Framework and Criteria for the Appraisal and Socioeconomic Justification of Education Projects

A Reference Guide for Bank Staff, Consultants and Executing Agencies

ASIAN DEVELOPMENT BANK
Economics and Development Resource Center
Infrastructure Department
# Table of Contents

Preface  
List of Abbreviations  
List of Figures  
Executive Summary  

Chapter I. Introduction ............................................................. 1  
   A. Background ......................................................................... 1  
   B. Objectives ........................................................................ 3  
   C. Scope and Design ................................................................ 3  
   D. General Role of Education .................................................. 5  
   E. Key Premises Underlying the Appraisal Framework ................. 6  

Chapter II. The Project Appraisal Framework .................................. 7  
   A. Basic Justification Criteria and Major Characteristics ............. 7  
   B. Major Categories of Justification Criteria ............................. 8  
   C. Interfaces and Linkages Between Project Appraisal Criteria .......... 15  

Chapter III. The Educational Policy Framework .............................. 18  
   A. Sector Analysis .................................................................... 18  
   B. Sustainability Issues .......................................................... 20  

Chapter IV. Internal Efficiency Justification .................................... 23  

Chapter V. External Efficiency Justification .................................... 28  

Chapter VI. The Economic Analysis of Education Projects ............... 34  
   A. Introduction ........................................................................ 34  
   B. The Demand for Educational Services .................................... 36  
   C. Equity Impact ..................................................................... 38  
   D. Financial Considerations ....................................................... 41  
   E. Cost-benefit Comparison ....................................................... 43  
   F. Cost-effectiveness ................................................................. 45  
   G. Risk Analysis ...................................................................... 46  

Chapter VII. Conclusions ............................................................... 48  

List of Appendixes  
References
As early as 1991, the Education, Health and Population Divisions of Infrastructure Department identified the need to improve the existing framework for the appraisal and socioeconomic justification of Bank-assisted Projects in the education sector. The revised framework presented here was prepared jointly by EDRC and IFD staff based on the Bank's operational practices and experiences as well as literature research.

This Framework focuses on the design and appraisal of education project loans per se. Given the complexity of these projects, it is expected that the project analyst will benefit from the logically consistent, standardized approach to the design and appraisal of education projects shown in this Framework. The Framework views sustainability as the overall indicator of project quality with sustainability ultimately determined by the broader developmental or external effects brought about by educational interventions. The Framework essentially is efficiency-based, development-oriented and pragmatic in nature.

In the absence of conventional cost-benefit analysis as an appraisal tool at project processing stage, it becomes critically important to justify educational intervention in terms of a structured set of interrelated internal and external efficiency criteria within the context of a logical conceptual framework. The ultimate goal or justification of the Framework lies in improved identification and conduct of more effective educational activities, at realizable cost levels, to promote social, institutional and economic development with equity.

The Framework will be especially useful to Bank staff and consultants in project preparation, design and appraisal. Staff in DMCs' project planning, executing and implementing agencies are also expected to benefit. Lessons learned from its consistent application will be incorporated into the Framework in an effort to update the methodology involved.

The design of the Framework was coordinated by Mr. Etienne Van De Walle. Professor Douglas Windham, a staff consultant, made significant contributions. Bank staff who made important contributions to the development of concepts and appraisal methodology are Mr. Tin Maung Oo, Mr. Manuel P. Perlas, Mr. Motilal Sharma, Mr. Paul L. Chang, Mr. Robert L.T. Dawson, Mr. Shamsul A. Chowdhury and Mr. Brahm Prakash.

SATISH C. JHA  
Chief Economist  
Economics and Development Resource Center

SAYED A. BAHA  
Director  
Infrastructure Department
Framework and Criteria for the Appraisal and Socioeconomic Justification of Education Projects

ASIAN DEVELOPMENT BANK
Economics and Development Resource Center
Infrastructure Department
January 1994
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME</td>
<td>Benefit monitoring and evaluation</td>
</tr>
<tr>
<td>CBA</td>
<td>Cost benefit analysis</td>
</tr>
<tr>
<td>CE</td>
<td>Cost effectiveness</td>
</tr>
<tr>
<td>CEA</td>
<td>Cost effectiveness analysis</td>
</tr>
<tr>
<td>COSS</td>
<td>Country operational strategy study</td>
</tr>
<tr>
<td>CP</td>
<td>Country programming</td>
</tr>
<tr>
<td>CUA</td>
<td>Cost utility analysis</td>
</tr>
<tr>
<td>DI</td>
<td>Distributional impact</td>
</tr>
<tr>
<td>DMC</td>
<td>Developing Member Country</td>
</tr>
<tr>
<td>EA</td>
<td>Economic analysis</td>
</tr>
<tr>
<td>EIRR</td>
<td>Economic internal rate of return</td>
</tr>
<tr>
<td>EMIS</td>
<td>Educational management information system</td>
</tr>
<tr>
<td>ES</td>
<td>Educational system</td>
</tr>
<tr>
<td>FIRR</td>
<td>Financial internal rate of return</td>
</tr>
<tr>
<td>HRD</td>
<td>Human resource development</td>
</tr>
<tr>
<td>IRC</td>
<td>Incremental recurrent costs</td>
</tr>
<tr>
<td>IRR</td>
<td>Internal rate of return</td>
</tr>
<tr>
<td>MR</td>
<td>Manpower requirements</td>
</tr>
<tr>
<td>OVI</td>
<td>Objectively verifiable indicators</td>
</tr>
<tr>
<td>PPTA</td>
<td>Project preparatory technical assistance</td>
</tr>
<tr>
<td>RSA</td>
<td>Rapid social appraisal</td>
</tr>
<tr>
<td>SDS</td>
<td>Social design study</td>
</tr>
<tr>
<td>WTP</td>
<td>Willingness-to-pay</td>
</tr>
</tbody>
</table>
List of Figures

1  Linkages Between Major Framework Criteria
2  Classification of Appraisal Criteria and Relation to Project Justification
3  Linkage of the Framework Components to the Bank’s Project Cycle
4  Framework of Criteria and Subcriteria for Justifying Education Projects
5  Interfaces and Interlinkages Between Major Groupings of Project Appraisal Criteria
6  Relationship Between Sectoral Issues and Project Implementation
7  Major Categories of Internal Efficiency Criteria
8  Major External Impact Criteria
9  The Logical Framework for Appraising Education Projects as a Dynamic Model
3A Interrelated Factors Determining the Overall Usefulness of the Framework
4A Major Methodological Steps in the Framework Design
Executive Summary

Education projects generally pursue multiple, interrelated objectives, and there is no standardized delivery mechanism for educational services. Moreover, the diverse effects of education projects often are less tangible, more distant in time, and more uncertain. Given these complexities, the project analyst will benefit from a standardized approach to the design and appraisal of education projects. A standardized approach would apply a logical framework concept in a systematic way, endeavor to identify design and appraisal criteria and highlight their interrelatedness, and emphasize the congruency between appraisal criteria, benefit monitoring and evaluation indicators during and after implementation, and ex-post performance evaluation criteria.

This Framework and Criteria for the Appraisal and Socioeconomic Justification of Education Projects is a synthesis of operational practices and experiences and literature research findings. The Framework views sustainability as the overall indicator of project quality, with sustainability ultimately determined by the broader developmental or external impact brought about by educational intervention. The Framework essentially is efficiency-based, development-oriented and pragmatic. The key concept used is educational efficiency, which refers to educational effectiveness relative to input costs. The achievement of project quality is conditional on the achievement of both internal and external efficiency, which coincide broadly with project-specific objectives.

Conventional cost-benefit analysis and EIRR estimation, although very useful and reliable if carried out at the subsectoral level, are not appropriate, feasible or justified for individual education projects and therefore are not part of the appraisal process for a given project. In the absence of economic internal rate of return analysis, justifying educational intervention in terms of a structured set of interrelated efficiency criteria within the context of a logical conceptual framework becomes critically important. The primary use of the Framework will be through the application of appraisal checklists, consisting of a structured set of criteria and key measurement indicators for project design and efficiency. The ultimate goal or justification of the Framework lies in improved identification and the conduct of more effective educational activities at realizable cost levels, to promote social, institutional and economic development with equity.

This Framework highlights project rationale—the need for the project—and sustainability as the two most important justification criteria. A sustained cost-efficient delivery of educational services and realization of expected external impacts, including social, institutional and financial viability, are critical determinants of project sustainability. In education projects, it is particularly difficult to assess sustainability, as the set of indicators used to measure sustainability combines qualitative and quantitative aspects of project performance during and after implementation.

This Framework has three major emphases: (i) predesign, design and appraisal criteria; (ii) the breakdown of appraisal criteria in internal and external project
justifications; and (iii) the linkage of these components to the Bank's operational cycle and types of analysis. To achieve an ex-ante project justification, three subsets of criteria are clearly distinguishable: (i) pre-design macro considerations that provide for a subsectoral justification of the individual project (to be ascertained at country programming stage); (ii) specific design criteria, which are expected to result in an optimal project design, i.e., an appropriate mix of components, subcomponents and inputs; and (iii) appraisal criteria, which comprise a qualitative and/or quantitative assessment of the anticipated internal efficiency and external impact.

The project analyst should be aware that major appraisal categories and subcriteria are interrelated. The nature and strengths of these relationships will be influenced by the specific project characteristics that determine the relevant criteria. Internal effects—outputs—and external impacts—benefits—are not independent of each other but are mutually reinforcing, e.g., educational quality improvement and higher internal efficiency have a range of economic and other effects. Moreover, there are relationships between the major external impact categories, e.g., enhanced equity and a more appropriate institutional setting both may have important economic spin-offs.

