

TENDERING AND EVALUATION OF TENDERS FOR BOO(T) POWER PROJECTS

prepared by
GAMAL NASSAR *

Turnkey versus BOO(T)

It is important to understand the distinction between

- a traditional **Turnkey** project and
- a **BOO(T)** project.

The object of a turnkey project is the supply and construction of a power plant whereas a BOO(T) tender focuses on an agreed upon availability and delivery of energy over a period of time.

In the former, a public sector entity (government or utility) develops detailed technical specifications for the plant on which basis the suppliers offer their price for supply and erection.

In the latter, only functional specifications are developed by the public sector entity and an investor.

Most likely an investment consortium, offers its financial and technical plan, including its price (generally in the form of tariffs) for Building, Owning and Operating (BOO) the plant, thereby providing a guaranteed level of availability and efficiency to the public sector entity.

The plant may be Transferred from the investor to the power sector entity at the end of a specified period (BOOT).

It should be noted that BOO(T) concept can be applied to different power plant types, particularly thermal power plants (conventional steam, combined cycle, repowered steam, cogeneration) and also to hydroelectric power plants. This document deals exclusively with BOO(T) projects.

* Prof.Dr.Ing., Structural Engineering Dept., Faculty of Engineering , Ain Shams University
Member of I'IDIC Executive Committee, Sec. Gen. Egyptian Society Of Consulting Engineers
"ESCONI".

Tender Procedure :

The tender procedure includes the following steps :

- (i) Invitation to tender,
- (ii) Issue of instructions to investors (tenderers),
- (iii) Submission of tenders by interested investors,
- (iv) Evaluation of tenders,
- (v) Negotiation with the investor offering the most favourable conditions,
- (vi) Signing of a Power Purchase Agreement.

BOO(T) projects are initiated through an international bid procedure, although state-owned utilities are usually required to follow public procurement instructions particular to their country.

Preceding the invitation to tender may be a pre-qualification step during which the utility reduces the number of potential investors to those able to demonstrate a high-level of financial and technical expertise and who have extensive experience with similar projects. The invitation to tender is then made only to those potential investors which have been pre-qualified.

Instructions and Information

To prepare its tender the investor needs information about the intended project and the local conditions. Usually, the government or utility provides the investor with the following information:

- Desired capacity range and intended dispatch plan,
- Desired fuel type and quality, including secondary or tertiary fuel use options (if any),
- Time schedules,
- Project form (BOO/BOOT) and the expected lifetime of the Power Purchase Agreement,
- Technical and environmental standards,
- Economic parameters under which the evaluation will take place

- (inflation, fuel indexes, exchange rate deterioration, discount factors , etc ...)
- Site conditions (infrastructure, soils, meteorology, etc.),
- Pre-feasibility and/or feasibility study,
- If an existing facility is to be rehabilitated, information about operation and maintenance to assist the investor in evaluating the state of equipment.

Tender Preparation

The investor prepares the offer in accordance with the instructions and provides the following:

- A description of his background, especially experience in similar power projects and financial standing (for a consortium, the experience and capability of the members will be indicated),
- The technical design, including capacity, availability and other technical parameters,
- A detailed financial offer, including tariffs, financing plan and a detailed cost break-down ,
- Preliminary commitments from debt funding institutions, a reputable financial adviser, local legal adviser, a capable local partner for civil works and a technical adviser (if not represented in the bidding consortium).

Tender Evaluation

Evaluation of the tenders is carried out in two steps. First, verification is made that certain minimum threshold criteria are met. Threshold criteria typically include the following:

- Provision of the required information,

- Demonstration of capacity to provide the project equity and viability of the financing plan,
- Feasibility of the technical design and compliance with technical standards and minimum parameters.

Second, the tenders are ranked. The ranking criteria and the weight given to each criteria may vary widely between projects, depending on the utility's priorities and particular requirements. The ranking criteria may include the following, listed in order of priority and likelihood of being a ranking criteria for a typical project:

- Tariffs and underlying cost structure,
- Financing plan specifics (debt to equity ratio, sources of funding, funding conditions),
- Required guarantees and their costs (tariff payment, exchange rate and transfer guarantees),
- Technical plan specifics (including timing, capacity, availability, efficiency, and emissions),
- Use of local labour,
- Integration of existing facilities (If any).

