Project Finance for Geothermal Power Projects

Takaya Naito

Director, Project Finance Department,
The Export-Import Bank of Japan

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PROJECT FINANCING FOR GEOTHERMAL POWER PROJECTS

1. INTRODUCTION

The Export-Import Bank of Japan (J-EXIM) has facilities, such as export credit, investment credit, untied loan, and untied guarantee, for supporting geothermal power projects.

Traditionally, J-EXIM has secured its credits by obtaining Japanese suppliers' or investors' guarantees, guarantees from first-class banks both domestic or international, or sovereign guarantees, in support of projects in developing countries. However, J-EXIM can provide project finance for projects on a case by case basis.

There is no strict definition of " project finance ", however, it may be defined as follows:

> " A financing of a particular economic unit in which a lender is satisfied to look initially to the cash flows and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as collateral for the loan."

Project finance techniques are used for a wide range of projects. It is applied to natural resource development, manufacturing and infrastructure projects. Large-scale infrastructure projects such as power, transportation and telecommunication are increasing especially in South East Asia. BOT (Build-Operate-Transfer) structure is often used for these projects.

Project finance can be applied to geothermal power projects.

The purpose of this paper is, first to generally introduce J-EXIM's principle in applying project finance for support of projects, second to examine, from the lendcrs' point, the major issues in building up a security package for power projects to which project finance will be cstcndcd. third to emphasize the necessity of the host country's support to and involvement in the project, and finally to refer to the appropriate risk sharing among parties related tu ihc project.

2. GENERAL PRINCIPLE IN PROVIDING PROJECT FINANCE

2.1 J-EXIM's principle is based on a case by case approach. The following principles are not rigid guidelines, but are important points from J-EXIM's view as a Japanese public agency and at the same time as a financial institution.

(1)As a governmental institution, the project should ha significant to Japan. Energy or natural resource development projects, where products are imported to Japan under long-term sales contracts, are good examples.

However, with the background of the increased needs for infrastructurc development, such as power, telecommunication, transportation and pan sector, in developing countries, many BOT or BOO (Huild-Own-Operate) type infrastructure projects are brought to J-EXIM by Japanese companies which expect project finance from J-EXIM.

In supporting these infrastructure projects, J-EXIM will be able to contribute to the economic development and private sector development of the host country. Such contribution will be characterized as economic cooperation which is one of J-EXIM's imponant roles as a governmental body.

(2)J-EXIM's rules is to support Japanese companies by supplementing *or* encouraging their expon. import and overseas investment activities. through financial assistance.

J-EXIM, in applying project finance loan to a project. considers the degree of Japanese companies' involvement with the project and their supports and obligations to the project. In considering this factor, J-EXIM checks, lor example. the degree of equity participation in and/or the extension of subordinate loan to the project as a sponsor. the degree and obligation for plant completion as a turnkey contractor, the support for the operation and management of the project as an operator hy providing technology assistance or hy transferring know-how. and the responsibility to offtake products, and so on.

(3)As a financial institution, the project itself should be v table. For natural resource development project, J-EXIM itself checks the reserves in detail or by hiring external consultants. For manufacturing, the assurance of feedstock supply and processing is imponant. The importance of long term sales contract is common in both cases.

(4)The project should be profitable. J-EXIM examines the cash flow of the project and makes sensitivity analysis. The assurance of debt service is the critical issue to lendcrs.

(5)The ability of project sponsors is the key tu the project. The experience and know-how of project sponsors will materially affects the successful construction and operation of the project. Completion, operation. marketing and any other risks can be minimized by the existence of international first-class sponsors which have strong commitments to the project. In J-EXIM's view. foreign partners' credibility and reliability are very important checking pnints.

2.2 With respect to geothermal power projects, principles similar to those in 2.1 will be applied. Further discussion will be made in Section 3 by major risk categories.

3. MAJOR ISSUES IN BUILDING UP SECURITY PACKAGE FOR POWER PROJECTS

In this section, each word beginning with a capital letter has the samc meaning as used in the chart shown on page 4

In controlling the risks related to geothermal power projects. the following measures should be considercd and appropriately reflected in the credit documentation.

3.1 LEGAL RISK

The existence of a sophisticated legal framework in Host Country is the premise of providing project finance.

Senior Lenders have to review the legal system by using their own lawyer. The points to be reviewed include enforcement of security interest, legal process to pursue claims, foreclosure by Senior Lenders, recognition of choice of foreign law, resolution of disputes by an arbitration forum or courts and enforceability of arbitration awards or foreign judgments.