Major post-evaluation findings have underscored the need for careful project identification and selection during the country programming process. Educational policy planners are faced with the complex task of setting priorities and allocating scarce resources among competing subsectors (primary, secondary, tertiary education, vocational and technical education and training, non-formal education). The choice and design of education projects will greatly benefit from the existence of a well-articulated and feasible policy framework that clearly spells out major policy objectives, directions, and priorities, and that indicates a coherent set of implementable strategies to achieve the stated sectoral plan objectives.

To avoid the dichotomy between education project choice and education subsectoral planning, individual projects must be subjected to a consistent set of feasible national educational policy objectives. The policy framework should explicitly consider three major sustainability issues: (i) the socio-cultural context and its receptiveness to the proposed educational intervention (program or project); (ii) the economic and financial capacity of the country; and (iii) the managerial capacity to implement and operate programs/projects, given the country’s institutional context.

The Bank's own medium-term strategic objectives/priorities constitute a second major aspect of educational policy with direct implications for the selection, design and appraisal of Bank-assisted education projects. The convergence of the DMC's sectoral policies/strategies and the Bank's own strategic priorities can be achieved only through policy dialogue. To promote efficiency in operations and enhance cost-effectiveness, agreements reached should (i) incorporate lessons of experience from previous projects; (ii) promote complementarities with recent or ongoing projects; and (iii) encourage donor coordination.
The external impact of educational intervention depends critically on the production of intermediate (e.g., trained teachers) and final education outputs (graduates). These two outputs represent typical internal efficiency considerations. The latter is a necessary but not a sufficient condition for bringing about the ultimate developmental impact. The project analyst has the complex task of demonstrating convincingly how projected short-term changes in inputs and processes will increase the production of the desired educational outputs. Provision of educational inputs produces educational outputs only if the former are used and combined appropriately through educational processes that are administrative/managerial or instructional in nature. The choice of the specific inputs, processes and desired outputs are critically determined by the project concept and its scope and specific targets. This Framework views educational intervention as a logical sequence of expected relationships wherein resource inputs are transformed into outputs, effects and ultimate impact.

The potential external efficiency effects generated by education projects include economic, equity-related, institutional, political and environmental effects. These broad developmental effects are the ultimate justification of a given educational intervention. At the appraisal stage, usually it is feasible to identify and assess potential external benefits only in qualitative terms. A substantial part of external outcomes normally will occur outside the immediate education setting and may be indirect, distant in time and highly uncertain at the time of appraisal. The logical framework approach requires making explicit the linkage between the external impact and the educational outputs/effects, and stresses the need to define a corresponding set of indicators to monitor and assess expected project effects as part of the continuous benefit monitoring and evaluation process. The project analyst should also specify the assumptions (risk factors) that link the more immediate internal effects to the more remote external impact.

Although information on private, public and social returns to investment in specific educational subsectors may help strengthen the justification of a given educational intervention (program or project) at the appraisal stage, ex-ante project-specific EIRR analysis has not been used to justify individual projects. Such analysis would require relevant and reliable data on the anticipated monetary impact (distant in time and highly uncertain), which is extremely difficult to predict at the time of project processing. In the absence of internal rate of return analysis to assess the financial/economic viability of educational projects, the Bank's current guidelines suggest the following criteria: (i) macroeconomic justification; (ii) demand analysis (assessment of the need for the project's educational services); (iii) identification of all project costs and benefits; and (iv) cost-effectiveness analysis. This Framework promotes the further use of these criteria and emphasizes the need to identify educational outputs and broader developmental effects using the Bank's logical framework approach.

Two conventional approaches are used to assess the need for an education project: social demand and the manpower requirements approach. The social demand approach is generally considered appropriate for primary and basic, lower secondary, and mass education, while the latter approach is adequate for
vocational, technical, and higher educational interventions, especially when the existing demand-supply mismatch is important.

The social viability of an educational project depends on the equity impact, defined as the sum of income-related, gender-related, regional and cultural equity. A substantial part of the equity impact is intangible in nature and is not measurable in monetary terms. Therefore, this effect will have to be assessed mainly in qualitative terms. It is important, through social analysis, to identify the target population/beneficiaries, describe their main characteristics (number, gender, rural vs. urban, income class) and define the major expected effects, including the distributional effect (contribution to poverty reduction or income-related equity).

Although financial internal rate of return analysis generally is not included in the appraisal process, the latter should examine, among others, the following aspects of financial analysis: (i) review of educational expenditures; (ii) analysis of the financial project costs and budgetary allocation, including counterpart funds; (iii) finance of incremental recurrent cost; and (iv) cost recovery in relation to affordability for the beneficiaries.

In economic analysis (EA), on the other hand, social and private costs and benefits should at least be identified and valuation should be attempted to the extent possible. In the absence of EIRR analysis, demonstrating the cost-effectiveness of the educational intervention is an essential step in EA. Cost-effectiveness analysis (CEA) helps achieve the objectives of cost minimization or benefit maximization, but also taking into account the anticipated effects of different project alternatives. As data on effectiveness are usually lacking, it is seldom possible to apply CEA, which then would be reduced to least-cost analysis. The project analyst should at least make least-cost choices for major components/inputs (cost minimization) and/or incorporate cost-efficient measures into the project design (benefit maximization), which is a limited application of conventional CEA.

In educational projects, quantitative sensitivity analysis is not feasible and risk analysis can be done only in qualitative terms. However, risk assessment remains an essential step in the design and appraisal of education projects. Risks relating to both costs and benefits should be assessed. Risks more often are on the benefits side, as the production of project outputs (e.g., schools, teachers, and equipment) is not sufficient to achieve the project objectives (e.g., reduce demand-supply shortages in the labor market). The performance and sustainability of education projects depend on the appropriate mix of hardware and software components (internal to the project) and conditions and facilities external to the project. The appraisal specialist should distinguish internal efficiency risks, which relate to educational outputs, and external efficiency risks, which relate to the expected developmental benefits of the project.
CHAPTER I
Introduction

A. Background

Refinement and improvement are recurring features in the socioeconomic analysis and justification of education projects. Existing Bank guidelines—generally observed in the preparation of appraisal documentation—emphasize the quantification and valuation of economic benefits and economic internal rate of return (EIRR) analysis. A comprehensive review of appraisal documents and project processing experience in the education sector indicate that conventional cost-benefit analysis and EIRR calculation are not appropriate, feasible or justified under prevailing project circumstances. In actual ADB and World Bank appraisal documents dealing with education projects, cost-benefit analysis with EIRR estimation is not presented. However, in the absence of EIRR analysis that would justify educational intervention, a legitimate question remains as to which appraisal criteria should be used to justify and approve a project. A review of appraisal documents across all educational subsectors confirms that relevant appraisal and impact criteria, which may significantly strengthen the justification of a given project, often are not explicitly and consistently considered. It is therefore appropriate to clearly identify those criteria in each education project and develop a logical conceptual framework that relates the appraisal criteria to (i) pre-design and design criteria, considered at an earlier stage in the Bank's project cycle; and (ii) project sustainability, which is the ultimate and overall project justification criterion. These linkages are shown in Figure 1.

This Framework is the result of a comprehensive review of Bank's policies and practices in the economic analysis of education projects, and is based on the Bank's operational documents (appraisal reports, post-evaluation findings, existing guidelines, sector paper on education). Operational practices followed by institutions such as the World Bank, the Inter-American Development Bank, and UNDP, as well as operationally relevant literature findings summarized by a Bank staff consultant are incorporated in the Framework. The consultant's findings build largely on the operational experiences of Bank staff in processing and evaluation work. All Bank staff currently involved in the processing of education projects have participated in the development of the Framework; their suggestions for improvements emerging from two feedback workshops and comments at successive review stages over a period of two years were instrumental in identifying a structured set of education project justification criteria.

1 Appendix 11 to Bank's Guidelines for Economic Analysis of Projects deals with the economic analysis of education projects. (Economics Office, 1987).
FIGURE 1
Linkage Between Major Framework Criteria

Pre-Design Criteria

Design Criteria

PROJECT RATIONALE
(NEED FOR THE PROJECT)

PROJECT SUSTAINABILITY
(BASIC JUSTIFICATION)

Appraisal Criteria
B. Objectives

The major objective of education project appraisal is to determine, first, whether a project should be processed and implemented, and second, what changes, if any, should be made in the initial project design to control costs and/or to expand the project's overall effectiveness and thereby contribute to enhanced project benefits, whether education system-related effects and outputs, or broader effects such as social, institutional, economic and other benefits.

The key objective of this Framework is to present a checklist of criteria useful for the design, appraisal and justification of education projects. The Framework is intended to be: (i) user-friendly; (ii) used as a checklist; (iii) operationally relevant; (iv) relevant; and (v) flexible, in view of its intended application to a variety of education projects in different subsectors. The use of the term "framework" is justified as it aims at a broad coverage of criteria applicable to most education subsectors, without going into the details of design/appraisal for a project in a specific subsector. The Framework also presents a simple taxonomy and classification of criteria into a set of homogeneous groupings and brings out the interrelatedness between the latter as well as linkage to the main stages in the Bank's project cycle and major types of analysis.

More specifically, the purpose of the Framework is to identify a coherent set of appraisal criteria based upon operational practices followed by international lending agencies and the current state-of-the-art in the evaluation of education projects. The primary use of this Framework will be through application of appraisal checklists consisting of sets of criteria and key measurement indicators for project design and internal and external efficiency. The improvements that the Framework attempts to promote in project processing, at design and at the appraisal stage, are not the ultimate goal. Rather, improved identification and the conduct of more effective educational activities at realizable cost levels to promote social, institutional and economic development with equity are the ultimate goal and justification.

Congruent with the Bank's logical framework model, the Framework is designed as a logical model that presents a structured set of interrelated appraisal criteria. The linkage of the optimal project input mix to the expected educational outputs and broader developmental impacts using the logical framework model helps to build the external efficiency justification (in terms of economic, social, institutional, environmental and political impacts) on a strong internal efficiency justification. The Framework is also to serve as an instrument to be used by DMC educational project planners and consultants who carry out the Bank's project preparatory work. The Framework is also intended to guide Bank staff in the processing and implementation of education projects.

