Private Sector Participation in Power through BOOT Schemes

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PRIVATE SECTOR PARTICIPATION
IN POWER THROUGH BOOT SCHEMES

Edited by
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ABSTRACT

This report reviews the issues and options for private sector participation in power supply by means of Build-Own-Operate-Transfer (BOOT) schemes, particularly in developing countries. This report is an edited transcript of presentations given by senior executives of major private sector organisations at the seminar organised by the World Bank in Washington, D.C. on April 23 and 24, 1990. The presenters drew on their experience with these organisations in implementing BOOT schemes around the world during the 1980s. Since the seminar was only intended to review issues, this report does not present a formal statement of the World Bank's policy on this subject.

The report focuses on the practical issues for implementing successfully the BOOT approach for power development from the different perspectives of host governments, power utilities and financiers as well as investors, suppliers and contractors from the private sector. The following key aspects are covered:

* objectives of the approach for all parties;
* security package and risk allocation;
* bidding and negotiation processes;
* responsibilities of host governments; and
* options for the role of the World Bank.

A recurring theme in the report is the trade-off between the potential advantages (risk sharing, additional investment resources, improved efficiency) and drawbacks (lengthy and costly negotiations, inflexibility in the plant usage, higher price from greater returns sought by private investors) of BOOT power projects for developing countries. On balance, it appears that experience to date does not provide a reliable basis for evaluating this trade-off, but it appears to show that the approach could offer a decisive net advantage once the process for developing these projects is improved.
ACKNOWLEDGEMENTS

The editor is grateful to Robert Phillips, Ranjit Mathrani, Joseph Ferrigno, Robert Carney, Richard Strzelecki, Jeffrey Moore and David Renton, who came to Washington in April 1990 to give World Bank staff the benefit of their experience at the seminar on private sector participation in power through BOOT schemes. Their presentations provide the basis for this report. Thanks are also due to Gillian Bannister for promoting the seminar, Naomi Levan for transcribing the presentation and co-editing the report, Chieko Cook for preparing the report for publication, and to the World Bank's Human Resources Development Division for co-sponsoring the seminar with the Industry and Energy Department.

The editor also wishes to acknowledge the contributions of the World Bank staff who attended the seminar, particularly Anthony Churchill for giving the introduction and closing remarks, and to those who chaired seminar sessions - Ibrahim Elwan, Randolph Harris, Gilbert Hunt, Alastair McKechnie, Sanjivi Rajasingham, Arturo Roa, Raghavan Srinivasan and Harold Wackman.
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This report reviews the issues and options for private sector participation in power supply by means of Build-Own-Operate-Transfer (BOOT) schemes, particularly in developing countries. Under the BOOT approach to developing infrastructure, a project company under private ownership, or a joint venture with a minority public participation, is set up to plan, finance under limited recourse, design, construct and operate the project facilities for a determined period under a concession granted by the host government, after which ownership of the facilities is transferred to the public sector. Limited recourse financing is based on the project risks and cash flows, in which guarantees from, or recourse to, the project owners are limited.

The report is an edited transcript of presentations given by senior executives of major private sector organisations at a seminar organised by the World Bank in Washington, D.C. on April 23 and 24, 1990. The presenters drew on their experience with these organisations in implementing BOOT schemes around the world during the 1980s. Since the seminar was only intended to review issues, this report does not present a formal statement of the World Bank's policy on this subject.

The report focuses on the practical issues for implementing successfully the BOOT approach for power development from the different perspectives of host governments, power utilities and financiers as well as investors, suppliers and contractors from the private sector. This collective analysis is thus an invaluable contribution to improving the collaboration between the public and private sectors in developing countries.

The report structure generally follows the sequence of the seminar sessions. Sessions One to Four concern generic issues for BOOT projects. The remaining sessions, Five to Nine, are focussed specifically on BOOT power projects. Following the Introduction to the seminar by Mr. Anthony Churchill, Director of the Industry and Energy Department of the World Bank, the report features presentations by:

Mr. Robert Phillips, partner of McKenna & Co., the London-based lawyers;
Mr. Ranjit Mathrani, Managing Director of Charterd WestLB., the London-based merchant bank;
Mr. Joseph Ferrigno, adviser to the President of Kumagai Gumi Co. Ltd., New York;
Mr. Robert Carney, Director of Capacity Contracts for the Virginia Electric & Power Company;
Mr. Richard Strzelecki, Vice President for Development, General Electric Power Funding Corporation, New York;
Mr. Jeffrey Moore, Director of Business Development, ABB Energy Ventures, New Jersey; and
Mr. David Renton, also of McKenna & Co., London
In their presentations and the accompanying debates, the participants supported a general view that BOOT power schemes are feasible in developing countries, but there are questions as to whether they are attractive solutions and how they can be adapted to World Bank lending policies and practice. The highlights of these exchanges covered the following key aspects:

* objectives of the approach for all parties;
* security package and risk allocation;
* bidding and negotiation processes;
* responsibilities of host governments; and
* options for the role of the World Bank.

A recurring theme in the seminar is the trade-off between the potential advantages (risk sharing, additional investment resources, improved efficiency) and drawbacks (lengthy and costly negotiations, inflexibility in plant usage, higher price from greater returns sought by private investors) of BOOT power projects for developing countries. On balance, it appears that experience to date does not provide a reliable basis for evaluating this trade-off, but it appears to show that the approach could offer a decisive net advantage once the process for developing these projects is improved. The seminar discussions about the role of the World Bank reflect this perception.

In his Introduction, Mr. Churchill suggests that BOOT projects should be used to develop local capital markets, and thus help to mobilize the vast amounts of finance needed to meet the power needs of developing countries in the S. In this context, he challenges the obligatory transfer of the assets to the public sector under the "T" in "BOOT" at the end of the concession period, since it complicates unnecessarily an already complex contractual situation. Instead, it would be better to use the sale of shares in the project company to develop the local capital market.

Mr. Phillips reviews the structure of contracts between the numerous participants and their respective roles in his presentation "BOOT Projects - The Overview" (Session One).

The issues for allocating risks and designing the financial structure, especially from the financier's viewpoint, are covered by Mr. Mathrani in his presentation "The Financial Equation" (Session Two). After outlining the traditional sources of finance for BOOT projects, he examines options for overcoming the critical constraints on financing arising from a shortage of equity, the absence of genuine long-term investors, underdeveloped local capital markets and shortage of local currency resources. His options include participation by international financing agencies, remove the "T" from "BOOT", transfer pre-commissioning financial risks from investors, and increase equity requirements to reduce the complexity of contractual protection and risk sharing arrangements sought by financiers. Mr. Mathrani concludes by reviewing options for the
role of the World Bank, specifically in risk mitigation and contingency financing, expediting the franchise award process, dispute resolution, formulating the security package, and providing contingency funds for cost overruns.

In presenting "The Successful Packaging of BOOT Projects" (Session 3), Mr. Ferrigno contends that a shortage of packaging skills causes many attempts at BOOT projects to fail. He first identifies the essential conditions for success, notably host government acceptance of the need for private participation, and the availability of credibly qualified private suppliers. He then lists the practical problems and difficulties in applying the BOOT approach. Finally, Mr. Ferrigno recommends certain principles to be followed to plan, evaluate, promote, develop, finance and implement a BOOT project, even though each project has unique features. Some of them touch upon sensitive issues that recurred throughout the seminar, such as which risks, especially exchange rate risks from foreign debt financing, the host country's public sector should carry; and the desirability of involving contractors from the outset, whilst delaying that of project creditors until the development phase is well advanced.

In his second presentation, "The Questions which Need to be Asked to Identify Viability" (Session Four), Mr. Phillips provides a useful checklist for private developers/investors and their advisors to help assess a prospective BOOT project. These questions are grouped into the following categories: government support, foreign currency remittance, freedom to import materials and plant, use of local labour, use of local contractors, and the legal environment and tax regime.

Mr. Carney's presentation "The Utility's Viewpoint" (Session Five) gives a fascinating account of the evolution of the relationship between a power utility and private power suppliers in a competitive environment. Although based on experience under the regulatory conditions for the power market in the U.S.A., it yields many useful insights for such a relationship in other countries, particularly on the differences in the perspectives of utilities and private power generators. For instance, the utility's goal is to obtain full despatch rights over the private generator's plant, whereas the latter will wish its units to be base loaded to minimise risks for debt servicing.

The evolution of Virginia Power's three solicitations for bids from private power suppliers in the 1980s shows how competition can be increased as the utility and bidders gain experience and thus confidence in the bidding process. Key aspects were the design of the Request for Proposals and the transparency of the bidding process, the evaluation of proposals including the relative importance of price and non-price factors and the use of benchmark prices and hurdle criteria, and the approach to conducting negotiations (also highlighted by Mr. Mathrani and Mr. Ferrigno).

The full range of issues for a BOOT power project are reviewed again in the next presentation (Session Six) "The Investor's/Supplier's Viewpoint" by Mr. Strzelecki,
this time from the perspective of a major international plant manufacturer which has set up a subsidiary to participate as investor in the power supply market. The presentation outlines and quantifies the main factors from GE's experience, such as typical plant performance levels, capital and operating costs, and required energy sales prices to yield target rates of return on investment. Mr. Strzelecki then analyses GE's views on credit support for BOOT power projects, comments on the competitive bidding process, and finally outlines GE's investment strategy in this field.

Mr. Moore summarises the views of another major international plant manufacturer which has also set up a subsidiary to participate as investor in the power supply market, in his presentation "An Equipment Manufacturer's/Developer's Perspective of BOOT" (Session Seven). He emphasises the need for balance between risks and rewards for the investor, and reviews the requirements for a successful BOOT power project.

Most of the key issues for a BOOT power project are interlinked in the negotiations over the pricing formula for power, as shown in Mr. Renton's presentation "Tariff Structures and Their Importance" (Session Eight). First, he compares the aims of developers and governments in financial terms. For instance, whether capacity payments should be for actual output or plant availability is critical, since the utility prefers the former whilst investors and their financiers prefer the latter. Mr. Renton then reviews the various aspects covered in the negotiations over price, particularly which financial risks are to be passed through to the utility in the price formula, bearing in mind that the investors in a BOOT project offer power, not plant as in the conventional turnkey approach. These aspects include allocation of risks from changes in fuel costs, the plant operating regime within the power system, the legal environment and interest rates. The relationship between project debt/equity ratio and tariff structure is also examined in the context of risk management.

In the concluding session (Nine), seminar participants discussed the "Lessons to be Learnt from Past BOOT projects". They covered many of the issues raised during the earlier sessions, and the salient points are recorded in the edited version of this session. The first part also summarises the views expressed by World Bank staff during the seminar on legal, procurement, economic and financial issues. The second part deals with options for the World Bank's role, particularly to help host governments prepare policies and set up institutional arrangements that encourage the private sector to supply power, issues for the Bank's procurement guidelines, and the roles of MIGA and the Bank's expanded cofinancing operations in mitigating sovereign risks for private investors.

Finally, the objective of editing the transcripts was to preserve the essence of the presentations and debates in a readable form. The editor takes full responsibility for any errors in the report arising from this attempt.
Introduction

Mr. Anthony A. Churchill
Director, Industry and Energy Department
The World Bank
Introduction

During the forthcoming decade, developing countries plan to invest approximately a trillion dollars in expanding their power sectors, or 100 billion dollars per year. About 15 to 17 billion dollars a year will come from institutions like the World Bank, the bilaterals, and other lending agencies for the power sector, leaving a gap of some 85 billion dollars a year. It seems doubtful that, particularly as the sector is presently structured, much of this money will come from the private sector, and certainly not from the international private sector. Therefore, "...bulk of these funds, as indeed, the bulk of most funds for development purposes, will have to come from within the developing countries themselves.

The first question, then, is whether there is enough money. Savings rates in developing countries are, on average, about twice that of the United States and two-thirds greater than European levels. Typically, the highly indebted countries of Latin America have savings rates of over 18 percent of the GNP, in contrast to somewhat less than eight percent in the United States. Thus, the savings are there, but they are not being mobilized, and in particular not for development purposes.

One reason that domestic savings are not being mobilized for development purposes is that governments, through their insistence on maintaining public ownership and control of investment by utilities, have foreclosed these markets from private capital. They have operated these institutions in such a fashion as to make them unattractive to private capital. It would seem quite illogical to a resident of a developing country to invest money in that country's public utilities which are likely to be bankrupt or, if not bankrupt, simply being maintained through transfers of taxpayers' money.

The issue then becomes how to raise capital from these domestic markets to finance public infrastructure. It is worth bearing in mind the experience of today's developed countries. Much of their public infrastructure was financed through private savings, not through taxpayer funds. Historically, the development of the railroads, the present public utilities, toll roads, canals, and the electric traction railways in the cities was all financed by issuing bonds and shares to private savers, and making these investments attractive. Some people made a lot of money, some lost money in the process, but the objective was to raise the money for development from private savings, and to put it into enterprises which yielded high rates of return.

Since World War II, developing countries have chosen a different route, in which public infrastructure is financed through the taxpayer by transfers of public funds. The ability to finance development this way has reached its limit. As noted, the enormous coming demand for public infrastructure cannot be fully met through transfers from the public sector, including the World Bank, the multilaterals, and other institutions with official development capital. There simply are not enough funds. This money can
only be raised by making these projects attractive to private capital, and discussions about
BOOTs, BOOs, and other projects of that type must focus on that issue.

The overarching objective is to develop capital markets. The officials of
developing countries say repeatedly that they cannot raise money this way because there
is no capital market, or the capital market is underdeveloped. Of course the capital
market is underdeveloped! When investment of private capital in the major types of
projects that take place at early stages of economic development is precluded, it is no
wonder that there is no private capital market, or a very small one. Historically, the
development of the capital market has gone hand-in-hand with the financing of large
public infrastructure projects. Indeed, the whole concept of limited liability goes back to
the funding of large-scale public infrastructure projects.

One of the ideas behind the BOOT approach is to bring in private capital
(and usually in BOOT schemes in developing countries what has been meant is private
foreign capital) together with supplier credits and assorted other types of moneys, to build
a power plant or toll road. The foreign consortium or the operating company runs the
schemes for a while and then, at some point in the future (usually sufficiently vaguely
defined), transfers the assets to the public sector of the host nation.

Hopefully, this is a temporary measure. First, I do not think that it is the
way to develop capital markets. Second, turning these enterprises back to the public
sector probably compounds the problem. When a project is built and running well, there
is little reason to turn it over to an inefficient public monopoly. It seems doubtful that
the public monopoly will be more efficient ten or fifteen years from now. Experience,
certainly, teaches otherwise.

The meaning of "transfer" (the "T" in BOOT) and how it is to be
accomplished has not been given sufficient thought. In most of the schemes in operation
or under consideration, the transfers are sufficiently far in the future that the problem
has not demanded attention. But there is some experience with transferring assets in this
fashion. One example is some of the public bus companies in Africa, which were
operated by foreign consortia. At the end of the franchise period, these companies were
to be transferred back to the public sector. As might have been expected, as the transfer
date approached, the temptation for the franchise holder was to run down the capital
stock. And the history of many of these schemes shows that that running down of capital
stock has, in fact, happened. While all sorts of carefully worded legal agreements which
include inspection plans and other measures, may provide protection on paper against this
sort of loss of capital stock, it seems unlikely that such arrangements will be effective in
developing countries.
There is an alternative to the "T" that needs to be considered, and it is one that will assist in developing the capital market. Rather than transferring a plant back to the public monopoly which has done so poorly in running that type of plant in the past, the foreign shareholders in the plant would be expected to divest themselves of their stock, up to some negotiated percentage. Ownership could be transferred in the form of paper, certificates or other instruments for investment in the local market. In other words, there would be a transfer of ownership rather than a transfer of the plant.

I happen to favor this kind of approach because I think that the primary objective behind these schemes should be not building another power plant or building another road, but developing that capital market. In all of these countries there is great scarcity of good paper assets for investment. Every time a good investment scheme comes along, it is oversubscribed. This approach would bring a group of foreigners together to build and run a plant, with all sorts of clauses in the agreements about repatriation of capital, and so on. When the project is working, with the government meeting its obligations, it becomes a prime attraction for local investors. Perhaps it would be sensible to start the process of developing the local capital market with a BOOT scheme where perhaps 10% or 20% of the initial investment comes from local investors. Starting to issue some shares and getting some dealing in the shares is the only way to replicate this process on a scale that is relevant to the capital mobilization problem facing the developing countries.

So BOOT should be thought of as part of an initial strategy to develop this capital market, not as a final objective. Setting up a BOOT scheme and getting it working is very nice. It does not, however, really solve too many problems, unless there is follow through in developing domestic capital markets rather than in attracting more and more foreign money, of which there simply is not enough. The developing countries are going to have to raise most of their capital requirements locally, and BOOT schemes are one way of developing that local capital market.

A final observation is that these schemes are enormously complex in terms of the negotiations and the agreements that have to be reached by all parties. And part of the complexity arises out of the lack of trust between parties, partly because there has not been enough experience with this sort of approach. Private investors are skeptical about whether governments will live up to their agreements, such as whether they will follow through on price increases and currency exchange convertibility. So what happens is that all the parties to the agreement hire large groups of lawyers and negotiate sophisticated contracts of enormous complexity, with difficult procurement issues, etc. At the end of the day, as I think happened in Turkey, the two sides look at each other and say, "It ain't worth it."
One solution may be to begin with these schemes on a smaller scale. Consortia or companies should not be asked to invest heavily initially, but rather to participate in small schemes to build up experience and confidence.

In the power sector, probably the best way to start small is through co-generation facilities, rather than independent utilities or independent generating facilities with all sorts of guarantees. But, certainly, in developing this private capital market, the rules of the game are established through progressive steps, as each side becomes more and more confident with each other.

The rules of the game are terribly important. There are many things that the private sector does to protect itself in these types of schemes. But safeguarding the legitimate public interests of the public sector is also important. Most of the World Bank's public sector customers are probably not capable of doing so, at least as they are currently set up. Most of them have very little experience in shifting away from using ownership to using regulation as a means of control. And the World Bank has much to do in the coming decade to assist governments in developing the rules of the game and the self-confidence to accept the private sector as investors.

So, while hearing the private sector's side of this business during this seminar, one should also think about the other side in terms of what the government should be doing and how it should do it. It is hard for the individual parties, with their different interests, to attempt to negotiate the rules of the game under that kind of a structure. Hence, more neutral bodies, such as the World Bank and others, that can step aside a little bit from this, may be able to provide some comfort to governments and others in putting together these rules of the game.
SESSION ONE

BOOT - The Overview

Mr. Robert J. Phillips

Coordinator, Major Projects Unit

McKenna & Co., London
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Session One

BOOT -- The Overview

Benefits of Private Sector Involvement in Public Infrastructure

Over the last few years, those involved in infrastructure projects have identified various elements that the private sector can offer to the public sector, and the public sector will be expecting. One such element is performance. If the private sector can actually improve performance because of the competitive pressures which are brought to bear upon it, then quite clearly this improvement will be attractive to the host government.

Moreover, burdens which would otherwise be carried by the public sector can be shifted to the private sector. The extent and the scope of the shift is really a matter of negotiation, but a considerable amount of responsibility will be undertaken by the private sector during construction and operation.

A final element is additionality. Additionality tends to be spoken of in terms of finance and whether having a BOOT project will increase the number of projects being developed in a particular host country. But additionality also means increasing the available human resources, both at present by assisting the host country in its plans, and by giving the host country's own personnel the experience to run such a project in the future. This is the element of an extra "T" in BOOITT. The extra T means "train," and it will be a very important element for developing countries.

Allocation of Risk

The first thing that lawyers tend to look at is project structure, but financial advisors, governments, and, indeed, the private sector have to look at the allocation of risk. Risk can be divided effectively into two categories. There is the risk and gain -- the risk-to-reward ratio -- and there is the risk-only element.

Allocating risk takes considerable time and planning. It is important in the public sector, as well as the private sector, to have appropriate financial and technical consultants. The critical question is how the risks can best be allocated to achieve the desired objectives. The risks of construction and operation, currency risks, fluctuations risks, and inflation risks all need to be addressed, as do the exceptional risks like force majeure. "Force majeure" is a well-known legal term, but the risks it actually represents remain uncertain. Nobody can be sure what will actually happen if war breaks out or there is insurrection. Nevertheless, all these risks are going to have to be placed somewhere, and risk distribution normally has implications for project cost. If the government accepts some of the risk, the cost (reward demanded by the private sector) may go down. If the private sector has to take some of the risk, the costs rise.
A whole series of risks have to be considered and allocated among the various parties involved, namely the sponsors, the government, and the concession agencies. This allocation is a vital element that must be done before teams of lawyers become involved in a project. Lawyers can assist, but the clear thinking has to be done at the outset. Experienced people need to take part at the early stages of these projects, both on behalf of the host country and on behalf of the private sector parties.

**Project Structure**

The structure of interlocking contracts in a typical project is shown in Figure 1-1. This is not the perfect matrix; in fact, there is no perfect matrix. As the discussions take place, the parties identify each other's positions and come up with a scheme. On balance, the elements reflected here are also reflected in other projects, but not necessarily in the same way.

**Government.** The government will grant a concession to the project company. Either the concession agreement or a combination of the concession agreement and legislation will set out the obligations and the benefits which will be received by the project company from the host government. If the project, such as the Eurotunnel between England and France, runs between two countries, there will be a treaty between two governments, and the concession may well be given by two governments to two companies.

**Shareholders.** There may be two groups of shareholders involved in a project. The initial shareholders, or sponsors, have either responded to an invitation from the host government to bid or have come up with a scheme which they believe the host government should properly adopt. In the case of the Eastern Harbor Crossing in Hong Kong, Kumagai Gumi went to the government with the idea, and the government was interested but required competitive tendering. Kumagai Gumi then won the tender and was given the award. On the other hand, the consortium which first developed the idea for the Dartford-Thurrock bridge over the River Thames in England failed to submit the winning tender. This risk is one of those facing the developer of an original concept.

The shareholders of the winning consortium enter into a "shareholders’ agreement" with each other which governs the relationship among themselves and describes how the project company will be managed. When, as is often the case, the contractor is a shareholder in the project company, there is a potential conflict of interest between its role as contractor and its role as investor. Such a conflict is viewed differently from the simple adversarial approach that has been taken in the construction industry, particularly in the United States and the United Kingdom. A collaborative approach between the shareholders is usually adopted, within which the contractors' various interests are handled. This approach reflects the need for trust which is essential in BOOT projects.
Figure 1-1: Structure of Contracts in a BOO/ Project
Contractor. Often, the contract between the contractor and the project company is a fixed price design-and-build contract, which lessens some of the risks. Financing is facilitated if the contractor takes responsibility for the design risk, because the contractor will usually assume risks for a longer period than he would under a standard construction contract. Under the latter, the contractor’s liability may be from three to twelve years, depending upon the limitations period in the controlling jurisdiction. On the other hand, in a number of BOOT projects, the contractors have been asked assume the risk at least for the life of the commercial debt or even for the life of the concession, generally twenty to twenty-five years.

Equipment Supplier. The equipment supplier will operate as a subcontractor to the contractor during the construction phase. The supplier should also enter into a contract to supply spare parts during the life of the project, or at least the early life of the project, at a reasonable cost. It has been suggested that second-hand equipment might be used to contain capital costs. Whether there are any difficulties with using such equipment depends on whether the supplier of the refurbished second-hand equipment is prepared to provide some assurance about the working life of that equipment. Obviously, there are disadvantages in using second-hand equipment, such as its lower operating efficiency than new equipment. However, the considerably lower capital cost would be a marked advantage. In BOOT projects, "tried-and-tested" technology tends to be preferred; if the plant has worked in one place, it will probably work reasonably well in another. Equipment based on unproven technology carries risks that make both government and lenders extremely nervous.

Plant Operator. The plant operator should also be involved in the project at an early stage because he can make a considerable contribution to the design process, helping to ensure that the plant is operated in the most efficient way given existing cost constraints.

Lenders. If the shareholders have contributed limited equity, lenders will be providing substantial amounts of money. The agreements, therefore, must also cater to their needs. The lenders will normally require a long-term fuel agreement to assure themselves that the plant will actually produce electricity. Sometimes, however, an innovative approach makes such an agreement unnecessary. In one project proposed for the Philippines, for example, the government will supply the fuel, and the power plant will act, in effect, as a processing plant by taking the fuel and converting it into electricity. This approach has some advantages in terms of tariffs, and in some circumstances it can be quite attractive.

Purchasers. For the lenders, the offtake agreement is the most important of all, because it addresses their concern that there will be revenues generated from the project to service the debt; the investors would also like some assurance that they will actually receive a dividend on their capital.
Insurance. While allocation of risk is essential, insurance can mitigate some of the risks. For example, business interruption insurance is usually available to provide funds for at least some period of time if there are machinery or plant break-downs which reduce the available capacity. On the other hand, with toll roads and other civil engineering projects, the market seems resistant to providing latent defects damage insurance. Absent such insurance, it would be difficult to have business disruption coverage because there is no policy to which it could be attached. So at an early stage, it is helpful to have insurance advisors to consider when insurance might be obtained to mitigate risks. Insurance advisors are also necessary to determine the impact of any requirement to take out insurance in the host country, in terms of re-insurance and cut-through clauses in financing contracts. Finally, the government also needs insurance advisors to determine for which of the risks it bears it can obtain insurance coverage.

Thus the project structure generally includes all of these elements, but the roles of the participants and the relationships among them vary from project to project. For both the host government and the private sector parties, it is important that risk allocation has been carefully considered before the project package is put together.

A simple power station can serve as an example of how the elements of the project structure fit together in a private sector power project. The power station will require fuel, such as gas or coal, to run the generators. There is the transmission line which is owned by the utility in the host country; the operator and the staff are from the private sector. Given a fair wind and a lot of luck, power will be produced at the appropriate rates, so that there will be no penalties applied. The project will entail a whole raft of contracts. There is a long-term gas or coal supply contract, which is an agreement between the supplier and the franchisee. There is the power offtake agreement, which is primarily between the project company and the local utility.

Finally, there is a role for lawyers, which is to try to help people pull the project strands together. If there are delays, it is the lawyer's role to press hard and fast, so that the project is brought back on schedule.

All of these elements provide the basis, hopefully, for a viable scheme which enables the private sector to make a contribution to the public sector.