A quantitative approach, a qualitative approach or most probably a mixed approach may be taken for the ranking criteria. For example, the tariffs, funding guarantee costs and technical plan specifics may be integrated into a quantitative evaluation method called the Dynamic Unit Cost (DUC). This cost represents the present value of the costs (tariffs and guarantee costs) divided by the present value of the output of the power plant during the lifetime of the project. The DUC is calculated using a specific evaluation scenario: estimated inflation, exchange rates, cost indexes and facility dispatch. The bidders' Dynamic Unit Costs are then compared and given a corresponding number of points. A qualitative evaluation may then be made of such items as the financing plan, technical plan, use of local labour and financing, and the integration of existing facilities (if any), resulting again in a corresponding number of points. The points are then summed, resulting in a combined quantitative and qualitative ranking of the bids. The DUC or a similar cost evaluation method is usually the core of the tender ranking procedure, typically comprising 60-90% of the possible ranking points.

A detailed and flexible financial model represents the backbone of the cost evaluation. Such a model is usually designed specifically for the project, allowing consideration of all project specific factors. The financial model enables the offered tariffs to be tested under different scenarios, especially to demonstrate the effect of the proposed cost escalation schemes in different economic scenarios described by inflation and/or exchange rate deterioration. However, the base tariffs are calculated in real terms, by setting inflation, exchange deterioration and also cost escalation to zero. The actual tariffs during operation will be computed on the basis of the base tariffs, modified by the actual inflation, cost indexes and exchange rates. The indexes are applied to the corresponding cost item offered in the tender.

The tariffs, which are the ultimate focus of the tender procedure, may be composed of the following charges:

- **Capacity Charge:** the fixed cost of the project (debt service, fixed operating costs,
- return on equity), the payment of which is a function of the capacity (gross or net) and the availability (technical or commercial),
- **Energy Charge:** the variable operating costs (mainly fuel), the payment of which is a function of the output (kWh) and possibly the heat rate (accounts for variable load factors),
- **Start-up Charges:** the cost of extraordinary dispatch procedures which induce otherwise unaccounted for start-ups.

As previously noted, the tariffs may include inflation indexes, specific cost indexes, and exchange rate indexes. Furthermore, multiple currencies may be specified for each tariff charge, resulting in very complex tariff formulae.

Typical tender evaluation criteria are summarised in the following figure:

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**SCHEDULE FOR THE IMPLEMENTATION PROCESS OF A
BOOT POWER PROJECT**

1. Establish, a Project Team

Establish bidding consortium - possibly including government & supplier
Appoint technical/commercial adviser
Appoint legal adviser
Appoint financial adviser

2. Prepare Pre-Feasibility Study

Select suitable site
Outline technical features of the project (incl. environmental considerations)
First **cost** estimate
Examine legal framework
Get **first** offer of O&M company
Get preliminary commitment of fuel supplier

3. Receive Letter of Invitation from Government to Submit Proposal

Prepare Preliminary Financing Package
Get preliminary commitment from commercial banks
Get preliminary commitment from international development banks (World Bank, IFC, ADB, etc.)
Decide own maximum equity commitment
Get preliminary equity commitments from other investors Quantify and qualify risks

4. Prepare Financial Model

Calculate tariff
Calculate ROE
Conduct sensitivity analysis
Prepare outputs for further negotiations with banks and investors

5. Prepare Draft Contracts

Implementation agreement
Power purchase agreement
Fuel supply contract
Operation and maintenance contract

6. Prepare Offer to Tendering Institution (Government / Utility)

- Technical part
- Commercial part
- Legal part
- Financial Part
- Receive Letter of Intent (LOI) to the Appointed as Sole Developer

7. Security Package Negotiations with Various Parties

8. Sign Implementation Agreement and Other Contracts

9. Project Implementation

BUILD-OPERATE-TRANSFER CONCEPT
MOST BASIC FORM OF BOO(T)

1. A government grants a concession for a period of time (Concession period) to approved constitution (The private project company : Concessionary company).

The project company builds, operates & manages the project for a definite number of years. It collects its profit during the time of its management to the project.

At the end of the concession period the project is transferred to the government.

Different terms describing this form of project financing are :

- BOO : Build/Own/Operate
- BOOT : Build/Own/Operate/Transfer
- BOOM : Build/Own/Operate/Manage
- BOT : Build/own/Transfer
- BOLT : Build/Own/Lease/Transfer
- BRT : Build/Rent/Transfer

- 2- The government has nothing to do with repayment of any loans :
 - The loans payment depend on the revenue generated by the project
 - The project company arranges for guarantee to the lender
The government gains the benefit of private sector experience in operating and managing the project and the pressure of public borrowing
- 3- In the BOT projects, the project company represents the owner unlike traditional contracts, so the project company has not only to organise the financing but also to ensure that the project will be profitable.
- 4- The risk distribution schemes in BOT can be quite complex because of two factors :
 - Financing
 - Contractual arrangement
- 5- In the area of contracting, some of the problems arise due to the fact that BOT project involves a high number of contractually over-related parties :
 - Host government
 - Project company
 - Construction company
 - Independent investors
 - End users