C. Scope and Design

The Framework is designed to promote a more consistent and comprehensive review of alternative criteria for the justification of education projects. The
Framework criteria should not be applied rigidly in the appraisal of all education projects. As is stressed throughout the Framework the criteria shown are proposed as a checklist, and no single project is expected to produce all the types of internal and external effects covered. However, it is expected that the designers and appraisers of education projects will benefit from considering at the outset a wide range of possible justification criteria before settling on specific criteria considered particularly relevant to the project concerned.

The focus of the Framework is on educational activities—knowledge transmission and skills development—that take place both in school and out of school. "Schooling" is too narrow a term to capture the full range of project activities with which the Bank is concerned, while human resource development categories are too broad, given the specific purpose of the Framework. Definitions of these and other key terms related to the Framework are given in Appendix 1.

The Framework relates to the socioeconomic analysis and appraisal of education projects and encompasses a coherent set of generic criteria and subcriteria that can be used to justify development projects in the education subsectors. Besides education system-related criteria, the Framework also includes economic, social, institutional, financial and other considerations relevant to the design and appraisal of education projects.

In the Framework, the appraisal of an education project is based on: (i) the project's congruency to (pre)design criteria; (ii) the internal efficiency with which the project's direct educational outputs are produced; and (iii) the external efficiency with which broader societal effects are promoted. Ultimately, these effects are the true justification for any education project. External effects are largely intangible and are difficult to quantify and/or value in monetary terms, are delayed in time, and are uncertain in magnitude and incidence. Furthermore, the propagation of favorable project effects across different societal groups/beneficiaries and economic sectors is difficult to trace. Therefore, appraisal work commonly focuses on the inputs, processes and anticipated direct outputs as well as on the linkage of the latter to the external or societal impact.

It is important to emphasize from the outset that all design/appraisal criteria and alternative types of justification suggested in the Framework will not apply in every project. Therefore, the Framework should not be used routinely as a general yardstick for evaluating all projects. Each proposed educational project has its unique scope and objectives and addresses specific issues; this determines the set of relevant design and appraisal criteria that will have to be taken into consideration for the project concerned. This is further illustrated in Appendix 2. The usefulness of the Framework and the successive Framework design steps are presented in Appendixes 3 and 4.

---

2 Although the focus of this study is on education, the Framework will address educational issues within the context of human resource development sectoral concerns. The effects of education projects on broad human development issues will be considered as part of the discussion of external effectiveness of educational projects.
The Framework is efficiency-oriented, has a logical structure, and links major subsets of justification criteria. Although mainly intended for appraisal purposes, the Framework should also be useful for design purposes, as appraisal covers most design criteria. This is understandable as the design and appraisal activities in actual project preparation overlap to a large extent. Basic concepts in project design and the logical framework applied to educational projects are presented in Appendixes 5 and 6.

D. General Role of Education

A concise description of the role of education is helpful in identifying the range of benefits expected to be generated by education projects.

Education can play a direct role in poverty reduction by enhancing the marketable skills of the economically disadvantaged and vulnerable groups and by expanding their ability to take advantage of income generation possibilities and available social services. Through increased and more equitable access by the poorer or vulnerable target population groups to appropriate educational and training opportunities, education, one of the most important social services, is instrumental in promoting a better standard of living of the economically disadvantaged.

Education plays a key role in promoting the interests of women and increasing their diversified impact and contribution to national development goals. Women must have equal access to and participation in educational activities. In view of their external economic role and important intergenerational effects within the home, women are a key resource with a unique capacity to support educational improvements and general societal development. The conclusion is that educational investment for women is a priority consideration to be taken seriously by DMCs, the Bank, and other international assistance agencies.

Educational attainment increases an individual's understanding of the importance of family planning and enhances the individual's ability to use family planning effectively. Through its impact on employment opportunities and earning potential, education alters the valuation placed on children and the willingness of parents to invest more in each child's development. Through education's link to nutrition, child care and related health programs, child survival is increased, thus reducing the need for large numbers of births as a hedge against infant and child mortality. Education, through formal schools and skills training and via the communication and information media, is a major determinant of population planning success.

Education plays an informational and facilitative role in the protection of the environment. Educational enhancement promotes protection of the environment by changing individual values, by creating awareness of the dangers of environmental degradation and resource depletion, and by contributing both directly and indirectly to a higher level of socio-cultural and economic development that provides sufficient resources to address effectively environmental issues. Values, information and resources are key factors in implementing
assistance programs to reverse current environmental damage and in promoting environmentally sustainable development in the future.

E. Key Premises Underlying the Framework

The Framework is based on a set of key premises, which are shown in Appendix 7. The most important of these premises include the following.

First, sustainability is a critical appraisal criterion that should be examined primarily as a function of the institutional capabilities and socio-cultural setting of the DMC concerned. Second, internal and external efficiency justifications should combine appropriate forms of quantification (e.g., the number of project beneficiaries by income group or estimated financial savings) with qualitative assessments (e.g., regional equity impact, institutional impact, etc.) of anticipated project performance. Third, appraisal criteria should serve as an initial benchmark in the development of a BME system and be explicitly linked to post-project evaluation methodologies. Moreover, wherever feasible, the appraisal justification criteria used should be operationalized as much as possible as objectively verifiable indicators (OVIs) of project performance and general educational progress. Such OVIs could be used in the project-related BME system, which should be linked explicitly to the efficiency-based EMIS. Fourth, project design and appraisal criteria should be considered within the context of the results of education sector analysis, touching upon educational, socio-cultural, economic and institutional aspects, as well as DMC’s policy framework and priorities and the Bank’s own strategic planning framework. Fifth, the framework and the appraisal criteria should highlight the role of education in (i) catering for the needs of underserved and vulnerable social groups; and (ii) increasing the participation of women in society and promoting desirable intergenerational effects.
A. Basic Justification Criteria and Major Characteristics

The purpose of this chapter is to (i) highlight the two basic project justification criteria of project rationale and project sustainability—the major characteristics of the Framework (Section II.A); (ii) present a structured set of distinctions (four levels) between major appraisal categories (Section II.B); and (iii) describe the main linkages between project appraisal criteria (Section II.C).

The need for a project provides the rationale for its design and implementation and is a basic justification criterion (Figure 1). The need for the project should emerge from the analysis and assessment of sectoral issues and identified weaknesses. To avoid overlaps with education project justification, the need for a should not be stated in terms of anticipated contribution to project objectives, which usually is stated in terms of internal efficiency and external impact. The need for a particular project is considered early in the Bank’s project cycle and plays a primary role as a selection guide to identification of projects to be incorporated in the Bank’s country operational program for a particular DMC. The linkages between project rationale, project objectives and project justification are indicated in Appendix 8.

Project sustainability is the ultimate and comprehensive criterion for justifying a given project (Figure 1). This criterion refers to the capacity of a project to continue to deliver its intended benefits over a long period of time—project life and beyond. The success of a project must be assessed in terms of its ability to sustain the flow of benefits over its lifetime. In education projects, it is more difficult to define or measure sustainability, which must be assessed in terms of a set of indicators that combine different qualitative and quantitative aspects of project performance beyond project implementation. To assess the sustainability of social development projects such as education, it is useful to use the following broad indicators: (i) continued delivery of services and production of benefits; (ii) maintenance of facilities/equipment; (iii) long-term institutional capacity, including financial viability; and (iv) political support.

The Framework has three major characteristics: (i) the classification into design and appraisal criteria; (ii) the further breakdown of appraisal criteria into internal and external project justifications; and (iii) linkage of the Framework components to the Bank’s programming cycle. As shown in the previous Figure 1, three clearly distinguishable groups of criteria must be considered to achieve project sustainability: (i) pre-design criteria, which are of a macro nature and provide a subsectoral justification of the project; (ii) specific design criteria, which are expected to result in an optimal project design, i.e., an appropriate mix of components, subcomponents and inputs with anticipated maximum development impact; and (iii) appraisal criteria, which comprise a qualitative and/or quantitative assessment of the anticipated internal efficiency effects and external
impact. Figure 2 depicts a breakdown of the appraisal criteria into (i) internal efficiency or education system related criteria; and (ii) external efficiency criteria, which refer to the broader developmental impact.

Figure 3 depicts the linkage of the major Framework components with important stages in the Bank's project cycle. Pre-design considerations constitute an interrelated set of criteria which must be considered and assessed qualitatively prior to project design, i.e., when the country operational strategy and program are established/updated and when the country performance is assessed. These criteria are more or less given for the project analyst. The design criteria, on the other hand, are to be considered specifically at the project preparation stage and be addressed by the PPTA feasibility study and further firmed up at loan fact-finding. The appraisal criteria, which relate to anticipated internal effects and external impact and provide the ex-ante project justification, are to be considered first at feasibility stage and further detailed during project processing (loan fact-finding, appraisal, and interdepartmental review). Criteria to monitor project progress are crucial during project implementation. The ex-post evaluation criteria are used to assess the performance of the project after completion. These criteria normally should be built on the ex-ante appraisal criteria, which are the criteria for monitoring project implementation progress and BME indicators.

B. Major Categories of Justification Criteria

In constructing a framework specifically for the appraisal of education projects, it is useful to begin with the final objective the framework is designed to promote: an appropriate, efficient and sustainable project. "Appropriate" refers to the fit of the project's activities, direct outputs and ultimate outcomes to the education sector policy framework that exists between the DMC and the lending agencies. "Efficient" refers to the cost-effective production of internal effects and external benefits of the project. "Sustainable" refers to the ability of the project to continue efficient operation after external assistance comes to an end. From this specification of the objective of the project appraisal framework, four levels of appraisal considerations may be derived: pre-design justification (Level I), project design justification (Level II), education system or internal efficiency justification (Level III), and external efficiency justification (Level IV).