Costs

The overhead costs for a BOOT scheme incurred in getting the agreements and putting the whole project together, vary from project to project. These costs depend largely on the government and the parties involved. With BOOT-type projects, one concern of the private sector participants is high expenditure at the front end without necessarily any assurance that they will win the contract and the project will actually be
built. Negotiations sometimes take two years. While it does not necessarily mean having people fully engaged for two years, nevertheless the cost entailed is very high, as retaining a negotiating team can cost US$25,000 a day. Once the initial deal is put together, there are also lawyers for the lenders, the loan stockholders and other parties, and the costs begin to mount very quickly. So it is important for all the participants to appreciate fully the need to facilitate the process. When faced with any proposal from the other side, it is important that the parties begin to ask, "Why not?" rather than "Why?"
SESSION TWO

The Financial Equation

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Session Two

The Financial Equation

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Analytical Requirements for Developing a BOOT Project

BOOT projects are really a variant of limited recourse financing projects. Limited recourse financing is financing on the basis of project risks and cash flows, in which guarantees from, or recourse to, project owners are limited. Its benefits include freeing potential borrowing capacity for the project sponsors, sharing project risks, and bringing private sector efficiency and commercial discipline to the power development process.

BOOT financing requires a combination of detailed risk analysis - to assess whether all the risks will be satisfactorily covered; economic analysis - to demonstrate acceptable rates of return to the government and the project; and financial analysis - to demonstrate adequate cash flows. It is thus a complex process that involves reconciling, within a defined time period and at an acceptable overall cost, conflicting variables and requirements so as to meet the objectives of lenders, governments, investors, contractors, suppliers of raw materials, and purchasers of output.

The benefits of limited recourse financing, however, have a price. There will be incremental costs which are, in effect, an insurance premium. The project development process will be lengthy, although this time may be offset by the tighter project construction and planning under private sponsorship. Project sponsors will be constrained in their ability to distribute cash and operate without external review. The government will also be limited in its ability to change the business environment for the project.

The range of problems associated with BOOT projects varies enormously between developing countries. At one extreme, a country such as Tanzania will combine the full range of risks. At the other extreme, countries like India, Malaysia and Thailand do not have problems of currency convertibility at all. Between the two extremes are countries like Pakistan, in which the perceptions of currency convertibility vary enormously from year to year. Five years ago, it was very bad, three years ago it was good, and now it would be somewhere in between.

Not surprisingly, countries with high GNPs relative to other developing countries, on the whole, have been doing fairly well in promoting BOOT projects. To the extent that the investors’ perceptions of the political risk is low, there is no need for other support either, beyond catalytic support in defining and developing the framework of the bidding and franchising processes. In the countries constrained by the risk aversion of investors and lenders or public expenditure constraints, BOOT is a mechanism for developing projects which would not otherwise be built. In other countries without
these constraints, it allows projects which previously would have been done in the public sector to be done in the private sector, so that the public sector's resources can be used elsewhere.

Ten years ago, a billion dollar project in a developing country would have been done entirely in the public sector, with the involvement of the World Bank and many bilateral institutions, and probably export credits guaranteed by suppliers' governments as well. In the present environment, at least half the resources might be tapped from sources which otherwise would not be available to the country.

The development of a BOOT project requires effective integration of the financial, technical, commercial and legal processes. It requires an early harnessing of necessary expertise, and early development of the project timetable. The process includes several stages. The first step is clarification of the host government's objectives and constraints, including financial constraints. Preconceptual evaluation studies must be done. A principle operating partner must be identified, and negotiations completed on technical, commercial and financial issues. Next, contractual arrangements must be developed. Other equity partners must be identified. Detailed engineering studies are then done, a financing strategy and plan developed, and lenders and contractors secured. Finally, the contract and loan documents must be completed. It should be borne in mind that the process is unlikely to take less than at least two years, and probably three.

While energy projects in developed countries have been done with limited recourse financing, such financing has been unusual in developing countries due primarily to problems over foreign exchange convertibility; the lenders' perception of the political risks, particularly with respect to host government obligations; and domestic operating risks. BOOT financing of import substitution projects is particularly unusual because in addition to all of those elements, such projects also have domestic market risks.

**Risk Characteristics of BOOT Power Projects**

BOOT power projects have several particular characteristics. First, BOOT projects, to date, have been for finite concession or franchise periods. Second, they involve certain political and economic risks created by the general practice of having a single purchaser, which is usually a state-owned utility. Third, there are foreign exchange convertibility risks in import substitution projects, in contrast to fertilizer or mining projects which usually generate foreign exchange from project revenues. Finally, since very few OECD countries have domestic private sector power companies, there is a shortage of international companies genuinely interested in the investment and operation of power stations in developing countries. Again, this contrasts with projects in the mining sector, the petrochemical sector and other sectors where there are multinational
corporations and major companies with a genuine long-term interest in owning and operating the projects.

Financeability is made more difficult by the shortage of genuine long-term investors. The need to value and transfer the assets at the end of the concession period exacerbates the problem, because it tends to decrease the value of the assets and thus the attractiveness of BOOT projects. From the financier's point of view, the loss of value reduces the effective equity in the project, and hence increases the leverage and the risk of loss in these projects. In addition, the political risks are increased considerably by the fact that there is a single state-owned purchaser. Finally, the reliance on the domestic market for the project output increases the economic risks. BOOT projects, because of these characteristics, are thus even more difficult than operations based on conventional limited recourse financing.

Before the creation of a project's financial structure, the project must be subjected to intensive risk analysis. The risks may be divided into three categories, pre-commissioning period risks, post-commissioning period risks, and risks which apply throughout the project's life.

Pre-Commissioning Period Risks

There are a number of pre-commissioning period risks, among them the risk that the project will be aborted by the shareholders, and the risks of late start-up, cost overruns and delays arising from force majeure, damage encountered on site, and bankruptcy of shareholders and suppliers. There are risks associated with availability of the fuel supply infrastructure, and the risk that any other required infrastructure will not be completed because of force majeure or other reasons. There is the risk that government requirements, such as customs, procurement, and construction work force regulations, will increase construction costs or cause delays. The main pre-commissioning risks are generally capital cost risk and the construction delay risk.

Post-Commissioning Period Risks

The second category of risks is the post-commissioning period risks, which are risks which emerge once the project is operational. Risks in this category are output shortfall due to physical damage, strikes, or general operational reasons; output shortfall due to inadequate fuel supply; lower offtake than desired; power prices below forecasts level; inflation and operating costs above forecast levels; and again, government action, such as changes in fuel supply arrangements, import restrictions, tax regime, or safety and environmental legislation, which effects the viability of the project. The most significant post-commissioning risks are the operating risks arising from the domestic circumstances of the project, the price and offtake risks, and technical risks specific to the project.
Project Lifetime Risks

The risks to which the project is exposed throughout the project life are foreign exchange risks, increased interest rates, nationalization and expropriation, and delays of the date of commissioning. Particularly important in developing countries are the currency convertibility risks, general political risks, and the risk that shareholders will not fulfill their joint venture responsibilities.

An important general issue for import substitution projects is how the project company protects itself from exchange rate devaluation, if it has a high amount of foreign debt. This issue remains for creditors even if the project company has been able to secure flexibility in pricing for its sales or if it is financing the project with a relatively high proportion of equity. Particularly in a stand-alone project financing structure for an import substitution project, there will have to be measures to deal with the exchange rate risk.

Currency convertibility risks are the second main area of concern. In import substitution projects, the risk of non-availability of foreign exchange or exchange controls is particularly important. It would be almost inconceivable for the lenders or the investors to assume a significant risk that the project company will not be able to repatriate sufficient funds to repay its foreign debt obligations. The net effect of the project on the country’s debt service burden must also be considered in developing BOOT projects.

The general political risks of concern are the abrogation of foreign purchase agreements, a change in taxation conditions, changes in requirements for indigenous involvement, and abrogation of fuel supply arrangements. The risk that Government may use actions of this sort to influence or interfere with a project is one reason that investors often require high rates of return. Finally, the breach of shareholder undertakings, particularly with respect to financing cost overruns during construction and operating deficits after commissioning, is also a concern.

Financial Structure

In the end, the lender will gauge the project’s ability to withstand the risks involved, especially critical ones, by looking primarily at the coverage ratio and the debt service ratio. The former is the net present value of the future after-tax cash flows over the project life, divided by the loan balance outstanding; the latter is the annual cash flow available for debt service divided by annual debt service. It is not possible to make a general statement that a project must have a debt-service-cover ratio of, for example, 1.2, 1.25, or 1.5. Rather, the ratios which the lender will require depend on specific project risks and the way they are handled by the web of contractual arrangements.
By contrast, the investors will be interested in the internal rate of return offered by the project. The minimum acceptable rate will depend mainly on the project’s riskiness as characterized by the type and location of the project, and on the risk sharing arrangements and the investors’ opportunity cost of capital.

Lenders and investors undertake a sensitivity analysis for changes in project capital costs, the selling price of power, the construction delay, power output, fuel costs, other operating costs, interest rate and exchange rate fluctuations, and combined sensitivities. There is nothing new about this sort of analysis, which any sensible project owner would normally do. But because of the controlling principle is that a BOOT project, once commissioned, must be self-financing, it is very important that the project meet minimum financial criteria even with pessimistic assumptions or the combination of the above factors.

Requirements of Lenders with Respect to Credit Structure

The lenders have various requirement in terms of the credit structure. There is no automatic formula for the financing of these projects. On the contrary, the web of contractual arrangements can vary enormously from project to project, depending on the strengths of the individual participants and the amount of equity in the project. Conceptually BOOT projects have three levels. First, one can identify the issues which arise in BOOT projects generally. Then there are issues specific to the host country concerned. All of the general BOOT issues have to be evaluated within the framework of the country’s legal system, capital markets, financial markets, and other aspects. Finally, there are issues specific to the project itself. The question of debt equity ratios is illustrative of the inapplicability of a generic standard. It is possible to do projects with a 10% equity in some countries, although this low level would require a whole web of contractual agreements for allocating the risks. But in other parts of the world, equities have to be at least 25 to 30% of the total project cost for a BOOT project to be feasible.

Pre-commissioning Period Structure. For the lenders, a completion guarantee is critical to the pre-commissioning period structure. The lenders normally insist that there be full recourse to the owners of the project until the completion test (e.g. physical completion, performance output) is satisfied. An investor in combination with a major industrial partner or a major power station utility can take on the completion risk. Completion guarantees are traditionally required pro rata to the investors’ equity interest.

Where no single party is willing or able to bear all the risks, there needs to be alternative structures which handle the risks of completion and cost overruns satisfactorily. Credit structures have been developed from detailed project evaluation
which do not require a full completion guarantee. The structure which tends to be created combines tight fixed-price contracts with performance guarantees, and it provides that no investor may abandon the project for other than political or force majeure reasons. If an investor leaves the project for commercial reasons, he will remain liable for his share of project costs. Limited stand-by equity financing also has been created with a pool of funds to pay for cost overruns. The precise arrangements are a function of the perceived technical risks in the project and the nature of the performance and completion support. For example, a well-proven technology and a contractor prepared to give a good performance guarantee might alleviate a number of concerns. Absent such circumstances, there would have to be more equity financing or a pool of funds to provide for added costs.

**Post-Commissioning Period Structure.** The lenders' requirements for the post-commissioning period structure are more numerous. They include a fuel supply contract, an energy purchase agreement, an escrow account, insurance, and a loan repayment profile. There may be a contingency fund in case cash flows are inadequate, restrictions are introduced on dividend payments and on the assignment of project agreements, and to cover other covenants and restrictions.

**Other Lenders' Requirements.** The credit structure suggested above does not answer certain of the lenders' major concerns relating to the reliance of the BOOT power project on the domestic market. The main concerns are abrogations of the energy purchase contract (including pricing formula) by the government or the utility, the foreign exchange availability risks, the general political risk, and the ability of the shareholders, including the government, to fulfill their share of the completion obligation. These concerns can be at least partially alleviated by an adequate distribution of the risks and rewards, by giving the host government a financial stake in the project, and by including a role for international bodies, such as the World Bank, in the arrangements.

**Sources of Finance**

The traditional sources of finance for these projects are export credits, the medium-term syndicated loan market, the international development finance institutions, the national aid agencies, alternative forms which include the cash or capital markets, and domestic capital markets.

The export credit agencies which traditionally provided long-term credits that were guaranteed by their governments, have been reluctant to become involved in this type of project financing. However, this situation is changing, and provided the credits can be capitalized effectively, and bearing in mind the procurement implications of these financial sources, these agencies can be a very useful and important source of credit.
The medium-term syndicated loan market is a very flexible source of short-term financing, but it is highly susceptible to political risks and perceptions of political risks.

There are really two categories of international development finance institutions. There are private sector institutions such as IFC, OPIC, CDC, and DEG, and there are institutions such as the World Bank and other multilateral agencies. The former play a useful role but, given the size of the projects, their participation has often been relatively minor. The role of the World Bank and other multilateral institutions is discussed later.

The national aid agencies, which have traditionally been oriented towards supporting the public sector, and for that reason lend only to governments, are driven by national supply interests. Domestic capital markets are presently too limited to support substantially the heavy demands for financing from power investments.

In terms of foreign equity, long-term industrial investors are few; short-term industrial investors, such as contractors and suppliers, have their own constraints; development finance institutions are useful but do not have enough money; and commercial investment institutions are nonexistent. Domestically, potential sources of equity are the host governments, parastatal institutions, development finance institutions, industrial and commercial institutions, and the public. However, the constraints on these institutions are well known. There is a shortage of domestic industrial capital entrepreneurs, and a lack of debt and equity markets. Therefore, the preferred option is government equity participation, which has the advantage of ensuring the government’s involvement in the project’s success, which is important for ensuring provision of project inputs, such as natural gas, but carries the disadvantages of bureaucracy, government control, and political pressure. Another problem is the shortage of foreign exchange for government equity. This money may come from bilateral aid, development finance institutions, or multilateral aid institutions.

The prime focus of emergent investment funds, mutual funds, and all the fashionable Thai, Korean, Malaysian, Indonesian, Indian or Hungarian funds has to be to invest in quoted securities. They could invest in unquoted funds, which would be venture capital, if there were a genuine prospect of those issues being quoted on stock

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1 IFC = International Finance Corporation -- a member of the World Bank Group; OPIC = Overseas Private Investment Corporation -- a U.S. Government Agency; CDC = Commonwealth Development Corporation; DEG = German Development Agency.
markets in the near future. In the end, however, all these funds must realize returns on their investments.

One of the reasons for removing the 'T' from "BOOT", is to bring these projects to capital markets so that it is possible for investors to invest in them. There is no reason why there should not be investors in these types of projects, within in a well-defined framework of economic and financial regulation.

Investors are unlikely to be interested in the projects prior to construction. It is unfortunately the case, with respect to mutual funds, that even in developed countries, investors are not very interested in investing in major greenfield ventures before the operation of that plant commences. (The tunnel under the English Channel has been about the only recent exception to this trend). But if shares in the project company are put on the capital markets after the construction period, it is likely that the mutual funds will be quite interested in them.

With regard to underwriting or redeemable instruments and debentures, it is worth bearing in mind that there are different types of risks in these projects, some of which are local capital market risks, and the others which are more the foreign type risks. India is an example. The local capital market is perfectly able and willing to underwrite major greenfield projects, in conjunction with the underwriters. Chartered WestLB is a major merchant bank in India and underwrites major issues very frequently. So it is certainly possible.

On the other hand, there would clearly be problems with a proposal that a foreign institution underwrite an underdeveloped capital market without knowing what the framework of regulation in the domestic stock market is likely to be in five years time.

The instruments selected for financing will depend on the particular host country. Many projects which have taken place in one part of the world could not take place in another because of differences in the political, economic and financial environment, the industry sector, the amount of the equipment supply, the asset life and payback period, the need for direct foreign currency generation, and the nature of the risk analysis. The financing arrangements may also depend upon whether a major developed country has significant political, commercial or industrial interests in the host country. In securing financing for a major BOOT project or limited recourse project, it is often helpful to identify a local entity, such as an equipment supplier or a development institution, which is particularly anxious to proceed with the project and can serve as a catalyst for the project.
Thus, the process of selecting these instruments will involve reconciling the cash flow requirements of the project, the catalytic role of institutions, the financing availability, the lenders' requirements, and the NPV of the financing for the equipment supply costs. The sequence of events must be carefully constructed, so that the right moment is selected to bring in an international development institution to add credibility to the project. The right export credit agency then has to be involved. To stimulate progress, it is useful to create competition between the agencies of different countries to participate in the project.

Options for Overcoming Critical Constraints on Financing

As mentioned above, the critical constraints on the availability of finance are shortage of equity, both foreign and domestic, the absence of genuine long-term investors, underdeveloped domestic capital markets, and shortage of local currency resources.

There are a number of possible avenues for meeting these problems. One is greater participation by the international financial institutions. Such institutions as the IFC, the CDC, and DEG would need to increase their access to funds for supporting major private sector projects. Second, governments need to realize that they can meet both their political and economic objectives by shifting bilateral aid from straight funding of public sector projects to financing government equity contributions to private sector projects or domestic private sector intermediaries for these projects. This change is taking place slowly. Debt equity swaps represent a third potential avenue. However, the applicability of such arrangements is limited; they are mostly used in Latin American countries, and relatively few of them materialize, because they require some difficult choices by the government concerned.

Removing the "T" from BOOT will also help ease financing availability problems. "BOOT" is really a misnomer. It is really only to meet the ideological needs of governments that there is a "T" in the term at all. Certainly, if transference takes place at all, there is no conceptual or economic reason for it to be a physical transfer to the state rather than a sale of the shares in the market place. It is unlikely that major, genuine, long-term foreign investors will be interested in participating in a project which is going to be transferred back to the state effectively on a knock-down basis.

One concern about dropping the "T" from BOOT is that only the host government may have the creditworthiness to raise the money necessary to fill a significant financing gap. Abandoning the "T" does not, however, deprive the government of compensation for having provided that financing. At the end of the concession, its equity can always be sold off in the market place, just as if it was a venture capitalist in
the same way as other project promoters. The government receives returns on its investment in the same way as the other investors.

The British government's experience with the half a billion dollar franchising of the second River Severn Crossing is instructive. It was quite clear that the result of incorporating ultimate reversion back to the public sector was that many of the financing proposals for the project was based on pinpoint equity, that is, a hundred dollars equity. This can also lead to particular problems about maintaining an incentive for efficiency towards the end of the concession period. Therefore, to ensure that efficiency will be maintained through the end of the franchise, a very elaborate mechanism needs to be constructed that includes various penalties, performance yardsticks, criteria, and stringent contractual arrangements. It would be much more efficient for the government not to have required reversion. Indeed, the British government has now announced a new policy on private sector financing, and it is prepared to consider franchise periods in excess of a hundred years, which means, in effect, long-term private sector involvement.

**Options for the Role of the World Bank**

Lenders and investors need to see that a host government is sufficiently interested in the success of a project such as a power station, so that the host government will find it extremely difficult to renounce its obligations. The involvement of a combination of major export credit agencies, bilateral financial institutions, and international financial institutions is a firm essential. A host government will be deterred from behaving awkwardly by having to contend with eight or so different institutions and governments at the same time.

Adequate distribution of the rewards of a project is also essential to project success. The host government's own political interests must be protected satisfactorily, so that there should be no perception of taking advantage of the host government. One approach is to give the government an incentive to participate in the project by offering it a share of the profits above a certain minimum return, before the other investors, in exchange for making a concession in terms of infrastructure, fuel supply or other support. This share of the profits is quite apart from its equity involvement. The government, therefore, has an incentive to participate, and the arrangement can demonstrate to the local populace that they will share and benefit from the gains of the project.

Assuming the World Bank supports the promotion of successful energy projects which minimize claims on the public sector in the host country, the World Bank's role should be to help catalyze projects with limited recourse financing by providing significant support not easily provided by other parties. One way to assist is by providing initial finance for the government's equity contribution. Another method is with risk mitigation by contingency finance. A third option is with expediting the franchise
award process. Each of these options carries major implications for the Bank's assistance strategy, including coordination with IFC and MIGA, and integration with the project appraisal timetable.

The Bank can provide direct financing to a project through B loans, traditional co-financing, financing of the host government's initial contribution, or financing additional construction components. Of these devices, the latter two are most often appropriate for these projects. However, there are certain constraints, such as questions of procurement, and the fact that such financing might require more host government debt exposure than necessary, because World Bank financing for the host government's contribution has to be repaid rather than left in the project as equity. And it may be that, other than in cases where there is an equity shortage, initial World Bank financing does not address the lenders' real concerns, which are the questions of domestic political risk and currency convertibility risks.

Taken together, MIGA, IFC, and the World Bank make a powerful and effective group. They have useful and powerful complementary roles. The IFC can play the role of the direct lender to the project, while the World Bank is involved in the creation of policy and financial frameworks and as an expert advisor to the government, as well as providing all or part of the government's equity and assisting in risk mitigation.

The potential role of the World Bank does not change by virtue of the removal of the 'T' from "BOOT." Because no matter how entrenched in the private sector the project might be, it is always possible for the host government to be involved, be it as a supplier of raw material, a purchase of the offtake, or as investor.

Risk Mitigation and Contingency Financing. Another concern of the lenders is the risks in the energy purchase agreement. If the state-owned utility is to buy the power, the question arises of where the foreign currency is to come from to convert payments into foreign exchange. There are also purchase and price risks, fuel supply risks, and the general political risk. The answer depends to some extent on other available measures of insurance coverage. If there is, for example, political risk insurance from ECGD, or from OPIC, and that is combined with MIGA, there would be no need for the World Bank to protect these investors. On the other hand, in various areas for which it might be difficult to secure insurance, it would be useful for the World Bank to

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2 MIGA is the Multilateral Investment Guarantee Agency of the World Bank Group.

3 ECGD is the Export Credits Guarantee Department of the United Kingdom.
play the role of providing reassurance that the host government will behave responsibly rather than just providing direct financial assistance. Because even with insurance, no one willingly enters into a project on the assumption that the insured event will occur.

A second option for the World Bank’s role is, therefore, in risk mitigation and contingency financing. One solution to the problem of the foreign currency risks is a World Bank rollover guarantee or contingency loan to the government which is triggered by the host government’s failure to pay for energy in foreign currency, uphold the price formula or ensure the fuel supply. For example, the World Bank could make available something equal to one year’s debt service burden of the project. If the project company deposited local currency in the central bank which it is then unable to convert, money from the World Bank loan would be paid directly to the project company for the purpose of paying the lenders. That World Bank loan would be a loan to the host government with a maturity period of six months, because the next debt service payment is six months later. Failure to repay the World Bank within six months would put the host government in breach of its obligations, and the World Bank could then seek its own remedies, including, possibly, the ultimate recourse of withholding new lending from the country.

The effect is to have a revolving facility which provides the lender with the reassurance that there will be finance available for the debtor’s obligation. The amount of the loan will depend on the lender’s belief that the World Bank would insist on the repayment of its loan in the six-month period as planned, or instead would take its time over long negotiations with the host government and run into the time for the next repayment six months later. In such circumstances, World Bank support would be required that is equal to one year’s debt service for the project.

Another option for the World Bank’s role is to provide support toward the completion guarantee where the host government, as an investor in the project, has cash constraints and is in genuine doubt about its ability to come up with the stand-by financing required for cost overruns. The World Bank would make a guarantee in the form of a contingent loan activated by the government’s failure to provide its share of completion funds, with the precise amount depending on detailed project analysis. The loan would be limited to an amount sufficient to provide lenders and host governments with the necessary reassurances with respect to the government’s liabilities. Such a loan would clearly require a lengthy repayment period. The World Bank funding would only be available for the host government’s share of that cost overrun financing, and not for the private sector partners’ share of the obligation. The other participants, such as lenders and foreign equity owners, would be responsible for coming up with their share.

Dispute Resolution. Basically, the choice for the Bank between the use of contingent loans versus guarantees would depend on the degree of complexity of the
arrangement, duration of the debt required, procurement issues and charging policy. One of the World Bank's concerns about getting involved in private sector development, particularly in BOOT projects, is that the complexity of their security packages makes it likely that disputes will arise which might threaten the Bank's relationship with the host government. But the roles suggested here for the Bank do not increase the probabilities of becoming enmeshed in such disputes. If the Bank is financing the government's equity, it does not need to be involved in disputes between the main parties. When the Bank provides a guarantee or risk mitigation, the possibility that a guarantee might be called does increase the chance of involvement in disputes. The circumstances in which a guarantee is called, however, are very precise, such as certification by the escrow agent that the money has been deposited in the escrow account and then not been remitted, which clearly is a default. The real problems arise where the Bank is guaranteeing the general performance of the host government, but that, hopefully, is a problem for MIGA, and not for the World Bank.

**Expediting the Franchise Award Process.** It is essential that any franchise award process should have four goals. The first is to minimize project development costs and the duration of the process. Second, it should ensure that the bidder's proposals are tailored to the project's critical objectives. The third goal is to assess fully the value represented by each proposal. Finally, abortive work should be minimized.

One of the major problems which arises in all BOOT and limited recourse financing is that proposals are invited at far too early a stage, before there is a sufficiently clear and tight framework within which to consider proposals. In part, these goals can be achieved by creating, before bidding begins, a detailed policy framework, financial framework, security package structured by the government, and draft franchise agreement.

A third major role for the World Bank is thus to persuade governments to carry out these activities before requesting proposals. This approach shortens the duration of the bidding process. Perhaps 80 percent of the time spent in project development is on getting the framework sorted out, and not actually in developing the proposals.

The objectives outlined above raise some other questions as well, including whether there ought to be full bidding, limited competition, or negotiated franchise.

A controversial question is whether the unsuccessful bidders' costs be reimbursed. It is a very radical suggestion, but perhaps there should be a special World Bank fund for reimbursement of unsuccessful bidders. One of the critical constraints in getting these projects off the ground, is the prohibitive cost of bidding. The cost of bidding is the most expensive up-front cost in any project development process. It is that
cost which drives up the threshold rates of return of investors and financiers. That constraint would be alleviated if developers knew that cost could be shifted from them and added on to the project cost. Reimbursement is a good way of ensuring that the development costs of these projects are capitalized. But it would require the governments to recognize that this is an area of legitimate expenditure, and it would require World Bank support.

