About the Asian Development Bank

ADB’s vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region’s many successes, it remains home to two-thirds of the world’s poor: 1.7 billion people who live on less than $2 a day, with 828 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.
KEY AREAS OF ECONOMIC ANALYSIS OF INVESTMENT PROJECTS

An Overview

ECONOMIC ANALYSIS AND OPERATIONS SUPPORT DIVISION (EREA)

ECONOMICS AND RESEARCH DEPARTMENT (ERD)

September 2013
Economic analysis helps assess sustainability of investment projects that will improve the welfare of the beneficiaries and a country as a whole. This pamphlet, the 3rd edition, outlines the key areas of economic analysis. It emphasizes that analysis begins at the first stages of project identification, during country partnership strategy preparation, and continues iteratively throughout the project cycle. Economic analysis must be coordinated with institutional, financial, environmental, social, and poverty analyses, forming an integral part of investment appraisal.

Part I of the pamphlet summarizes the principles and key areas of analysis needed to appraise the economic feasibility of every project. The detailed assessment methods are outlined in the *Guidelines for the Economic Analysis of Projects* (1997) of the Asian Development Bank (ADB). *Cost Benefit Analysis for Development—A Practical Guide* (2013) provides the recent methodological developments in cost–benefit analysis and illustrates the application of methodologies through a number of case studies covering selected sectors. Part II summarizes the main

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issues to be addressed in each of the key areas of analysis (AAs). Part III outlines the stages of the project cycle when analyses are to be carried out.

In practice, each sector, situation, and set of problems to be addressed is different. Basic principles of analysis need to be followed, although analytical approaches and data requirements need to be adapted to different circumstances. Selecting the appropriate level of analysis to inform project decision-making is key to sound economic analysis.

The pamphlet is intended to help ADB staff, consultants, and their counterpart staff in developing member countries (DMCs) apply the principles of project economic analysis at each stage of the project development process.
PART I: Scope of Project Economic Analysis

Macroeconomic Context

What macroeconomic factors influence target sectors and vice versa?

A project cannot be designed and implemented in isolation from the rest of the economy. An understanding of an economy’s overall performance and outlook and how macroeconomic factors may affect project performance is important. This includes understanding how the sectors of an economy contribute to the overall growth and development process and influence macroeconomic performance. Key macroeconomic factors include, for example, exchange rate changes that affect the price and competitiveness of traded goods, and economy-wide structural policies that influence prices and affect consumer and producer incentives and behaviors. The fiscal management situation needs to be understood for the purposes of assessing and ensuring sustainability of projects that draw on public resources.

Sector Context

What are the binding constraints to the functioning of markets and efficient and equitable provision of public services?
Where markets provide private goods and services, one needs to understand dimensions of the sector setting including: production and supply systems, prices and incentives that affect consumer and producer behavior, and the supporting market and public institutional framework. The following needs to be assessed:

- the conduct and performance of industry and market structures;
- the international market context of traded goods and services;
- policy-caused price distortions, which are often the main reason for differences between financial and economic prices; and
- key factors that influence private sector performance, including the function and performance of market-related institutions and the state of the legal and enabling environment and their effects on the costs and risks of doing business.

In cases where markets fail to provide goods and services that society wants, public provision may be justified. Public goods may include services such as health care, basic education, and law and order. Understanding the role and performance of public institutions in, for example, service delivery, also requires careful assessment. The structure, conduct, and performance of public institutions can greatly affect the costs of and access to public goods and services. Thus, the policy and legal framework, public goods delivery mechanism and performance, fiscal and public expenditure management, and benefit incidence and distribution must be assessed. Where public
institutions and agencies fail to effectively provide public goods or deliver services, the causes need to be identified.

Sector analysis is an essential step to identifying key problems—usually market or institutional failure or underperformance—their causes and effects, and the reason, or rationale, for a project and its objectives. A diagnostic analysis at the sector level can help identify and prioritize challenges and can be the key to understanding the context and identifying the rationale and objective for a possible intervention.

Economic Rationale

Why should there be public sector intervention?

The economic rationale for public sector operations is established at the time of sector assessment. A clear economic rationale will help narrow the possible alternative ways of addressing a development problem, focus project design and appraisal, and identify key performance indicators.