Each of the four generic appraisal levels includes subsets of specific criteria and forms of analysis appropriate to the production, quantification or qualitative assessment of indicators for each of the criteria. In the framework, these criteria and indicators are to be understood and used as a checklist only. The framework presented in Figure 4 and Appendix 9 indicates a structured set of distinctions between the levels of justification, subsets of criteria within the major criteria groups and between criteria, and forms of analysis which should be useful to project analysts. Level I of the framework is concerned with pre-design criteria and considerations that should be ascertained at country operational strategy/programming stage, prior to the start of the actual project processing work. These criteria may critically affect the initial formulation and design of a project. The
FIGURE 2
Classification of Appraisal Criteria and Relation of Project Justification

INTERNAL EFFICIENCY/EFFECTS (EDUCATION SYSTEM RELATED CRITERIA)

EXTERNAL CRITERIA (Developmental Impacts)

- Political Impacts
- Economic Impacts
- Institutional Impacts
- Social or Equity Impacts
- Environmental Impacts

Pre-Design Criteria

Overall Justification (Project Sustainability)

Design Criteria
FIGURE 3
Linkage of the Framework Components to the Bank’s Project Cycle

MAIN STAGES IN THE PROJECT CYCLE

Country Operational Strategy and Programming
Country Performance Assessment

DESIGN/ APPRAISAL CRITERIA

Pre-design Criteria

PROJECT PROCESSING

• PPTA/Feasibility
• Loan Fact-Finding

Appraisal Stage

Design Criteria

Appraisal Criteria
Justification Framework

Implementation

Criteria to Monitor Project Progress

Post-Evaluation

Ex-post Performance Evaluation Criteria
country programming exercise attempts initial identification of project opportunities. This identification should be based upon a needs assessment, emerging from sector analysis work, which indicates which educational problems are critical issues within a given DMC. A "problem" becomes an "issue" when the effects or the individuals affected are sufficiently important to attract general societal attention. Clear identification of a problem of educational policy and/or practice is the first step to be taken at pre-project design level where the actual project design work must begin.

The sector analysis and assessments provide the basis for outlining/updating the Bank’s subsectoral operational strategy. The latter should be congruent with the current government subsectoral development plan, which provides details on policies, objectives and priorities. The Bank’s sectoral strategy should also be consistent with or complementary to operational strategies adopted by major donors. The finalized country operational program, which specifies projects and their broad profile, should also ascertain the broad consistency with and/or complementarity to other donor financed projects. As a government’s policy, priorities and strategies may be subject to changes over time, it is necessary that the appraisal analyst, during project processing (PPTA/appraisal) ascertain a three-fold consistency: (i) consistency of project objectives with the government’s actual sectoral policies, objectives and priorities; (ii) consistency of the project scope with Bank’s sectoral operational strategy and country program; and (iii) complementarity, if any, of the project structure (components and activities), with other donor-financed projects in processing or under implementation or completed. There have been cases in which project scope and objectives were no longer consistent with the actual (changed) government priorities. Emerging incongruencies should be eliminated through policy dialogue, to avoid delays in project processing.

The Level II set of criteria are particularly relevant at the design stage and mainly attempt to justify the project in terms of risk-minimizing measures, effective donor coordination, and managerial efficiency. The early and appropriate incorporation into the project design of lessons of experience, identified by project staff during their processing work and/or at the post-evaluation stage, should result in more cost-effective and cost-efficient project design that helps minimize project costs, given a coherent set of objectives, or that helps maximize project impacts/benefits, given the cost of inputs. Incorporation into the project design of measures to minimize risks and recommendations emerging from the social, institutional and environmental assessment has the same favorable impact on the performance of the project during the implementation and operational phase. Furthermore, explicit consideration and comparison of at least two feasible alternatives for each major project component will indicate which cost-efficient input packages will ensure overall project cost-effectiveness. The establishment of an effective educational management information system/BME system will enhance managerial efficiency and improve project planning and implementation and therefore contribute to enhanced cost-efficiency and overall project cost-effectiveness. Adequate donor aid analysis and coordination are also crucial in
FIGURE 4
Framework of Criteria and Subcriteria Justifying Education Projects

Level I: PREDESIGN CRITERIA

1. Consistency with Bank's strategic priorities
2. Consistency with Bank's (sub)sectoral operational strategy
3. Consistency with current government policies/priorities
4. Consistency with and/or complementarity to other donor financed projects
5. Consistency with sector analysis/assessment findings

Level II: DESIGN CRITERIA

1. Incorporation of previous project experience
2. Effective donor coordination/analysis
3. Risk minimization including social, institutional and environmental risks
4. Effective EMIS/BME system (managerial efficiency)
5. Cost effectiveness/least-cost analysis
6. Financing incidence/identification

Level III: EDUCATION SYSTEM RELATED APPRAISAL CRITERIA

1. Quantitative expansion and system rationalization
2. Quality of Education (student achievement)
3. Internal efficiency
4. System productivity (attainment and educational output)
5. Curriculum relevance

PROJECT OBJECTIVES

PROJECT DETERMINED TO BE INTERNALLY EFFICIENT

See Fig. 5(b)
FIGURE 4 (continued)

PROJECT DETERMINED TO BE INTERNALLY EFFICIENT

Level IV: EXTERNAL APPRAISAL OR DEVELOPMENTAL IMPACT CRITERIA

ECONOMIC BENEFITS
1. Employment
2. Enhanced general productivity and economic growth (partly through technical progress)
3. Higher earning potential
4. Fiscal capacity
5. Cost savings
6. Consumption behavior
7. Related health and population benefits (reduced fertility)
8. Intergenerational potential

SOCIAL OR EQUITY CRITERIA
1. Income-related (poverty reduction)
2. Gender-related
3. Regional equity
4. Socio-cultural
   - Inclusion/participation of vulnerable groups
   - Social mobility
   - Transmission of values and beliefs

INSTITUTIONAL CRITERIA
1. Strengthened policy dialogue and improved environment for reform
2. Improved institutional structure
3. Effective coordination/collaboration with other agencies/institutions
4. Enhanced staff capability and managerial efficiency
5. Improved sector/project management (EMS/BME)
6. Strengthening of informational resources and utilization

POLITICAL CRITERIA
1. Acceptancy of rule of LAW
2. National Identification
3. Belief in democratic structures
4. Individual participation in political process

ENVIRONMENTAL CRITERIA
1. Energy utilization
2. Community services (water supply, sanitation, drainage)
3. Design and site enhancement
4. Environmental consciousness

PROJECT APPRAISED AS APPROPRIATE, EFFICIENT AND SUSTAINABLE
achieving the goal of greater complementarity to previous or ongoing projects. An illustration of such coordination, which becomes more important as more donors are involved in project funding, is given in Appendix 10. The example shows that the education sector should be viewed as one system and that complementarity is a key requirement for overall increased productivity—higher throughput and output—in the entire education system. Considerations related to costs and financing effects are also critical. First, the proposed project design must be shown to be the most cost-effective or the least-cost alternative among the various available design options. Second, the incidence and incentives resulting from the proposed financing recommendations that are part of the project design must be analyzed, in particular the demonstration of affordability to implementing local financing agencies during and after project implementation.

The Level III set of criteria attempts mainly to justify the project and its design in terms of internal educational efficiency. The education system-related justification criteria focus on internal project effects broadly defined in terms of achievement of objectives such as (i) quantitative expansion, as indicated by enhanced enrollment/participation rates and system rationalization; (ii) improved quality of education, as indicated by knowledge achievement by subject area and other types of achievement (psychomotor, affective, values, attitudes, behavior); (iii) increased internal efficiency and related system productivity, as indicated by attainment, including access and retention, and educational output; and (iv) curriculum relevance and employability, which in the narrow sense sometimes is referred to as external efficiency. The last criterion could also be considered as an educational quality indicator with direct links to external economic benefits. A wide variety of subcriteria exist for each of the more generic criteria and the specific focus of the project will determine the actual subcriteria to be used.

Level IV of the Framework is designed to provide the link between education-specific outputs and effects that are internal to the education system and broader societal or developmental effects that are largely external to the education system. Although, from the viewpoint of educationalists, internal education outputs/effects are considered inherently valuable and by themselves justify a project, the economics of education and of social activities generally highlight that larger societal benefits provide the ultimate justification of the project. This is the view of education economists who consider educational activities as instrumental in achieving larger societal or developmental objectives. The external impact/benefits in Figure 4 are classified into five main categories: (i) economic benefits; (ii) social or equity related benefits; (iii) institutional impact; (iv) political impact; and (v) environmental impact. External efficiency impact provides the ultimate justification of a given educational intervention.

Two concluding points should be noted. First, it is emphasized again that framework criteria and subcriteria should be used only as a checklist, as all justification criteria mentioned will not apply in a given project context. The number and nature of possible effects and benefits and their relative importance and magnitude will vary depending on the nature and scope of the project and the sector or project-specific circumstances. Second, there is no clear distinction
between design and appraisal criteria. Most criteria are to be considered in both the design and the appraisal phases. In the project cycle, design is shown to precede appraisal, though even at the appraisal stage refinements to design may still be feasible. The appraisal more specifically focuses on anticipated internal effects and external or broader societal impact, in either qualitative or quantitative terms. The appraisal activity should take place with reference to the optimal project design, i.e., after the project analyst has carefully considered all specific design criteria, including built-in cost-effective measures to minimize project risks.

C. Interfaces and Linkages Between Project Appraisal Criteria

When describing and assessing the expected project effects and impact, the project analyst should be aware that the different appraisal categories and subcriteria are not independent, i.e., they may not be mutually exclusive and may show interfaces that indicate their interrelatedness. Figure 5 visualizes the most important direct or primary linkages between major subsets of appraisal criteria. The strength and nature of these relationships will be influenced by the project specific characteristics that determine the relevant criteria to be used.