The legal stability. namely consistency of interpretation and implementation of law by Host Country Government and courts has also to be reviewed.

3.2 POLITICAI. RISK

The political stability of Host Country is an issue of concern. Political risk includes currency inconvertibility. exchange transfer restriction, expropriation. war, civil strife and breach of contact.

Political risk will be addressed through the procurement of political risk insurance whether by public agencies or by private companies

In addition. participation of multilateral or bilateral institution would mitigate political risk that Host Country Government will interfere with Senior Lenders. In similar, if resources for project finance come from countries which are friendly to Host Country. those friendly countries' involvement in the project will prevent Host Country Government form taking actions which will materially and adversely affect the interest of Sponsors and Senior Lenders

To seek local participation in the project such as equity ownership or inclusion of host country banks as Senior Lenders will also mitigate political risks.

3.3 STEAM SUPPLY RISK

In case of geothermal power, due to the feature of the project, neither Senior Lenders nor the Project Company can take steam supply risk. It should be borne by Seller or other parties concerned such as Host Country Government.

Even though Senior Lenders do not take geothermal risk, confirmation of geothermal reservoir is very important. Senior Lenders should review an independent geothermal reservoir engineer's report which should confirm the sustainable capacity of the geothermal resources for the life of the Project. Senior Lenders' independent engineer should review and confirm the methodology and completeness of the existing geothermal resource studies prepared by the project engineer and all geothermal resource specifications in ECA and EPC Contract.

Senior Lenders' independent engineer should be satisfied with this issue.

Seller's obligation to pay for energy conversion by Project Company and to buyout the plant after the lapse of certain period of time should be assured. in the event of Project Company's inability to generate power stipulated in ECA due to lack of quantity or quality of steam provided by Seller. Failure by Seller to provide steam conforming to the specifications required under ECA, whether by reason of force majeure or otherwise, will not excuse Seller from its payment obligations for expected energy conversion.

There may he a case where Host Country Government or Seller makes a plan for the development of the local geothermal resources which will affect the adequate supply of steam for the project. Under these circumstances, some measures such as Senior Lenders' prior approval for the development plan itself may he requested.

3.4 COMPLETION RISK

Fixed-price, lump-sum. turnkey and date certain haw EPC Contract with international first-class and experienced contractor is the key to mitigate the completion risk.

The risk will be addressed principally through the liquidated damage and completion guarantee provisions of EPC Contract. Credit support (in the form of performance bond, parent guarantee. letter of credit etc.) for these obligations must be negotiated, and will vary depending on the creditworthiness of the EPC Contractor. Construction cost overrun risk is normally addressed by the fixed nature of EPC Contract. Provision of cash or subordinated loan hy EPC Contractor or Project Company to cover pre-completio r cost overruns and funding shortfall may be required, if necessary.

Senior Lenders' independent engineer plays a key role in this regard. The engineer confirms the design and technological feasibility of the project set out in EPC Contract and approves the budget during construction period

3.5 OPERATION RISK

Operator's ability to operate and maintain the plant is the key element. Senior Lenders' independent engineer should he able to confirm Operator's experience level and ability, budget forecast for the cost of operation and maintenance, and the capacity of the plant to perform consistently at a level sufficient to meet performance criteria.

Maintenance of capacity nominated at a certain level which generates sufficient cash flow to cover debt services is preferable. However. Senior Lenders typically do not have a right to veto capacity nominations directly. If this is the case, Senior Lenders can protect themselves by obtaining the right to approve annual project budget and are thereby effectively ensured that they will be able to approve the nominated capacity figures for any year prior to those figures being fixed.

3.6 TECHNOLOGY RISK

A Project with simple design and technical requirements has low risk. Senior Lenders usually support projects which utilize proven technology.

Independent experts for Senior Lenders will review the technology uscd for both construction and operation phase. This includes the design of the plant. start-up test procedure completion criteria and performance criteria.

3.1 INFRASTRUCTURE ARRANGEMENT AND UTILITY SUPPLY

Allocation, between Seller's and Project Company's responsibility for site provision, infrastructure arrangement such as construction of access roads. and arrangement and maintenance of necessary utilities such as water and electric power. should be clearly prescribed under the ECA.

Usually, Seller undertakes in ECA to make a **site** available to Project Company, and to hold Project Company harmless against third-party claims. For **Senior** Lenders, such " hold harmless " obligation should cover not only claims by third parties relating to the land provided for the site **but** also cover suitability for use, damage caused by Seller arising **out** of its ownership or administration of the site or other potential claims. The exclusive use of the site by Project Company should be also explicitly granted in ECA.