The main reason for public sector operations is to address market or institutional failures. Market failure can occur when a free market fails to deliver an efficient allocation of resources and results in a loss of economic and social welfare. Various factors can lead to market failure, such as uncompetitive market structures, high transaction costs and risks due to unclear or unspecified property rights, asymmetric information, poor contract enforcement, and unequal access to opportunity. “Missing markets” occur when the market does not provide certain goods and services because of their “non-rival, non-excludable nature,” i.e., anyone can use the good.

A public sector solution must identify what the government can do that the private sector
failed to do. In cases where the provision of public goods and services does not meet the needs of society, or particular groups in society, such as the poor, there may be a strong case for an intervention. Examples include inefficient public provision that raises costs in relation to benefits, and leakages from intended to unintended beneficiaries. Public institutions responsible for providing public goods and services may need strengthening through capacity building, restructuring, or reform.

In turn, the selection of the funding modality—either internal or external—should be based on a clear economic rationale for an identified intervention based on public or private sector solutions to a problem that are agreed by both ADB and the government or other development partners, and that can be addressed through ADB’s lending or nonlending assistance. The value the external financing agency adds in supporting relevant and feasible solutions should also be demonstrated.

Demand Analysis

How much of the output is wanted? How much are users willing to pay for the output?

Demand analysis is the basis for identifying the goods and services needed by users and for estimating the economic benefits from a project. A project that does not meet the consumer or user demand for particular goods and services will not meet its objectives or generate benefits, resulting in the project not being viable and valuable resources being wasted.

Market research and user surveys may be used to increase the reliability of estimates and to assess the demand response to price changes and income growth. Research and surveys can also be used to identify the potential and options pertaining to beneficiaries’ willingness to pay for project goods and services. Project demand for an input and the public demand
for an output or need for a service should also be assessed against total demand and supply for the good or service. The assessment is needed to determine whether total demand or supply, and prices, are likely to be affected by additional output by the project.

Design and Monitoring Framework

*Is there a clear linkage between impact, outcome, outputs, activities, and inputs?*

The design and monitoring framework (DMF) is a simple but powerful tool for improving the design and implementation of projects. At the design stage, the DMF helps with conceptualizing the project and understanding its potential impact. Starting with a clearly identified long-term sector-level priority (impact), the DMF helps analyze what goal needs to be met in the medium term (outcome). When the medium-term goal (outcome) has been identified, then the outputs that the project targets should be ascertained, and the activities and inputs that will enable delivery of these outputs.

A well-thought-out DMF will establish clear linkages between *impact, outcome, outputs, activities, and inputs*. Thus, the DMF is an important foundation of the project design and is essential for properly structuring the economic analysis of an investment project.

Strong linkages between various layers of the DMF indicate the project is likely to succeed, whereas weak or poor linkages will raise doubts about the project’s ability to meet its objectives. Identification of key assumptions and risks is also an important part of the project design, helping stakeholders understand what needs to be provided for the project to succeed.

Economic analysis often has to make assumptions about key parameters. Thus, a systematic way of information gathering,
conceptual analysis, and stakeholder involvement in the process is essential for achieving the desired results. The monitoring of actual outcomes and outputs is important to allow effective project implementation and impact assessment.

Alternatives and Least-Cost Analysis

What is the best way of addressing the market or institutional failure or problem?

Having established the problem to be addressed, and the rationale and objective for a project, the next question is: What alternative (mutually exclusive) ways could meet the objective? This involves asking: What will happen without the project? The without-project scenario need not be the same as the current situation. For example, if the current situation is expected to deteriorate further, the project impact must be considered relative to falling performance. With-project comparisons also need to consider public versus private sector provision, scale, location, technology, and timing of alternative project designs.

With the analysis of the causes and effects of market and institutional underperformance or failures in mind, the alternatives analysis can better consider alternative designs, institutional, and financing arrangements.

Least-cost analysis is one of the most common tools for comparing and ranking alternatives. Least-cost analysis compares the present value of costs of alternatives in delivering the same level of welfare or benefits. The basis for selecting the preferred alternative should be clearly explained, particularly if it is not the least-cost alternative in economic terms.
Comparing Benefits and Costs

*Will the project benefits exceed project costs?*

With the project alternative selected, the next step is to determine whether the project is worthwhile, by comparing the costs with the benefits. The benefits of the project must be identified and measured relative to what might happen without the project.