It is not unusual for the United States government, in developing a new defense system, to pay two or three developers to develop the system, and then pick one of them for the production stage. On the other hand, there are differences between a United States defense contract and something that might happen in a developing country. Procurement of defense systems is not very price-sensitive. But cost reimbursement for BOOT bids may itself drive the project beyond the feasibility level. So if costs are to be reimbursed, bidding might have to be limited to a certain number of invited proposals, with a cap on the costs that could be reimbursed.

Advice to Host Government. It has been noted that the Bank's experience so far shows that the security package is mostly formulated by the host government, with the help of the World Bank or, perhaps, the investment banker, representing the sponsor. The commercial lenders come at a much later stage and require a range of assurances before they will participate which could unwind carefully worked out arrangements.

Involving commercial lenders at an early stage does not necessarily improve matters. The problem in the formulation of the security package, is often that the government does not have enough advice at an early enough stage. It does not really matter whether this advice comes from experienced commercial or investment bankers, provided they are not to be the lenders for that project and are skilled in providing advice and not solely lending. It is essential that the government have the right financial advice.
SESSION THREE

The Successful packaging of BOOT Projects

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New York, N.Y.
# Session 3

## The Successful Packaging of BOOT Projects

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Introduction

Good afternoon, ladies and gentlemen. Konnichiwa.

Thank you, Mr. Chairman. I very much appreciate the invitation of Mr. Phillips of McKenna & Co. and of the World Bank Group to speak on a subject which has been of great interest to me for nearly two decades.

The subject is, "The Successful Packaging of BOOT Projects." What exactly does it mean?

By now everyone involved in major projects knows what is meant by the phrase, "BOT," or "BOOT," and why these methods are being used, or are being attempted, for an increasing number of power and transportation projects around the world. I therefore will not bore you by reciting those reasons yet again. One of your associates, Ibrahim Elwan, provided a highly useful definition for the purposes of my subject when he said, "BOT's are, in essence, the vehicles for the implementation of infrastructure by the private sector."

But what is meant by "successful" and "packaging?"

"Successful" as applied to BOOT projects can mean different things to different project participants. And, for the same participant, it can apply to each of the stages from project conception to the ultimate transfer to the host government. However, for my purposes today, "successful packaging" means getting all of the political, technical, commercial and financial elements of a project together so that adequate funds have been committed and advanced to the project company and construction has started. "Packaging" therefore deals with the evaluation, promotion, development, financing and initial implementation of projects. It does not pertain to their construction and operation.

This definition will not necessarily satisfy the investors/creditors for whom "success" can only be truly experienced many years into the future.

Based on my experience, I believe that major power and transportation projects can be successfully packaged using the BOOT method. However, this can only

\[1\] This text is a verbatim transcription of Mr. Ferrigno's presentation.
be the case when BOOT methods are really appropriate in the particular circumstances and when certain principles and practices are applied from initial planning throughout the completion of all financing arrangements and until commencement of construction.

I also think that BOOT methods are applicable for projects in both the developed and developing world, although it is much more difficult to apply to the latter. In the developing countries, the private sector alone simply cannot finance BOOT projects without substantial public sector support. And, in much of the developing world, the multilateral agencies are essential to facilitating BOOT projects.

My principle purpose in the next several minutes is to offer you some principles and practices for the successful packaging of BOOT projects. You can then draw your own conclusions about the possible applications, if any, to the planning and implementation of projects in which you may be involved.

Qualifications and Ground Rules

I'd like first to set some ground rules and qualifications:

1. Although I have been working exclusively on behalf of Kumagai Gumi for the past year and during the previous several years advised and assisted Kumagai with a number of BOOT projects, my comments are my own and are not made in my official capacity.

2. My experience in recent years has been limited to only a small number of projects that utilized BOOT schemes. Most of these have been in the developed world or in the newly industrializing countries. The projects include:

   - the US$435 million Hong Kong Eastern Harbour Crossing project completed in September, 1989;
   - the US$620 million Sydney Harbour Tunnel Project, which is about 50% complete;
   - the US$1.1 billion Bangkok Second Stage Expressway Project for which mobilization of engineering and construction is just now getting underway;
   - the US$2.5 billion Florida High Speed Rail Project;
   - the US$1 billion Pakistan Hab River Power Project;
   - Eurotunnel (Is US$12 billion still the correct number?);
   - the US$300 million Catalan Hydropower Project in Turkey;
   - the US$1 billion E-470 Colorado Toll Road;
   - the US$300 million Cikampek-Cirebon Toll Road in Indonesia;
3. The perspective I have adopted is that of the principal project sponsor/owner, although most of my experience is as an advisor/agent and not officially as a principal. However, I am quite comfortable with this perspective. Most of you that have experience with trying to package these sorts of projects will acknowledge that they can easily become your own, mentally and emotionally.

Projects with Potential for Successful Packaging

There are many projects which have good potential to be successfully packaged on a "BOOT" basis, but which, to date, have not.

One question is therefore, "Are there any general characteristics of successful projects?" I think the answer is definitely, "yes," when the following conditions are present:

- there must be a high need for the project which has been perceived for years by government officials with clout;
- there are inadequate government funds and financial guarantees available for the project, and therefore there is sufficient political will to utilize the private sector to help fund, build and operate the project;
- it is believed that highly credible contractors or groups of contractors and suppliers are willing to enter into turnkey design/construction contracts with firm prices and completion terms and conditions;
- it is believed that the private sector possesses all of the technical expertise to design, build and operate the project; and
- the project is considered financeable on a limited-recourse basis.

There is no lack of projects which have these characteristics. Such projects have not gotten off the ground, have been attempted and failed, or are failing, principally for other reasons. One of the main reasons is the relative shortage of "packaging skills" based on sound principles and practices.

Therefore, another question is, "Are there any general principles and practices that can be applied to help make such projects successful?" I think the answer is, "probably yes." I say, "probably," because each project is unique and not all projects are always subject to general principles and practices. Moreover, timing has a very critical impact on the success of each particular project's packaging. However, I believe that there are some general principles and practices that are often applicable. I will
describe these shortly and invite you to consider whether there may be some that are applicable to projects in which you may be or may become involved.

First, I'd like to ask you to recall the issues and concerns that have been mentioned by the previous speakers and from your own experiences, while I describe some of the common difficulties which are encountered in the packaging of BOOT projects.

Problems and Difficulties

There are a number of problems and difficulties which are inherent in the application of the BOOT method. A recent review of BOOT schemes by a European Community commission concluded that there were three key problems:

1. the availability of credible project developers and equity investors with experience in packaging these projects;

2. the ability of governments to provide the necessary level of cooperation and support for such projects; and

3. the formulation of workable corporate and financial structures.

The commission was concerned principally with developed countries. When one considers the special problems of the developing countries, the successful packaging of such projects becomes especially challenging, even taking into account the major contributions to the financing of BOOT projects which have been and are being made by the World Bank Group and other multilateral and bilateral agencies.

Here is one list of some of the problems and difficulties:

1. The Untrusting Relationship Between the Public and Private Sector Partners - This is virtually universal. The classic gaps in backgrounds and cultures leads to misunderstandings and doubts about motives. This is magnified when the matter is unique and doesn’t fit into any standard set of procedures, and where a sharing or allocation of risks must be negotiated.

2. Inexperience in the Private Sector - BOOT projects tend to be managed by private sector managers with little or no experience with the method. It has been said that very few participants are keen to repeat the experience of packaging a BOOT project. Therefore, the learning curve is generally very steep for most of the managers of new projects. In addition, they are often subject to the well-intentioned enquiries and directives of their bosses who, because they cannot possibly be intimately involved, tend
to have even less experience. Often this leads to unreasonable expectations and frustrations. In addition, such projects are frequently staffed by "seconded" staff, who, for one reason or another, are temporarily assigned to the project. This breeds inexperience as individuals are anxious to get back to headquarters.

3. **Inexperience in the Public Sector** - All government bureaucracies, whether in the developed or developing worlds, are prone to be slow and episodic in their attention to projects. Inexperience of the government officials, the competing interests of different ministries that are required to be or desire to be involved, coupled with the fear of job loss and related antagonism toward the private sector managers and staff, can result in rigor mortis from time to time which delays or kills the project. This can exhaust the energies of the project managers. In addition, the tendencies of governments to change and for the same government to assign different negotiators, sometimes without warning or adequate briefing by predecessors, can be damaging to the packaging of basically sound projects. Finally, governments are reluctant to accept and/or share any project risks. This is often the case even when the alternative is the abandonment of a much-needed project. This can be the case even though the kinds and levels of risks to be assumed by the government are modest compared to the risks the government would effectively have to accept to plan and execute a necessary project on its own using traditional public sector methods.

4. **High Complexity** - BOOT projects require very complicated risk allocation and sharing arrangements among several parties (up to 15-20) who have to be satisfied that their risks are sufficiently limited while at the same time all project risks have to be covered to the satisfaction of the project's creditors and investors. The withdrawal of key participants could seriously jeopardize the project. Multi-dimensional negotiations are therefore de rigueur, adding to the complexity of the packaging process. The complexity is increased by the need to document all agreements amongst the parties in great detail within voluminous documents that are usually all closely interrelated and directly dependent upon one another.

5. **High Development Costs** - All major projects are costly to package. There are expensive consultants and advisers to pay every month. In addition, the opportunity cost of the secondment of the key senior managers required is incalculably high.

6. **Conflicts of Interests** - In most major BOOT projects, conflicts of interests are unavoidable and rampant. Indeed, they are typically inherent. Project suppliers and contractors of all kinds naturally consider that their underwriting of the project promotion and development costs entitle them to special terms in providing their goods and services to the project company. Indeed, in some cases they expect two sources of return -- the commercial return on such goods/services -- and a financial return
to be derived from their sweat and/or cash project equity investment. The classic owner/supplier conflict demands careful and constant management. "Supplier" is here used in its broadest sense.

7. The "Typhoon" Phenomenon (which has also been referred to as the "Whirlpool Effect") - Frequent crises occur in the packaging process and cause decisions to be made without consulting all the affected parties and without regard to the segregation of the different interests of the project participants. Such decisions always come back to haunt the project and have the potential to kill it.

8. The High Dependency on Contractor Joint Ventures/Consortia - When a true design/build joint venture (i.e. where all risks, costs and progress payments are shared proportionately and the joint venture is effectively a profit-center) is needed to design and build the project under a lump-sum fixed-price turnkey contract, serious conflicts amongst the joint venturers can arise and jeopardize the success of packaging the project and the project itself. This is due to differences in the commercial interests between the contractors and their subcontractors and suppliers, differences in styles and cultures among the contractors, and competition between the joint venturers. Even greater potential difficulty is caused by a contractor consortium which is composed of members which have very different levels of financial strength. The difficulty occurs at any time that the weaker members are unable to complete their work on the agreed terms and none of the other contractors is in a position to take over the responsibility.

9. The Long Economic Lives of BOOT Projects - By nature, BOOT projects tend to have very long useful lives. Because everybody knows this, the terms of the BOOT agreements between the private and public sectors force the project sponsor/owner into needing very long-term funding. This has the effect of creating a high need for either highly credible forecasts of volume and price, i.e. revenues, and/or the need for appropriate escalation clauses in the purchase contracts and for very strong purchasers. It can be challenging to negotiate such provisions to the satisfaction of owners-investors, creditors, the purchaser(s) and the host government.

10. The Schizophrenic Nature of Project Creditors - Project creditors tend to vacillate, sometimes without warning, from keen interest to apathy during the long development periods of BOOT projects. Once they have obtained final approval and have issued a commitment letter, they also have a tendency to become somewhat rigid in their thinking about the terms and conditions of the credit they have agreed to extend and of all the BOOT project documents. This lack of flexibility can prevent the packaging of a sound project.
11. Changing Requirements for Project Management - As a project moves from conception to promotion to development to implementation, different skills and styles are required of the project leader. People who possess the right combinations for the need, and who are also available when they are needed, are very rare.

12. The Scarcity of Appropriate Sources of Cash Equity - Finding the right project co-developers and investors who combine the relevant knowledge, skill and political complexion, together with the ability and willingness to commit cash equity for development and implementation is not easy. Although investment funds for sound projects are available, development capital is very scarce.

13. The Project Blues - The very long process from conception to completion and the inevitable setbacks which always seem to be surprises, and really should not be, severely impact morale and sap the energies of all levels of staff involved with the project.

Having described some of the many problems and difficulties that are typical during the packaging of BOOT projects, I now want to make some suggestions as to how to cope with them and succeed in launching such projects.

Packaging Principles and Practices

The key question is, "Are there any general principles and practices that can be used in the successful packaging of projects?" As I said earlier, I think the answer is: "probably yes, but not always." Each project is unique and not all projects are always subject to general principles and practices. Moreover, timing has a critical impact on the success of each particular project's packaging. However, I believe that there are some general principles and practices or guidelines that are often applicable to each of the phases of the packaging of BOOT projects. The categorizations which I use here are arbitrary. If you think a guideline makes sense at any phase, it may be appropriate.

First, I'd like to focus on the Initial Planning and Evaluation Phases during which the following guidelines apply:

1. There is a high need for the project which has been perceived for years by the host government.

2. There are inadequate government funds and financial guarantees available for the project, and therefore there is sufficient political will to utilize the private sector to help fund, build and operate the project.
3. It is believed that highly credible contractors or groups of contractors and suppliers are willing to enter into turnkey design/construct contracts with firm price and completion terms and conditions.

4. It is believed that the private sector possesses all of the technical expertise to design, build and operate the project. I refer you to the rule of the "three T's" mentioned earlier by Mr. Phillips: "Technically tried and tested."

5. There is "a continuous judgment of the cost of ideas." This is a phrase which I learned from Jean Renault of Spie Batignolles and which I find so appealing to remind me, and the project team that I advise, of the essential need for realistic economic assessments of every aspect of a project that affects costs. And I mean everything from designs to construction methods to financing vehicles to project management systems and personalities. This is critical to avoid the pitfalls of "falling in love" with a project, a psychodynamic that can lurk in the subconscious of project team members.

6. The project is considered financeable on a limited-recourse basis from the perspectives of creditors and investors. This is vital. It avoids wasting valuable time, money and, perhaps even more important, the reputations of institutions and individuals, on an unfinanceable project.

During the Promotion and Development Phases, the principles and practices have to do with the quality of the relationships amongst the project constituencies.

1. The technical competence of the private sector group is unquestioned. Back to the Rule of the Three T's once again.

2. There is high confidence on the part of the host government in the private sector group's overall capability to plan and implement the project.

3. Contractors are involved at the outset. This is a highly controversial statement. Some people are of the view that only investors should be involved at the outset and the contractors brought in later on. I don't agree. My thinking is based on the fact that it is the contractors and equipment suppliers who stand to benefit soonest from the success of the packaging of a project, as they will be providing goods and services relatively soon as compared to the investors and operators. They can receive revenues and profits in the near-term if they are performing

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2 See Session 1.
properly and managing their risks well, and are likely to be the most highly motivated to solve quickly and effectively the many kinds of problems and difficulties I mentioned previously.

4. Again, contractors should be chosen very carefully. In particular, the project owner/sponsor should be sure that the joint venture/consortium method that the contractors desire to use is appropriate for the risk profile of the project and for the financial strengths of the members of the contractor group.

5. Exclusive negotiation between the government and the private sector group should begin only after a competitive qualifications and/or selection process.

6. The selection of one group should occur relatively soon after the initial proposals are submitted.

7. Government negotiators should be assisted by experienced advisors to represent the government’s interests effectively.

8. Government negotiators adopt a collaborative not an adversarial attitude after the private sector group has been selected for exclusive negotiations. Indeed, both the private and public sector representatives should try to act as much like partners as possible.

9. Government accepts some project risks and provides some resources to a limited extent. I want to emphasize this point: in general, based on my experience, if governments took a more positive stance and collaborated more closely with the private sector group after selection for exclusive negotiation, shared some project risks and contributed to project resources to a greater extent, many more infrastructure projects could be realized. For example, where appropriate, a limited but significant contribution from an existing related system might enable the financing of the new project. When governments are proactive and participate as partners with the private sector, the valuable benefits of private sector involvement in infrastructure implementation, e.g., lower costs and reduced risks, are more likely to be realized. When governments provide some of their own resources for the planning and implementation of the project, they have a major and definable stake in the successful packaging of a project and are therefore more likely to give it the consistent attention it is likely to require.

10. Continuing this theme, there should be close involvement of several agencies of the host government in the planning and the implementation of the project. The participation of the several government agencies that are
typically required to be involved should be well-coordinated by the project sponsors/owners.

During the **Implementation Phase**, the following guidelines should be applied:

1. The project owner should be "designed and built" from the beginning. Exclusive management, who is responsible to all the owners, current and prospective, should be appointed from the outset.

2. Contractors should be given incentives via penalties and bonuses for cost and time performance.

3. Credit facilities should be adequate to accommodate the potential need for additional funds due to a reasonable level of cost overruns and delays should be negotiated at the outset.

4. Debt financing should be entirely in local currency or the "public sector" effectively absorb the host country exchange rate depreciation, convertibility and remittability risk. By public sector, I mean the host government and a bilateral or multilateral agency.

5. The project financing structure should be carefully tailored to the characteristics of the project and the project participants. Indeed, attempts should be made to develop innovations in the financing vehicles to suit the circumstances precisely. This will reduce the need for costly restructurings and refinancings in the future.

6. Project creditors should not be involved too early. There is a right time to obtain firm commitments from project creditors, usually towards the end of the project development period to allow sufficient flexibility in negotiating terms and conditions.

7. The fullest possible economic use of insurances should be made. This source of risk management and control can make the difference between a financeable project and an unfinanceable project, and often does not get the attention it deserves until well after the bankers have issued their commitments, "subject to documentation." This documentation often includes "insurances acceptable to the lenders."

During **all phases** of the packaging process, there are a few additional guidelines which should be heeded.
1. Different strong personalities, who are willing and able to take responsibility to lead and manage during each phase, are needed and should be employed at the appropriate times. Realizing this factor, selecting the right people, and effectively managing the transitions are all necessary to initiate and keep up the momentum that is essential to finalize the packaging of a BOOT project. The vision, enthusiasm and salesmanship of the promoter has to give way to the drive, demand for detail and "dictatorship" of the developer. After the packaging has been successfully completed, the developer, who cannot always get along well with those on whom he has hammered to close the deal, has to turn over the project to a more congenial manager-type who will handle better the on-going relationships with the builders, the government representatives and the operator.

2. The integration of the technical, economic and commercial elements should be considered highly important and receive close coordination and supervision.

3. The political factors should be considered highly important and should be respected.

4. A high degree of local involvement throughout the process is essential.

5. Since some project participants play two or more roles, the conflicts must be properly managed. A delicate balance of clarity and ambiguity in the respective roles of the project participants is needed at different times. The project leaders must be sensitive to these dynamics and exercise judgment as to when to push for clarification or to allow the ambiguity.

6. Finally, some "motherhood" notions that I am not ashamed to mention - high degrees of commitment, perseverance, patience and good-faith cooperation on the parts of all the project participants are necessary.

That completes my current list of BOOT project packaging "do's and don'ts." I invite you to consider whether some of these ideas may be applicable to projects in which you may be involved.

As I mentioned at the outset, projects in which the World Bank Group is involved can have a significant beneficial impact on the economic and social well-being of relatively poor and underdeveloped countries. The Group's involvement can therefore be a crucial one. Indeed, the role of the World Bank Group is vital to the realization of BOOT projects in the developing world.
Knowing how difficult and frustrating it can sometimes be when you are packaging these projects and believing there is some value in sharing experiences, I sincerely hope you will be somewhat encouraged to continue your efforts to realize these important projects by applying some of my ideas about principles and practices where you feel that they may be appropriate.

Thank you very much for your attention. Domo arigato gozaimasu.
SESSION FOUR

The Questions Which Need to be Asked
to Identify Viability

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Session Four

The Questions Which Need to be Asked to Identify Viability

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Session Four

The Questions Which Need to be Asked to Identify Viability

Government Support

The private sector has numerous specific concerns about the fiscal and regulatory environment for the viability of a BOOT project. These concerns are summarized in a check-list at the end of this paper, and discussed herein. The first concern of the private sector participants in the project -- contractor, O&M contractor, hardware supplier, investor and financial advisor -- about the viability of a BOOT project, is whether the government, its authorities and local authorities will abide by government's decisions. A successful BOOT project requires strong leadership from both the government and the private sector during all stages of the project -- negotiations, construction, and also implementation, i.e., when the power station generates electricity. It is important that all key government agencies for the project -- the relevant ministries, regulatory bodies, etc., are committed to supporting the project.

The next concern is whether the government either will have been properly advised over a period of time on the mechanics of BOOT projects or will have access to appropriate financial consultants. The government needs to be confident that the private sector is giving it proper and accurate information. Many in the private sector see this as a particular area where the World Bank could contribute. It is important that the two sides are in roughly equal negotiating positions so as to develop the trust needed for successful negotiations. Certainly, contractors and suppliers much prefer to deal with people in government who really know the subject, as it improves the chances of a successful outcome.

The third concern is the need for good communication facilities, including transport. For example, the rates charged by members of negotiating teams are usually high, and the costs for the private participants increase unduly if they have to spend large amounts of time in transit between meetings. Since face-to-face negotiations are expensive to conduct, good electronic communication facilities are vital for preparing the groundwork before the parties meet around the table.

Next, it is critical that the government sets up a cabinet-level subcommittee with authority to push matters ahead. Many public agencies seek to protect their vested interests by obstructing private sector attempts to participate in developing public infrastructure. Their usual tactic is to procrastinate during negotiations. Frequently and frustratingly in the early stages of a project, ministries refer the negotiators for the private sector participants seeking information or assistance to another authority, and maintain that the matter in question is beyond their responsibility. Unless government is prepared to coordinate its efforts, so that the negotiating team is able to get sensible answers
quickly, the crucial goodwill of the private sector group will evaporate within the first week of negotiations, and they may well pull out of a project at an early stage to avoid incurring further heavy costs.

The next concern is whether the government will facilitate the process of obtaining planning consents and legal permits without delay. In the early stages of a project this is usually the concern of the contractor. But, in some projects, this role is undertaken by a genuine industrial investor. With his financial advisors he would be concerned about consents and permits at an early stage, to make sure that these are settled even before bringing in a contractor.

**Foreign Currency Remittance**

For the equipment suppliers and O&M contractors, the project's viability will also depend on the freedom to remit foreign currency. They need this freedom to fulfill their contractual commitments relating to fixed completion dates, by being able to purchase materials and plant and to procure off-shore technical services. And finally, foreign equipment suppliers and O&M contractors will be concerned about remitting funds to their home country to cover overhead costs incurred at the head office, as well as some of the profit.

**Freedom To Import Materials and Plant**

Foreign equipment suppliers may be able to obtain the advantage of export credit guarantees, subject to the credit agency's prevailing policy for the country concerned. Assuming that fairly firm contractual obligations are imposed upon the various parties, the equipment suppliers and O&M contractors will need to know at the time they prepare their bids, whether they will be free to import materials and plant, and whether these imports will be subject to non-discriminatory duties and taxes. However, many developing countries have difficulty in accepting these requirements because they view them as infringing their sovereignty and as slighting local competence and the quality of local products. Some governments insist that the developers use local products. Multinational manufacturers of plant and equipment may be willing to take advantage of good local inputs. However, the main contractor who takes responsibility for constructing the plant may be concerned that locally produced equipment might not be as reliable and the commitment of the local suppliers might not be as strong as, say, an international company who would be looking for repeat orders on other overseas projects. In addition, the financiers may themselves be concerned that the locally produced equipment would not be as reliable, but part of this problem can be dealt with by insurance. If the insurers are not prepared to insure local product then, quite clearly, local products would have to be discounted.
Where there are monopoly suppliers for key inputs, such as cement or steel, the project developers will be concerned about obtaining government support for the allocation of sufficient supplies. This support is particularly important in countries with ambitious development plans, where local supplies may be insufficient. The alternative to ensuring that sufficient local supply will be allocated to the project is to allow importation of these goods. The project investors will need to establish in advanced negotiations that these goods would be supplied to them at non-discriminatory prices.

Use Of Local Labor

Each imposed condition of a nonfinancial nature makes a project less attractive, and also less financeable, depending on the developing country concerned. The O&M contractor, for example, needs to have its own supervisory staff on site that report to the head office. Contract conditions which require the O&M contractor to use an indigenous work force to the detriment of plant performance would be a major deterrent to investors in BOOT projects.

While the O&M contractor has a built-in cost incentive to develop and train local personnel to take over some of the operations, it is not possible to use local personnel until the appropriate skill levels exist. Thus, the private sector contractors prefer local staff to be trained independently under other arrangements, such as through specific training programs. In their view, this kind of objective cannot realistically be incorporated into a commercial contract for a BOOT project. If hiring local staff makes financial sense for the contractor, it will do so.

Another concern of the private sector is that a local work force which it has trained might disappear shortly afterwards, so the contractors have to continue to provide training at considerable expense. But in most developing countries, the private sector can retain its staff because salaries are higher than those the public sector is prepared to offer.

Use of Local Contractors

The host country should develop the capability to operate and take the risks in operating large and complex facilities. Even though the countries initially need the help of many foreign expatriates with technical expertise to operate such facilities, local operators should take over this responsibility as they become qualified, even if the project remains in the private sector. By transferring this knowledge, the project owners will also benefit since the cost of hiring local engineers and technicians will be lower than for expatriates. However, the country should receive a share of the financial saving through a more favorable bulk price for power to the power utility. In a sense, the term
"BOOTT" is more appropriate than "BOOT", with the second "T" standing for "train".

Recently, a European Community directive proposed that power projects awarded to concession companies by other than competitive tendering should have to use competitive bidding for thirty percent of the construction work. That draft directive, while not yet finalized, is causing a number of contractors who have invested in consortia companies to review their plans to participate in the privatized UK power industry as investors. A contractor that is involved as a sponsor, at least wants to know whether he will have to compete against others for his contract or will be able to obtain a contract from the concession company entirely from negotiations.

The opportunity for using local contractors depends upon the type of project. There is little such opportunity in a "capital plant" project, in which it is likely that either process plant or generating equipment will be imported to the host country from an overseas supplier. However, in straight civil engineering projects, local contractors can contribute substantially, due partly to knowing how to deal with local circumstances better than foreign contractors. In the case of civil works, at least in developing countries, local expertise and the capability in the civil area far exceeds that for manufacturing plant and equipment, and local civil engineering contractors can deal better with the local business environment. Experience in the public sector shows that, at a minimum, 20 to 30 percent of the total cost of a project consists of local components, meaning civil work. BOOT projects generally tend to have much lower local composition, in which most of the components are imported to minimize the risk to the investors. The private sector's sourcing strategy in such cases, thus tends to conflict with the objective of host governments to avoid an undue drain on the country's foreign exchange for goods that the country can itself provide.