First, internal effects and external impact are not independent of each other but are mutually reinforcing. For example, educational quality improvement and higher internal system efficiency (e.g., higher retention) have a variety of positive economic and other effects.

Second, there are interrelationships between the three major external impact categories. For example, both enhanced equity, in its broadest meaning, and an improved, more appropriate institutional setting may have important economic spin-offs. Both internal and external efficiency are instrumental in achieving project sustainability.

The figure in Appendix 11 shows the most important interrelationships between individual criteria within each of the major appraisal categories. Quality improvement, including more relevant curricula, resulting in lower drop-outs rates and reduced repetition rates, and good management contribute to higher internal efficiency and to better educated/skilled individuals whose employability is further enhanced. System expansion (higher enrolment), rationalization and enhanced internal efficiency lead to greater system productivity, as measured by increased educational output. As regards the economic impact, health- and population-related benefits lead to higher general productivity in the economic sectors and to cost savings. The higher economic productivity of better educated and better trained individuals enhances their earning potential and contributes to economic growth. Cost-effectiveness usually means cost-efficiency and more affordable unit costs. The category of institutional impact criteria comprises highly interrelated subcriteria that tend to be mutually reinforcing; for example, an improved educational policy framework promotes rationalization and cost-efficiency through strengthened institutions, improved sector/project management, and more effective coordination.
FIGURE 5
Interfaces and Interlinkages Between Major Groupings of Project Appraisal Criteria

PROJECT SUSTAINABILITY (Overall Justification)

Internal Efficiency Effects (e.g. Improved quality of education, higher internal efficiency and increased educational output)

EXTERNAL EFFICIENCY IMPACTS
1. Economic Impacts
2. Social Impacts (Equity Impacts)
3. Institutional Impacts
4. Political Impacts
5. Environmental Impacts
The analysis of the interrelationships between appraisal criteria shows clearly that apart from psychological and socio-cultural benefits, most educational effects are ultimately related to economic efficiency and growth. Most, if not all, education activities ultimately are undertaken to meet manpower requirements of the economy. If shortages of well-educated and skilled persons are recognized to have a serious adverse impact on economic growth, educational projects that emphasize urgent system expansion and increased system productivity, producing the required number of needed skilled people, will have a favorable impact on the economic growth potential and generate a wide range of economic benefits. Educational activities that stress improvement of the quality of education and produce better educated/skilled, employable persons will enhance the earning potential of the persons employed and promote accelerated economic growth through higher labor productivity in the economic sectors. Educational programs and projects that stress system rationalization (e.g., reduced number of many smaller higher educational institutions) and enhanced internal efficiency (higher throughput) are expected to result in enhanced economic efficiency through cost savings, increased managerial efficiency and lower unit cost levels.

This chapter addresses the overall presentation of the framework. Four generic criteria groups, Levels I through IV, have been distinguished, and the appraisal analyst should use the more detailed subcriteria as a checklist. While it is recognized that the Level I pre-design and Level II design criteria are common to other projects as well, they have to be considered with due regard to the specific characteristics of the education sector and the educational services. Similarly, while a number of external efficiency criteria (Level IV) are common to other sectors as well, all Level IV criteria are particularly relevant in the educational context and have to be assessed in light of the specific characteristics of educational services, which are quite different from services or products generated by other sectors. Level III appraisal criteria generally affect the internal efficiency of the education system and are more specific to the processing/implementation of education projects.

The remaining chapters provide a more detailed picture of generic justification criteria. Chapter III briefly reviews major aspects of the educational policy framework (Level I pre-design criteria) that provide a project justification at the macro or sectoral level. Chapter IV focuses on the internal efficiency justification (Level III education system-related appraisal criteria). Chapter V elaborates to some extent on the external efficiency justification. Detailed guidelines for the economic justification, which has been considered to be largely a Level II design consideration, are presented in Chapter VI.

---

CHAPTER III
The Educational Policy Framework

To avoid a dichotomy between education project choice and educational planning at the national level, projects are subjected to evaluation against a consistent set of national educational policy objectives. The choice and design of education projects will benefit from the existence of a well conceived and feasible policy framework that clearly spells out major policy objectives and that indicates major strategies and approaches to achieve them. It is therefore appropriate that this chapter elaborate to some extent on the Level I predesign justification criteria, as indicated in Figure 4.

The educational policy framework initially should be quite broad and should touch upon the country’s broad development objectives, including an assessment of its macroeconomic performance. The focus will be on issues, objectives and strategies that are relevant to the education sector. It is necessary to spell out the implications of the country’s economic conditions and development goals for the education sector. Two major sets of concern should be incorporated in the educational policy framework: (i) the DMC’s national development policy objectives and priorities, including those touching upon the education sector; and (ii) the Bank’s own operational strategy and strategic objectives, including the Bank’s specific design criteria for loan projects (Figure 4). It will be useful to bring out clearly the relationship between sector analysis findings and major issues to be considered in the formulation of the project concerned. A fundamental step in project analysis is to make explicit the link between sectoral policies and project formulation/design: sector analysis helps identify sectoral issues and objectives while project formulation/objectives logically would emanate from this sector work (Figure 6).

In-depth sector analysis based on relevant and reliable data is a first requirement and will enable clear identification of national objectives and priorities for the education sector, given the sector-specific issues to be addressed. Educational objectives should be defined clearly and adhered to consistently in educational planning. It is more difficult in actual practice to achieve the objectives through the implementation of carefully designed projects. The project analyst has the difficult task of specifying the performance gap, which emerges from comparing actual performance with stated objectives. This specification—how well an educational system is performing relative to its objectives—could be given for the most recent planning period and may lead towards a more appropriate and feasible set of objectives.

A. Sector Analysis

Education sector analysis applies a systems approach to the identification of educational issues (problems) and specification of alternative solutions (strategies to address issues). This systems approach explicitly emphasizes intersectoral and
FIGURE 6
Relationship between Sectoral Issues and Project Implementation

SECTOR ASSESSMENT AND POLICY FORMULATION

Sector Studies
Analysis of Issues
Problem Analysis

Sectoral Issues
(Education)

Subsectoral Issues
(e.g. Primary Education)

Project Objectives/
Targets

Project Strategies

Project Activities/
Components/Inputs

CONSISTENT WITH

CONSISTENT WITH

TO REACH

TO IMPLEMENT

TO SOLVE

CONSISTENT WITH

CONSISTENT WITH

PROJECT PROCESSING AND IMPLEMENTATION
intrasectoral linkages among programs (projects) and program (project) effects and broader developmental impact. The sector analysis methodology emphasizes a clear identification/definition of problems before the consideration of solutions. One of the fundamental goals of education sector analysis is to operationalize objectives in a manner that enables the project manager to use/apply objectively verifiable indicators to measure progress toward achieving those objectives. The indicators should be sufficiently detailed/refined and made operational to the point that project success or failure can be effectively monitored during and beyond project implementation.

B. Sustainability Issues

The sector analysis and educational policy framework should consider three major sustainability issues: (i) the socio-cultural context and its receptiveness to the proposed educational intervention (project or program); (ii) the economic and financial capacity of the country; and (iii) management capacity, given the country’s institutional structure and culture.

The cultural context and related social concerns should be carefully considered as they may be crucial to project success. More specifically, the socio-cultural capability of a society or its subgroups to adapt to proposed educational reforms or innovations may be a key determinant in overcoming project problems. The project analyst should find out the extent to which current values and beliefs are part of the environment the educational project is designed to change. Project formulation should carefully consider how conservative attitudes toward gender roles in schooling and employment that are judged to impede societal change and development could be most effectively overcome. Other examples of socio-cultural considerations that may help determine the capacity of a nation to benefit from a particular educational intervention are: (i) the treatment of minority religious beliefs; (ii) the adaptation to the family obligations and work schedules of learners; and (iii) the role of local languages.

The concern with economic, financial and fiscal issues within sector analysis is critical if the proposed project is to contribute positively to a DMC’s educational objectives and not impose excessive recurrent cost burdens. Within sector analysis, the following checklist of economic and financial assessments may have to be considered: (i) economic growth perspectives and international financial relationships; (ii) recurrent cost impacts and fiscal absorptive capacity; (iii) cost recovery and privatization alternatives; (iv) manpower demand and supply analysis including for teachers; (v) unit (e.g., per student, per class) and cycle (per graduate) costs for major subsectors; and (vi) returns to education.

Management absorptive capacity is an equally critical determinant of immediate project success (implementation performance) and long-term sustainability (performance during the project operation period). Important aspects to be considered here are: (i) organizational culture and structure; (ii) capabilities/skills of available personnel; (iii) supportive information systems; and (iv) incentive structures for teachers and qualified senior personnel.
The Bank's own medium-term strategic priorities are a second major aspect of educational policy. The Bank's medium-term strategy places special emphasis on the following five key development objectives, which are closely interrelated and mutually reinforcing: (i) economic growth, with the private sector as a major contributor to development; (ii) poverty reduction, through improved access to employment, income generation opportunities and social services; (iii) WID issues, including increasing women's economic efficiency and socioeconomic status as well as individual capabilities; (iv) population planning, including maternal and child care, family planning, and human resource development; and (v) environmental protection. The latter strategic objective comprises protection of the environment from the pressure of development and population growth as well as remedying past degradation of the environment and depletion of natural resources.

These strategic objectives and priority concerns have direct implications on the selection, design and appraisal of Bank-assisted education projects. The complementary role of education to physical capital, to technology, and to private sector growth will help contribute to economic growth. Similarly, the provision of a better educated and skilled work force will respond to the quantitative and/or qualitative needs of a diversified economy and constantly changing technical requirements. The Bank's medium-term strategy involves education in all five areas of its development agenda. In each case, the design of educational investments should facilitate and support the other investment activities of the Bank and the DMCS. Furthermore, educational activities should be designed and appraised with full consideration of the broader societal context, existing institutional capacities, and intra- and intersectoral complementarities. Educational activities, projects and programs can be made more cost effective if sector analysis has been carried out in sufficient detail to identify problems and specify feasible alternatives for intervention.