When the project’s inputs and related costs, and outputs and related benefits, are identified, measured, and the value estimated, valuation must distinguish between project inputs and outputs that replace current supplies (nonincremental), or add to total supplies (incremental) as different methods apply. External effects, such as environmental impacts, must also be quantified and valued, and costs or benefits incorporated, to the extent possible.

The price level and the unit of account (numeraire), either domestic or international, must be consistently used in comparing alternatives. The without-project scenario should be analyzed in the same way as the alternatives.

The economic justification of the project is based on comparing the benefits and costs as they occur over time, and appropriately discounted. A project investment is economically justified if the estimated economic internal rate of return (EIRR) exceeds the economic opportunity cost of capital (EOCC) for the country. Given the difficulty of estimating country-specific EOCCs, the EOCC for all ADB DMCs is 12%. However, an EIRR of 10%-12% is acceptable if the project is deemed to have significant unquantified net benefits.

If the value of a project’s outputs cannot be measured, then the economic analysis can be
based on its cost-effectiveness. A project is cost-effective if it has the least cost for a specified output. But least-cost analysis alone is not sufficient to justify the selection of a particular alternative. If benefits cannot be estimated, other social arguments must be developed to establish whether the project is worth pursuing.

**Sustainability of Investment Projects**

*Are there enough resources to ensure the flow of project benefits?*

The economic viability of a project depends on, and thus calls for, detailed financial and institutional sustainability analysis. For example, assessing the financial sustainability of revenue-generating projects incorporates an analysis of the financial performance of project-related enterprises. A key assessment is whether there is enough incentive for project participants, in terms of financial returns, and whether participants have sufficient funds to operate and maintain the project investments. Where relevant, the capacity of the project-operating entity to finance the project through prices or user charges should be analyzed.

For both revenue and nonrevenue generating projects, their fiscal impacts should be considered. Where goods or services are provided directly through government budget, the fiscal impact of the project arising from, for example, operation and maintenance, should be assessed.

ADB supports minimal financial subsidies. Exceptions may occur in the provision of basic foodstuffs, basic water, primary health care, and basic education. Clear justification needs to be established for financial subsidies to apply.

Assessment of institutional sustainability focuses on identifying the structure, functions,
and capacity of agencies (whether public, nongovernment, or private) that are being considered for a role in implementation. A clear and distinct role for public and/or private agencies needs to be established based on systematic assessment of institutional factors that might underlie market or institutional underperformance or failure, and capacity to assume an identified role. The project implementation period should also consider the capacity of implementing agencies to achieve targets on time, as delays can result in increased costs and delayed benefits.

Sensitivity and Risk Analyses

What are the chances that the benefits and costs will be realized as anticipated?

As there is always a degree of uncertainty about future events, the economic analysis must include understanding critical factors that are subject to risk, the source of the risks, and the probable variation in the risk factors. Sensitivity analysis is undertaken to identify the parameters that are uncertain and to which the project decision, taken through the economic net present value (ENPV) or EIRR, is sensitive. Switching values, showing the change in a parameter required for the project decision to shift from acceptance to rejection, are presented for key parameters and can be compared with post-evaluation results for similar projects. A quantitative risk analysis is recommended for large projects, projects with an EIRR close to the 12% EOCC, and projects with high risks. The analysis should incorporate ranges for key parameters, and the likelihood of their occurring simultaneously. Sensitivity and risk analysis should lead to improved project

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2 These key risks are identified in the project’s DMF and should be taken into account in the conduct of sensitivity and risk analyses.
design, and an outline of actions mitigating major sources of uncertainty.

**Distribution Analysis**

*Who benefits from this project, and by how much?*

The main project beneficiary and stakeholder groups and the extent to which they gain from benefits, or to which they bear costs, should be identified. Where project effects are intended to benefit a specific group, the proportion of net benefits going to that group should be assessed. The cost implications to other stakeholders and the economy as a whole of targeting specific groups also need to be assessed.
Covering the key areas of analysis (AAs) requires many specific tasks. The following identifies the most important tasks for each AA. The list is not exhaustive, and other tasks may be required, depending on the circumstances of the project. The AAs are numbered in the order in which they are generally addressed, but the tasks for each AA may overlap, and are not necessarily sequential. A task listed under one AA, for example, may be required before previous AAs are completed.