Legal Environment and Tax Regime

The O&M contractor is concerned about discriminatory changes in legislation and regulation relating to both the particular project and the category of projects into which it falls.

A particular concern for project viability is the tax regime. It is important to have a tax code which is non-discriminatory and conducive to project implementation. Taxes levied at the border of the countries -- import tax and customs duty -- and income tax are reflected in the bulk sales tariff and do not pose problems for the project participants. However, governments are under conflicting pressures. On the one hand, they need to utilize resources efficiently for public expenditures from a limited fiscal base. On the other hand, the private sector seeks tax holidays, exemptions, and other concessions for their BOOT projects. Contractors have sought such tax concessions from the host government to compensate for taxes on dividends levied by the contractor's country. At the time of bidding the promoters would have to take into account whether
or not there will be tax holidays, or special economic zones, or whatever term is used in the particular host country. But, obviously, it is of interest to know whether there are any advantages which the government offers which can be used for the benefit of the project.

Some host governments even levy a special tax on profits remitted overseas. This does not impact the viability of the project itself, but does have an impact on the investor’s return from the project. The investors will try to negotiate a bulk sales tariff that takes account of these features to their satisfaction. The point is that the tax regime should not discriminate against the foreign investor at whatever levels of taxes levied by the host government.

Many public utilities enjoy tax breaks. They do not pay duties on imported equipment nor do they pay corporation taxes. Such concessions should be taken into consideration in comparing the costs of power from the public and private sector options. The private sector sponsors would consider that private investors in projects should receive the same concessions as the public sector.

There is also a presentational advantage with uniform tax regimes. When the host government imposes a relatively high tax rate on profits remitted overseas, the foreign investors in that country might seek an unduly high pre-tax return. They will want to pass through a corporate tax into the tariffs. However, this would give rise to practical problems in that either the foreign investor appears to be seeking too high a return, or the tariffs will be too high for the utility compared to the cost of the public sector option.

In summary, the issue of tax regime encompasses two separate problems. There are taxes levied by the country itself which can only be reflected by passing them through in the tariff. There are also taxes which are levied on the income or the dividend income of the investor. These should be compensated for; they are reflected in the investment decision of the investor, looking at the net return after taking into consideration the country’s tax regime. These points should be taken into account in the host country’s foreign investment code. While a BOOT power project has some unique characteristics for a foreign investment, such as production of a non-tradeable good, a single buyer -- usually a state-owned utility -- and price controls on the purchasers output, most of these issues should be handled by the foreign investment code. For a government that is thinking about adopting a BOOT approach, the World Bank should help to review investment laws and regulations to make sure they are appropriate for the approach.
APPENDIX

The Questions Which Need to be Asked to Identify
the Viability of a BOOT Project

1. Will Government be willing to take decisions which Government, Governmental Authorities or Local Authorities will abide by, i.e., Government will agree to a concession agreement which will constitute the framework for underlying documentation and thereby setting the policy?

2. Will Government either be appraised of specifics of the project, or alternatively does Government have access to appropriate technical consultants?

3. Are there reasonable communication facilities, including transport?

4. Will there be, where appropriate, Government/Cabinet sub-committees to progress matters?

5. Will Government support for obtaining construction consents and the like be available so as to avoid delays?

6. Will Central Government support be provided for the project?

7. Will there be freedom to remit foreign currency:
   i) to purchase materials and plant?
   ii) to pay for off-shore services?
   iii) head office overheads and profit?

8. Will there be freedom to import materials and plant, and will there be non-discriminatory duty/import imposts?

9. Will there be freedom to assign to the project sufficient qualified personnel? e.g., expatriates.

10. Will there be freedom to import spare parts and services required for maintenance?

11. Does a good supply of indigenous personnel, including labor, exist?
12. Where there are monopoly suppliers for project imports (e.g., cement, steel), will there be Government support for allocation of sufficient supplies to the project?

13. Will there be no discriminatory changes in legislation and the like?

14. Will there be a non-discriminatory tax regime which is conducive to project implementation?

15. Will Government set up a tax regime which is conducive to project implementation?

16. Where the construction contractor is also an investor in the project, will there be freedom from competitive tendering so far as work to be carried out by that contractor is concerned?

17. Will there be freedom to carry out construction operations and maintenance either in own right or alternatively with a joint venture local partner of own choice?

18. Are there copyright and other proprietary rights or intellectual property protections?

19. Will there be a framework to remit foreign currency?

20. Will there be a framework for foreign exchange conversion?

21. Who takes the currency conversion risk?

22. Will Treasury guarantees be given for remittances and conversions?

23. Will MIGA be available for investment in the host country?

24. Will there be an ability to remit dividends on shares and share capital on disposal?

25. Will there be a market for shares in the project company?

26. Is the extent of competition (if any) understood and, preferably has the regulatory framework been created so as to identify the relationship of the project with other similar schemes, particularly in power generation?
27. Will there be the freedom to fix a tariff to protect a minimum return on capital (other than in the case of default by project company)?

28. Will there be an ability to convert local currency earnings to foreign exchange without creating a tariff which would penalize the domestic user?

29. Will support be provided to the investors in the event of force majeure or events outside a sponsor's or investor's control?

30. Will support be given to the investors in the event of changes to legislation adversely affecting income, debt service or minimum level of profits scheme?
SESSION FIVE

The Utility's Viewpoint

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Session Five

The Utility's Viewpoint

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Session Five

The Utility’s Viewpoint

Introduction

In considering the "the utility's viewpoint" on private power generation, it is first important to recognize that the utilities do not all share a single attitude toward private production of power. Instead, a number of situational factors affect the way any utility views private generation. The primary factors are the load growth, need for new generating capacity, and limits on the company’s resources, financial, physical and human. If a new plant has to be built, whether it is built by the private sector or by the utility is not of great importance, as long as there is power for the utility’s customers. Another factor is the absence of adequate reserve margins of generation capacity. Under those circumstances, the utility may have to reduce voltage frequency or even rotate blackouts, unless power is available from another source such as a private producer.

The regulatory environment is a third issue, because the regulators, in this country, wield a lot of power over the utility’s management. A final issue is diversification. The utilities may be interested in taking advantage of privately funded and operated generation plants to move away from the regulated utility business. Management staff of many utilities in the U.S.A. are focusing on these questions.

Investor-owned utilities in this country have two common goals. First, they seek to provide a reliable supply of electricity. Most aim for 99.6 percent or better reliability: ninety-nine and six tenth percent of the time, every customer should have power on line to serve him. The second goal is to operate at least cost. The utilities are in business to make money.

PURPA and the Evolution of Privately Generated Power

The Public Utility Regulatory Policies Act of 1978 (PURPA) is often viewed as the beginning of co-generation in this country, but it is not. For decades, many industrial customers have made power themselves with a waste product or because they had to build a steam plant anyway. However, PURPA did encourage co-generation. Indeed, encouragement of small-scale power production was one of its stated purposes.

PURPA imposes four requirements on utilities. First, they are obliged to buy whatever power is made available by a qualifying facility (hereinafter "QF"). Second,
the utility must pay full avoided costs. That requirement does not sound unduly burdensome as written and makes sense conceptually. If the utility gets the equivalent number of kilowatt hours, it should not matter to the utility whether it pays $100 to buy power from a developer who has built a power plant or pays $100 to its fuel supplier. The customers and stockholders should also be indifferent. So, the concept of avoided cost no longer bothers most people in the utility business.

The implementation of the concept by regulators was terrible and that bothered many utility executives. However, Virginia Power's avoided cost, as calculated under PURPA and approved by the State Corporation Commission, has dropped from about five cents down to about two and a half cents per kWh. Energy costs have not risen much over the past decade, but they certainly have not dropped by half. So Virginia Power has been very successful in reducing its cost to a reasonable level.

PURPA's third requirement is that the utility interconnect any QF with its transmission network to receive and deliver power. Finally, the utility must sell to qualifying private power producers whatever power they need, whenever they want it - without discrimination.

PURPA Projects. A key question is whether PURPA has achieved the objectives of its enactors. PURPA is widely considered to have been an overwhelming success. Three kinds of projects have resulted.

An example of the first is a 100-year-old water wheel, located near Charlottesville in Virginia, which was rescued from dereliction, refurbished and connected to a generator, housed in a rather flimsy eight-foot by twelve-foot plywood shed, and set to producing electricity. The whole installation was once swept away by floods. The facility produces very little power but has provided a nice tax shelter for its owner. However, it seems unlikely that PURPA's objective was to provide tax credits.

Private generation in this country is something that evolved over time. Again, industrial customers have generated their own electricity for many years. Fifty or sixty years ago, 20% of this country's power was generated by the private sector. By the 1970s, the percentage had fallen to less than 5%. When PURPA was passed, the renewable energy plants -- the hydroelectric, the solar plants, the windmills -- emerged beside these industrial QF's. By creating the "PURPA machines," the lawyers and bankers exploited PURPA as a device to build power plants that were able to avoid regulation. To qualify under PURPA it is simply necessary that five percent of the facility's output has to be in steam or hot water. So project sponsors can qualify by claiming that 5.01% of the plant's output is steam, although if efficiency were properly calculated, in some cases the project would not qualify. One example of this second type of project which has emerged under PURPA is a Virginia Power customer with a power
demand equivalent to that of three small grocery stores, who was to be a host to a 50 MW gas-fired co-generation plant.

So, "PURPA machine" has come to have a derogatory connotation, but from the utility's point of view, it may be an excellent idea, because a "PURPA machine is simply an independent power producer who avoids some of the regulation. As his customer, the utility can benefit from that looser regulation.

The third type of project is a serious contribution by a private generator, like the 356 MW gas-fired combined cycle facility in Hopewell, Virginia, with state-of-the-art equipment. While a small part of its revenues comes from selling steam to someone else, Virginia Power provides 99.3% of the project's receipts. Thus, Virginia Power controls this producer's paycheck, and when Virginia Power wants him to shut off, start up, or do something else, he will respond. That kind of arrangement suits Virginia Power perfectly. Another example is a 105 MW coal-fired co-generation unit being built in North Carolina. Both facilities are being sponsored by reliable, capable power producers for whom Virginia Power has high regard.

Utilities' Response to PURPA. Utilities have responded to private generators in three stages. In the "accommodation stage," the utilities complied with PURPA's requirements by accommodating industrialists when they wanted to generate electricity in parallel with their own energy needs. But they did no more than was required.

In the second stage, the utilities started to include independent power generators in their forecasting and planning, and thus started to take more interest in this potential source. Finally, the utilities started to integrate independent producers into their operations, and now routinely hook up these producers, just as they have always done with industrial self-generators.

Planning for new generation plant has to focus on the availability of power capacity. The first questions are whether a plant will start to generate power when the utility needs it, and whether the developers will then stay in operation and deliver for the life of the contract. There are real concerns in the utility industry about whether private generators will perform reliably over the long-term, but there is no way to answer the question in advance.

The type of generating capacity proposed by an independent producer, in terms of fuel or technology, is also an important planning issue for the utilities. Any kind or capacity that works may be fine for a developer, but the utility may wish to consider other factors. Among the other factors are whether a plant uses a new generating technology, and whether there is an innovative technology that might become applicable some day, like coal gasification. Another issue is fuel supply. It is good business strategy
to lessen the fuel risk by diversification. Because Virginia Power has a good mix of fuel types, this issue is not as great for Virginia Power as for many other utilities. The last factor is location, particularly whether the plant is in an accessible area for the utility, and whether the developer can actually acquire the proposed site and obtain the necessary clearances for the plant.

A similar problem might confront the World Bank in BOOT projects abroad. For example, if 300 MW were needed in a particular country, and nine bidders each proposed a single 300 MW plant, that country would be left to depend upon a single technology and a single developer. So the Bank might learn from Virginia Power's experience to focus on diversification, by asking for proposals in increments of not more than 100 MW. While a single developer might be willing to offer a discount for supplying two or three units, a utility might also gain by introducing competition through using more than one developer and technology.

Private Generators Versus the Utility: Differences in Perspective

Not surprisingly, the private generators and the utilities do not have the same perspective. One point of difference is that the independent power producers want to be base-load units: they want to turn the unit on, leave it on as long as it runs, and take it off-line only when forced to do so. Operating that way has several advantages for them. It lowers their O&M costs, because they do not have to cycle the unit. It makes financing easier because there are always capacity and energy revenues, so the bankers' only risk is that the technology will not perform. Finally, base-loading makes it easier to sell steam to a host.

On the other hand, the utility does not want to take all of the load swings on its units. It wants every unit to share in load swings to avoid uneconomic dispatch of generating units\(^2\). Base-loading a private generator would raise the total cost to the utility of meeting system demand, if the developer wants to operate his plant when it is not the least cost unit available to the utility.

The second difference of view is that the private producer wants an agreement under which the utility's ability to reduce the producer's output is restricted, for example, to ten times a year for no more than fifteen hours each time, with 12 hours notice. The utility does not like that proposition for two reasons.

\(^2\) For those unfamiliar with the term, a practical definition of "dispatching" -- engineers would give a technical definition which differs from this one -- is deciding which plant will be on line, when, at what level, and for how long.
First, inflexible arrangements for power reductions make it hard for the utility to maximize the benefits of its power purchases. If the utility can curtail a particular operator for only three hundred or a thousand hours a year, the utility will not know, early in the year, if it has made the right decision about shutting off that operator's generator. The need for those three hundred hours might be greater later on. So the idea of having curtailments under a low limit has little value to the utility. On the other hand, if the producer offers a much larger limit, even up to four thousand hours a year, the utility is likely to feel more secure.

The notice requirement is also a problem for the utility. It might want to curtail output from the private producer at short notice to take advantage of an offer from a neighboring utility. If the utility has exercised all of its contractual rights to load curtailment, it will have to let same uneconomic units remain in production. Hence, the utility's goal is full dispatch rights. The private producer argues that the project's financing commitments do not permit the utility to have full dispatchability and that, moreover, it would increase O&M costs and make it harder to get fuel supplied at low cost, thus increasing the unit cost of production. The utility's response is that it needs full dispatch rights for maximum flexibility. Since the utility is buying the power, and therefore paying the private generator's bank loans, the private generator has little choice but to yield to the utility's requirement that it run only when it is the unit of choice. In this matter, the utility's customers should be neutral. Regardless of who owns the plant, the customers get the best service when the utility gets full dispatch rights. And in this country, that is one of the sacred goals of the industry.

Power Needs of the Utility

The Load Duration Curve. A perennial question is whether base-load, intermediate-load or peak-load is needed. Virginia Power's system is growing: from about 11700 MW last year, it will increase to about 14000 MW by 1995. Its compound growth rate has been about 7.3% in peak demand for the last six years, which is a fairly healthy growth rate. Virginia Power's load duration curve for 1988 shows that the minimum annual load was about 30% of the maximum load on its system. It is generally agreed that base-load generation means running 80% or more of the time, although definitions of the term vary from 60% and above. Bankers involved with power projects should look at the load duration curve. If the load will not last all night, all weekend, all year round, there is no need for the type of capital-intensive plant which extra base-load capacity would require. If the plant is only going to run for five or ten percent of

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3 Utilities in the United States are interconnected so that power can flow between different utilities and they can sell or purchase electricity by either over-generating or under-generating, respectively.
the time, only peaking units are needed, and it would not be wise to invest a lot of money in fixed cost supply contracts or high capital-cost projects.

It has been argued that the merit of giving a contract to the lowest evaluated bidder without negotiation is that it keeps politics out of the evaluation. As Virginia Power is a regulated utility, politics are supposed to be irrelevant, but it is difficult to keep them out of consideration. So political neutrality may be one advantage of pure competitive bids, but it is outweighed by the benefit of including the non-price factors, when they are based on clearly articulated criteria.

Demands Management. Demand management is being practiced quite aggressively by most utilities to raise the load factor and take advantage of low cost techniques for demand management. Virginia Power has an annual load factor of 57 percent with fairly equal summer and winter peaks. The numbers Virginia Power gives for load growth in the system are "net of load management." In other words, if the load is 17000 MW in the abstract, but Virginia Power thinks there might be 2000 MW of cost effective load management, it endeavors to have a reserve margin based on the 15000 MW that needs to be supplied. So while the utility takes demand into account, it does so before getting bids. To date, Virginia Power does not seek competitive bidding for demand side alternatives. The company is looking at it, but has some reservations about it.

Selection of Unit Type

Virginia Power's evaluation procedure takes advantage of the collective ingenuity of the private developers. They have some very good innovative ideas for projects. Open competitive bidding may be a good way to identify the units that should be included in the process of optimizing capacity additions. Virginia Power cannot really forego the optimization process because of the great number of combinations for evaluation. The whole system is a synergistic effort that combines base, intermediate, and peak units from different suppliers to determine the best combination.

However, Virginia Power's computing capacity is limited to evaluating 500 combinations of generating units. In the 1988 solicitation, there were 178 proposals which produced several hundred combinations for evaluation. Under the 1989 solicitation, the process will be even more complicated, because each bidder was asked to give three in-service dates: an early date, a preferred date, and a late date. The alternative dates were requested to allow Virginia Power to include the most attractive projects by sequencing to suit Virginia Power's expansion needs, bearing in mind that the Request for Proposal (RFP) does not allow Virginia Power to go back to a bidder for a new date if it clashes with another preferred bidder's date.
It might be easier for Virginia Power to contemplate a more structured evaluation system if only one supplier were to be chosen, as is generally done in developing countries. For example, if 300 MW are required, it might be advantageous to the government to take three 100 MW proposals. If one project fails, for whatever reason, or does not get built, or is delayed, at least the country is going to get 200 MW. So there is a higher probability of completion by taking two or three smaller units than if the government puts all of its eggs in one basket. It might not be necessary to go through three whole bid processes; there could be a solicitation for 300 MW to be developed in increments. One company may give the best bid for three 100 MW units, because there are economies of scale that come into play. Then the banker or the government or the utility will have the choice of saving money or diversifying its risks.

Evaluation of Bid Proposals for Private Power Plants

Historically, before PURPA was passed, private producers did not offer utilities much power since utilities would pay only a token amount per kWh. It was just not worthwhile for the producer. PURPA came along and said that the true co-generators, the paper mills, the chemical companies, the pharmaceuticals, and the little hydro plants could all sell power to the utilities as QF’s.

From 1981 to 1985, about 200 MW of supply was being offered, on and off. In 1985, Virginia Power got its first third-party project, one of the Cogentrix plants; by that time, the power being generated privately in Virginia Power’s region had grown to about 500 MW. Compared to Virginia Power’s system total of about 9000 MW, 500 MW was not significant.

Things changed in 1986. Suddenly, people with 5000 MW to offer were beating on Virginia Power’s door. Senior management began to focus attention on this power acquisition business. Job titles and management reporting relationships changed, and Virginia Power staff became much closer to the senior executives.

The 1986 Solicitation. In December of 1986 Virginia Power issued a rather informal RFP. Virginia Power needed 700 MW of capacity to come on line in 1990 to meet the expected summer peak, and announced that it wanted to talk to any developer who was willing to build a fully dispatchable power plant at a cost not greater than that of Chesterfield 7, a combined-cycle plant that Virginia Power is building.

The utility received about 53 proposals from 27 developers, amounting to 5083 MW, or roughly seven times what Virginia Power needed. The utility realized that it could develop a market to supply its needs, and it signed some contracts. One important lesson that emerged was that 90% of the capacity offered was gas-fired generation because Virginia Power had given the bidders a gas-fired unit as the benchmark.
Virginia Power then began to consider what it could do differently in the next solicitation. First, it eliminated the benchmark price. Instead, the bidders were asked to quote their best price. Not publishing a benchmark price distinguishes Virginia Power's bidding program from those of most other utilities in this country. One reason for not giving one is that if the utility announces a benchmark price of $600 per KW, a bidder might bid $570, whereas without this announcement, his bid might be $520.

Non-transparency of Evaluation Criteria. The fact that Virginia Power does not publish in advance the details of its evaluation is the second unique feature of its solicitation. When a bidder submits his bid to Boston Edison, for instance, he can determine that his bid will receive a 7.203 rating on a zero-to-ten scale, although he has no idea how other bids will fare. But Virginia Power feels that if the bidders are given the details of the evaluation process in advance, so that they can work out their own scores arithmetically, some clever bidder will figure out how to achieve the maximum score, even though there might be better projects being offered.

Virginia Power specifies which factors are used in its evaluation, but it does not tell how those factors will be evaluated. For example, Virginia Power will not reveal whether any particular manufacturer carries more weight than another, although it will specify clearly that one of the factors is experience, in terms of how many similar plants the bidder has built in the past. When Virginia Power evaluates that experience, it will have more confidence in the project if the bidder has formed a joint venture with a major supplier such as GE, ABB, Westinghouse, Ebasco, Combustion Engineering, Babcock & Wilcox, or Stone and Webster. So, Virginia Power does not disclose how it analyzes the data once it gets it, but it does tell the bidders what it is looking for. One is not likely to get information for which one does not ask.

The process is both fair and economical. Virginia Power does not have to "squeeze" the bidders on price after it does the evaluation. Once a project is selected at the bidder's proposed price, Virginia Power applies no further pressure on that point. The bidder comes to the table to work out the final details of the contract. In Virginia Power's bidding program, the bidder marks up Virginia Power's model agreement and, in effect, makes Virginia Powder an offer. The bidder offers to build this plant for the utility on the terms specified in the contract, as it is marked up with all the changes. There is some degree of negotiating on the contract terms, but not on price.

Dispatchability. Recognizing that requiring full dispatch probably raised the bidding price, Virginia Power also decided to encourage dispatchability rather than require it in the 1988 bid. Thus, Virginia Power announced that it would accept bids that offered full dispatch rights on part of the capacity with base load dispatch on the remainder to ensure a supply of steam required by the producer.
Hurdle Criteria. There is certainly scope to incorporate the concept of hurdle criteria in the evaluation process, especially for factors that are hard to quantify. But hurdles are a useful approach to dealing with only a few factors. Bidders are generally shrewd enough to try to offer the features for which the purchaser is looking. For example, Virginia Power received only one proposal for peaking units in the latest bidding round, in which only proposals for base and intermediate units were solicited. Load factor was not a hurdle criterion because base and intermediate units were preferred, but not required. In fact, if a bidder had offered a peaking unit that fitted Virginia Power’s system needs at a very good price, Virginia Power would have bought it.

The 1988 Solicitation. In the 1988 solicitation, Virginia Power did not provide a benchmark, and the bids reflected a better fuel mix as a result. Projects based on coal and coal waste totalled about 50 percent of the offered capacity. Gas-fired capacity was still significant at about 45 percent, but that was much better than 90 percent that resulted from the 1986 solicitation. Virginia Power was not used to generating from gas, and in Virginia the gas pipelines do not have much spare capacity and the gas pipeline companies have not, to date, been willing to invest on a speculative basis in gas transport capacity.

The results justified Virginia Power’s initiative and confirmed that its market for power purchases existed even under the changed bidding requirements. Virginia Power needed 1750 MW, the largest solicitation in this country to date in the competitive market. Ninety five projects were offered that totalled 14650 MW, with different alternatives on pricing and a whole range of other factors. Thus Virginia Power, whose capacity had primarily been nuclear and coal-based, suddenly acquired approximately 1500 MW of gas-fired generation on its system.

Virginia Power had enough units suited to meeting its base and intermediate loads with its gas and coal projects, and based on an examination of its load duration curve, it needed 300 MW of peak-load units. It received 26 offers for 2139 MW, again about seven times its requirement. But Virginia Power rejected all the bids because it thought the prices were too high. Spending money to put together a proposal, only to have the utility reject all bids, is the bidders’ nightmare. But Virginia Power felt it was in the ratepayers’ best interests to do so. Price was the biggest factor, but others, such as whether Virginia Power could get timely permission to build a necessary overhead transmission line to the proposed site, were also considered.

After rejecting all bids, there was a lot of fear in the company and the supply industry that developers would not bid in Virginia Power’s territory again. However, the results of the 1989 solicitation proved these fears unfounded.
The 1989 Solicitation. In August 1989, Virginia Power solicited 1100 MW of capacity. The utility made it clear that bidders would be competing against Virginia Powder's own units. On January 2, the last working day before bids were due, the utility notified the Virginia State Corporation Commission, Virginia Power's regulator, of the price at which it felt it would be able to build a unit. Virginia Power did not give this information to the bidders, so it was not truly a benchmark. But the regulators, who have to approve Virginia Power's construction plans and who might be required to approve contracts at some point in the future, knew the generating unit that Virginia Power was using as a standard for evaluating the bids. Virginia Power felt this procedure addressed a complaint about the absence of any standard for holding the utility accountable if it constructed units for itself instead of accepting bids. Proposals totalling 11600 MW were received in the 1989 solicitation, over ten times Virginia Power's requirements, even though the utility had rejected all the bids previously, and warned bidders that it might do so again.

The main mechanism for controlling Virginia Power is the need to get approval from the State Corporation Commission to pass on the payments to our ratepayers. That supervision provides quite an incentive. A recent article published by the Economic Analysis Staff of the State Corporation Commission described the Staff's review and detailed evaluation of Virginia Power's process, after which they made some fairly positive recommendations. The main criticism was that Virginia Power relied too much on private units rather than putting its own units in direct competition with them.

Responsiveness to the RFP. Once the bids have been submitted, the question becomes how to evaluate the proposals. Virginia Power first screens them for responsiveness, to check that each bidder has complied with Virginia Power's requirements. If a bidder does not follow the ground rules, the utility will not waste time extracting the information.

Price Factors in Evaluation of Proposals. The first thing Virginia Power looks at is price. Obviously, price is a big factor to a regulated utility. Virginia Power also starts a non-price evaluation and goes through its optimization and risk analysis scenarios.

