy, the running costs are high, and the unit cost per power generation capacity of the offshore power generation is relatively higher than that of on-shore power generation. Cutting down the initial and running costs of off-shore projects is seen as the issue to address from the above.

(2) Sponsor

For wind power generation projects, which require operational and maintenance skills, the sponsor often acts as the O&M of the project. In order to expect stable operating results in the future, an important factor is how much the sponsor has accumulated O&M know-how. Where the sponsor's creditworthiness is insufficient, a framework to continue the project should be considered in case that the sponsor cum O&M is unable to perform the duties.

(3) Risks Related to Facilities and Technologies

Facilities used in wind power generation are increasingly manufactured by large manufacturers. At the same time, the business model of these major manufacturers has been changing from the sell-off of wind turbines to generating revenue by combining sales and maintenance services. Due to the fact, it is necessary to ensure the coverage of maintenance service, supply system of replacement parts, manufacturers' creditworthiness to provide maintenance services over the long term, etc. in addition to performance of the equipment. Attention should also be paid to whether necessary knowledge is reflected in equipment selection since suitable equipment is not selected for environment and conditions of the installation place, downtime may increases as it is planned and malfunction may frequently occur.

(4) Construction Completion risk

The construction period of wind power projects tends to be relatively short, which is less than one year in general. Despite the fact, a certain degree of time and cost overrun risk involves in such projects given that it is necessary to install several tens of thousands of components in terms of the number of parts under the unique landscape and natural environment, some projects require to secure roads, main components need to be imported from Europe, the U.S., etc. In light of these factors, EPC service providers' track record, technological capability and creditworthiness should be carefully examined at the same time of considering project risk allocation, etc., and then it is necessary to reflect them into the rating.

(5) Fluctuation in power generation volume and estimation risk

Power generation volume of wind power generation projects involve larger downturn risk than that of solar power generation projects in general. In addition to change in wind conditions, it is affected by errors in observation data, errors in estimating wind conditions under the installation conditions of wind turbines from data of wind condition surveys, turbulence, operation rates, etc. There is a risk that planned output volume cannot be obtained due to a slight difference in the installation place in some cases. In addition, in Japan, particularly typhoons and lightning strikes give impacts to the project; therefore, it is necessary to select equipment that meets these conditions[1] and also estimate the downtime appropriately.

JCR considers that conservative output volume should be adopted in the cash flow evaluation given the large fluctuation in estimating output volume such as difficulties in estimating output volume, change in wind conditions, etc. Unique attributes for each project should be considered; however, in many cases, it will be around P75. For projects with a certain operating history, JCR will also consider to check the difference between forecast and actual, and reflect it in the cash flow analysis.

(6) Operational Risk

In order to avoid malfunctions or problems and continue to operate wind power generation facilities appropriately, a certain amount of expertise is required. Repairs may need to be made under unexpected situations in some cases, and there is a risk that the cost may exceed the expectation. For wind power generation, O&M generally guarantees the operation rate. Therefore, at the same time of ensuring the coverage of guarantee, it is necessary to check O&M's experience, capability, creditworthiness, and the availability of alternative O&M to estimate the unplanned downtime appropriately. If replacement parts are imported from overseas, there is also a risk that unplanned downtime will be prolonged. Inventory of replacement parts, insurance coverage, etc. should also be checked.

[1] As an international standard, IEC standard exists. It classifies equipment by resilience against wind conditions and lightning strikes. In Japan, it should be noted that equipment, which exceeds the specification classified under the highest category of the above, is often required.

(7) Other Risks

With regard to risk relating to securing land, sponsor risk, etc., JCR evaluates whether the preconditions to execute the project appropriately are in place or not.

As for risks relating to output control, regulations and institutional changes, and natural disasters are checked by margin of cash flows and security packages in the base case. In particular, JCR focuses on the effects of mechanisms to ensure repayment obligations when cash flow declines due to unforeseen circumstances, such as suspension of dividends, and accelerated redemptions under certain conditions. Security by insurance and reserves are also included in the evaluation items.

(8) Guideline for quantitative evaluation

As a quantitative guideline for ratings, JCR focuses on DSCR. Assuming drawdowns after completion of a green project upon incorporating the above points into cash flow, around 1.5 for A category, and the first half of 1.3 range for BBB category are required based on the assumed cash flow by the sponsor.

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