1. **Assess the Macroeconomic Context**

   - Review recent economic performance including key sources of growth and their trends, to identify sector needs for improving growth potential.

   - Assess macroeconomic policies, issues, and indicators such as debt levels, balance of payments, inflation, exchange rate movements, and public financial management, as they relate to the target sector and area.

   - Assess economy-wide structural policies that may affect market functions and service provision to the
target sector, including trade, financial, labor, and governance structures.

- Assess the economic outlook and projections for key indicators critical to sector and project performance.

- Assess critical linkages and assumptions that affect the target sector’s performance and possible investments. Include feedback mechanisms and effects from the sector on the macro economy and other sectors.

- Estimate countrywide economic parameters such as standard conversion factors or shadow exchange rate factors.

2. **Assess the Sector Context**

- Assess the overall sector growth and performance, including probable causes of underperformance and low productivity. Analyze area-specific constraints.

- Assess resource availability and utilization. Discuss the comparative advantage of various economic activities.

- Assess market-related institution performance, including the extent of property rights and contracts definition and enforcement, and the effect on access to resources and income sources;
Part II: Key Areas of Analysis

- conduct and performance of the industry or service structure; availability and access to factors of production; supply chain, marketing, and service delivery issues; issues influencing transaction costs; and effects of taxes, subsidies, and quotas;

- effectiveness of information flows on market conditions and goods to existing and potential participants; and

- extent to which public and private institutions increase or inhibit competition in the markets.

- Assess public institution performance, including the

  - role and functions of government and institutional frameworks in economic activity and service provision;

  - vertical and horizontal institutional arrangements, including decentralization measures as appropriate;

  - efficiency and effectiveness of public institutions in policy making, regulation, and service delivery; and

  - allocation and management of public expenditure and benefit incidence.

- Identify other supply sources or service providers: government, private sector, nongovernment organizations (NGOs), etc.
- Assess the policy environment, including price, market-institution, or public institution policies.

- Assess patterns of public and private investment in the sector and how conducive the sector context is to investment activities.

- Identify the most binding constraints on sector performance and development in terms of market and nonmarket failures. Assess whether problems and their solutions should be addressed concurrently or sequentially.

- Identify the most appropriate form of developmental support: advisory technical assistance, policy-related, and/or investment operations.

3. **Assess the Demand**

- Assess the demand for goods and services produced and/or provided by the sector, and the size of the market in terms of the demand to be met by a possible project.

- Identify and distinguish the factors that change demand, including income, demography, and substitutable and complementary goods and services.

- Assess the consumer’s or client’s degree of satisfaction with the existing quantity and quality of goods and services produced or provided.

- Identify the potential and options pertaining to beneficiaries’ willingness-to-pay for project goods and services.
• Assess how the demand will be affected by price and user charges.

4. **Provide the Economic Rationale and Choice of Financing Modality**

• Describe the market or institutional failure that needs to be addressed.

• Establish the rationale for public sector involvement. Justify why the government can do something that the private sector cannot.

• Clarify and evaluate the strategic relevance of the proposed project-type operation, in the country or sector context.

• Identify the financing modality and justify the role and form of ADB’s possible involvement.

5. **Establish a Project Design and Monitoring Framework**

• State the outputs, activities, and inputs required to achieve the project’s intended impact(s) and outcome(s).

• Demonstrate clear linkages between project inputs, activities, and outputs, and how they will lead to achieving the impact(s) and outcome(s).

• Identify the key assumptions necessary for the linkages and how they can mitigate risks to achieving the project objectives.
• Ensure that the DMF includes key indicators, physical and or financial, at each level.

• Identify the requirements to collect baseline and final data on all key parameters.

6. Identify Project Alternatives and Conduct the Least-Cost Analysis

• Assess options for policy reforms and institutional changes versus investment.

• Identify without- and with-project situations. Develop the basis for the without-project (counterfactual) analysis.

• Identify possible project alternatives in terms of location, scale, timing of investments, and policy changes.