Price covers 70 percent of the evaluation. Price factors that Virginia Power considers include anything that affects the utility's payment for privately generated power, for example, both the amount and the timing of the capacity payment stream. Virginia Power can understand and work with a proposal for $200 per kW per year, fixed for twenty-five years. Virginia Power also understands another bidder's proposal for $180 per kW per year which is to be increased by $3 a year. But if a bidder wants $1200 up front, and nothing for the next 24 years, Virginia Power will throw out the proposal. That bidder will have no incentive to stay in business, because his receipts are not linked to his performance. Similarly on payments for energy, a bidder who asks for a nickel (5
U.S. cents) plus ten percent a year escalation would profit enormously at the utility's expense, and thus not be seriously considered. But a proposal for a coal price equivalent of two cents per kWh, with price escalation based on some coal index, might have a chance of being considered.

Another factor is load dispatch. Virginia Power considers whether and to what extent a bidder's proposal to run its plant on base-load would affect dispatching decisions, and the resultant increase in cost is added to the evaluated bid price. Virginia Power also adds to this price the estimated cost of interconnection with its network. A large plant to be located adjacent to an existing transmission line could be hooked up, perhaps, at a relatively small cost, whereas thirty miles of line to a proposed site would be a substantial cost for Virginia Power's ratepayers.

So price is anything that affects how much money the utility's customers would pay, calculated on a present worth basis. Virginia Power doesn't divulge the discount rate it uses, since it varies with risk scenarios and other factors. Across solicitations, the rate has varied a little.

**Non-price Factors in Evaluation of Proposals.** There are three basic areas of non-price factors to be considered. The non-price 30 percent of the evaluation is equally divided between project viability, fuel and other factors.

The viability factor includes the level of development, the technical expertise of the project sponsors, whether they understand the process for obtaining permits and have started to acquire some of them, and whether they have the financial strength for the project. The overall question is the competence of the sponsoring group and the details of the specific project.

The fuel issues include the type of fuel and how it fits in with Virginia Power's mix. If Virginia Power is becoming worried about having too much gas-fired capacity on the system, non-gas fired projects score more points. Multi-fuel capability is also valuable to the utility, since it increases the likelihood that the plant will remain competitive in the long run. Another factor is use of domestic fuel. A utility has to take into account state interests and the will of the legislature. In Virginia, credit is given to proposals for burning coal produced in Virginia.

The "other" category includes diversity of ownership. If every private generation project on Virginia Power's system, all 4000 MW, were owned by one supplier Virginia Power would no longer be in control of its own affairs. So Virginia Power believes in diversifying its purchases in awarding contracts.
The location is also important. In evaluating a project, Virginia Power looks at whether it would be in a community that has a high unemployment rate or that badly needs an injection of tax revenues.

Finally, dispatch also arises as a non-price issue. For example, a plant might be proposed in an area where Virginia Power needs to support the voltage. Virginia Power would thus do well to have a generation plant there, possibly one that could be partly base-loaded.

**Competitive Bidding**

The main benefit of a competitive bidding to reconcile pricing with the non-pricing issues, since price alone is not an adequate basis for evaluating bids. For example, if all proposals use the same fuel, there can be no discrimination by fuel price and thus, fuel type ought not to be heavily weighted. But if there are three proposals for one fuel type, and the remainder propose another, then choice of fuel can be weighted according to Virginia Power's interests.

A major benefit of a competitive bidding is that the market, rather than some regulator or political appointee, sets the price. Avoided cost is supposed to be the cost the utility would incur to supply the power or to buy the power from another source, and the market is the best determinant of that cost. The other benefits of the negotiation process are low cost to ratepayers, and most importantly, an orderly process for evaluating bids. By evaluating all proposals at the same time, with consistent criteria, the utility is more likely to make the right decision than by negotiating with developers at a different times.

**Contract Negotiations**

Virginia Power's concept of competitive negotiations means that Virginia Power is willing to enter into simultaneous negotiation for various projects with a capacity that exceeds its planned requirement. While the negotiations are not truly separated, they are not conducted in a purely competitive situation with Virginia Power deciding which bids it likes best. Virginia Power makes its evaluations, and would be happy to accept every negotiated contract that will lead to a successful project instead of entering into negotiations for say, 19 projects with the intention of eliminating four or five of them. Virginia Power's attitude is to take all those projects on which a satisfactory agreement can be reached. There is sometimes confusion on this point. Virginia Power does not come to a point where it has reached a "certain plateau" and then selects projects by price. Virginia Power was interested in contracting 19 of the 95 projects proposed in the 1988 solicitation. Agreements have been terminated on six of these projects. Virginia Power had anticipated that 20% would fail. If the remaining 13
projects also fail, Virginia Power could either re-bid for the balance of the required capacity or build a plant for itself.

Since the utility and the private generator are entering a long-term business relationship, Virginia Power wants to base the energy price on a market escalator, so that the private generator has a reasonable chance of staying in business over the life of the contract, if he is a prudent businessman. His variable expenses and his variable revenues should be comparable. The price for the O&M component should also be escalated by an inflation index.

**Capacity Payments**

Virginia Power is willing to front-end load capacity payments. Front-end loading means that Virginia Power will pay more in the earlier years and less in the later years, within a certain limit. Virginia Power's limit is 90% of the present worth of the payments occurring in the first fifteen years of a twenty-five year contract, which makes sense because these projects are being financed in most cases on a twelve- to fifteen-year loan. By making these up-front payments, Virginia Power helps developers to raise project finance and thus improves the prospects for getting such capacity built. But the payment schedule should have enough money in the tail-end of the payment schedule to give the developer an incentive to keep the plant in operation throughout the term of the contract.

**Security Concerns**

Virginia Power is also concerned about the risk that private producer's plant will not remain in operation. Therefore, it seeks the right to buy the plant when in the ratepayers' best interests. Virginia Power also wants the right to require the owner to take the plant off line for maintenance, or to carry out maintenance on the plant for itself if the owner neglects to do so, with the right to recover any overpayments. Finally, as already mentioned, Virginia Power also seeks dispatch rights and certain terms relating to interconnection.

**Involvement of the Utility in Plant Operation.** It has been argued that the utility or the host government, those for whom the power plant is being developed to provide power, should recognize that they are buying electricity rather than a power plant, and that how that power is produced is up to the project company. But Virginia Power wants to be involved in how the plant in operated and maintained owing to its statutory obligation to provide service whenever a customer wants it. If Virginia Power allows the private generators to set terms to their own convenience, Virginia Power might not have enough electricity for its customers. For example, the private generator could contract a supply from the gas companies at a discount by agreeing to three months interruptibility on the transportation of gas, so that in December, January, and February
there might be no gas delivered to the generating plant, and thus no power delivered to Virginia Power. Virginia Power only wants the right to buy the plant from the private generator if he fails to meet his obligations. That condition is important for long-term utility planning.

Planning and the Independent Power Producers. The question arises as to whether the increasing share of Virginia Power's total capacity being provided by independent producers will create particular problems for planning system development and operations. In 1995, based on current expectations, about 15 percent of the electricity supplied by Virginia Power will be provided by independent producers. Virginia Power tries to maintain a reserve margin of 21 percent. So in 1995, the utility's planned reserve margin will be provide more than full cover for the capacity of the independent producers. Virginia Power has not yet reached the point where its customers will be dependent on these producers. Whether that point is going to be reached will be dependent on their performance. To date they have performed well. For example, in the first four and a half years of operation, the first coal-fired Cogentrix units have had a 96 percent equivalent availability. Not many coal-fired units operated by utilities have performed so well. So while there are a few unreliable independent power producers, most of them are good operators who construct very good plants.

When an independent producer's plant is put on standby by the utility's dispatcher, the utility has to know that the producer's declared available capacity will really be available when needed. Virginia Power deals with this issue under the negotiated contract. If Virginia Power finds that a plant has not met its obligations, the contract provides Virginia Power with the right to call for a test of plant performance, and the capacity payment is based on the test result. If the producer has not reported a forced outage, the utility has a right to expect the plant to perform in accordance with the test.
SESSION SIX

The Investor's/Supplier's Viewpoint

Mr. Richard Strzelecki
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### Session Six

The Investor's/Supplier's Viewpoint

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Session Six
The Investor’s/Supplier’s Viewpoint

Introduction

In 1870, GE initiated the commercialization of electric energy. At that point in time, none of the infrastructure for generation, transmission, and distribution of electric energy existed and we were required to literally create a new industry. GE not only developed the technology, initiated the manufacture of equipment, we also created the market by building and owning the generating, transmission and distribution facilities. Furthermore, we were required to develop devices for the ultimate use of electricity, initially through lighting and evolving into the myriad of appliances, motors and other equipment based on the use of electric energy. By the 1920’s, GE was one of the largest utilities in the United States, with its various operations held under the Edison Bond Share Company. However, in the early 30’s, the enactment of the Public Utility Holding Company Act (PUHCA) gave GE the two choices, either to become a regulated company or to divest itself of its utility holdings. GE chose the latter, and from the 1930’s until the early 60’s, GE functioned primarily as an equipment supplier.

In the early 1960’s, the advent of nuclear power and industrial gas turbines technology changed the situation. Customers required more than just equipment; they also sought guarantees with respect to the system performance. Therefore, GE once again entered the systems business offering turnkey contracts on plants utilizing those technologies.

In the early 80’s, the utilities had dramatically curtailed making capacity additions. The alternative energy projects which emerged with the enactment of the PURPA legislation, a few years earlier, proved to be a significant market segment for equipment. However, the financing of the projects required turnkey contracts and frequently equity participation. Hence, GE once again is participating in the ownership of power generation facilities.

GE Power Projects. Today, worldwide, GE power generating equipment represents 590 GWe of installed capacity consisting of 115 GWe in gas turbines, 455 GW in steam turbines and 20 GWe in combined cycle plant.

GE is also financing generating plants through GE Power Funding (GEPFC) and GE Capital which are affiliates of GE Financial Services. Over the last eight years, GE has financed, through loans and leases, $5.3 billion worth of power plants. GE has also taken equity positions in six plants representing $200 million of equity.

Among others, GE projects include TBG Cogen, Cogen Tech (Bayonne), Cogen Tech (Linden), Bayou Cogen, and Modesto Energy. TBG Cogen has been
operating since the fall of 1989. The project generates 50 MWe and provide process steam to Grumman located on Long Island in New York State. GE acted as the financial advisor and secured third-party financing, constructed the project, and operates it. While GE did not provide debt financing for the project, it did obtain bids from eight different banks, evaluated them, and selected three banks for negotiations. A single bank was finally selected to do both the construction and the term financing. GE has several partners in the project including Brooklyn Union Gas, Consolidated Natural Gas, and an independent developer, Mikowski Associates.

TBG is a good example of how complicated these projects can become. It took GE approximately two years to put the project together from the time an agreement was reached with Grumman to the time funds were distributed from the financing. When financing closed, there were about 22 major agreements. In all, 145 documents had to be executed at the closing. There were nine lawyers and a dress rehearsal was needed the day before the closing.

Cogen Tech (Bayonne) is a project of 250 MWe located in New Jersey, in which GE provided the construction financing and the turnkey supply, acts as O&M operator, as well as provided approximately 10% of the equity in that project. Cogen Tech in Linden is a new project, for which the financing has just been completed. GE underwrote the $820 million financing package, took the underwriting risk for the project and will syndicate the financing in the fall of 1990.

Bayou Cogen, in Texas, is a true cogenerator providing over a million pounds of steam per hour to Big Three and supplying over 300 MWe of power. The power sales arrangement for this project differs from the usual structure. The Bayou partnership provides a cost-of-service contract under which Big Three is essentially a supplier of fuel; the Bayou partnership provides the plant and charges for capacity and processing. Bayou never takes title to the fuel, the steam, or electricity which remain, instead, Big Three's property. Bayou simply processes the fuel into electricity and steam. It is up to Big Three to utilize it, and resell the surplus electricity to Houston Power & Light. This arrangement relieves Bayou of the fuel risk so that the processing fee can be a little more attractive than a pure power or steam sale.

Financing. GEPFC views project financing to consist of three elements: ownership, funding alternatives and the credit support.

Ownership refers to entity which will take title to the facility. It can take the form of (i) direct ownership by the customer; (ii) lease by the customer; or (iii) the customer may simply purchase power from a plant owned and operated by a third party. The decision should be based on the customer's needs. Helping him to clarify his
objectives and consider his alternatives in relation to those objectives can be a long process.

Figure 6-1 identifies issues to be considered in determining the ownership structure. The arrows indicate how each of the listed concerns is affected by the selected structure. This list was developed with respect to domestic industrial customers (in the U.S.A.), but many of these issues apply to developing countries as well.

The first two issues deal with capital utilization and balance sheet integrity which really go hand-in-hand. When a company builds and owns a plant financed through debt, the balance sheet is affected negatively. The plant will use up capital. However, if the plant is leased instead of owned, the balance sheet is not affected because current accounting practices allow a true operating lease to be footnoted on the balance sheet. Further, little capital is utilized with a lease since it will provide almost 100% financing. Where a project is entirely developed by a third party, it does not affect the customer's balance sheets.

The ownership structure also affects the risk the company bears. The electricity and fuel supply risks are greater for a self-owned project than for a third-party owned plant; and steam supply control is greater for owned or leased plant than for those owned by third parties.

The co-generation considerations also vary with ownership structure. Cogeneration can be a good way to bring power into an underdeveloped country where there is a need for process steam which is expensive. But cogeneration raises the issue of who controls the steam. If the project is self-owned, there is full control. But if it is third-party owned, some degree of control over the steam is lost.

The final consideration is the attitude of the customer toward ownership. Many companies in the United States would rather not be involved in what they view as a new business (in other words, they prefer to "stick to their own knitting"). They would rather have someone else provide them with power and steam at a discount and not worry about the day-to-day operations of the power plant.

Ownership Structure. Figure 6-2 shows the structure of a BOOT project. Whoever owns the plant enters into various contracts, puts in equity and borrows funds to leverage the equity. In the United States, GE has participated in projects with very high percentage of equity when the project is financially strong, but normally 70 to 90 percent is borrowed, and in some cases, 100 percent of the project funding has been borrowed. Internationally, in lesser developed countries, it is doubtful that the debt-to-equity ratios will be so aggressive. In the four BOOT schemes with which GE is currently involved, the debt has accounted for 60 to 75% of the total funding.
## Elements of Private Ownership

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<th>Leased</th>
<th>Third Party O &amp; O</th>
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<td>• &quot;Stick to the Knitting&quot;</td>
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STRUCTURE

BUILD OWN OPERATE

LENDERS

INVESTORS

GE POWER FUNDING

UTILITY (CUSTOMER)

POWER PLANT

OWNER

Lenders

Equity

ROI

Ownership

PMT

kw-hrs

PMT

FUEL SUPPLY

GE POWER FUNDING

TURNOCK CONTRACTOR

GE EQUIPMENT

BOP

FUEL TRANSPORT

PLANT OPERATION

LAND LEASE

Figure 6.2:
BOOT Structure
The structure gets more complicated when the project is barter-backed, as Figure 6-3 shows. In this situation, the power purchasing entity enters into a long-term arrangement with a commodity supplier who then enters into a long term sales agreement with a trading company who in turn places the commodities on the world market. The prices of the commodities generally have to be tied to some world indicator if the contracts are to be long-term. The funds from the sale of the commodities are placed in an off-shore trust. The lender and the plant owner are paid by the trust in accordance with the trust agreement and surplus funds are shifted back to the host country.

Still more complexity is added by the lease, which is in effect another funding vehicle. The equity is provided through a lessor with whom the plant owner then enters into a lease agreement. Figure 6-4 shows the structure. The owner trust shown may not be necessary if there is already an ownership entity in existence during construction, which could be the same entity that ultimately will lease the plant. However, the lessor cannot enter into a lease until the plant is completed. As a supplier, GE wants somebody to take title during the construction in order to be able to register plant sales. Thus, this type of structure, in which an owner trust is created during the construction period, satisfies all parties.

Funding. The various funding sources are shown in Figure 6-5. In one project, GE is looking for local investors to provide fifty percent of the ownership equity. Another possibility is for non-regulated affiliates of US utilities to invest. In one such project, two different utilities have expressed interest in not only making equity investment but also entering into a joint venture with a local company to operate and maintain the facility. This arrangement brings local understanding of the business environment into partnership with the technical expertise of the United States utility.

Subordinated debt or preferred equity is another tier of financing which may be useful in a few situations. This kind of financing is of particular interest where the opportunity for debt swaps exists. Those debt swaps can be brought in through preferred equity in which there will be firm payments of interest and a kicker payment based on a percentage of the profit from the project so that the return for the preferred equity investor is somewhere between that of a lender and an equity investor. Subordinated debt is similar except that a firm schedule for principal repayment is included.
STRUCTURE

BUILD OWN OPERATE (Barter Backed)

Minister Finance 
Central Bank 
Excess PMT
OFFSHORE TRUST

Turnkey Contract
GE Equipment
BOP

Approval
User

Trading Company

National Source (Commodities)

GE Power Funding

PMTs

Investors

National Utility

kw-hrs

Lenders

Debt Svcs.
PMTs

Loan

PMT

Project Owner

Equity

ROI

Ownership

Power Plant

Equipment

Svcs.

Fuel Supply

Fuel Transport

O&M

Land Lease

Figure 6.3: BOOT Structure (Barter-Backed)
Note: Under this STRUCTURE the residual value remains with the LESSOR.
Figure 6-5: Sources of Funding

Senior Debt
- Commercial Banks
- Government Banks
- Financial Institutions

Subordinated Debt/Kicker
Preferred Equity/Kicker
- Commercial Banks (Debt Swap)
- Equipment Vendors
- Utility Non-regulated Affiliates
- Investors
- Financial Institution

Equity
- Investors
- Utility non-regulated Affiliates
  (Other than Holding Companies)
- Equipment Vendors
- Fuel Suppliers
- Constructors
- Steam Purchasers

Performance and Capital Costs for Different Types of Plants. It would be difficult to give costs for a "typical" power plant, because each one is unique. But Figure 6-6 gives some idea of the relationship between the capital costs of conventional-type steam turbine, a combined cycle plant and a cogenerator. The quoted costs are for a steam turbine based on a conventional gas-fired boiler. The combined cycle plant consists of two "GE frame nine" gas turbines with a steam turbine, and the cogenerator is using the same two frame nines without the steam turbine but instead all of the steam is utilized for process.

The figures are based on 20% equity which may be aggressive in developing countries. Two elements do not appear in Figures 6-6 and 6-7 which should be added. One is a contingency fund, which should be a minimum of 10% of the plant cost. The second missing element is the project development cost which will amount to at least a million dollars and could be as much as five or six million dollars.

Annual Operating Costs and Energy Prices. Figure 6-7 shows some reasonable estimates of the costs of fuel, labor, maintenance, and water. Although not significant in this example, water supply can be a crucial cost item in some cases. There are also fixed costs which include the profit, debt service, and some administrative costs.
## PERFORMANCE

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<td>Availability, %</td>
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## CAPITAL COSTS ($, millions)

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<td>Equity</td>
<td>55.2</td>
<td>220.8</td>
<td>276.0</td>
</tr>
<tr>
<td>Loans</td>
<td>40.6</td>
<td>162.4</td>
<td>203.0</td>
</tr>
<tr>
<td>Total</td>
<td>95.8</td>
<td>383.2</td>
<td>379.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Uses</th>
<th>Plant</th>
<th>Spares</th>
<th>Startup</th>
<th>Working Capital</th>
<th>Fees</th>
<th>IDC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>230.0</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>10.0</td>
<td>27.0</td>
<td>276.0</td>
</tr>
<tr>
<td></td>
<td>165.0</td>
<td>4.0</td>
<td>2.5</td>
<td>2.0</td>
<td>8.0</td>
<td>21.5</td>
<td>203.0</td>
</tr>
<tr>
<td></td>
<td>120.0</td>
<td>2.5</td>
<td>2.0</td>
<td>2.0</td>
<td>7.0</td>
<td>15.0</td>
<td>148.5</td>
</tr>
</tbody>
</table>

*Figure 6-6: Performance and Capital Costs*
THE ECONOMICS

ANNUAL OPERATING COSTS
($ in millions)

<table>
<thead>
<tr>
<th></th>
<th>Steam Turbine</th>
<th>Combined Cycle</th>
<th>Cogenerator (Max Steam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel @ $2.50/MMBTU(LHV)</td>
<td>66.78</td>
<td>47.99</td>
<td>47.99</td>
</tr>
<tr>
<td>Labor</td>
<td>1.65</td>
<td>1.65</td>
<td>1.50</td>
</tr>
<tr>
<td>Maintenance</td>
<td>6.90</td>
<td>4.95</td>
<td>2.60</td>
</tr>
<tr>
<td>Water</td>
<td>0.22</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Fixed Costs</td>
<td>63.49</td>
<td>46.16</td>
<td>42.77</td>
</tr>
</tbody>
</table>

ENERGY PRICING

<table>
<thead>
<tr>
<th></th>
<th>Steam Turbine</th>
<th>Combined Cycle</th>
<th>Cogenerator (Max Steam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Energy, cents/kw-hr</td>
<td>5.1</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Cost of steam, $/k-lbs</td>
<td>-</td>
<td>-</td>
<td>2.12</td>
</tr>
</tbody>
</table>

25% discount from price based on full fuel allocation of $2.85
Based on the assumptions given in Figures 6-6 and 6-7, the project could sell power produced from the conventional boiler at 5.1 cents/kWh and from the combined cycle plant at 3.7 cents/kWh. When some steam is used for process instead of power generation, the value of the steam becomes an important issue. In the example shown in Figure 6-7, the cost of energy from the cogeneration plant is arbitrarily kept the same as from the combined cycle plant, and the power output of the cogeneration plant is about two-thirds of the combined cycle plant because the steam is being used for process. The cost of steam, based on fuel at $2.50/MM BTUs is then about $2.2/k-lbs. In fact, this steam cost is 25% below the level that corresponds to the value of steam if the fuel were to be used solely for generating steam ($2.85/MM BTUs). The beauty of combined cycle technology is that it uses more BTUs of the fuel than other technologies either to generate steam for process or to generate additional electricity.

Credit Support

The credit support for projects comes from a variety of sources as shown in Figure 6-8. The balance sheet is the most common source. Full recourse financing is based on the strength of the owner’s balance sheet. Other elements of credit support are government/corporate guarantees, the project contracts, and insurance. Even with limited recourse financing, the financial strength of the party is crucial because a contractual guarantee with liquidated damages does not provide strong support if the party to the contract does not have the financial resources to backstop its guarantees. Performance bonds, insurance, and other mechanisms may also be necessary to fill out the credit package. Finally, vendor-supported financing is sometimes involved. For example, a vendor may take back paper for a period of time in lieu of a cash payment.

Figure 6-8: Credit Support

* Balance Sheet
* Government/Corporate Guarantees
* Project Contracts
* Non-Recourse/Project Financing
* Insurance Program
* Vendor Supported

The key elements for project financing from our point of view are shown in Figure 6-9. The turnkey contract, the power sales agreement, the O&M agreement, and the fuel supply agreement are the most important contracts. Financing will revolve around those contracts and they must be strong enough to support it. The important elements to be included in these contracts are summarized in Figure 6-10 and are discussed below.
CREDIT SUPPORT

Key Contracts & Agreements

OWNER

- TURNKEY CONTRACT
- CONSTRUCTION FINANCING
- TERM FINANCING

- POWER SALES AGREEMENT
- O & M AGREEMENT
- ADMINISTRATION AGREEMENT
- FUEL SUPPLY AGREEMENT
- FUEL TRANSPORT AGREEMENT
- LAND LEASE
CREDIT SUPPORT

TURNKEY CONTRACT
- Single Point Responsibility
- Fixed/or Not-to-Exceed Price
- Guaranteed Completion
- Guaranteed Performance
- Liquidated Damages
- Performance & PMT Bond

COUNTRY ISSUES
- Power Sales Contracts Denominated in Loan Currency
- Convertibility
- Change in Law Risk

POWER SALES
- Take-if-tendered or large capacity PMT
- Pricing Based on Avoided Cost or Competitive Bid
- Price Linked to Fuel
- Ltd Regulatory Risks
- Ltd Curtailment
- Term Equal to Life of Project

FUEL SUPPLY
- 100% Req for Financing Term
- Guaranteed Deliverability
- Guaranteed Transportation
- Pass through or Pricing Linked to Revenues
- Liquidated Damages

PROJECT ECONOMICS
- Financial Strength of Participants
- Consistent Force Majeure Terms
- Term of all Contracts tied to term of Loan
- Options for Renewal
- Automatic Extension of Power Sales for Force Majeure

STEAM SALES
- Take-if-tendered
- Guaranteed Minimum
- Term Equal to Life of Project

LAND LEASE
- Defined Premises
- Provide all Cemements
- Provide all Access
- Responsible for pre-existing site Conditions
- Term Equal to useful Life of Project

O & M
- Single Point Responsibility
- Availability Guarantees
- Liquidated Damages

Figure 6.10: Credit Support: Important Issues
Turnkey Contract. For the financier, the turnkey contract provides a single focus of responsibility. A project owner who contracts with many different parties for different elements of the project will need financial strength and technical expertise sufficient to guarantee that all of the project elements will come together in a properly functioning facility. One way to avoid such requirements is to use a turnkey supplier who will provide a firm (with appropriate escalators) or not-to-exceed price with a guaranteed completion date and performance guarantees including heat rate and capacity. GE has provided such guarantees and assumed liquidated damages in order to back up the guarantees. But as a turnkey supplier, GE seeks a give-and-take situation, with bonuses and penalties that are balanced. If GE is to accept liquidated damages for performance shortfalls on one hand, then if we improve in the performance or bring the project into operation ahead of schedule, GE would seek to participate in the benefits.

Power Sales and Fuel Supply Agreements. The linkage between the agreements for fuel pricing and the power sales is of paramount importance. Fuel prices which are linked to a world market rate and passed through directly in the operating costs of the power sales agreement, are not a problem. The difficulty lies in prices for fuel supply and power sales which are linked to different escalators. In a combined-cycle plant, the cost of fuel represents roughly 60 to 70% of the revenues; so the linkage between power sales price and fuel cost is crucial in structuring these projects.

The power sales arrangement should be take-if-tendered or provide for a large capacity payment. It is important that the cash flow should not be determined arbitrarily but rather be tied to capacity and energy sales. A privately owned power plant provides capacity for the utility and, therefore, the utility should be prepared to make a capacity payment. Full dispatchability can be provided if there are adequate capacity payments and no conflict exists with the fuel supply agreement. But if capacity payments are inadequate, then a minimum of energy off-take should be included so that the combined payment is sufficient to meet all requirements and expenses of the project.