For the education sector as well as for all other sectors of intervention, the Bank's comparative advantages and DMCS' needs should be combined effectively to meet the developmental need of the region. As indicated in the Bank's Medium-Term Strategic Framework, the Bank's approach to operationalization of its strategies involves a full recognition of the diversity among DMCS and the need to relate Bank and DMC priorities. The following key considerations can help operationalize the Bank's strategy: (i) incorporating Bank objectives into operational plans and country programs in an iterative manner; (ii) focusing the Bank's analytical and diagnostic capabilities on operational planning, design and implementation; (iii) involving all Bank and DMC participants in the planning process; (iv) providing relatively long lead times and far-sighted, flexible planning operations; and (v) relating the three-year rolling work plans that result from this process to the Bank's strategic goals, resource allocation patterns and budget.

The convergence of the national sector policies and the Bank's strategic priorities can be achieved only through open and equitable discussion between the Bank and its DMCS. To promote efficiency in operations and increase cost-effectiveness, the agreements reached in these policy dialogues should incorporate
the Bank's traditional design criteria of learning from the lessons of previous projects, promoting complementarities with recent and ongoing projects, and encouraging donor coordination.

Sector analysis should also be useful in justifying the sector approach followed by a number of loans in the education sector. Such loans require appropriate sector policies, well-conceived and feasible plans/programs, and strong sector institutions. It is particularly important to gauge the managerial capacity and experience of the executing agency to implement the sector loan effectively. In reality, however, it often is observed that sector institutions still lack sufficient implementation capabilities. In case technical assistance for policy improvement and institution building is deemed necessary, it is preferable to provide such assistance prior to a loan rather than piggybacking technical assistance to the sector loan.
CHAPTER IV
Internal Efficiency Justification

The internal efficiency justification of an education project should not be viewed independently of its anticipated external impact. While it has to be emphasized that the latter (e.g., economic benefits) are the ultimate justification of educational activities, such impact depends critically on the production of final educational outputs—more and better skilled graduates—which typically is an internal efficiency criterion. In other words, internal efficiency is a necessary but not a sufficient condition for bringing about the ultimate development impact. This chapter reviews descriptively and concisely the major internal efficiency criteria. The Bank's logical framework model, bringing out linkages between education project inputs, outputs, effects and benefits, is presented in Appendix 6.

As reliable information on quantitative or even qualitative external impact indicators often is limited at the appraisal stage or over the early part of the project, appraisal will have to be based more on a project’s short-term changes in educational inputs and processes and expected outputs. These are easier to ascertain at appraisal. In such cases, the project appraisal analyst must provide a convincing argument as to the broader relevance of these changes. For example, a project that upgrades teacher qualification, alters the existing curriculum, changes the availability of textbooks and improves managerial staff skills requires a two-level justification. First, it is necessary to demonstrate how the short-term changes in inputs or processes will increase the production of desired educational outputs in the medium term. Second, these outputs themselves must be linked to beneficial external or developmental effects, that are more intangible and long-term in nature.

A detailed checklist of major internal efficiency criteria which may have relevance in the assessment of an education project is presented in Appendix 12 and summarized in Figure 7. It is emphasized again that a given education project usually involves only a limited number of these criteria. The checklist only suggests the possible range of criteria that may have to be considered in the justification of a given project. The choice of the specific inputs, processes and desired outputs is critically determined by the project concept, its scope and specific targets.

Two main cost criteria should be emphasized, the first being proper pricing of project inputs. The assessment of the proper pricing will be based mainly on the requirement that the project design justify price levels wherever possible. The second criterion is the determination that project inputs are combined in the least-cost or most cost-effective manner. Given the scale of the activities, the proposed mix of resource inputs as the least-cost combination will be appraised based on the analyst’s experience with similar projects and will show why this particular resource combination was selected over others. The project design should include a comparison of the selected project input structure with other feasible but more costly alternatives.
FIGURE 7
Major Categories of Internal Efficiency Criteria

1
COSTS

2
FINANCING

3
INPUTS
3.1 Teachers
3.2 Facilities
3.3 Equipment
3.4 Curriculum
3.5 Instructional Materials
3.6 Administrative Capacity

4
PROCESSES
4.1 Administrative
4.2 Instructional

5
OUTPUTS
5.1 Attainment
5.2 Achievement
5.3 Equity

INTERNAL EFFICIENCY JUSTIFICATION
Changes in education financing of public and private costs as a result of the project should be assessed in terms of incidence and incentives. The project analyst should judge the feasibility of the proposed financing scheme and its equity, e.g., assessing the affordability for rural low-income parents to contribute partially to the cost of their children's schooling. The project effects on cost and financing must be considered in the context of the larger financing environment that includes the Bank, other external agencies, and public and private sources.

Assuming that the immediate objective of an education project is to change the inputs available to an educational activity, the categories and measures of inputs (Appendix 12) are important criteria to assess. Five major categories, all of which are not necessarily present in a given project context, can be distinguished: (i) teacher characteristics; (ii) facilities; (iii) equipment, curriculum/instructional materials; and (iv) administrative capacity. As teacher-centered instruction is the most common form of classroom organization, many projects include a teacher training component. The commonly studied characteristics are indicated in Figure 7. The project appraisal analyst should assess the impact of the project on indicators or determinants of these characteristics.

Educational facilities are a second important input category that has been the major focus of external assistance since construction necessarily involves a large initial cost. The provision of facilities has the ability to encourage learning and is often seen as a minimum condition for education. However, as there is a wide range of facilities quality over which the facility has little variable impact on educational outputs, the project appraisal analyst should make a cost-effective choice and consider the common characteristics of facilities effects. In case the project has a rehabilitation component, the condition of existing buildings is important and could be classified as follows: (i) acceptable; (ii) requiring maintenance or repairs to improve instructional effectiveness; (iii) requiring repair to provide minimum safety; or (iv) should be abandoned.

Equipment is the second hardware component that may be a pre-requisite for the success of a training or education program. The equipment to be used should not be outdated, too advanced, or inappropriate given the local technology. Equipment availability must be judged in terms of its appropriateness to training needs and the value of experience with the equipment in post-training employment. In appraising equipment inputs, four characteristics should be assessed: (i) availability; (ii) suitability; (iii) condition; and (iv) utilization. The last point is a requirement in achieving project cost-effectiveness. The education project design should incorporate measures (e.g., training skilled operators and ascertaining the timely availability of complementary resources) to overcome potential barriers to effective equipment utilization.

More relevant and effective curriculum and better instructional materials (e.g., textbooks) are expected to promote improvements in the quality of education, which is a key objective in most education projects. The following key criteria for curriculum appraisal should be considered: (i) the relevance and understandability of the curriculum; (ii) the dissemination of the curriculum, including the requisite training and materials; and (iii) availability and utilization.
The strong correlation found between textbook availability and instructional effectiveness also results from other conditions determining the quality of the materials and their use.

Administrative capacity is the final major input category. The appraisal analyst should first consider whether the project effects on administrative capacity are appropriate to the educational organization's external setting (e.g., adequate funding for better qualified inspectors) and internal incentives (salary level). The characteristics of administrators that might be considered by the appraisal analyst are similar to those for teachers but with a special emphasis on: (i) educational attainment; (ii) administrative training; (iii) teaching and administrative experience; and (iv) the organizational context and incentives.

The appraisal analyst should consider the inputs both individually and as a part of the global input mix. It is the manner in which inputs are combined that will determine the educational project's effect on educational outputs. For example, the success of curriculum projects is often a factor of teacher quality. The appraisal analyst has the difficult task of assessing how and to what extent instructional and administrative processes will combine inputs to produce desirable outcomes (educational outputs and ultimate impacts).

 Provision of educational inputs produces educational outputs only if the former are used appropriately and combined through educational processes, which are either administrative/managerial or instructional in nature. These processes are the key link between inputs and outputs, such that the project analyst should assess the criteria to appraise them. The administrative/managerial process criteria include the institutional characteristics of accountability within the educational hierarchy and behavior indicators such as contacts between the administrators and the teaching staff and local community. The appraisal analyst should identify the assumed project effects of the reformed administrative processes on the operation of the educational activity and assess whether the assumed impact would be realistic.

The instructional process criteria include teacher and student time allocations to teaching and learning. Teachers have administrative, instructional and monitoring/evaluating tasks. The project analyst should give careful attention to plans to make effective use of the new developments in communication technology, as this has a major bearing on process relationships. The appraisal analyst should always make a judgment about the fit of the project to the existing or anticipated forms of administrative and instructional processes, as the latter are a key determinant of a project's effectiveness.

The scope of educational output comprises attainment, achievement and equity. The project appraisal may consider a variety of appraisal subcriteria (checklist in Appendix 12). The assessment of educational attainment (in schools, training programs or non-formal activities) may be based on indicators such as access rates, attrition rates, repetition rates and graduation rates. Achievement indicators are either cognitive or non-cognitive. Cognitive achievement outcomes mainly include school and external examination/assessment results while non-cognitive achievement outcomes refer broadly to changes in values, attitudes or
behaviors. The assessment of expected achievement outcomes at appraisal, especially those of a non-cognitive nature, is a difficult task.

Equity effects are defined in terms of access to, participation in, and the result of educational activities. Equity indicators that can be appraised include gender, income class, location and social stratification.

