Guidelines for
Appraisal of Public Sector Projects

This note is in four parts. Part A covers general issues: rationale for project appraisal, types of analyses and their purpose, and limitations. Part B has a list of check points for practitioners and decision makers for assessing the quality of an appraisal/evaluation report. Part C gives a summary of the results obtained from project appraisal and how to interpret these results. Finally, part D describes the components of the different types of analyses in greater detail.

PART A

Why Project Appraisal?

- To stop bad projects and programs from being included in the budget
- To prevent good projects/programs from being destroyed before or during implementation
- To think about alternatives that might be more efficient and effective in terms of financing, organizational setup, contractual arrangements and technology
- Crucial for public sector investment because resources are limited and costs of bad decisions or mid-way corrections are very high
- To examine projects/programs from the point of view of various stakeholders (owner, sponsoring department, banks and other funding agencies, affected parties, the entire economy)
- To assess the likely sources and magnitude of risks and redesign the project/program to reduce risks and satisfy the requirements of various stakeholders
- To develop models for negotiation with contractors, service providers, different government agencies in a transparent way
- For assessing cost recovery, subsidy level and for regulation in some cases
- To enable the government to better forecast multiyear budgets by bringing out operating and maintenance (O&M) costs explicitly and help avoid taking up projects without adequate provision for O&M

In a nutshell, project appraisal and program evaluation is not only about accepting or rejecting a project/program; it is more of a management tool for decision making in a transparent manner, monitoring and successful implementation of projects and programs thereby maximizing the benefits of public sector investments.

Scope of Various Types of Analyses

Financial Analysis

- Financial analysis to see if a particular project or program is financially viable and, if not, what is the burden on the budget - both initial plan and recurrent expenditures
- Examine alternative sources and costs of financing
- Does the project look attractive from the points of views of different stakeholders
Assess the value of a project (firm) that could serve as the base value for privatization of a public sector company

**Economic Analysis**
- Economic analysis to answer the question: does the proposal make sense from the point of view the economy (society)? For public sector projects/programs this should be the basis for “yes-no” decision
- Assess the costs and benefits of externalities (pollution, deforestation, health, basic needs, resettlement etc.)
- Economic prices indicate the right level of user fees to be charged from the beneficiaries

**Stakeholder Analysis**
- Stakeholder or distributive analysis asks the question “who gains and who loses” and is relevant for the politics or the sustainability of the project
- Special attention may be paid to projects/programs if they cater to some basic needs

**Risk Analysis and Risk Management**
- Risk analysis to assess the level of its risk and its management through redesigning, financial and insurance arrangements, changing ownership or participation and contracting

**Who Uses these Techniques?**
- Private corporations, especially large successful ones
- Development banks and commercial banks
- International financing agencies (IFC, WB, ADB)
- Government departments/agencies, public sector companies
- Market investment analysts

**Limitations**
- Project appraisal or program evaluation is a diagnostic tool but cannot *per se* stop bad decision making at the bureaucratic or political levels
- It costs time, resources and needs specific skills and a practical outlook
- Capacity building at various levels is necessary for its successful implementation
- Appropriate decision making arrangements for approvals – in principle, final and budgetary.

**Motivation**
- Growing fiscal stress on state governments requires more prudent expenditures
- Increasing openness in economies, private participation and globalization of investments
- Changing political and bureaucratic vision
- Increasing awareness of stakeholders
PART B

Checkpoints for Different Types of Analyses

The following checkpoints may be used for assessing the quality of investment appraisal for public sector projects in the states. The departments/agencies that submit proposals for government approval for funding through the budget should complete the appraisal following these guidelines. The same holds good for DPRs (Detailed Project Report) prepared by the consultants.

The heads of departments or the line ministries may use these as check points to ensure that proposals have been properly and correctly appraised. Project Units in the ministries of Planning/Finance should use the same guidelines to re-appraise or assess proposals.