All of these factors tie into the financial strength of the participants. None of the contracts counts for much if the parties to those contracts do not have the financial strength to back up their guarantees contained in the contracts.

The terms of these contracts should be set at a minimum of 125% of the financing term. The lender wants all these contracts to last for at least as long as the term of the loan. The power sales agreement should also include a provision that it can be extended on a day-to-day basis for force majeure occurrences to provide some assurance to the lender that revenues will not be interrupted during the repayment term.
Operations and Maintenance Agreement. The O&M agreement provides a single point of responsibility for operations and maintenance and an owner may seek availability guarantees from the O&M provider, with certain liquidated damages.

Land Lease. The land lease provisions are very important. They should cover a term equal to the project's useful life and include all the easements over adjoining property necessary to provide full access to the facility including fuel supply facilities in the case of a pipeline and access for transmission lines.

Count Issues. There are a number of issues relating to doing international projects that need to be addressed. One is extreme inflation as in some South American countries. A solution is to denominate the contract in the currency of the lender's country and convertibility occurs at the time of payment so that the lender does not take the inflation risk. Convertibility is itself an issue which may be handled through barter or other means. The risk of changes in law is probably the most difficult risk to manage because the project participants are essentially at the mercy of the host government. The risk must be understood and assumed by the right parties.

The Process

Time Required for Competitive Bidding. The sequence of events for competitive bidding is shown in Figure 6-11 with estimates of the time required for each stage. Optimistically, the process from inception to the start of construction will take about 18 months. A more realistic assessment is 30 to 36 months. The process is thus neither quick nor simple.

The Proposal Request. The main features of a Request for Proposals (RFP) are summarized in Figure 6-12. The RFP should reflect the evaluation criteria. It is important that the customer determine how he will evaluate bids at the time he prepares the RFP. Whether or not the customer specifically sets out his evaluation criteria, he must know what is really important to him. Having clearly identified his needs, the customer can expect a proposal directly responsive to his requirements.
THE PROCESS (Competitive Bid)

Establish Need → Request for Proposal → Establish Evaluation Criteria → Submit Proposal

Potential Bidders → Prepare Plan of Action

Evaluate and Award → Negotiate Energy Purchase Agreement

Preliminary Financial Structure

Preliminary
- Turnkey
- O&M
- Fuel Supply
- Fuel Transport
- Site

Negotiate Supporting Contracts → Secure Financing

TIME LINE
3-6 Mos | 6-12 Mos | 2 Mos | 2-3 Mos | 2-4 Mos | 2-3 Mos

Figure 6-11: The Process: Competitive Bidding
Figure 6-12: Request for Proposals and Response

Proposal Request

Pricing
- Firm Price
- Currency denomination
- Convertibility
- Availability of Barter

Environmental criteria
Site
Qualifications of bidder
- Technical
- Financial

Fuel
- Quantity/quality
- Point of delivery
- Interface definition

Transmission
- Points of delivery
- Interface definition

Other
- Regulatory requirements
- Taxes, tariffs, fee, other payments
- Change in law
- Performance & completion bonds
- Response deadlines

Proposal Response

Qualifications
- Technical
- Financial

Facility
- Description/technical
- Siting

Development & Construction
Schedule
Permits, Licenses & Regulatory Statutes

Operation & Maintenance Schedule
Fuel Supply & Transportation
Status
Ownership Structure & Financing
- Equity commitment status
- Financing contract status

Pricing
- Capacity
- Energy
- Conditions/guarantees

Energy Sales Agreement

On receiving the RFP, the bidder puts together an ownership structure, discusses his requirements with financial institutions and puts together the turnkey package.

For the bidder, there is a bit of a dilemma here. He can negotiate the turnkey and O&M contracts to get firm numbers. But he is bidding a price to supply power through a capacity and/or an energy charge, without reopeners, and he may not secure the financing until some indefinite period in the future. It may take a year and a half to complete all the negotiations. Therefore, the bidder must estimate the interest rate, in order to come up with a reasonable charge for the power.
One method that GE has used to handle the financing issue is to put collars -- a cap and a floor -- on the interest rate. If the interest rate fluctuates within that band, it is GE's responsibility. If it goes above the ceiling, GE gets some relief; while if it drops below the floor, the customer gets the benefit.

Another solution is to buy a swap option -- an option on the swap of interest rates. The bidder cannot enter into a firm swap because he does not yet know whether he has the contract but he could buy an option on a swap. However, the option can be quite expensive. In a US$350MM project for which GE was considering a swap option of approximately two years, the cost was $3.5MM to be paid upfront.

Because the fuel supplier may not be willing to begin discussions until there is a negotiated power sales agreement, the same thing applies to the fuel. The uncertainty over the fuel supply can be eliminated by means of some pass-through in the power sales agreement or by using a cost of service contract.

Pricing is a key element of proposals. Currency denomination, convertibility and the availability of barter may all be issues, depending upon the specific country. In some cases, barter has been almost essential, such as in certain eastern European countries where there has been no other way to assure payment.

Another element is environmental criteria which can be a major factor in the cost of a power plant in the United States. In some cases, environmental concerns may rule out certain technologies in favor of others. So the RFP should include any requirements with respect to the environment, specifically with respect to emissions constraints.

Sometimes there are benefits to the utility of having the project located in a certain region due to transmission restraints. If there is a specific site, the RFP should say where it is located or state the preferred general location when a site is not available.

If the customer is to provide the fuel, the quality and quantity of the fuel, point of delivery, and the interface between the supplier and the user are important. One example of an interface issue is whether the bidder, the owner of the facility, or the fuel supplier will be responsible for any compressor needs.

Power transmission issues to be considered include the point of delivery where the power will be taken, the access to power grid, and the building of the transmission line from the facility to the grid. In many cases the cogenerator builds it, but on a small project it may not be able to afford to include the cost as a part of the project capital structure.
Regulatory requirements, taxes, tariffs, fees, other payments are also important. The RFP should set out the conditions for construction and operation of the power plant and the requirements for performance and completion bonds. Finally, the request should include response deadlines.

Proposal Response. The main features of a bidders response to an RFP are also summarized in Figure 6-12. The bidder's proposal should include the company's qualifications and specifically address the customer's requirements. The proposal should describe the facility in technical as well as its physical aspects and the setting. The bidder puts forward a development and construction schedule, identifies the permits, licenses and regulatory requirements, and comes up with an O&M program. A responsible O&M contractor will provide a scheduled maintenance program, a plan for responding to forced outages, a schedule of required spare parts, and an organized structure for the operation of the facility.

Another question is the ownership structure. At a minimum, 50 to 75 percent of the equity should be committed at the time of the bid. With respect to the other financing, the best the bidder can do is a preliminary letter of intent. The financier certainly is not going to give a firm commitment until there is a power sales agreement.

The pricing proposal should respond to the customer's needs. Again, the customer should define whether the plant is to be operated as base-loaded, intermediate-load or a peaker. Different technology may be used for each and construction could be different in order to minimize the cost.

Finally, there will be an energy sales agreement. If there are three or four bids, there will be three or four different sales agreements and comparison will be difficult. One approach is to use a detailed commitment schedule on which the bidder notes his exceptions. Another way is to use a term sheet for identifying the requirement for each key element to which the proposer responds.

Evaluation of Proposals. The final question is how to evaluate proposals. If the approach to be used involves weighted price and non-price factors, a 70 percent weighting on price would raise some strong objections, particularly in an off-shore situation. In a complicated financial transaction that involves many contracts, there are other elements that are extremely important and pricing should really account for only 25 to 45 percent. The notion of qualification hurdles in a good idea. If there are some very stringent hurdles, and the final bidders are qualified people on whom the customer can rely to complete the project, then giving more weight to price is fine. Otherwise, it is very dangerous to put that much emphasis on pricing.
In addition to pricing, the major elements to be considered in the evaluation are economic confidence, project development confidence, operational longevity, and system optimization. Economic confidence is a function of the customer's assessment of the economic risks, taking into account the years required to break even, the type of guarantees, the strength of financing, and the strength of the equity participants. Project development confidence is a function of the experience of the participants. Whether they have completed similar projects and understand what is required is a significant consideration. It is going to be a long, tedious process, and tempers will flare quite frequently because the process never goes smoothly and nobody is going to get exactly what they want from it. It will be a series of compromises, but hopefully, everybody wins in the end. That point is really important to the potential long-term success of a project.

Operational longevity confidence will depend on debt coverage ratios, the financial strength of the participants, experience and guarantees of the O&M contractor. Another factor is the depth of the O&M contractor's experience in working with a specific group of investors.

System optimization addresses the issues dealing with the way the plant fits into the existing system. For example, one question is whether transmission construction at one site results in a penalty compared with another site. Another issue is whether the plant will have minimal impact on transmission facilities.

Figure 6-13 shows one way of weighting these factors. Each project is unique and each evaluation is unique. But it is important to know the importance of these criteria to the customer at the time he goes out for bids, otherwise the bids cannot be responsive.
### Figure 6-13: Evaluation Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>25-45%</td>
<td>Utilizing capacity and energy as priced in the proposal, the &quot;guaranteed&quot; performance and availability, calculate the NPV.</td>
</tr>
<tr>
<td>Economic Confidence</td>
<td>20-25%</td>
<td>Measures economic risk considering years to break even, type of guarantees, strength of financing package, and the equity participants.</td>
</tr>
<tr>
<td>Project Development Confidence</td>
<td>20-25%</td>
<td>Participant’s experience and financial strength; status of specific milestones; technical maturity of the proposed equipment.</td>
</tr>
<tr>
<td>Operational Longevity Confidence</td>
<td>10-15%</td>
<td>Debt coverage ratios, financial strength of participants, experience and guarantees of O&amp;M contractor.</td>
</tr>
<tr>
<td>System Optimization</td>
<td>5-10%</td>
<td>Compares project specific characteristics with utility long-range planning and operational needs.</td>
</tr>
</tbody>
</table>

**Investment Strategy.** With all arrangements in place, the parties to the contracts have certain expectations. For domestic projects, investor’s expectations are summarized in Figure 6-14. At the time of financing, investors expect at least a 20 percent internal rate of return after taxes on equity based on a 20-year contract. Earlier in project preparation, when there are greater uncertainties about project terms, investors look for higher rates to reflect the risks. On international projects, investor’s internal rate of return expectation is higher, anywhere from 25 to 35 percent, depending upon the particular situation.
An investor will be satisfied with about 16 to 18 percent internal rate of return on preferred equity. A term of eight to twelve years is included here, because of debt swaps. A number of the commercial banks who are willing to enter into debt swaps want to have the option to get out of the transaction after a certain period of time. Therefore, they are given preferred equity, a rate of return with a coupon rate of perhaps eight percent with a kicker payment to bring up the return. Then after about five years, buy back provisions provide that at the end of 12 years all the preferred equity is retired.

Subordinated debt is sometimes involved because United States utilities, as public holding companies, are not allowed to take equity investments in foreign utilities, but they are allowed to lend money to foreign utilities or foreign power generators. Subordinated debt with a kicker provides them with a vehicle for participating in a project. The expected interest rate is 12 to 16 percent with a term of 8 to 12 years.

These infrastructure projects are long-term projects with fairly high returns. A rule of thumb for debt service is about 25 percent of the revenues. Domestically, GE has some projects with 20 to 25-year loans; 15 years is the absolute minimum. A shorter loan term affects the internal rate of return because more of the cash at the front end is going to service the debt leaving less to distribute to shareholders.

**Rates of Return on Projects.** In bidding or in soliciting financing for some of the projects that GE is pursuing in developing countries, it views the rate of return as a hurdle. If GE participates in a project as an equipment supplier, a turnkey system supplier, an O&M operator, or an equity investor -- and it does all of those -- each form of
participation has certain risks that GE will be absorbing. GE looks for returns based on each group of risks without lumping them together. Each has to stand on its own.

The return sought on equity is not affected by anticipated profits when GE is the equipment supplier in a particular project. Each element of the transaction should provide a return commensurate with the specific set of risks. As an equity investor, GE looks for a return as if it had no other participation in the project.

**Subordinated Debt and Debt Swaps.** The issue of subordinated debt and debt swaps is worth some elaboration. Although there is money available for Mexican and Argentinian debt swaps, the market for debt swapping is limited and will not be a major source of financing. However, it may fit a particular niche, and if it is available, it can be very beneficial to the project. With respect to subordinated debt, certain US holding companies are prohibited by law from making direct equity investments, but they can make subordinated debt investments in off-shore power plants. **BOOTs** are a relatively new vehicle for developing infrastructure projects; the methods for financing these projects are still evolving.

**Currency Fluctuations and the Project Development Time Line.** Barter arrangements bypass the problem of currency fluctuations but involve a whole series of new risks, one of which relates to having a commodity that is going to be put into the world markets. Generally, the commodity trader contracts for a commodity in excess of the expected financial needs of the project to provide a cushion against fluctuation in the commodity price. Again, the power sales contract would be denominated in the debt currency to ensure payment in hard currency. But the process is complicated; one needs to look at the history of the commodity, where its price stands and how volatile it is, and how much excess commodity is needed. And it certainly adds many more contracts to the transaction. In a barter transaction, GE becomes the marketing agent for the country through GE’s trading company or other trading companies because the country itself lacks access to the market or the necessary expertise or simply is unwilling to take the risk. It is not the solution of first choice, but it is feasible.

**Price as the Sole Determining Factor in a Competitive Solicitation.** Whether GE would compete in a bidding process involving strong hurdle qualifications and the selection is solely on evaluated cost depends on the situation. GE did not compete in the last solicitation by Virginia Power. Speaking speculatively, GE would probably bid in one solicitation and then examine the outcome and how it was reached. If satisfied with the process, whether or not it won the contract, GE would compete in future competitive biddings. If GE were not satisfied, it would not participate further.

**Role of the World Bank’s Multilateral Investment Guarantee Agency.** With regard to the four **BOOT** projects in which we are involved, MIGA may have a role to play
as well as OPIC. GE's problem is the $50MM coverage limit on both MIGA and OPIC. The limits make it difficult to do large projects. For example, if a project is capitalized at $250MM, the question is on which elements of the project to apply the MIGA and OPIC insurance. An EXIM guarantee on a portion of the loan provides some relief.

It is possible to go out and get comparable commercial insurance in the commercial market, but it is expensive. Furthermore, the insurers will not commit themselves to longer than three years. They provide a rolling cover for three years forward and then it may be cut off. However, to the extent that the main concerns about risk apply during the construction and start-up periods, three years insurance covers that risk period and thus this kind of insurance may be useful.

Minimum Project Size. From an investor-cum-supplier's point of view, the minimum size of BOOT project that is worthwhile developing in the international market is about 150 MW. Anything smaller is a dilution of resources, and clearly larger projects would be able to carry the overhead costs more easily. To some extent, the minimum size that will attract interest depends on the available options. Even GE has limited resources and seeks to apply them to get the best return.
SESSION SEVEN

An Equipment Manufacturer’s/Developer’s

Perspective of BOOT

Mr. Jeffrey W. Moore

Director, Business Development

ABB Energy Ventures

Princeton, New Jersey
Session 7

An Equipment Manufacturer's/Developer's Perspective of BOOT

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Session Seven

An Equipment Manufacturer/Developer's Perspective of BOOT

ABB's Participation in the International Power Market

Asea-Brown-Boveri (ABB) is a worldwide supplier of electrotechnical equipment and services. It has major product lines in power generation, power transmission, power distribution, industrial, traction, and environmental equipment. ABB's sales total over US$25 billion, and it has 200,000 employees across the world. ABB derives approximately 20% of its sales from developing countries, and roughly that percentage of its personnel come from them. With the recent acquisition of Combustion Engineering in the U.S.A., a leading supplier of industrial and utility boilers and related services, ABB has the expertise and equipment to build a wide range of power plants, from hydroelectric stations to gas-fired combined cycle plants and circulating fluidized bed coal plants.

Over the past few years, the number of private power generation facilities in the United States and overseas has grown rapidly. Private companies have developed a new segment of the power industry by combining project financing techniques with long-term power sales agreements using the BOO (Build, Own and Operate) and BOOT (Build, Own, Operate and Transfer) approaches. Having gained momentum and experience in the United States, private companies are beginning to apply this approach to power plants for developing countries. ABB has entered the BOOT market by establishing ABB Energy Ventures, whose charter is to develop and own private power stations worldwide, using ABB equipment and services.

Typically, ABB becomes involved in a project through a lead from its local office in the host country. ABB's local offices often have connections with the local government or with the local utility, and can therefore find out about power needs which cannot be met by the public sector because of lack of financing. A second source of projects is through finance institutions, like the World Bank and the Asian Development Bank, which hear of projects in countries where ABB does not have operations. Cold approaches are not part of ABB's marketing strategy; the projects which are likely to proceed are normally those which have been under consideration for some time.

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1 This paper provides the specific perspectives of ABB Energy Ventures and its parent, Asea-Brown-Boveri, on the BOOT Market for private power plants, both as an equipment supplier and as a developer/owner. Special emphasis will be placed on private power issues relating to developing countries.
Two major points need to be made at the outset. First, although private power is an important market for equipment suppliers, it is not a panacea for power generation problems. Second, for private sector participation in power projects to become successful in developing countries, international project funding agencies, such as the World Bank, need to provide more leadership, and governments and utilities need to create the appropriate business environment. Ultimately, the participation of the private sector in power projects will depend on the balance of the risk and rewards of these projects.

Advantages and Disadvantages of the BOOT Approach

There have been numerous discussions of the advantages of private power and, in particular, of BOOT projects. General statements are frequently made regarding the reduction of the government's and utility's financing burden, and the establishment of long-term stable prices for electricity and long-term availability guarantees.

BOOT projects have both advantages and disadvantages from the perspective of the equipment supplier/developer. Clearly, one advantage is that he can sell equipment where, for example, financing restrictions would otherwise have been prohibitive. The supplier develops BOOT projects in order to create new equipment sales. Another attraction of BOOT is that the ownership of the plant allows the supplier to earn an income which is usually stable and guarantees him future spare parts and maintenance contracts. A third advantage is that his early involvement in the project helps him to optimize the selection of plant and equipment.

One disadvantage of BOOT is that successful conclusion of a project requires a much larger initial investment than ABB would otherwise have to make. A second disadvantage for the equipment supplier/developer is that he bears many of the development costs as well as the risks associated with developing the project that are usually borne by the utility. Development of a gas-fired combined-cycle plant, for example, might require one to two years of work and cost US$1 million for legal, tax, regulatory, permission, and pre-engineering expenses. Even after the development phase, the equipment supplier/owner bears greater responsibility for the performance of his equipment, bearing the risk over the lifetime of the project rather than just the normal guarantee period. ABB, therefore, requires that the risks of its involvement in the BOOT project be balanced by rewards. The components of this balance are illustrated in Figure 7-1.

Bidding for a BOOT Project

Two issues in particular will arise as BOOT schemes become more popular and bidding becomes more prevalent. First, it has become apparent in the development
BALANCE

- Schedule
- Output
- Heat Rate
- Price
- Operation Cost
- Maintenance Cost
- Availability
- Equity Returns
- Bonus Potential
- Reasonable Profit
of private power plants in the United States that these projects attract potential participants who do not have the necessary skills to bring these projects to completion. Part of the problem is that the selection of contractors and suppliers needs to be completed early in the development process to minimize each bidder’s financial exposure. This aspect of the bidding process permits weak participants to become involved; when one of them wins a BOOT contract, and subsequently collapses financially, the BOOT method suffers a loss of credibility.

One solution that is common in the United States, is to place greater emphasis on non-price factors in evaluation of bids. Even greater emphasis should, perhaps, be placed on non-price factors in international BOOT projects because of their greater complexity. However, the subjective nature of non-price factors does complicate the evaluation of BOOT bids.

ABB favors a strong emphasis on the non-price factors which should reflect overall experience in private power. Important factors are: (a) the number of power plants that the turnkey constructor, who is taking a fixed price, has built; (b) the types of technology with which he has experience; (c) the number of projects the developer and the O&M contractor have done; and (d) the progress any bidder has made in project development, for example, in negotiating the fuel contract.

Although ABB prefers negotiated arrangements, ABB might participate in a strictly competitive bidding process. However, large-scale procedures of the sort common in the United States, involving as many as two hundred bidders, should be discouraged. A better approach is to invite three or four qualified suppliers to submit competitive bids.

Requirements For a Successful BOOT Project

The first step in establishing successful BOOT projects is to clarify the reasons for using this approach instead of the traditional model. The second step is to identify properly qualified participants who have a long term commitment to the market for generating power and who also have adequate experience of BOOT projects and financial resources to sustain their commitment.

Risk Allocation. The project risks must be appropriately distributed among the participants. ABB divides the many risks to be borne in BOOT projects into the following four categories: market risk, sovereign risk, project risk and commercial risk. ABB’s view on optimal allocation of risks is illustrated in Figure 7-2. As in the United States, the utility should bear the market risk, and the commercial banks should bear the project financing risks. For BOOT projects in developing countries, the multilateral and bilateral financing agencies should help with managing the sovereign risk. The
RISK SPECTRUM

- Market Risk - Utility
- Sovereign Risk - Multi-lateral Agencies
  - Bi-lateral Agencies
- Project Risk - Lenders
- Commercial Risk - Private Power Company
performance and operating risks should be borne by the project company. ABB is, without hesitation, willing to take the risks of plant availability, output and performance, but is unwilling to take the risks of expropriation and any of the components of sovereign risk, unless sufficient benefits are offered to offset such risk.

**World Bank Participation.** The World Bank’s role should be the catalyst for BOOT projects. The World Bank’s participation would encourage other potential participants, such as fuel suppliers and commercial banks to take a serious interest in the project. The Bank should also help governments to set policies for, and develop confidence in private sector participation by drawing on their knowledge from other countries about this approach.

**Business Environment.** Finally, the creation of a supportive business environment is essential to the success of a BOOT project. Both the government and the utility are responsible for bringing this about. The success of a BOOT project depends greatly on the way the government addresses questions of ownership, taxes, investment incentives, remittance of foreign exchange and profits, and supporting the utility’s obligations to pay for the power that it purchases.

**Utility’s role.** The utility may take either a proactive or a protectionary stance towards private sector participation in power supply. The approach it takes has significant implications for the success of a BOOT project. ABB is not adverse to having utilities as joint venture partners in private power plants, and such a joint venture allows utilities to leverage their resources. This kind of joint venture is useful in situations where the need for power is growing dramatically, and the utility just does not have the resources to keep up with this need. But as a developer, ABB will stay away from utilities that are protective, because such projects will involve prolonged uphill battles. The chance of getting a large power contract does not justify the effort in this situation. Experience with certain utilities in the United States confirms this point.

**Project Size.** If it takes a million dollars of initial investment to develop a 100 MW project, clearly it is not going to take two million dollars to develop a 200 MW project. ABB’s minimum investment in a project is half a million to three quarters of a million dollars, whether it is a 50 MW hydro station or a 1000 MW coal fired station. But ABB’s experience in Turkey with a 1000 MW coal-fired project shows that this initial cost could well exceed five million dollars. A project of that size requires the involvement of so many banks, that assembling the project team becomes very complicated and the development costs are therefore high. The development costs for projects that are between 100 MW and 500 MW are fairly reasonable relative to the size of the project. Beyond 500 MW, the development costs may be excessive relative to the capacity gained.
ABB will continue to be willing to participate in large projects. It would not turn down a two billion dollar project. But the lesson learned in Turkey is that the first BOOT power schemes should not be large and complex, such as a 1000 MW station. For example, the early BOOT projects in the United States were 5 to 10 MW hydroelectric and biomass projects, in which the amounts of money at risk were relatively small and well within the capacity of equipment suppliers. Thus, in the present international market, perhaps the early BOOT projects should be 200 MW or 300 MW stations. Once experience and confidence have been gained at this level, larger capacities can be tackled under BOOT projects.

Return Sought on Investments. The level of return a developer expects on his investment in a BOOT project depends upon the stage of the project. At the time of financial closing on projects located in the United States, before construction and thus when there is the greatest potential for cost overruns, a return of 20% is acceptable to ABB. Once construction is finished and the plant has passed the performance tests, the investment is similar to a high risk bond, and thus should yield a 13 to 14 percent return. Conversely, at the conceptual stage of a project, the expected rate of return has to be greater than at later stages after firming up the plant design and costs, fuel supply contracts and other key cost components. ABB's rule of thumb on the turnkey price is 25 to 30 percent return at the conceptual stage. But these figures are for projects in the United States. In international projects they may have to be somewhat higher to provide a risk premium on the prospective return to the equity investment.

Responsibility for Cost Overruns. Developers, utilities and host governments have to be clear about the responsibility for cost overruns that are beyond the developers' control. The standard contract language provides that ABB will assume those risks over which ABB has control. Other risks will either have to be transferred, by agreement, to the government or utility, or covered by force majeure insurance. Such insurance may be available to compensate for some cost overruns, such as those due to strikes. It is necessary to work with the government, early on, to identify these risks.

When ABB Energy Ventures negotiates a fixed-price contract with the ABB engineering team, it is likely to have a joint venture partner on the project. Whether that partner is a fuel supplier or the utility, that fixed-price contract is negotiated on an arm's length basis. ABB seeks a fair profit, but certainly not an excessive one.

Use of External Suppliers. ABB Energy Ventures' profit as a developer is usually a function of the price given by the internal ABB supplier. If that price is not good, Energy Ventures will go to the open market to check that the supplier's price is competitive. This possibility pressures the internal supplier to offer a better price. Although theoretically ABB Energy Ventures could utilize other firm's equipment, in practice it is unlikely to do so because it is in business to sell its own equipment.
Involvement of Supplier/Investor after Transfer of Project. ABB has not had much experience in transferring large power stations to utilities. But the question of transfer raises concerns about the competence of the utilities. So transfer should probably be gradual. ABB would not suddenly withdraw from operating the plant and pass it over to new owners. ABB would train utility staff and continue certain guarantees on performance, provided that ABB has control over the maintenance procedures. ABB might not carry the operating cost risk or the maintenance cost risk, but would give availability guarantees. Transfer is a slow process of providing various levels of O&M services. ABB would be willing to provide certain guarantees past the transfer point, depending on the level of its involvement.
SESSION EIGHT

Tariff Structures and Their Importance

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Session Eight

Tariff Structures and Their Importance

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Session Eight

Tariff Structures and Their Importance

Differences in Aims of Developers and Governments

In any commercial negotiation, the most important term to reach agreement on is price or, in long-term contracts, the formula for fixing the price. BOOT finance is no different. Too many BOOT projects never get off the ground because the project developer and the host government have significantly divergent expectations as to what BOOT finance involves. BOOT project developers and the host government will have conflicting interests in any BOOT project. For illustrative purposes, extreme positions for these parties are shown in Figure 8-1.