Senior Lenders have to confirm **Seller's** title to the site. If any ofrhe site is privately owned. Senior Lenders need tu find out how Seller intends to obtain the title to the land.

These may be a case where a number of households lie in or adjacent to the site. These households will have to he relocated in accordance with Host Countries' environmental laws and **regulations.** Senior Lenders wish to be assured that such relocation is proceeding smoothly and quickly without giving any delay to the construction and operation of the project.

3.8 ABANDONMENT RISK

Project company may consider abandoning the project because of (i) changes of law, (ii) the occurrence of an event of force majeure **or** (iii) changes in economic condition. ECA usually includes buyout provisions and provisions for ahandonment.

In case a change of law or force majeure event occurs, Project company will pursue to choose an option to use buyout provision rather than abandoning the project. On the other hand. Project company will prefer ahandonment whcn changes in economic condition occurs.

Consequences of abandonment vary depending **on** whether such abandonment **occurs** during the construction period or operational phasc **of** the project or on whether such ahandonment occurs due to **Sellers'** fault or Project Company's fault.

If an abandonment occurs due to Project Company's fault. Senior Lenders may wish to **accelerate** their loans, namely to request it to fully pay outstanding **amount of** principal together with interest. In case of an abandonment due to Seller's fault. Project Company's right to *make* **Seller** buyout the project should be assured and Senior Lenders' interest.; will be thereby secured.

Senior Lenders with tu protect their interests hy incorporating a provision into ECA in which **Seller** acknowledges lhat their liens in the project assets shall survive any abandonment and the corresponding reversion of such **assets** to Seller.

3.9 POWER DELIVERY RISK

There is a case where Power Purchaser constructs facilities such as transmission lines. submarine cables or converter stations in order to receive powers from Seller while Project Company constructs the project.

Under such **a** circumstances, Power Purchaser's commitment to ensure the completion of constructing the facilities and its ability to accept power delivered by Seller will strengthen the project. Howcver, from Senior Lenders' point. it is most preferable that the responsibility of Seller to pay for the energy conversion is expressly provided in the ECA irrespective of the completion **status** of Power Purchaser's facilities **or** Power Purchaser's ability to accept power. once the projcct **construction** is completed.

3.10 MARKET RISK

Investigation of power supply and demand in the host country is of course important. However. " take-or-pay " anangement for the project is the fundamental device to mitigate market risk like any other project financing transaction. **In case of** pouer generation projects, there will be only one offtaker, national or local utility agency. In such cases, it is necessary that host country **government** undertakes or ensure the utility's minimum offtake which covers capacity revenues (**covers** fixed charge including debt service) and energy revenues (covers operating **cost**).

Under ECA, Seller's obligation to pay and continue to pay for energy conversion should *be* secured in **any** event that the delivery **of** power to Power Purchaser is affected by Seller's fault. The " take-or-pay " naturc will provide the principal legal protection against market risk.

The **relevant** PPA will be important to the continuing health of **the** project. Senior Lenders wish that the terms of ECA and PPA are longer than **loan** life.

Senior Lenders should check the relationship between Seller's obligation under ECA and the taking of power by Power Purchaser under PPA. The monetary or other obligations **of** Seller under ECA may not be conditioned upon the receipt of power by Power Purchaser under PPA. but there is a possibility **that** future difficulties hctwccn Seller and Power Purchaser may affect the relationship between Seller and Project Company. Senior Lenders should review PPA to ensure that they arc satisfied with the underlying structure.

3.11 CASUALTY RISK

Casualty risk is addressed through adequate casualty and business interruption insurance requirements and buyout provisions regarding force majeure. Senior Lenders make Project Company be obligated to keep its properties and **business** insured with financially sound and reputable insurers. Senior Lenders should review a report preparcd by an independent insurance advisor concerning the insurance coverage to the maintained for the project during both the construction and operation phases. The repon should assess the adequacy of such coverage and the capacity of the insurance market.

The types of insurance generally requircd in project finance **arc (i)** or construction phasc, such as Constructor's all Risk Insurance, Ocean Marine Cargo Insurance, Business Interruption Insurance, Terrorism and Sabotage Insurance. etc. and (ii) for operation phasc. such as Material Damage Insurance, Machinery Breakdown Insurance. Business Interruption Insurance **rcsulting** from material damage and machinery breakdown. and so on.

3.12 ENVIRONMENTAI. RISK

The project should be environmentally sound and in accordance with at least applicable laws of Host Country during both construction and operatian periods. **If** Host Country's laws are loose compared to international standards. Senior landers may wish to check whether the environmental consequences of the project conform to international standard.: or not. and may make an assessment of the environmental impact of **the** project hiring an independent consultant.