Step I: Financial Analysis

- Ask for a feasibility report (Cost Benefit analysis or appraisal report or detailed project report) starting with the financial analysis.
- If dealing with a program, better to break it into components (small projects). For instance, Rural Development Programs can be subdivided into rural roads, village electrification, minor irrigation schemes etc.
- For the demand (revenue) side, ask the following questions:
  - Where is the demand? Is it contractor driven or people driven?
  - Why should the project be undertaken by the public sector – why not by the private sector, or NGOs?
- Does the investment Schedule include the following:
  - Cost of existing assets, if any
  - Market value of land (opportunity cost) – land is seldom free
  - Cost of rehabilitation if any
  - Environmental costs if any (deforestation, animal habitat)
  - Do not include sunk costs but do incorporate all opportunity costs
- Is the project bankable? What institutional finance has been tied up and at what cost? If the entire funding is expected to come from the budget, what is the justification?
- If loan is part of the funding, what is the repayment schedule? Do the debt holders look secure?
  - Debt service capacity ratio. Any problem years?
  - Probability of default? Is there need for restructuring debt?
- Has the working capital (Accounts Receivables, Accounts Payable, Cash Balance) been appropriately accounted for?
- What is the appropriate discount rate for financial analysis? If the entire investment is coming out of government budget, real financial cost of capital is the same as the real Economic Opportunity Cost of Capital (EOCK) or at least real cost of borrowing by the government. Cost of Budget Funds (including grants) is never zero so long as there are alternative uses of funds, it is always higher than the market interest rate
• Have the year-by-year financial demands on the plan and revenue budgets been identified for the purposes of making annual budgets.
• Has the inflation – both Domestic and Foreign - been incorporated in the analysis or it has been done at constant costs?
• Will the project pay income tax and property tax? If yes, have the income tax and property tax liabilities been correctly computed?
• Has the analysis been done at least from the owner’s (government department), total investment (banker’s) and economy’s point of view? If other significant players are involved - Private Participator or Contractor or special class of beneficiaries (such as farmer, road user, hospital patient) – their perspective also needs to be considered.
• Is the recommendation based on NPV? If need be, IRR and BCR too may be calculated.
• Alternatively for social sector projects, has the financial and economic cost effectiveness analysis to compare different ways of generating same benefits or minimize unit costs where measurement of benefits is infeasible been done?
• Has Sensitivity Analysis been done and which variables seem to be important?
• Beware of the tendency of administrative departments/agencies to overstate benefits and underestimate costs so scrutinize both.
• Keep cost and benefits norms updated regularly.

Step II: Economic Analysis

• Have the transfers – loan, loan repayment, income tax payments, income subsides – been excluded from economic analysis?
• Have the important Conversion Factors for prices of goods and services where market prices exist and there are distortions – price subsidies, sales tax, excise etc. in the market been correctly estimated?
• Have the external benefits and costs been included such as time savings, reduction in vehicle operating costs in road projects, environmental costs/benefits?
• For estimating economic wages, use supply price of labor i.e. prices at which labor is willing to work on the project and adjust for income tax differences. Have the income taxes been adjusted from the financial wage to arrive at the economic wage?
• What economic discount rate or Economic Opportunity Cost of Capital (EOCK) been used? For India (and Indian states) 12% is a good estimate of EOCK.
• What foreign exchange premium (FEP) been used for traded goods? For India (and Indian states) 11% is a good estimate of Foreign exchange premium.
• Have the Positive and Negative Externalities as applicable to the Specific Sectors been identified and quantified?

Step III: Distributive (Stakeholders) Analysis

• Has the stakeholder impact been estimated by calculating the difference between the Present Value of each line item in financial analysis and each line item in economic analysis discounted at Economic Rate of Discount?
• Has the distribution of Externalities among Stakeholders – who gains and who loses and by how much (Financiers, Government, Beneficiaries, Low-income Beneficiaries, etc) – been done in a coherent fashion?
• Do not use distributional weights to reflect benefits accruing to deprived sections of society i.e. do not augment benefits or reduce costs by arbitrary factors. A basic needs premium (BNP) needs to be calculated; for basic needs, identify low income beneficiaries by location and number, improvement in their consumption and the expenditures incurred. If exact estimation of BNP is not feasible, use a reasonable percentage and for India (and Indian states) 15% should be a good estimate of this premium.

