



Chapter 6:
**Financial
Evaluation**



6.0 FINANCIAL EVALUATION

This Financial evaluation contains an analysis of the possible financial scenarios for the entire duration of the project's 30-years operation period (excluding construction period) for the proposed Pacific Marine Industrial Zone (Madang, Papua New Guinea). A brief description of its guiding parameters will be discussed and separate computations of the project cost, revenues, operating costs and financial / interest charges presented.

6.0.1 FINANCIAL ANALYSIS (FA)

The main objective of the Financial Analysis is to look into the financial benefits, costs and profitability of the project from the investor Feasibility Study perspective. Financial analysis (FA) includes direct transfer payments such as taxes, duties, subsidies in the evaluation.

6.0.2 SENSITIVITY ANALYSIS

A Sensitivity Analysis reveals how much the NPV will change in response to a given change in an input variable. This kind of analysis determines the effect on the NPW with variations in the input variables such as revenues, operating cost, and salvage value etc.

Sensitivity analysis begins with a base case situation, which is developed by using the most likely values for each input. Then the value of the specific variable of interest is changed above or below its most likely value, while holding all other variables constant.

6.0.3 FINANCIAL INTERNAL RATE OF RETURN (FIRR)

The FIRR is an indicator to measure the financial return on investment of an income generation project and is used to make the investment decision. The FIRR is obtained by equating the present value of investment costs (as cash out-flows) and the present value of net incomes (as cash in-flows) and thus finds out the break-even interest rate.

In general, the decision rule is as follows:

- If $FIRR >$, then, accept the project.
- If $FIRR =$, then, remain indifferent.
- If $FIRR <$, then, reject the project.

6.0.4 INTERNAL RATE OF RETURN (IRR)

The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

IRR is sometimes referred to as "economic rate of return (ERR)".

You can think of IRR as the rate of growth a project is expected to generate. While the actual rate of return that a given project ends up generating will often differ from its estimated IRR rate, a project with a substantially higher IRR value than other available options would still provide a much better chance of strong growth.

IRRs can also be compared against prevailing rates of return in the securities market. If a firm can't find any projects with IRRs greater than the returns that can be generated in the financial markets, it may simply choose to invest its retained earnings into the market.

6.0.5 BENEFITS/COST RATIO (B-C RATIO)

B/C ratio is the ratio of the total present value of benefits during the service life of the project to the total present value of the costs. A project is accepted for investment if B/C ratio is greater than or equal to unity and rejected otherwise.

6.0.6 PAYBACK PERIOD

The payback period is the time that a project is expected to take in order to earn net revenue equal to the capital cost of the project. It is utilized for small investments, like improvements and energy efficiency measures, since it is easy to understand by business managers.

DRAWBACKS:

- It tells the analyst nothing about the project earning rate after the payback period and does not consider the total profitability or size of the project.

- If a company makes investment decisions solely on the basis of the payback period, it considers only those projects with a payback period shorter than the maximum acceptable payback period.

The payback period method ignores inflation and discriminates against large capital-intensive infrastructure projects with long gestation times. Therefore, it is a poor criterion in itself and it must be used in conjunction with other criteria.

6.0.7 NET PRESENT VALUE (NPV)

Net Present Value or Net Present Worth is defined as the Total Present Value (PV) of a time series of cash flows. It is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met.

NPV is an indicator of how much value an investment or project adds to the value of the firm. With a particular project, if C_t (Cash inflow of Time) is a positive value, the project is in the status of discounted cash inflow in the time of t . If C_t is a negative value, the project is in the status of discounted cash outflow in the time. Appropriately risked projects with a positive NPV could be accepted. This does not necessarily mean that they should be undertaken since NPV at the cost of capital may not account for opportunity cost, i.e. comparison with other available investments. In financial theory, if there is a choice between two mutually exclusive alternatives, the one yielding the higher NPV should be selected. The following sums up the NPVs in various situations.

If the $NPV > 0$ the investment would add value to the firm the project may be accepted, $NPV < 0$ the investment would subtract value from the firm the project should be rejected, $NPV = 0$ the investment would neither gain nor lose value for the firm We should be indifferent in the decision whether to accept or reject the project. This project adds no monetary value. Decision should be based on other criteria, e.g. strategic positioning or other factors not explicitly included in the calculation.

However, $NPV = 0$ does not mean that a project is only expected to break even, in the sense of undiscounted profit or loss (earnings). It will show net total positive cash flow and earnings over its life.

6.1 METHODOLOGY

The process of evaluation aims to determine the amount of funds needed to implement the project, establish the project's revenues and expenses and verify the financial viability of the project considering the financial assumptions.

The project's viability is measured in terms of its Financial Internal Rate of Return (FIRR) and Net Present Value (NPV) against the opportunity cost of the capital.

The projections, covering a 30 years operation period, are prepared in Papua New Guinea Kina (PGK), Chinese RMB (YUAN) and compared to US Dollar (\$) equivalent in current value (November, 2008). These projections consist of the financial statements for the entire project financing term. Sensitivity tests are also performed to determine the viability of the project under certain conditions such changes in revenues and investment.

The projections represent the expected financial condition of the project based on the result of its operation and its cash flow for the entire 30-years period. The assumptions disclosed in the following sections are deemed very significant to the forecasted results.

6.2 PROJECT FUNDING

The project is proposed for implementation under the Fund and Build Scheme (Turnkey) utilizing China Shenyang International Economic and Technical Cooperation Corporation as General Contractor and funding from the China Export and Import Bank (China Eximbank) of the People's Republic of China payable in Twenty (30) years period with a grace period, of Five (5) years and an Interest Rate of Two percent (2%) per annum.

6.3 SUMMARY OF PROJECT COSTS

A Project Cost estimate was prepared based on the prevailing market cost of the equipment to be procured as well as the prevailing construction cost, using (November, 2008) as based price. Included in the cost estimate are the delivery costs of equipment, projected inflation, shipping and handling costs, inventories during construction together with the profit margin and development costs, and interest / financing charges during construction.