**Figure 8-1: Comparison of Aims of the BOOT Project Developer and Host Government**

<table>
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<th>Aims of BOOT Project Developer</th>
<th>Aims of Host Government</th>
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<td>1. To minimize operating costs.</td>
<td>To ensure project assets are properly maintained to provide good quality service and to maintain the residual value of project assets.</td>
</tr>
<tr>
<td>2. To maximize revenue.</td>
<td>To control revenues to prevent excessive charging - especially when BOOT is compared with conventional finance.</td>
</tr>
<tr>
<td>3. To maintain positive cash flow.</td>
<td>To pay only according to results - no work, no pay.</td>
</tr>
<tr>
<td>4. To require stable legal environment.</td>
<td>To require project companies to comply with all present and future laws and government policies.</td>
</tr>
<tr>
<td>5. To enjoy the right to use project assets in whatever way will maximize profit.</td>
<td>To require project assets to be used in whatever way will maximize the economic benefit to the host country.</td>
</tr>
<tr>
<td>6. To transfer project risks to the host government.</td>
<td>To transfer project risks to the project developer.</td>
</tr>
</tbody>
</table>
Problems of Delay

A lawyer views a power station as a bundle of rights, risks, and obligations to be priced and allocated among the project participants. Who will assume the risks, how they will be priced, and how the parties will protect themselves against the risk are important questions. In the BOOT context, the parties try to reach a consensus by allocating the risks in such a way that the project is viable and financeable, which requires a workable meshing of contracts that provides a secure and stable flow of cash to the project, with prices acceptable to all parties. It is not surprising that the process can take considerable time.

One of the great difficulties when negotiations take two or three years to complete is that the basic assumptions underlying a project can change fundamentally during the negotiations. For example, over five years during the 1980s, the CEGB switched its declared preference for power generation from nuclear power to coal-fired power and then to gas-fired power using combined-cycle technology.

Virginia Power seems to have overcome the problem of delay. Virginia Power is in the process of evaluating a number of independent power proposals and expects to finish that evaluation in early May. They are quite confident that they will be able to sign contracts by the end of June. It would be mindboggling to consider such a timetable for international BOOT schemes, and it is worth looking at the factors that make it possible for Virginia Power to move so quickly.

Much of the foundation for developing independent power supply in the United States has already been laid over many years. Virginia Power is a sophisticated utility which can clearly specify its requirements from independent power producers in the Request for Proposals (RFP). The regulatory environment is well-defined. The legal regime within which these deals function is well-developed, and contracts between the utilities and the independent power producers are well-established and well understood on both sides. Hence, negotiation can proceed relatively quickly. The purchaser of electricity is a regulated utility, with a solid credit standing, so the seller can be assured that the funds promised under power purchase agreement will be paid over the term of the contract. And finally, and perhaps most importantly, there is a developed competitive market for generating capacity.

A BOOT scheme in a developing country with foreign participants is an entirely different case. There the basic legal and regulatory infrastructure may not be sufficiently developed to cope with the complexities of international project financing, and

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1 Central Electricity Generating Board for England and Wales.
it may need to be reinforced by often complex contractual arrangements that take time to negotiate. A very long lead time for developing these projects in itself can become a huge obstacle to their success. The groundwork must be done in each country that is actively considering a BOOT project. A legal environment must be developed in which these projects can flourish and investors can have confidence.

Anthony Churchill made a good point about the importance of the World Bank's role in assisting host governments to develop an appropriate legal framework for BOOT projects. The World Bank can help to explain to the host governments what, realistically, is required to encourage foreign investment. It can also provide some assurance to investors that host governments are likely to abide by the rules.

Negotiating Power Purchase Tariffs

Let us turn to some of the potential areas of conflict between the BOOT project developer and the host government that I referred to earlier, and consider how these conflicts can manifest themselves in the negotiation of the power purchase tariff. In a BOOT project the tariff is normally made up of several elements which reflect the project company's cost of generating electricity: a capacity charge per MW of available capacity to cover all of the project's fixed costs plus return to investors, an energy charge per MWh sent out to cover all of the project's variable costs, and supplemental charges to cater for the other variables. These elements need to be indexed to reflect changes in cost over time.

The BOOT developer will be concerned to make sure that over the entire term of the power purchase agreement, the indexation provisions will ensure that the various cost elements of the tariff will keep pace with increases in the project company's costs. Frequently the developer will seek to include in the power purchase agreement a re-opening clause that will enable adjustments to be made to the tariff if the indexation provisions fail to achieve this result. Additionally, unless the power station is to be allowed to operate at maximum output throughout the life of the power purchase agreement, the BOOT developer is likely to favor a tariff structure in which the profit that can be earned by the investors is not dependent on the output of the power station.

The host government (or the state electricity company) may object to a tariff structure which makes the project company indifferent to the extent that it is utilized to generate electricity. The government may therefore favor a tariff structure which requires the project company to achieve at least a target level of output to earn a return for the investors. The compromise between these two positions is to give the power station operators a financial incentive to achieve high availability and to reduce the time that plant is subject to scheduled and forced outage.
The tariff typically consists of three elements: the capacity charge, the energy charge, and a variable element which rewards high availability and penalises low availability. The capacity charge can be used to cover the debt service on the loans and can be adjusted at specified periods to incorporate any changes in interest rates to the extent that it is not practical to fix the rate of interest on project debt. In effect, the project lenders will look to the capacity charge to cover the actual interest payments on the project debt.

Because interest charges attributable to a project (as well as depreciation) are higher in the early years of a project, a power purchase tariff which fully reflects the economic cost of the new investment in the capacity charge element would have to be front-end loaded. However, because the capacity charge represents a fixed obligation of the host government over the term of the power purchase agreement, it is normally possible to reduce the degree of front-end loading in the tariff to avoid the difficulties for the utility which might arise, and which would oblige it to absorb the higher charges itself rather than pass them through to its customers by varying retail tariffs. Hence, governments have to realize that this type of financing arrangement in some respects resembles a structured leveraged leasing, where the capacity charge element (the equivalent of rent) can be shaped to match to some extent an unpredictable output per time period.

However, the principal attraction of a BOOT scheme is that the investors offer power, not plant. The idea of a three-part tariff, with most of the costs wrapped up in a capacity charge, therefore needs further exploration. Not only must the tariff provide the project company with the right financial incentives to operate the plant in the most economically efficient way, the utility must also be given the right financial incentives to take the power output most advantageously in the context of its power system.

There is often a basic misunderstanding between the project company and the utility about what will be bought and sold. A feasibility study often gives the impression that the investors are offering a price per kilowatt hour of energy, subject to indexation. But when negotiating the power purchase agreement, the investors frequently insist on such provisions such as a high capacity charge or a substantial minimum off-take of power, making it clear that the utility will be required to take power over the full economically useful life of the station regardless of how the cost of that energy compares with alternative sources.

The parties to the negotiations must be clear from the outset about the sort of power purchase agreement that the investors are offering. The tariff structure should reflect what is being offered by the project developer. Arguably, in the BOOT context, it is simpler for the developer to offer capacity rather than energy at an agreed rate. Recent experience from the privatization of the British electricity supply industry is
Recent experience from the privatization of the British electricity supply industry is instructive. The objective was to set up a pricing structure for bulk power sales which would allow energy to be traded competitively on the basis of a market price. However, the market price calculations are complex enough to require 250 or so pages of algebra, a degree of complexity which simply is not appropriate for a BOOT project. Unless the host government has some mechanism for establishing a market price for energy, there seems to be little alternative but to offer capacity at a fixed price over the term of the contract.

In BOOT financing, the critical consideration in deciding how risk should be allocated is the availability of finance. Neither debt nor equity investors will make open-ended commitments to provide additional funds to cover project cash deficits. Any risk taking must be accommodated with the initial commitments by the debt and equity investors, making it inappropriate for a BOOT project to take unlimited risk on output levels.

This feature does not mean that BOOT project developers cannot accept any output risk. On the contrary, they may have to do so in order make BOOT finance attractive to the host government. But risk must be accommodated within the parameters of the project cash flow. This accommodation can be managed by prior agreement provided that the factors affecting the output of the plant are not subject to the control of the purchaser of the output and can be reflected in the project developer's risk analysis.

Fuel Risk

Another potential area of conflict is the fuel risk. The project developers will wish to pass through in the tariff any changes in fuel costs on the grounds that they cannot be expected to predict relative fuel prices over the 20 or more years of the finance term. The host government may argue that the economic feasibility of the project depends on fuel price projections and the project developers should accept some risk that the fuel price projections are wrong.

If capacity is offered, variable costs need to be covered in the bulk supply tariff. Fuel is the most important variable cost. In many countries, fuel supply is the exclusive responsibility of state organizations such as national petroleum and coal corporations and the investors thus have no control over the origin and cost of procuring fuels for their power stations. Under these conditions, the price of fuel supplied to the power station is usually set according to government policy.

If the fuel is bought on the open market, there needs to be some mechanism for ensuring that the utility buys the fuel at reasonable cost, taking advantage of any available
cost savings. The usual mechanism is to link the fuel price to some objective index, such as an international market index. Indexation of the price of oil supplies to an international oil benchmark price works extremely well. However, the same approach is unlikely to work well for indexation of the price of coal supplies. It is difficult to construct a price index for the international market for traded coal that is a sufficiently reliable basis for a price index for raising financing with a 20 to 25 year repayment period. In such cases, an alternative approach is required for managing the fuel price risk.

When the project company's actual fuel cost is fully reflected in the tariff, incentives for the project company to use fuel efficiently are useful and important. One method is to structure the tariff to provide a bonus payment for high fuel efficiency and to penalize the utility for poor fuel efficiency. These rewards and penalties might be implemented, for example, by setting upper and lower limits for conversion rates based on the operating performance of efficient plants in other countries.

**Operation and Maintenance Costs**

The BOOT approach also gives the contractors strong incentives to control the O&M costs over the life of the project. The O&M contractor is consulted on project design and is committed, both to the utility and to the investors, to achieving the target level of availability. Usually, the O&M contractor will agree to quote a price which is linked to domestic inflation. If a suitable local index is not available, the O&M charges might be based, for example, on an equivalent hard currency cost. The charges will also rise to reflect increases in O&M costs as the plant ages.

**Changes in the Legal Environment**

There is no justification for expecting the project investors to accept risks associated with changes in the legal environment, since governments' control of this environment gives the investors little assurance of impartial treatment in contractual matters with a state-owned utility. Any additional costs resulting from changes in the legal environment should be passed through to the project investors in the bulk tariff.

However, the government will resist, and even resent, any constraint on its ability to change the laws affecting the operation of the power station. There cannot be any restriction on the ability of the government to change, for example, its environmental laws or its tax laws. The only exception is laws that relate to the foreign investment itself, which are normally contained in the implementation agreement. The investors generally will require guarantees that these laws will not be changed adversely over the life of their investment.
Changes in the Operating Regime

The economics of a power station project will depend on how it is used to generate electricity (e.g. base load, peaking plant). The host government and utility will wish the freedom to change the way in which the power station is instructed to operate in order to optimize the station's economic benefit to the electricity system as a whole. The tariff to which the project developers agree may be based on a specific use, and they would like the government and utilities to agree not to alter that use. Changes in operating regime can create particular difficulty if the utility wishes the power station to be fully dispatchable. Dispatchability significantly affects the O&M costs of a power station. Unless the dispatch of power is predictable, it is difficult to estimate reliably and thus to offer a fixed O&M charge. For this reason, most BOOT schemes are used to meet base load, and thus are built on the basis of continuous operation, subject only to planned maintenance and unplanned outage.

It is often possible to offer the utility a degree of flexibility in its utilization of the power station by including a charge for start-up costs and fixed heat costs in the tariff. But in most developing countries, the problem is largely undercapacity, and there is generally no reason to expect that the power station would not be used to meet base load throughout its economic life.

Force Majeure

An issue which always arises in these negotiations is force majeure. When a risk is subject to one party's control, it is appropriately allocated to that party. But true force majeure risks, such as war, terrorism, or earthquake are beyond anyone's control. It will usually fall to the host government to assume those risks, because the project company's capital is limited, and the investors will, as a rule, have no continuing obligation to provide funds beyond their initial commitment. The project company normally does not have the financial capability to absorb the costs of force majeure risks. Thus a mechanism needs to be established to provide the project company with cash flow that is adequate to cover its fixed costs during a period of force majeure.

Availability Incentives

If the tariff structure is to contain incentives to encourage high availability, the power purchase agreement needs to have clear provisions on how availability is measured. Generally, these provisions will be quite detailed. When a power station is used to meet base load, measurement of availability is usually straightforward. Under this mode, the station will usually be operated steadily at or near its rated capacity, and thus its average availability can be derived from the metered amount of energy sent out to the utility's transmission network.
When a power station is used in other roles, for example to provide spinning reserve, defining availability becomes more complex. If the station is required to be available for despatch but on stand-by duty, one technique for establishing its availability for contractual purposes is to incorporate a provision for testing in the contract. Under this approach, the utility could require the operators to demonstrate that the station is capable of responding to dispatch instructions consistently with the performance characteristics defined in the power purchase agreement.

**Capacity Charge**

One means for sharing risks between the investors and the utility is through indexing the capacity charge. BOOT projects normally have both a local capital element, consisting of the funds raised within the host country itself, and an overseas funding element, which includes the cost of imported plant and equipment, the consultants, the contractor and the O&M contractor.

Foreign investors will not normally accept risk from domestic inflation. Thus, the value of the domestic component of the capacity charge must be maintained at a sufficient level to cover the financing costs incurred by the investors in the host country.

One solution is to link the capacity charges to a hard currency, thus using exchange rate movement as a proxy measure for domestic inflation. All domestic costs are translated into the chosen hard currency at the actual exchange rate. A capacity charge is then calculated in terms of the hard currency and reconvered into the currency of the host country at the times of payments.

On the other hand, the investors will normally be expected to bear the risk of inflation on the overseas funding element. For example, the host government will be reluctant to protect the investor against the exchange risk between its own currency and the currency of an equipment supplier from a different country. Contractors are unlikely to be willing to hold their quotations for these periods which can extend to 2 or 3 years. This uncertainty increases the difficulty for the host government in assessing the project’s cost effectiveness. It is possible to hedge the exchange risk and the interest rate risk by buying swap options, but the costs of such options are high. If the risk is very great, the project will not proceed. The investors will normally be very reluctant to quote a firm price for a period as long as two years.

**Risks from Interest Rates**

Substantial amounts of financing are available for investments at variable interest rates, but indexing the tariff to offset the interest rate then becomes a question.
Ranjit Mathrani suggests one of two approaches. In his view, the easier approach is to make the debt service burden a component of the cost, and factor the interest rate fluctuations into the tariff. Another approach is to index the tariff to a projected movement in the underlying real rate of return for government bonds.

**Risks Borne By the Project Company**

The project company is able to bear quite limited risks in the tariff. It will only be able to take risks to the extent of its equity capital. If the project company is highly leveraged, the allocation of risk and the contractual framework require a great deal of attention to make sure that the company does not incur liabilities which leave it unable to pay its debts. The contractual terms can be more relaxed if there is a substantial cushion in the form of equity that gives the company itself some substance and some ability to bear risk.

To be in a position to assume risks, the project company will often have to be able to adjust its cash commitments. The company may sometimes be able to reach an agreement with its lenders to defer its debt repayment on pre-defined terms if certain events arise. In tunnel projects, for example, there may be an agreement that if there is less traffic than forecast, the term of financing can be extended on certain terms to relieve the company's cash flow. In theory, this principle could be adapted to apply to hydroelectric projects which are affected by water shortages, although lenders to such schemes have been reluctant to accept this risk.

Many risks which the purchaser of power is not willing to bear, are passed on to other parties by the project company, particularly if it is highly leveraged. For example, to handle the risks associated with the availability of the power station, the project company will seek guarantees from the fuel suppliers and the operations and maintenance contractor.

**Legal Environment**

The dispute resolution provisions of the contract are extremely important. A contract providing for foreign investment is an international contract, and the investors will normally insist that disputes are resolved under some international standard, in a neutral forum.

Operation of BOOT schemes is, however, inevitably heavily affected by the host country's legal environment, which should encourage foreign investment. For example, laws should specify the incentives provided to foreign investors in terms of tax holidays. Also, if the project company becomes subject to taxation, it needs a large increase in its tariff to maintain its level of profitability. Another important aspect of the
legal environment is the way governments formulate and implement regulations. Particularly for the operations of private power stations, regulations should be consistent and transparent.

**Debt Equity Ratio and the Tariff Structure**

A higher proportion of equity in a BOOT scheme simplifies the tariff negotiation process for the following reasons. The investor is placing assets which are largely fixed in a particular location, and sells the output to a single customer. The value of those assets is thus heavily dependent on the future income stream the investor expects to earn from them, and the security for lenders also depends on the future income stream, which is mainly a function of the tariff. Equity gives some protection against variations in cash flow. With a thin equity base, even a temporary reduction in cash flow could create enormous difficulties for the investor meeting his debt servicing commitments. Likewise, with substantial equity, lenders would require a less complex web of contractual commitments because they would know that the project would be able to withstand temporary set-backs more easily.

The amount of equity can affect the allocation of risks. The greater the equity, the more of the risk can be borne by equity investors, and the lenders can be more relaxed about protecting themselves. One of the fundamental criteria of BOOT financing therefore, is that the project company must remain at least cash neutral, and preferably have a positive flow, once the project is in operation, to maintain the investors' continuing commitment to performance.

**Risk Mitigation for Hydroelectric Projects**

Attention has been paid to mitigation of the fuel risk in the BOOT approach for a thermal power stations. In a hydroelectric scheme, there is no fuel price risk, although there are risks from the variability of hydrology and interest rates, and from the large amount of financing often required. Because of uncertainty about energy output due to hydrological variability, if the tariff for the project output is based on the amount of energy sold, it is difficult to raise financing under a BOOT arrangement. For a run-of-river hydroelectric station, financing might be obtainable if the tariff is based on a capacity charge linked to the available capacity, which covers the fixed capital costs of the project company. For a hydroelectric station fed from a reservoir or with some other way of controlling power dispatchability, the tariff structure does need to provide the utility with the incentive to take the power output as best suits the power system.

The project company could, in fact, negotiate at an early stage with the lender for a deferment of payment in the event that actual revenues fall below the projected level needed to meet debt servicing. In a hydroelectric project experiencing a
water shortage, that kind of agreement is one way of dealing with cash flow shortages arising from defined eventualities. Such an agreement is difficult to obtain because lenders do not generally wish to take any risk on energy output.

It is also possible to take account of hydrological uncertainty in a hydroelectric project. An availability charge could be derived from the estimated firm power capacity based on the hydrological record. In principle, the concepts of an availability premium for a thermal power plant and a firm power premium for a hydroelectric station are similar. To a certain extent, the premium would be wrapped up in the capacity charge. The required availability for the plant should be clear from the power supply contract, such as continuous, stand-by or on call at an hour’s notice.

It is clear from various export contracts that utilities are willing to pay much more for firm power than for what they would regard as secondary energy. It is a question of availability. The utility, in planning its operations and system expansion, considers power firm if it knows with certainty when power is going to be available from the station. Otherwise, it has to invest in back-up plant to maintain the regulatory standards for security of power supply to consumers.

For a run-of-river hydroelectric station, obviously, the availability of firm power is a major problem. The average availability of power over many years can be assessed from hydrological records, but there is no assurance that the power station will be capable of producing a given amount of energy in a particular period. In many cases, there are considerable periods of time in which it cannot. So BOOT hydroelectric projects tend to include reservoirs to reduce the risk of low availability of water, provide dispatchability and maximize the level of firm power in the station’s output.

This solution, however, is somewhat limited, especially if capital costs have to be incorporated in energy charges because of low level of firm power and thus little capacity on which to base payments. For example, pricing the output of a run-of-river project on the basis of kilowatt hours could cause the plant to be displaced in the utility’s dispatching order by other plants with lower variable costs. Also, the tariff base would be less than the station output if system demand is insufficient to absorb the full output, as during off-peak demand periods. This situation would also occur when its contractual commitments with other power producers leave a utility with insufficient off-peak demand to use the output from a run-of-river hydroelectric station.
SESSION NINE

The Lessons to be Learnt from

Past BOOT Projects

Discussion Chaired by Mr. Ibrahim Elwan
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The World Bank
Session Nine

The Lessons to be Learnt From Past BOOT Projects

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Session Nine

The Lessons to be Learnt From Past BOOT Projects

General Lessons

It should be emphasized that BOOT projects involve long-term relationships that require trust between the public sector and the private sector participants and, also among the parties that compose each sector.

The project should be competitively structured, and the investors should put in genuine equity rather than profits disguised as equity. The equity must not only be substantial, but the return should be real and relatively prompt. Although profit that is invested in a BOOT project is equity, it has to be identifiable and treated differently than are investment funds contributed as equity.

In order to assess a project's competitiveness, the deciding factor must be the price per unit of electricity. This price can be compared with the system cost or with the public sector's avoided cost, after making an adjustment for the cost of borrowing and differences in the rate of return.

An additional means to secure a competitive project for the host country is to require a lock-in period on the equity which is long enough to prevent the investor from taking it out and leaving the other project participants stranded.

Another device for securing genuine equity is to require a relatively large down-payment as the equity contribution, at least higher than the mark-up for a construction or equipment supply contract. It is difficult to generalize about mark-ups since they vary with the size of the contract, typically being smaller in percentage terms of large contracts even though the amounts involved in absolute terms can be substantial.

It is a good idea to develop an alternative to the BOOT proposal as a comparator. Thus, the host government should arrange to have a pre-feasibility study done, have the site and other items identified, specifications written and a tender floated for a straight turnkey contract. The tender should be evaluated on the basis of cash value, and include a provision that the contractor provide a specified amount of equity.

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1 This text summarizes the discussion during the closing session among seminar participants on issues arising during the previous presentations. The views expressed herein do not necessarily reflect official World Bank policy.
Leadership of Investor Group

A project sponsor who is a genuine developer, rather than an equipment supplier, tends to advance the project in a more systematic way than if he is a contractor trying to sell a specific set of equipment. A sponsor who is willing to put in risk money up front will be eager to minimize the cost by seeking the best bids. On the other hand, suppliers and contractors, compared with investors, are in a position to benefit relatively early, and might therefore be more persistent about mobilizing resources and getting contracts signed, in order to begin working on the project and reaping a reasonable profit on that work. So it might not be a foregone conclusion that investor groups that exclude contractors and suppliers are preferable as project sponsors.

The question of whether contractors and investors should lead consortia is perennial. The issue may turn on the type of project. In projects such as roads, bridges and hydroelectric plants, the critical risk concerns construction completion. In those circumstances, the contractor and the supplier are often natural leaders for the project because completion is their responsibility. However, on a project in which the operating costs form a very large part of the total project costs, they may not necessarily be the best leaders. Nevertheless, they may win that role by default if the bidding process is very opaque or difficult, because the long and tedious process may discourage genuine investors from participating, while the supplier may be the only participant who can see a ready and certain benefit. On the other hand, transparency in the arrangements is likely to attract longer term operators as investors.

Contractors/Suppliers as Project Investors

Contractors or suppliers who are also investors in a project sometimes do not distinguish the returns on their commercial risk and technical risk from their financial return. In principle, they should consider each risk separately and be satisfied that each of the different kinds of risks will have an adequate return. They do not always do it that way. The reason is sometimes strategic. For instance, the company seeks to enter a new market, or there is not enough work in the country, but the company wants to maintain its staff there. So it is willing to make a trade off, for example, by deferring part of its take from the project as dividends or capital gains, in terms of a percentage of its costs or profits.

There is a useful distinction at issue. On the one hand, for a toll bridge or a toll road which involves relatively minor costs for operation and maintenance, the financial return can be segregated from the commercial return. On the other hand, for a combined cycle power plant, operating efficiency and fuel efficiency are important cost elements and the supplier is expected to provide a lot of help during operation, with training and so on, so that it needs an incentive to remain committed to the project.
The extent to which the supplier is willing to defer part of his profit as future dividends or capital gains, rather than taking it up front, is an important source of assurance for the investors and other creditors.

**Financing Arrangements and Relative Strengths of Participants**

Where the public sector and private sector participants are joint venturers, there is the risk that the private sector partners might abandon the project. When there are joint and several responsibilities, and some partners are weaker than others, a project does not work well. Such a combination should not be used at all, because even diffusion of liability is no protection from the negative impact of a failure by any of the partners, whether designer or contractor. In some circumstances, the main contractor effectively takes that risk and finds a means to get paid for so doing through all the ways he benefits from the project. But anyone evaluating a project should make sure that the main contractor is fully able to fill the breach virtually immediately, or have some contingency plan to handle the event that one of the weak participants is unable, for either technical or financial reasons, to continue with its part of the work.

**Difficulty in Securing Competitive Bidding in Developing Countries**

It is important to bear in mind that competition for franchises is an unusual phenomenon, even in the developed world where it is at least possible because the capital markets exist, the regulatory parameters are generally well-established, and the political risks are generally absent, so that the lenders have to be concerned only about whether the bidders have viable projects. It is therefore feasible to ask for competitive bids on a franchise basis and to leave to the franchisee the task of coming up with an underwritten offer of finance, alongside its toll or power tariff structure. In a developing country, unless a similar business environment is created at the outset through the security package, substantial guarantees, the resolution of force majeure responsibilities and other provisions, the prospect of obtaining competitive bids within a finite timescale for a franchise is a mirage, and it would be better for that country to negotiate a contract with one developer against an established benchmark price. If the process takes as long as three to four years or if conducted in an unsuitable environment, there is a high risk of failure which carries the danger of generating disillusionment with the BOOT approach.

A rigorous bidding process for a BOOT power project could encompass three major stages. First, the capital costs of the equipment are evaluated. A considerable amount of time could be spent obtaining independent estimates of these costs from consulting firms from various countries. Next, the economic costs of supply are analyzed in detail, to make sure that the offer price is not higher than the economic
cost of supply. The third stage of the analysis would be to compare these costs with the costs of electricity from similar power stations elsewhere in the world.