It should be emphasized that the outputs produced by a project activity rarely will be measurable directly at the appraisal stage. However, if the appropriate requirements of project design have been met, the project analyst will be in a position to specify the nature of the outputs and their probable impact. The appraisal analyst should also indicate how the expected outputs will be monitored relative to existing baseline data over the project life and, if appropriate, beyond. The combining of selected cost, finance, input, process and output effects for the proposed project should allow the analysts to come to a judgment as to the project's internal efficiency. If the project is not found to be internally efficient, the alternatives are to reject the project or to recommend design changes that would make the project internally efficient. If the project initially or subsequently is found to be internally efficient, the focus of the analyst must shift to issues of external efficiency.
The potential external efficiency impact—net benefits—generated by education projects include economic, equity-related, institutional, political and environmental effects. A detailed checklist of external efficiency criteria is given in Appendix 13 and the major external impact criteria are presented in Figure 8. It should be emphasized, again, that a given education project is not expected to cover the entire potential range of external efficiency criteria. However, the project appraisal analyst will benefit from considering various alternative effects in justifying the individual project. Depending on the specific nature and subsectoral focus of a given project, the appraisal analyst may even find it necessary to expand the checklist of potential external effects that should all be assessed as to their importance and incidence. Each project will be characterized by a particular set of external benefits that justify the proposed project. For example, if a DMC relies heavily on expensive expatriate skilled labor in senior positions throughout the economy and if the educational setting is characterized by capable institutions and an appropriate, stable policy framework, an educational project that promotes quality improvement and that is instrumental in increasing significantly the educational output at post-secondary education level could be expected to have mainly economic effects such as localization, employment and earnings, and budgetary impact.

At the appraisal stage, usually it is feasible to identify and assess potential external benefits only in broad qualitative terms. There is also a need to identify a corresponding set of indicators designed to monitor and assess expected project effects as part of a continuous benefit monitoring and evaluation (BME) process. This identification could be done as part of the feasibility study, further to be refined eventually by a BME consultant early in project implementation. Project-related BME should be an important design consideration and inherently should be part of the overall project structure.

The feasibility of measuring and assessing potential external efficiency effects at the time of project appraisal is an important concern. Since a substantial part of external outcomes normally will occur outside the immediate education setting and may be indirect and mainly long-term in nature, the appraisal analyst must consider the extent to which acceptable accuracy can be obtained in qualitatively or quantitatively assessing such outcomes as intergenerational impact, enhanced social mobility, national identification, improved educational management information system and improved policy framework.

Generally speaking, the effort required in terms of time and financial resources to make quantitative and/or monetary estimates of external benefits may not be justified in view of the paucity of available data. However, if detailed and reliable data from relevant tracer studies are available, it may be feasible to estimate the likely monetary impact of the enhanced employability of the graduates. For example, if a technical and vocational education project aims to
FIGURE 8
Major External Impact Criteria

Economic/Financial Impacts (Benefits)

Social (Equity) Impacts (Benefits)

Environmental Impacts (Benefits)

Institutional/Organizational (Impacts) Benefits

Political Impacts (Benefits)

EXTERNAL EFFICIENCY JUSTIFICATION
achieve specific objectives such as enhanced relevance of curricula, improved quality of education, and enhanced cost-effectiveness in a high unit cost education setting, there may be two economic benefit categories potentially quantifiable in monetary terms: (i) the actual cost savings as a result of lower unit costs, attributable, e.g., to rationalization and lower drop out rates; and (ii) the enhanced employability and earning potential of better skilled educational output. The latter category of external efficiency benefits can be further classified as: (i) increased income, if the time spent in finding a suitable job can be reduced; and (ii) incremental daily earnings, if the employers pay higher salaries to persons with better and more relevant skills.

Most of the other external benefit categories are largely or wholly intangible in nature (e.g., specific socio-cultural benefits such as promotion of traditional values, the benefits of effective donor coordination, and enhanced regional equity), and estimating their monetary impact is not operationally feasible. Moreover, even when the monetary impact of a given education intervention can be determined in stable educational and societal conditions, it should be observed that educational and societal development in many DMCs takes place under rapidly evolving conditions that would significantly increase the degree of uncertainty and thereby reduce the accuracy of any projection. In short, because of the limited quality and quantity of information and the prevailing uncertainty, the project appraisal specialist will find it more useful to focus on the alternative, qualitative option.

The qualitative option consists of identifying the true external benefit of subcategories and assessing their relative importance in qualitative terms. A key consideration is the demonstration that the project will be sustainable in terms of (i) continued delivery of high-quality educational services in a cost-effective way; (ii) assured operation and maintenance of all project facilities; (iii) adequate financing that is affordable for families, local communities and public sector educational entities; (iv) adequate long-term institutional capacity, including a favorable policy environment and good sector/project management; and (v) political support at all levels.

The qualitative assessment of the expected external impact may also include a concise picture of the logical framework, which should (i) identify the internal effects (nature and extent) the project is expected to promote; and (ii) specify the assumptions that link the immediate internal effects (mainly in terms of education inputs and outputs) to the more remote and indirect external impact. Educational outputs (e.g., skills achievement, number of graduates) should be linked to the external impacts by explicitly stating the assumptions under which the latter may occur. For example, the employment of graduates produced by a distance secondary education project will be dependent on a set of assumptions such as (i) region-specific labor shortages given the current and expected economic activity; (ii) intersectoral employment exchanges; and (iii) development of transportation facilities to facilitate migration or commuting. Similarly, skills acquired in a literacy campaign will have differential external impacts depending on the effective geographic distribution of reading materials and decisions made.
by certain agencies (e.g., health or agriculture ministries) to use written materials in their extension campaign.

The checklist of potential economic effects includes the following benefit categories, many of which are closely interrelated: (i) better employment prospects; (ii) higher daily earnings; (iii) enhanced general productivity in the economic sectors; (iv) higher economic growth; (v) health and population related benefits; (vi) changes in consumption behavior and patterns; (vii) intergenerational effects with economic spin-offs; (viii) fiscal capacity, including tax revenues and the demand for social services; (ix) consolidation of benefits achieved under previous projects; and (x) cost savings at the micro-level (within educational institutions) and at the macro-level (reduced public health expenditures). There is a consistent and strong empirical correlation between increased educational attainment and the probability of finding quickly suitable employment. Properly designed educational interventions should impart skills and knowledge to project beneficiaries (students, teachers, administrators), which will increase their productivity either in self-employment or in other employment. The expected impact upon the fiscal capacity may be illustrated with reference to a higher education intervention; in a societal/educational setting characterized by a high proportion of expatriate labor in senior positions in the education and other productive economic sectors, a high cost educational delivery system, and high progressive income taxes, an educational intervention that promotes localization of senior positions and higher educational output may well result in a flow of financial savings that more than offsets incremental capital and operational costs.

The broader category of social- or equity-related impact of education may include: (i) income-related equity or the expected contribution to poverty reduction; (ii) positive social effects on female participation (gender-related equity); (iii) a more balanced regional distribution of educational facilities (regional equity); and (iv) specific socio-cultural benefits such as enhanced social mobility and cultural effects in terms of transmission of values, beliefs, practices. Although the equity concept is to some extent inherently arbitrary and subjective, it appears to be feasible to define its operational meaning in terms of measurable objective indicators such as income, gender, location and racial/ethnic vulnerable groups. It may even be feasible to establish certain rates or proportions of inclusion, participation and mobility that may be accepted as standards of the equity criterion.

The favorable impact of education projects on institutional structures and processes has received increased attention in recent years, especially from international assistance agencies. Decision-makers and project analysts appreciate increasingly the manner and extent in which educational projects affect the organization and management of public and private sector institutions. Such institutional benefits (overall enhanced sector efficiency) broadly comprise the following subcategories: (i) improved organizational/institutional structure; (ii) strengthened institutions through enhanced personnel capabilities; (iii) development of more effective coordination and collaboration with other agencies/institutions; (iv) expanded policy dialogue and enhanced policy context for
initiating reforms; and (v) strengthening of informational resources (statistical data availability) and their effective utilization, with favorable effects on sector/project management. An improved statistical educational data base has two major effects: (i) better identification of key issues and strategies/programs/projects to address priority needs, which is expected to be reflected in the Bank’s operational strategies/programs; and (ii) enhanced potential to develop a feasible and effective educational management information system, which is a key determinant for the successful implementation of project-related benefit monitoring and evaluation systems. While institutional effects, compared with, for example, social or economic benefits, may be a less important benefit category in certain education projects, many other projects are specifically designed with these institutional benefits as part of the primary rationale for the project.

Political benefits are a special category of effects which may be important in certain educational settings. Some DMCs may have established a set of political criteria which the educational interventions are expected to promote, e.g., acceptance of a rule of law, national reliance and identification, belief in democratic structures and increased individual participation in the political process.

A sense of social responsibility and a concern for the long-term context within which educational activities must take place both have encouraged project analysts to consider as part of their appraisal work the impact of educational projects on the environment. Effects include: (i) more efficient and cost-effective energy utilization; (ii) improved environmental sanitation in the educational institutions (water supply, sanitation, drainage); and (iii) promoting environmental enhancement (site enhancement, and environmentally friendly architectural design) and environmental awareness (e.g., promotion of organic solid waste recycling in schools). The environmental effects rarely will be the primary justification of educational activities unless a specific project would focus only on environmental awareness building, though environmental effects could have secondary importance in given educational contexts. At design as well as at the appraisal stage the project analyst should be aware of any potential negative impact educational activities might have on the local environment, especially in those projects that include a significant hardware component.

It should be emphasized again that external project justifications assume that project identification, design and internal efficiency criteria were satisfied in the first place. The actual process of project design may not follow the sequence of the four appraisal levels. For example, designers may establish external effectiveness as goals and work back to build internal efficiency criteria into project design to help promote directly the generation of external effects. However, project appraisal analysis will become more transparent if it is structured appropriately to follow the justification sequence from Levels 1 to 4. Through modifications made in project design at each level, a project may be restructured into one that has a more acceptable project design and rationale and greater internal and external efficiency.
The logical framework for appraising education projects can also be understood as a dynamic model (Figure 9). When the educational program or project has been shown to be internally efficient, then, if valid assumptions hold (e.g., emerging labor shortages due to increased economic activity), external effects are expected to be forthcoming (Cycle 1). This will lead to changed societal conditions which lead to a new series of educational interventions (e.g., through enhanced fiscal capacity, better education-employment match) during the next cycle (Cycle 2). In this cycle, again, valid assumptions should link the modified set of internal efficiency considerations to the new set of external efficiency impacts. If a series of educational interventions, e.g., in technical/vocational education and training, have been financed over, say, one or two decades, then the appraisal analyst could attempt to analyze the successive changes in internal efficiency and external impact as well as the validity of the assumptions that link enhanced internal efficiency to the favorable developmental impact.