• Identify inputs and outputs as traded and/or nontraded, and incremental or nonincremental.

• Describe and assess each alternative’s benefits and costs, including possible environmental impacts, and identify the least-cost alternative for the project.

• Choose the preferred alternative and explain the basis for choosing it, especially if it is not the least-cost option.
7. Identify and Compare Benefits and Costs

- Identify types of benefits (incremental versus nonincremental) and types of costs that need to be included.

- Quantify the main project benefits and costs, comparing the with- and without-project situations for each alternative.

- Review the methods for measuring each type of benefit and cost, considering analytical effort, ease of explanation and understanding (clarity), and robustness of results.

- Choose the method/s of measuring benefits and costs. If benefits cannot be measured, determine an alternative method of analysis, such as cost-effectiveness analysis.

- Establish the basis for shadow pricing by choosing the numeraire and price level, and estimate conversion factors.

- Estimate the EIRR and net present value (NPV) for each independent subcomponent of the project, and for the project as a whole, as appropriate.

- Explain any expected difficulties in completing the cost–benefit analysis, and how the difficulties may be overcome.

- Explain why unquantified benefits were not measured. Describe them qualitatively.
• Spell out the major conclusions of the economic analysis, and assess whether the project is economically justified.

8. **Assess the Sustainability of the Project Investment**

• If the project generates revenue, estimate the financial internal rate of return (FIRR) and compare it to the weighted average cost of capital (WACC). Analyze and explain any difference between the FIRR and EIRR.

• Estimate the financial returns to different project participants. Evaluate whether the financial returns are adequate to attract investment or ensure active involvement.

• Explain any cost recovery measures or charges for goods and services, including how charges were incorporated into the demand and rate of return analysis.

• Analyze the project and associated enterprises for both external and internal (cross-) subsidies. Evaluate and explain the basis for any subsidies identified.

• Evaluate the financial sustainability of the project, both with and without any subsidies.

• Evaluate the fiscal impact of the project on the capital and recurrent budget, and identify and evaluate the source of funds to meet net fiscal requirements.
Use the institutional assessment results to identify how the structure, functions, and capacity of project-related agencies are likely to affect project-related input and service delivery and other transaction costs. Identify ways to minimize such costs.

9. Perform Sensitivity and Risk Analysis

- Identify the plausible range of variability for input and output variables.

- Estimate the value for each parameter, and compare the value to the plausible range.

- Use the results to identify the key parameters that affect the financial and economic performance of the project.

- Propose and explain measures for monitoring each key variable.

- Assess and explain the institutional risks.

- Specify a probability distribution over the plausible range of each key variable, and explain the basis for the distribution.

- Conduct quantitative risk analysis for key variables. Use results to identify the major risks to the economic basis of the project.

- Propose and explain measures for managing or reducing the project’s major risks.
10. Perform Distribution Analysis

- Identify stakeholders affected by the project and how the project impacts each type of stakeholder differently, including access to project inputs and outputs and the distribution of benefit incidence.

- Identify which stakeholders pay for project inputs, and their willingness to participate.

- Determine appropriate approaches to the distribution analysis (e.g., quantitative and qualitative methods).

- Estimate the distribution of benefits and costs, including the distribution relative to targeted project beneficiaries (e.g., the poor).
Steps in Project Economic Analysis

1. Macroeconomic Context
2. Sector Analysis
3. Economic Rationale and Selection of Appropriate Modality
4. Demand Analysis
5. Design and Monitoring Framework
6. Alternative and Least-Cost Analyses
7. Cost-Benefit Analysis
8. Sustainability of Project Investment
9. Risks and Sensitivity Analyses
10. Distribution Analysis
### PART III: Areas of Economic Analysis in ADB’s Project Processing Cycle

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<td>Identification of economic rationale and prospects for operations</td>
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<td>Identification of appropriate modality</td>
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<td>Identification of impact, outcome, outputs, and inputs for the project (preliminary design and monitoring framework [DMF])</td>
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<td>Identification of methods of valuation of project costs and benefits</td>
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### D. Management Review Meeting

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### Draft report and recommendation of the President (RRP), with linked documents and supplementary appendix on economic analysis

| Revised RRP, with linked documents and supplementary appendix on economic analysis |
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