**Step IV: Risk Analysis**
• Has the risk analysis been conducted?
  o How does the basic statistic for core outcomes (NPV, annual cash flows) look – expected mean, range of values, standard deviation, probability distribution, chances of negative values.
  o Can the risk be reduced by using some basic contracting?
PART C

Summary of results Obtained

a. NPV (financial, equity/sponsor/government perspective) > 0
   i. Expected NPV
   ii. Standard deviation, maximum, minimum NPV, confidence intervals
   iii. Probability of NPV < 0
   iv. Sources of variability or risk in NPV

b. NPV (economy) > 0?
   i. Expected NPV
   ii. Standard deviation, maximum, minimum NPV, confidence intervals
   iii. Probability of NPV < 0
   iv. Sources of variability or risk in NPV

c. NPV (externalities) and distribution of NPVs to stakeholders
   i. Identification of major winners and losers: Expected NPVs and variability measures.
   ii. Interpretation of winners and losers: Where projects have large winners and losers, would or should the project design change this distribution? For example, if beneficiaries are major winners of a water project, raising price of service would reduce gains to beneficiary and reduce possible losses to financiers of project

d. Security of debt holders
   i. Debt service capacity ratio. Any problem years?
   ii. Probability of default? Is there need for restructuring debt?

e. Risk analysis
   i. Sources of risk in project
   iii. Any sharing/reallocation devices in use? Formula for determining product or input price or quantity? Origin of formula – regulation or particular project agreement? Impacts of formula and interpretation of its appropriateness.
   iv. Is cost of equity being affected by industry/market risk, project risks or country risks? What are the sources of these risks? Are risk management techniques being applied to deal with these risks?

Typical range of recommendations

Based on the set of results derived from a comprehensive analysis of an investment project the following is the typical range of recommendations:
For a self-financing project, where it is:

1.1 Both financially and economically attractive with manageable risks and no key stakeholder group expected to experience major unintended gains or losses, the project should proceed as designed.

1.2 Subject to government regulation or participation agreements and is economically attractive and excessively attractive to the private investors, the project should proceed but with reduced gains to the private investors through adjusting contract prices or otherwise renegotiating the agreements.

1.3 Economically attractive, but financially unattractive to the stakeholders, the regulated prices or contract agreement should be adjusted to make the contract sufficiently attractive to the private investors by adjusting prices and/or introducing risk sharing arrangements to reallocate risks and/or improve performance incentives. If price adjustment not feasible due to equity reasons, the government should be willing to subsidize the provider of services from the budget.

1.4 Financially attractive, but economically unattractive (as may occur in a protected or subsidized sector), the degree of protection or subsidy should be reduced such that the investment becomes economically attractive, if feasible.

1.5 Both financially and economically unattractive, it should be reconsidered for project redesign – changed scale, timing, technology, real options, and/or financial and contractual arrangements – to assess whether the project can be made attractive under new design parameters or agreements.

For a non-self-financing project, where it is

2.1 Economically attractive, has secure operational finances and the target beneficiary group experiences intended gains (typically from added supply of a basic need), and no key stakeholder group expected to experience major losses, the project should proceed as designed.

2.2 Economically attractive, but has insecure operational finances, it should be reassessed based on reduced production of services and beneficiary gains to assess whether it remains economically attractive under realistic financing levels for its operations; otherwise it should be deferred until financing of its operations can be assured or subsidized through the budget if deemed essential.

2.3 Economically unattractive, has secure operational finances and the target beneficiary group experiences intended gains (typically from added supply of a basic need), the project should be considered for redesign to determine whether at a different scale or with a different technology it can deliver adequate benefits to the target stakeholders, but with either positive economic gains or limiting the economic losses to a small share (say below 20%) of the gains of the target group; otherwise reject the project.
PART D