But it would be wrong to assume that measures of this sort resolve all the issues for international competitive bidding. Once a bid has been selected, it is the host government, not the Bank, that has to conduct complex negotiations covering all costs, taxes and many other points including the impact of program slippages on costs.

There seem to be two extremes with regard to the bidding approach. At one extreme the Request for Proposals (RFP) would specify precisely and in detail what is wanted. At the other extreme, it would specify almost nothing. A major project in Hong Kong provides an example. Kumagai Gumi and its consulting engineers proposed the idea of building a combined road and rail tunnel under the harbor, rather than individual road and rail tunnels. The Hong Kong government decided to seek competitive bids, and it did so with a relatively high degree of ambiguity. In its RFP of approximately four paragraphs, published in the Hong Kong Gazette, the government announced that it was building a tunnel in a certain general location, and a combined road and rail tunnel might be of special interest, but all ideas would be considered. Although vague, it was sufficiently interesting to stimulate nine relatively substantial proposals. Ultimately, Kumagai Gumi was chosen and there was exclusive negotiation on the project.

Criteria for Competitive Selection of Contractors

The World Bank normally requires transparent evaluation criteria under its financial procurement guidelines, so that bidders are competing on an equal footing in bidding. Thus it would require the evaluation criteria to be stated clearly. But it may not be advantageous to include only objective requirements. For example, capacity to perform is critical yet almost defies quantification. However, the World Bank itself doesn’t get involved in making judgments, it only looks at the rules by which the government who borrows the money should do so. The Bank assists the government in setting the rules and assesses whether they are adequate. The Bank does not evaluate or judge.

Hurdle Criteria

Subjective factors can be included in the evaluation process without any loss of transparency. The financial advisors to the British government have just completed an exceedingly complex and formal evaluation process for the Second River Severn Crossing. Although it went against all the initial instincts of the British government, a formal evaluation process was developed which was totally transparent, down to the process of specifying the discount rates to be used in the evaluation process, and done
within a very tight bidding timetable, with no provision for noncompliant bids or variation from the basic terms of the contract.

The evaluation was done by using criteria separated into price and non-price factors. Every criterion not capable of being quantified in financial terms was made into a hurdle criterion which each group had to pass; once passed, no further weighting was given to those factors. Technical competence is an example. Every group which passed the test of technical competence was then deemed to be equal in that respect, and it was not further evaluated. Financial strength was another such hurdle. Once it was established that the groups had the financial strength for resilience, there were no finer distinctions drawn among them. The project specifications were drafted in a way with which project sponsor felt comfortable and were not subsequently changed at all. The controlling factor then boiled down to the lowest present value of the tolls over the concession period, with specified discount rates.

This process caused great apprehension, in the contracting community, because they had not seen this kind of process before and were not used to it. All through the process, the bidders inquired continually if the criteria which had been given would really be those used, if the government would really not give a weighting for procurement, a weighting for the identity of the nationality of the bidders, or a weighting for the nominal value of the tolls. But in fact, no weighting was used.

Originally there were eight bidders for this $600 million project, who were reduced to four under the pre-qualification process. The process could be applied as well to other types of projects, but it requires an enormous amount of work in advance. Developing the evaluation criteria, specifications and the draft heads of agreement on which the bid was made, took about seven or eight months. Second, it requires courage on the part of the government to adhere to it. But it is quite workable.

To this speaker, this approach appears to be entirely consistent with the World Bank's procurement guidelines. It is possible to evaluate the technical component without using a hurdle scheme. For example, in energy management systems, using a point system combined with price. It also does not contradict the notion that there is a need to include certain factors which are not objective. But it should be noted that the Severn Crossing project took place in a relatively well-developed country, where business can be done in a precise and orderly manner. The approach developed for that project could be applied to other projects, including projects in the developing world in some cases.
Additionality of Investment Financing Through BOOT Projects

In the developing country context, there is a ceiling to the total amount of investment that can take place, imposed by limitations on access to capital, foreign exchange, and so on. Below that ceiling, BOOT projects can increase the amount of total investment. Once the ceiling is reached, development of infrastructure in one sector must result in scaling down investment in another sector. In that situation, if the private sector is to come in to develop infrastructure, it has to be assured of an attractive return on its investment and compensation for the risks it takes, to be able to service the debt. Two examples are instructive. In the first case, public investment may have to be scaled down to maintain the overall investment within the medium term framework agreed upon between government, the IMF and the World Bank, which could create a vacuum for the private sector to fill. In contrast, in another case, it may not be clear to the private investors that there will be an effective demand for the amount of power capacity being solicited by the government, because the public utility already has surplus power to the demand on its system. So, investors question the need for private sector involvement in the first place and perceive a risk that the government could decide that a private sector facility should be shut down. The developer would then be unable to service his debt.

There are three conditions under which private investment can be additional to public investment. The first condition is the ability to mobilize equity investment risk money that comes with the investment itself. In that respect, the public sector cannot mobilize such funds. The second condition concerns financing from the commercial banks under limited recourse. In the case of public investment, the commercial banks would lend only with a sovereign guarantee. In some countries, commercial bank loans could be mobilized for private sector investment without having a sovereign guarantee. The third condition of additionality is when donor governments are so exasperated with the poor performance of the public sector in developing countries, that they are willing to increase their financial assistance on condition that the government in question uses the private sector to develop infrastructure.

Comparison of Private Bids with the Public Sector Alternative

Among the issues which arise in tendering for BOOT projects is how to structure the process to attract private sector participation. In particular, it is important to show potential bidders that the process will be open and fair. Bidders also need to be confident that the government and utility are serious about proceeding with the project under BOOT arrangements. Thus, governments and utilities have to be sure that the BOOT approach is appropriate for the project concerned.

One issue for governments is to determine how the economics of a BOOT project compares with the alternatives under traditional financing, especially how early in
the project cycle the government is able to resolve this issue. In making this comparison, some attempt at assessing the risks of the project needs to be made, based on the difficulty of design, construction, and operation. There seems to be a general presumption that the private sector is more efficient than the public sector. The question of when the government can know which is a better choice is, indeed, serious because a great deal of engineering work usually has to be done to calculate cost, and often governments, although they have an immediate need for power, do not have the resources for this work.

The Second River Severn Crossing Project is an interesting example. The government of the United Kingdom solicited proposals for a design-and-build contract to be awarded on a competitive basis. At the same time, it asked for a bid on a finance, build and operate basis. This dual bidding procedure was used because there are two questions involved in the decision to do a BOOT project. The host government must first identify the benefits of using the BOOT approach rather than the traditional public sector approach to infrastructure development. Then, there is a choice to be made among private sector alternatives.

The difference between the two options is that in the private sector option, the private sector would bear the full risk of the project and receive the tolls over the franchise period. Under the public sector option, on the other hand, the government would contract for an agreed construction cost for the bridge, but it would bear the burden of any cost overruns, default of the contractor, or latent defects in the bridge. It would also receive the toll revenues. The benefit, then, to the government of choosing the private sector option is the transference of risk, but it loses the toll revenues.

There are various approaches to the problem of deciding whether the benefits of the private sector option outweigh the costs. The British government opted for a formal comparison of the private sector and the public sector alternatives. This approach consists of a three-stage process that requires the government to establish the best public sector option, the best private sector option, and then to compare the two.

For the public sector design-and-build option, the contractors were asked to prepare proposals within the government's specifications on technical quality, reliability and various safety and other standards. The same groups were also asked to submit proposals to finance, build and operate the bridge on a franchise basis, to the same specifications.

The government with its financial advisors insisted that the design-and-build contract under the public sector option be as stringent as possible, by quantifying the construction risks, in order to facilitate comparison on a common basis with the private sector option as far as possible. Therefore, the contract for the public sector option had
to be based on a fixed-price lump-sum, with no provision for increase for any reason other than inflation. The contractor would assume fully all risks arising from ground conditions and the latent defect risks. As for the private sector option, the public sector option was to contain a twenty-five year latent defects provision.

There were also residual risks in the private sector option that the private sector would bear. These risks were variations in interest rate and inflation during the operating period, and the risks to revenue flows due to uncertainty in forecasting traffic volumes over the bridge. The risks would not be present in the public sector option because the government would be able to extend the "franchise" period over which the toll revenues are used to repay the debt.

Ultimately, in the Second River Severn Crossing project, the contractors refused to bear the twenty-five year latent defects risk under the public sector option. So, instead, a complex Monte Carlo simulation was used to analyze the three risks involved in the public sector option, and the results were used to factor these risks into the evaluation of the private sector option. It was eventually determined that the cost of the private sector option would be lower, after taking risk transference into account. A key factor for this finding was the private sector's better operating efficiencies and, therefore, lower operating costs.

In doing the second River Severn Crossing project, the British government used a fixed-price lump-sum contract on the public sector route, because it could not produce figures on the cost overruns and delays in the last ten years of the road building program, and it felt that the arbitrary figure of 40 percent chosen by the financial advisor was too high. Those figures are needed to compute the risk of cost overruns under the public sector option, and add it as a percentage probabilistic factor to all the capital costs, for evaluation purposes.

The evaluation process was very long and cumbersome, and it is perceived to have added considerably to bidding costs. That it was feasible at all was largely because the project was to be done in a developed country, and because the bidders knew with certainty both that the project would be built within a defined timescale, and that one of them would win the contract, either as a public sector or a private sector project. Those factors encouraged the bidders to participate. Nevertheless, for future projects similar to the Second River Severn Crossing, the British government will not go through the formal process of formulating and evaluating strictly comparable private and public sector options. Instead, it will use indicative capital costs for these types of public sector options to avoid the additional costs and time required for the formal evaluation process.
The cost of the public sector option provides a benchmark against which to evaluate the private sector. If this benchmark is met, then the private sector approach to investment will move forward; the benchmark is therefore important in the tendering process. A straightforward benchmark is the avoided cost by the utilities, adjusted for distortions in prices because in some developing countries, governments on-lend loans to utilities and assume the exchange rate risks. The cost of electricity provided by the private sector may be compared with that avoided cost. The use of this benchmark obviates the need for the formal process of obtaining bids on both public and private sector projects.

And, in any event, there are problems with making the formal comparison. For example, the project implementation schedule given by a contractor for the private sector option might be much shorter than the schedule for the public sector alternative. In the latter case, the contractor would build in allowances for unavoidable delays imposed by the working of public sector bureaucracies, and reflect them in his costs accordingly.

Differences in Procuring Private and Public Power Capacity

Investments for expanding public power systems traditionally follow an integrated development program prepared by a central planning agency, usually located in the power utility. This program identifies the capacity increments to be added over the planning horizon which, together with the optimal utilization of existing facilities, will meet the demand for power at least cost. The configuration, size, timing, and capacity, as well as the fuel use of each increment added to the system, is specified. Utilizing the private sector to provide capacity does not eliminate the need to prepare least cost programs.

However, there are two approaches to soliciting competitive bids from the private sector for power plants. The government or utility may specify that it needs a 300 MW coal plant at a certain location. The bidders then submit their prices for supplying electricity with certain price escalators, which is judged against the benchmark or the avoided cost of electricity. Or the government utility may simply announce that it needs 300 MW of power capacity, and allow the bidders to select the generation technology and plant location for their proposals. The latter approach allows bidders to exploit their comparative advantage in a particular technology, as well as entrepreneurship, to provide power at a competitive price.

Once it is decided that the next increment should be done by the private sector, great care should be used in developing the bidding process. It should not restrict the investors and the contractor to such an extent that it prevents the private sector from using its ingenuity to provide a margin of profit for themselves while meeting the
objective of providing inexpensive energy. It is important to refrain from viewing a private sector project in exactly the same manner as a public sector project.

The government's procurement policies required to implement BOOT projects differ radically from those under the traditional approach to power system expansion. Under a BOOT project, the object of procurement is to obtain electricity, rather than the plant to produce electricity. However, it is not easy to explain to governments and utilities, who have many well-qualified engineers working on numerous projects, that they are buying electricity and not a boiler, transformer, or civil works. The government finds it difficult to appreciate that the private sector will react to losses in one place by making up for them in another. For instance, if the government insists that a transformer be supplied at a price which is below cost, the private developer will charge more for the boiler in compensation. So, a bid from a private source has to be evaluated as an integrated package, rather than by components.

Issues for the World Bank

Need for Preparation by the Host Government. A major difficulty that is encountered at the very beginning of promoting the BOOT concept is in explaining to the governments of developing countries that the public sector will have to play a complementary role in promoting the private sector investment in their own countries. Many of these governments think that once they hand the project over to the private sector, they do not have any further responsibility for its success. The World Bank could help them understand that they do have responsibility, beyond providing the necessary legal and financial framework, since governments are the main factors in the assessment of sovereign risks by foreign investors and creditors.

The negotiation of BOOT projects takes a considerable amount of time and money. It is imperative, from the point of view of private sector participants, that the progress be no slower than necessary. There are currently, at least nine power projects in developing countries for which BOOT proposals have been made. Some have been underway for as long as two years, and there is room for grave concern that they will not progress satisfactorily because the host government has not carried out the necessary preparation. Long before new projects are proposed, a considerable amount of time and energy has to be spent to make sure that the host governments will be able to handle the negotiation or competitive bidding. The World Bank can be instrumental in providing guidance during this preparatory phase.

A government that is short of electricity, water or a road, and cannot see a project as a certain outcome, will have little patience for spending two years to learn about the process. Furthermore, once a government has committed itself, it needs to be supported continuously and reliably by the World Bank and others, especially during the
formative stages. Bidders, however, do not want to be involved in the process of familiarizing a government with the requirements of BOOT projects. For a developing country facing its first BOOT project, a reluctance to participate by bidders might be overcome if some means could be found of reimbursing their bidding costs under a general training provision.

A basic difference between forging a BOOT project and formulating a traditional investment scheme is the difference between a project and a deal. A deal requires much more flexibility and willingness to "roll with the punches". Part of the World Bank's role should be to imbue a willingness to be flexible in a group of people in the host government who are not usually so inclined.

A considerable amount of work can be done in advance, including drafting up to 80% of the franchise agreement. With the range of issues spelled out, the contractual negotiation process itself can be kept relatively short such as to six months. In one major BOOT power project currently under preparation, millions of dollars and countless hours of work have been spent by USAID, the World Bank, bilateral financing agencies and other parties, in an attempt to produce generic agreements for power sales, construction, O&M, and other aspects. These documents have been extensively reviewed by the World Bank and at least sixteen investment banks and their legal advisors.

On the other hand, there are dangers in creating generic agreements. The first is that flexibility may be lost. The second is that they may oversimplify what is in fact an art that involves financial engineering, legal and technical elements. It is an elaborate process which should not be encapsulated into a "Guidelines for BOOT Projects" by the World Bank. Properly trained legal, financial and engineering advisors must be involved in structuring each BOOT project. The World Bank should strive to manage and facilitate the project, rather than to produce a blueprint.

From an institutional point of view, the Bank is faced with the choice of whether to spend its resources in training without any project as the end result, or to provide this assistance only once a BOOT project has been identified and is being developed, even though the process may take longer than under the first approach. An internal issue for the Bank is whether sufficient staff resources could be made available, under present budgetary procedures, for extensive assistance in the absence of an specific operation. One compromise would be to shorten the preparatory stage by developing generic contracts which can be adapted to specific country and project circumstances.

**World Bank Policy on the Role of the Contractor.** There seems to be some inconsistency between the notion expressed frequently by private sector participants that contractors should be included in the development process at an early stage, and the World Bank's general view that contractors are not brought in until there is a firm
financing plan in place. The benefits to be gained by bringing the contractors in early are readily apparent. However, the Bank's views are mainly intended for Bank-funded and borrower-funded investment projects where the contractor is not asked either to bring in equity or raise funds in the market, and for public sector procurement rather than for private BOOT-type operations. But there is nothing to prevent the contractor from acting as an investor, if the contractor is selected on the basis of procedures which are acceptable to the Bank within its present guidelines.

**Firm Price Contracts.** The World Bank, in financing projects requiring long implementation periods, usually incorporates price escalation provisions in the project financing plan. Fixed price contracts are acceptable for civil works contracts of short duration, normally less than one year. A longer contract performance period may be acceptable at a fixed price for electro-mechanical plant, communications equipment, process plant and similar installations, where payments are to be made in an internationally traded currency and the plant etc. originates from a country where inflation is not excessive.

Many advocates of private sector participation emphasize the importance of firm price, throwing the risk of inflation onto the contractor. The intention is that a project should be structured to utilize the capability, strengths and resources of the private sector, to the benefit of all participants. The question of reconciling the two points of view is a very difficult one, particularly for the representative of a contractor. There are many different ways to structure payments to the contractor, but however it is done, there must be sufficient confidence that the project will be economically viable, through to the completion of construction, including all of the costs necessary to put the facility in service.

In the contracts for the Sydney Harbour Tunnel and the Hong Kong Harbour Crossing, there were very firm price and completion date commitments made by the contractor/joint venturer. Such contracts help make BOOT projects financeable, although they need not be used in all cases. If, for example, the investors and creditors are confident that revenues from project operation will be adequate to cover increases in costs due to inflation, a fixed term contract might not be necessary.

**Environmental Impact of Private Power Projects.** The rising concern over the environmental impact of infrastructure projects raises an interesting question as to whether the World Bank can make a contribution by helping governments to develop the regulatory framework for environmental matters at the outset, rather than trying to deal with it subsequently as a tariff reopener.

One example of how environmental issues are being handled is as follows. At the stage of site selection for the project, a screening study, which was paid for by
a bilateral financing agency rather than by the investors, was done to assess the selected site in terms of ecological soundness. The RFP included the requirement that investors should carry out an environmental impact assessment study and submit it as a part of their feasibility study. The Bank was involved in setting the scope and terms of reference for the environmental study, as it would do wherever the country has not developed clear guidelines on the subject. It was agreed that all investors would follow guidelines acceptable to the financing agencies involved in the project, when preparing the feasibility reports. In the case of hydroelectric power projects, the Bank would also require investors to include an involuntary resettlement plan with their proposals.

**Contingent Loans.** The World Bank does not make contingent loans, and the Bank is very reluctant to make guarantees. And although it might be a good idea, guarantees raise questions of lending limits and other issues.

While the Bank has been reluctant to use guarantees very broadly, it has recently instituted a new program of expanded co-financing operations (ECO) where the application of the guarantee authority can be very flexible. Guaranteeing these kinds of private sector projects, back-stopping the undertakings of the host government, is actually being considered for one or two countries at this time.

However, the World Bank can only provide financial guarantees, it cannot provide performance guarantees. The Bank's guarantee must therefore be structured so that the call on the Bank is triggered not by the failure of the government to perform in a certain way, but by an actual default or by the escrow agent's certification to the Bank that payments have not been made, and therefore the guarantee is called.

A guarantee counts against the Bank's overall lending limit and the headroom limit only when it becomes callable. Thus in a project like this, if the guarantee is in place but never called, it works as an assurance, but never counts against the lending limit.

Where the World Bank has an obligation to pay at any time that the host government does not pay, the guarantee is callable immediately, from the time the lenders do not receive their payment. On the other hand, the amount that is callable is only a small portion of the whole project finance. The guarantee, which is catalyzing a much bigger project, involves a much smaller sum than the Bank would have to provide to finance the same project itself. So even where guarantees are callable and count as loans with respect to lending limits, it might be worthwhile for the Bank to provide them.

If the World Bank seeks to play a major role, it should certainly consider these types of facilities, because they can really catalyze BOOT projects. They are a way to facilitate the development of these projects and are not, of course, intended to
indirectly increase the country's lending facility. The issue is simply one of scale. The funds involved catalyze something ten or fifteen times greater, in an area where it is critically needed.

Present Status of BOOT Projects in the World Bank. About fourteen projects are under consideration by the World Bank that are classified as BOOT. Most of them are in power, but some are in oil and gas pipelines, as well as transport. BOOT projects are viewed under the general category of private sector projects. In fact, the Bank prefers "BOO" projects because they support the development of local capital markets, rather than a "BOOT" project under a quasi-turnkey contract.

The World Bank has set up the Private Sector Development Group (CFSPS) to look at the financial engineering aspects of private sector projects throughout its Operations complex. So while the Operations complex will develop projects, ultimately they will refer to this group on financial engineering.

MIGA\(^2\) is a small player in the overall BOOT concept, particularly for large power schemes. MIGA's project limit currently is US$50 million per project. MIGA can cover many of the risks that investors are concerned about, although MIGA, or the insurance industry in general, is not able to solve all the problems investors face in BOOT projects.

For risks that MIGA is prepared to guarantee in some projects, MIGA does the same kind of analysis that an investor would do. Its role is to assure the investor that the conditions that exist five years from now, in terms of availability of foreign currency, taxes, etc., will be the same as those which exist today. MIGA cannot make the situation in the country better, but it can provide security. MIGA would look at the specific risks that the contractor would want to be covered against and insure against certain of those which qualified, for a fee.

In general, the risks MIGA handles include currency transfer, expropriation, war and civil disturbance, and breach of contract. Breach of contract coverage is something that sounds good for this kind of project, and in certain circumstances it could be. MIGA is set up primarily to cover equity. It can cover a limited form of debt, such as the shareholders' loan, if the shareholder provides a loan to the project company.

The World Bank is developing an arrangement under which guarantees would be split, so as to encourage commercial banks to mobilize their resources for investments in developing countries. The World Bank would provide direct guarantees to commercial banks against sovereign performance and sovereign risks, while the entire

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\(^2\) MIGA is the Multilateral Investment Guarantee Agency of the World Bank Group.
set of commercial risks would be borne by the investors. In other words, if the public utility fails to perform under the power purchase agreement by buying the electricity and delivering the money for the overseas escrow account, there would be a sovereign default which would invoke the guarantee provision. Thus, a key task for this arrangement is to split the events that constitute sovereign default and default by an agency whose performance is guaranteed by the government from the risks which are truly commercial risks.

**Financing Issues.** BOOT projects need loans with longer maturity periods than conventional under those provided by the World Bank and other financing agencies. The World Bank could consider this point, provided that any assistance would not constitute a subsidy for the private sector. The World Bank could also assist governments in obtaining the involvement of commercial finance institutions and the bilateral donors in BOOT projects. Finally, the Bank will have to adapt its perception of itself as the authority on the subject in hand, and allow other knowledgeable parties to have an influence on the design and implementation of a BOOT project according to its specific characteristics. The Bank will also have to improve the way it integrates its analysis of macroeconomic and sector requirements.

The amount of equity in these projects is huge, perhaps seven or eight times larger than any previous flotation in the host country. Putting $100 million of stock on the market in one placement would choke the market, and it is unlikely that there will be sufficient local buyers. So developing the capital market, "tapping the resources", requires a great deal of work. It includes finding outside underwriters for a large stock flotation, who will slowly release the stock onto the market as both the project and market absorptive capacity develop. Similarly, the issue of convertible bonds would probably be a new development for the local capital market, which would require an enormous amount of work, particularly relating to interest rates, macroeconomic credit ceilings, etc.

**Concluding Remarks by Mr. Anthony Churchill**

At the end of this extensive series of discussions, one is still left wondering why BOOT projects are such a big problem and are so complicated to execute. In part, it is because governments restrict entry to the infrastructure development business such as power or ports. One of the intentions of promoting the BOOT approach is to move toward market determination of investments and away from central planning. Experience shows that the deterministic approaches adopted under the latter rarely lead to the most economically efficient investments. One reason that governments continue to restrict entry by the private sector is because it can be difficult to plan for private sector development. Another factor in the complexity of BOOT projects arises from elaborately
specific agreements needed to protect each participant's interests in countries whose legal systems do not adequately protect property rights.

It may be that in the developing countries, the BOOT approach should not be thought of, at this point, as a way to fill gaps in a country's investment plan. Instead, the emphasis should be simply on getting started with smaller and fewer plants. It may take a long time, but slowly may be the only way they can be done at all. Because the costs are enormous to the World Bank on a project like the Hab Power project, it is doubtful that expenditure could be repeated for all the Bank's customers. It also seems unlikely that a meaningful generic model can be developed for countries whose legal systems differ so greatly in their approaches to property rights.

There are many general questions that come to mind from these discussions. Many BOOT agreements treat foreign investors differently from local investors. The World Bank finds itself in the rather strange position of insisting on foreign exchange repatriation and special rights for foreign investors. Should governments make the investment decisions? Shouldn't governments be talking about what is required in terms of the infrastructural output or the product? The traditional approach to the private sector in power development is to try to get them to make an investment. Maybe the approach should be in terms of supplying electricity, rather than a particular type of plant, at minimum costs. This is the usual approach in other sectors served by the private sector. Why should the power sector be treated differently? Can a government be all-knowing in setting both prices and quantities, such as the amount of electricity going to be needed at a particular price. Experience, and economic theory, shows that a price can be set and then see what quantities come at that price, or quantities can be set and then see what prices are generated. Yet, here is a situation where usually attempts are being made to set both.

Another difficulty with BOOT projects is that they are thought to involve extremely long term relationships. Such a concept of equity is peculiar in capital markets. Equity should be fully tradeable, and it is odd to ask investors to buy equity which they must hold forever. So there must be some system of transferring the property rights, rather than trying to insist that an investor stay in for 10 to 20 years. There is no reason for it to matter who owns the shares.

Much concern has been expressed that host governments will not follow the rules of the game. A recent study however, showed that this concern is grossly exaggerated. Few governments have signed contracts and then clearly repudiated them. More often, governments get involved in what might be called "creeping nationalization", rather than outright expropriation. Governments do so by failing to raise prices or follow through on all of the minor actions which affect project profitability. Governments of developing countries have a much better track record of honoring their contracts than do
those of the developed world. The latter have changed their tax regimes that affect foreign investors despite agreements on taxes under such contracts.

Another issue is the role of public accountability. BOOT schemes will work only if the politicians who put them in place are not vulnerable, and they will be vulnerable unless the process is sufficiently transparent that there is accountability, which means more open public regulatory systems. Otherwise, BOOT projects will become exposed to being sabotaged by politicians claiming that the former government betrayed the country by signing the contract with foreign capitalists. Thus, there is a real need for more local participation in these decisions, through consumer groups and other mechanisms.

There are thus a large number of issues that need to be addressed, with which we are only beginning to come to grips with. Nevertheless, it is exciting to contemplate shifting to the private sector the provision of certain services which have traditionally been delivered by the public sector. BOOT and BOO are a step in that direction.
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