Environmental issues directly relate to Project Company **but** not directly to Senior Lenders. However. in providing project finance, Senior Lenders have to be careful about environmental issues. If the project doer not go well and Senior Lenders decided to exercise their nght to take aver the project under mortgage or other securities in order to **recover** their loans outstanding, they will assume dircct responsibility for environmental matters of the project.

In ECA Seller's and Project Company's obligations to comply with environmental requirements will he explicitly mentioned. Failure by Seller to comply with environmental requirements will entitle Project Company to trigger buyout provision under ECA.

3.13 FOREIGN EXCHANGE AND TRANSFER RISK

Since the revenue of the Project Company is usually local currency denominated in case of infrastructure projects. Sponsors have to take some appropriate measures.

First. Sponsors will make the bulk of the payment streams under ECA be hard currency denominated. The intent of the allocation of revenues between local and hard currency is to allow the project debt to be serviced without currency conversion concerns. Senior Lenders have to analyze (i) the adequacy of local and hard currency allocation from a debt service perspective and (ii) the availability of hard currency to Seller to meet its hard currency denominated obligations under ECA.

Second, if the first option is not available, Sponsors will go to the Host Country Government and request it to provide assurance regarding the conversion from local to hard currency. The assurance definitely constitutes the base for the transaction.

Under project finance, the revenue from the project is the only source for debt service. From Senior Lenders' point of view. (i) the conversion of local currency into hard currency. (ii) the establishment of the offshore escrow account for the purpose of holding all of hard currency denominated revenues earned by Project Company and (iii) immediate transfer of foreign currency to the escrow account should be authorized by Host Country Government.

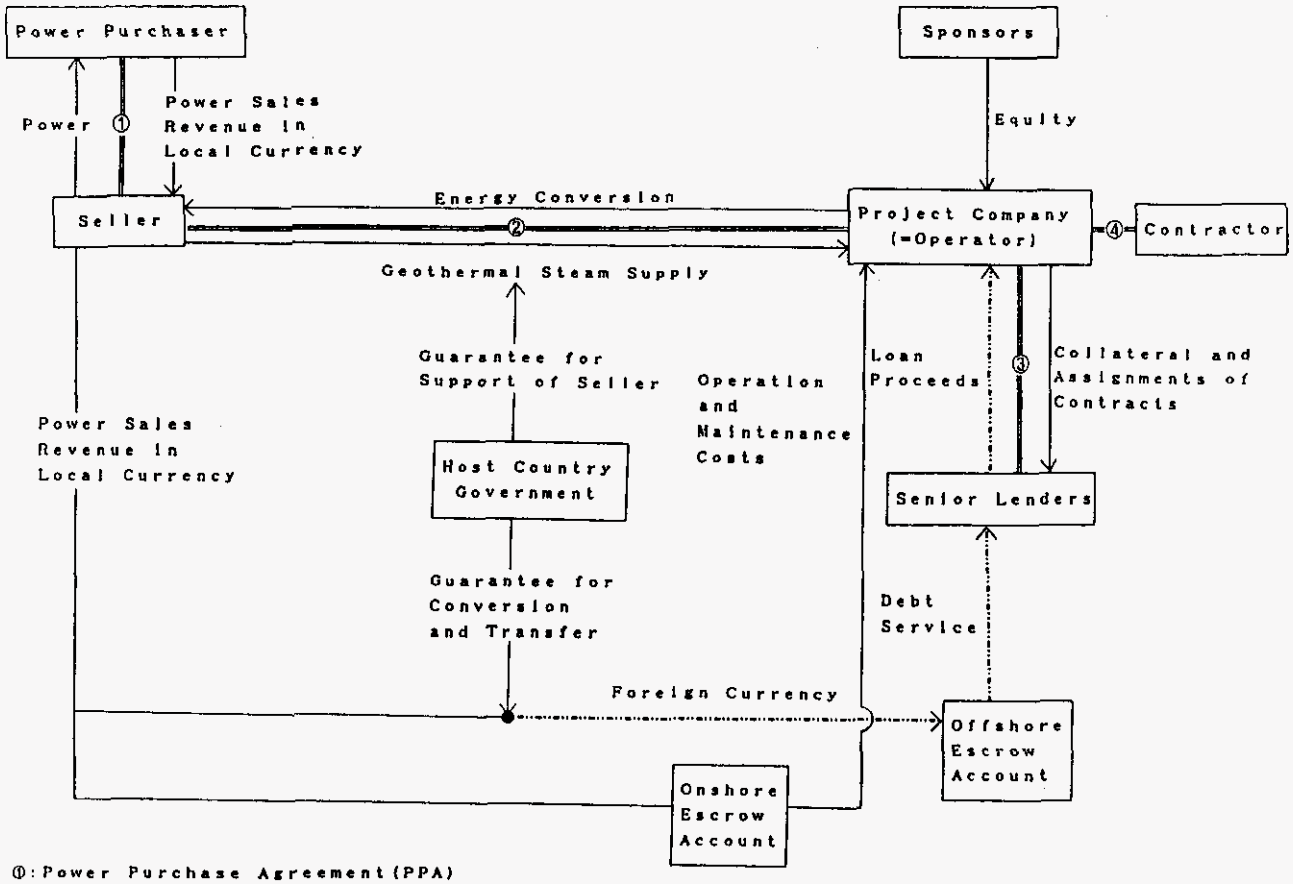
Senior Lenders should establish appropriate controls on the disbursements from that account and appropriate collateral security arrangements over deposits from time to time in that account in the credit documentation. Debt service to Senior Lenders should be given a high priority in the disbursements from the account and cenain level of funds should be reserved to service debts.