Components of Different Types of Analyses

I. Financial Analysis

(a) Table of Parameters
- Parameters (real, where applicable):
  - Revenue Parameters,
  - Recurrent Cost Parameters,
  - Loan Details,
  - Working Capital Details (Accounts Receivables, Accounts Payable, Cash Balance, Inventory Details),
  - Discount Rates or financial cost of capital – if entire investment coming out of government budget, real financial cost of capital is the same as the real Economic Opportunity Cost of Capital (EOCK) or at least equal to the real cost of borrowing by the government. Cost of Budget Funds (including grants) is never zero so long as there are alternative uses of funds, it is always higher than the market interest rate.
  - Rates of Inflation – both Domestic and Foreign,
  - Exchange Rate of countries with which trade is involved or from which loan is coming
  - Rates of Subsidy, Taxes, Tariffs,
  - Economic Life and Project Life,
  - Income tax rate
  - Income Tax Depreciation Rate etc.
- Investment Schedule (Real): The investment cost should also include
  - Cost of existing assets if any
  - Market value of land (opportunity cost) – land is never free
  - Cost of rehabilitation if any
  - Environmental costs if any (deforestation, animal habitat)
  - Do not include sunk costs but do incorporate all opportunity costs

For each parameter identify the source of the information or data and potential uncertainties or shortcomings of information.

(b) Working Tables
- Inflation and Exchange Rate Indices
- Loan Schedule
- Investment Schedule (Nominal)
- Depreciation Schedules (For Salvage Value or liquidation value and Income Tax)
- Production, Capacity Utilization and Sales Schedule
- Revenue Table (Nominal)
- Recurrent Cost Table (Nominal)
- Working Capital Table (Nominal)
- Cost of Goods Sold Table (Nominal)
• Income Tax Statement
• Cash flow from Total Investment Perspective (Nominal)
• Cash flow from Total Investment Perspective (Real)
• Cash flow from Owners/Sponsors/Government (Equity Holders) Perspective (Nominal)
• Cash flow from Owners/Sponsors/Government (Equity Holders) Perspective (Real)
• Other Cash flows like Private Participator or Contractor Perspective (such as toll road contractor/operator, waste treatment owner/operator), Beneficiaries Perspective (such as farmer, road user, hospital patient), Suppliers Perspective etc. in nominal and real terms, if needed
• Calculation of NPV (if need be, IRR and BCR too)
• Alternatively, financial and economic cost effectiveness analysis to compare different ways of generating same benefits or minimize unit costs where measurement of benefits is infeasible
• Sensitivity Analysis

II. Economic Analysis

(a) Working Tables
• Make sure transfers – loan, loan repayment, income tax payments, income subsidies are excluded from economic analysis.
• Calculation of Conversion Factors for prices of goods and services where market prices exist and there are distortions – price subsidies, sales tax, excise etc. in the market.
• For estimating economic wages, use supply price of labor i.e. prices at which labor is willing to work on the project and adjust for income tax differences
• Need the economic discount rate or Economic Opportunity Cost of Capital (EOCK); for India (and Indian states) 12% is a good estimate of EOCK.
• Need the foreign exchange premium which is the percentage by which Economic price of Foreign Exchange differs from its market price for adjusting the cost/benefit of traded goods and foreign loans; for India (and Indian states) 11% is a good estimate of Foreign exchange premium.
• Identification and Quantification of Positive and Negative Externalities as applicable to the Specific Sectors
• Do not use distributional weights to reflect benefits accruing to deprived sections of society i.e. do not augment benefits or reduce costs by arbitrary factors. Basic needs external premiums need to be calculated; for basic needs, identify low income beneficiaries by location and number. The basic needs premium should be at a reasonable level and for India (and Indian states) 15% should be a good estimate of this premium.
• Calculation of NPV (Economic) using EOCK or economic discount rate of 12%.
• Sensitivity Analysis
III: Distributive (Stakeholders) Analysis

Working Tables
- Table showing the difference between the each line item of Economic and Financial Cash-flow
- Calculation of the Present Value of each line item discounted at Economic Rate of Discount. (Consistency check between financial, economic and distributive analysis)
- Distribution of Externalities among Stakeholders – who gains and who loses and by how much (Financiers, Government, Beneficiaries, Low-income Beneficiaries, etc)

IV: Risk Analysis

- Based on Sensitivity Analysis, define Risk Variables (Assumptions) including Correlations. Identify sources of variability – objective observations of variability in parameter; uncertainty in value of parameter due to lack of information; positive or negative incentives of stakeholders, managers or workers
- Define Results
- Set Simulation Runs
- Run Simulations (De-sensitize sensitivity analysis before running simulation runs)
- Create Report
- Interpret the Analysis: identify real options or other risk management opportunities to reduce or reallocate risks and costs of these opportunities.