3.14 CHANGE IN LAW RISK/PRIVATIZATION RISK

With respect to changer of policies. laws or regulations, including taxes and environment, by Host Country Government which advenely affects the construction, operation or economics of the project, Seller's buyout obligation should be provided in ECA.

There is a case where Seller is a governmental institution. In such a case, there is a possibility that Seller may be privatized depending on Host Country's privatization policy. Senior Lenders may wish to have a right to approve for any plan of Host Country Government to privatize Seller. and to secure Host Country Government's undertaking to assume Seller's obligations under ECA in any event of privatization.

In order to minimize these risks also, Host Country's strong support to and decp involvement in the project is very important.



①: Power Purchase Agreement (PPA)
②: Energy conversion Agreement (ECA)
③: Loan Agreements
④: Turnkey Contract

GEOTHERMAL POWER PROJECT SCHEMEIEXAMPLEI

4. HOST COUNTRY'S SUPPORT TO AND INVOLVEMENT IN THE PROJECT

Traditionally infrastructure projects have been executed by host country government and its related agencies. Recently BOT type projects including geothermal power projects are stably increasing due to the governments' policy to reduce debt burden. to promote private sector activities by mobilizing private resources from both domestic and international market, and to encourage foreign investment and the introduction of technology.

However, BOT type projects cannot be free from governmental regulations, even though it is a purely private project. Infrastructure development will contribute to the growth of overall economy of developing countries. Host government is expected to understand its role and responsibility in the project and to promptly and properly deal with different interests among parties concerned.

Furthermore, host governments have to make efforts to establish the legal framework and financial infrastructure in order to encourage foreign sponsors to make investment. Establishment of transparent policy, legal system and administrative process in inviting foreign resources is the key factor.

From these paints, lenders needs to confirm the fact that the host country acknowledges the Importance of the project and expresses clear intention to support it. The project should be evidenced ab a high priority one in its economic development. More concretely, host government's undertaking of offtaker's obligation will be a minimum requirement.

The important role of the host government is to support external debt service of the project company. This include? the assurance of conversion from local to hard currency, the approval for opening off-shore escrow account for servicing loan and dividend payments, and permission for immediate transfer of hard currency to the escrow account. These measures taken by host government is the key for lenders to provide loans.

5. CONCLUSION - RISK SHARING -

As mentioned above, it is a matter of course that the project should be viable enough for J-EXIM to build up a satisfactory security package. All risks must be fairly shared by parties concerned and appropriately controlled. These include project sponsors, turnkey contractors, operators, feedstock suppliers, product offtakers, insures, senior lenders and host country governments.

Although the extent to which a party can take project risk depends on the return it anticipate from the project, the fundamental principle in sharing risks is that a party who can control or is in a position to control a risk has to bear the risk. For Example, senior lenders cannot take a construction risk because they are not in a position to control the risk. The risk will be most appropriately controlled by turnkey contractors. In case of BOT type infrastructure projects, host country's role in building a bankable financial scheme is important. Host country should support the external debt service of a project company by guaranteeing convertibility of local currency generated from the project into foreign currency and by approving foreign remittance of that hard currency.

Risk sharing among senior lenders is also important. J-EXIM prefers the participation of multilateral agencies such as International Finance Corporation and Asian Development Bank, and bilateral agencies such as the Export-Import Bank of the United States, as a project stabilizer