FIGURE 9
The Logical Framework for Appraising Education Projects as a Dynamic Model
A. Introduction

The project appraisal framework presented in the previous chapters emphasized that education projects should be justified in terms of their internal effects and ultimate external impact. Identification, quantification and valuation, if feasible, of economic impact is a critical part of the external efficiency justification. Economic analysis of education projects is one essential step in project design analysis, carried out mainly at feasibility and loan fact-finding stages, and is considered in this Framework as a Level II design criterion.

This chapter presents a concise set of guidelines touching upon various aspects of economic analysis, such as (i) the demand for educational services; (ii) cost-effectiveness; (iii) beneficiaries and benefits; (iv) cost benefit comparisons; and (v) risk analysis.

A recent Bank study\(^4\) provides broad empirical evidence at the macro, sectoral or subsectoral levels that social sector investment, including investment in the education sector, generate significant economic returns. Studies applying conventional cost-benefit analysis show that social and private rates of returns to education are generally well above the economic opportunity cost of capital, assumed to be about 10 to 12 per cent. The findings of these studies are summarized in the Bank policy paper on education:

"Irrespective of academic disputes on how to operationalize and measure the social and private benefits of education and in spite of all scholarly controversies on the appropriate arithmetics, there is pervasive evidence that human capital investment yields higher economic rates of return than physical capital investment, particularly in developing countries. It is also safe to conclude from pertinent research that formal basic education (primary and general lower secondary education) is socially and economically more profitable than any other form of education."

Moreover, the research indicates decreasing rates of return to investment in education as per capital income increases. Country-related research confirms these findings. Rates of return to investment in education at various educational levels are, in general, higher than the opportunity cost of capital. Country-related research also confirms that private rates of return to schooling are normally higher than social rates of return.\(^5\)


\(^5\) Dieter Bucher, \textit{op. cit.}, Chapter V. Economic Analysis of Social Sector Investments.
Although the methodology for carrying out EIRR-analysis for an individual education project is well established and although ex-ante or ex-post quantification/valuation of educational benefits is theoretically possible, such analysis requires reliable and relevant data on anticipated monetary impact, which is extremely difficult to predict. In the absence of valid and reliable historical series data on (i) the graduates from various institutions and their occupations; (ii) changing wages in real/nominal terms; (iii) horizontal/vertical job mobility over their lifetimes; and (iv) the corresponding training costs and economic indicators, it does not appear appropriate or feasible to apply cost-benefit analysis to an individual project. The assumptions that would have to be used to generate data for an EIRR computation would be highly controversial and ultimately would depend on personal judgment. Therefore, if the plausibility and validity of the assumptions used are not tested, cost-benefit analysis would be reduced to a mere guessing technique, a quite misleading approach for justifying education projects. Appendixes 14 to 16 give further details on the concept of cost benefit analysis, approaches to economic evaluation of education projects and limitations of CBA as applied to individual education projects.

The review of appraisal documents prepared by international development institutions such as the Bank, the World Bank, Inter-American Development Bank, UNICEF, etc., confirms that cost-benefit analysis (EIRR analysis) is not used to justify educational intervention. The operational guidelines and practices of these institutions do not include the requirements that cost-benefit analysis be carried out at the appraisal stage phase for a particular education project. Therefore, EIRR analysis is not presented in the appraisal documents. A main reason for this is that educational benefits are more remote in time, less certain in incidence and in amount, and are better measured in non-monetary forms.

This Framework does not advocate the use of CBA during project processing, and particularly at the appraisal stage, to justify a given education project. However, if reliable and relevant data are available and if assumptions are found to be plausible, EIRR analysis at the subsectoral level (especially for higher education, technical/vocational education and secondary education with technical/vocational focus) carried out as part of earlier sector analysis work, may strongly support the overall justification of a given educational intervention.

In the absence of conventional criteria (IRR analysis) to assess the financial and economic viability of educational projects, the Bank’s current Guidelines on the Economic Analysis of Education Projects suggest the use of the following criteria in the socioeconomic justification of education projects: (i) macroeconomic justification; (ii) assessment of the need for the project’s educational services

---

6 In those exceptional cases where an EIRR analysis is presented in the appraisal documents, the analytical work was usually carried out as a separate exercise mainly focusing on a specific subsector and not on the education project per se.

7 This is in contrast to costs that are more immediate, more certain in amount and incidence, and more in monetary form.

8 The Bank’s Guidelines for Economic Analysis of Projects, Appendix 11.
(demand analysis); (iii) identification of all project costs and benefits; and (iv) ascertaining the cost-effectiveness of the educational intervention. These criteria should be further adhered to in the Bank's processing work for education projects. The proposed framework promotes the further use of these criteria and emphasizes the need for clear identification of educational outputs, outcomes and broader developmental impact using the Bank's logical framework approach. As has been shown in the previous chapters, the external efficiency justification of a given education project is the ultimate justification of any investment in that sector. The appraisal analyst should start with a strong internal efficiency justification demonstrating how the educational outputs, as spelled out in the appraisal document, will be produced during the project implementation period.

Investment in individual educational projects must first be justified at the macro or sectoral level for the period of time during which a proposed project is to be implemented and operated. Such justification must be established for each individual education project to be implemented in a particular time period, prior to justifying the project under consideration through the least-cost or cost-effectiveness approach. In this regard, it should be noted that the issue of allocative efficiency (i.e., given limited resources, how much to allocate to the education sector and to competing sectors, and how much to allocate to each educational subsector) should be addressed within the general and sectoral development plan, prior to country programming.

B. The Demand for Educational Services

1. Assessment of Project Needs

The need for a project's services, based on demand analysis, is a key factor to be considered in the economic justification of a given education project. The project needs, in terms of software and/or hardware components, should emerge logically from a review of the educational system, including an analysis of issues to be addressed by the project. The two conventional approaches used to assess the need for an education project are (i) social demand; and (ii) the manpower requirements (MR) approach.

2. The Need for Bank Assistance to Primary and Basic Secondary Education

Even when there is no clearcut private demand for primary education, Bank assistance to this subsector may be justified on the basis of ethical, social or political considerations, or by using the basic needs argument (education as a merit good). The social demand approach is generally considered adequate for (i) primary education; (ii) mass education, in the case of very low participation and high illiteracy rates; and even (iii) basic, lower secondary education.
3. Application of the Manpower Requirements Approach

The manpower approach, on the other hand, is adequate for (i) technical and vocational education and training programs; and (ii) tertiary educational interventions. The approach is based on the assumed functional relationship between manpower needs of the economy (dependent variable) and the economic development objectives, either for the whole economy or for a given economic sector. To achieve the economic objectives of higher productivity and production, investments in both physical and human capital are necessary. While there may also exist a high social (in addition to private) demand for vocational, technical, engineering and higher education, the MR approach should be used in those cases to assess the need for the project. In such projects, a review of the general macroeconomic performance is justified and could cover the following: (i) a review of factors influencing overall economic growth; (ii) major issues in economic development; (iii) economic development strategies, including development projects; and (iv) a discussion of economic sectors that show a demand for semi-skilled and skilled laborers.

The MR approach becomes more meaningful if a larger proportion of the project educational output is expected to enter directly the technical/scientific and other fields of employment. It is equally important to identify the possible factors explaining the shortage of skilled manpower, e.g., (i) inadequate supply (in quality and quantity) by the ES; (ii) emigration of the better skilled labor force; or (iii) absence of in-plant training programs. The shortage of skilled labor should clearly emerge from reliable demand and supply forecast data. The MR approach is particularly meaningful when the demand-supply mismatch is important and/or where the project is expected to generate a significant supply of skilled persons. The manpower projection methodology is given in Appendix 16.

4. Education – Employment Linkages

Wherever applicable, especially in general secondary education, technical/vocational and higher education, it is necessary to analyze/assess education-employment linkages, starting by indicating the existing education employment mismatch. The review of possible linkages should result in a series of action-oriented recommendations to strengthen those linkages. The financial implications of such action plan should be discussed as well. Through such linkages, it is anticipated that the curricula and qualification of graduates will conform more closely to the technological requirements of the different economic sectors.

5. Demand for Private Sector Educational Services

In many DMCs, the supply of public educational services is largely inadequate to meet the high demand for education such that private sector educational institutions at the secondary or tertiary level become important providers of educational services in terms of student enrollment and educational
output. In view of the rising demand for education and given limited public resources, the role of the private sector in educational development is expected to increase. Sector analysis should provide the necessary data (number of schools, enrollment vs. output, internal and external efficiency) to enable proper planning of the global supply of educational services. The Bank has a major role to play in promoting complementarity between the public and private sector in interventions and in enhancing the internal and external efficiency of the private sector to make the overall ES more effective and capable to perform its role.

C. Equity Impact

1. Identification of the Target Population

After the need for the project services has been established, the next step is identifying project beneficiaries and classifying them as direct beneficiaries (students/trainees/academic or teaching staff/managerial and administrative staff), or indirect or more remote beneficiaries (beneficiaries' families, local communities, specific economic sectors). The direct beneficiaries constitute the target population. It is necessary to obtain the following profile data: (i) gender; (ii) location (urban vs. rural); (iii) income (low, middle, or high income level); (iv) socio-cultural group; and (v) occupational and educational stratification. In projects expected to have a significant poverty reduction impact, it is important to estimate the number of direct beneficiaries below the poverty line and identify those belonging to vulnerable groups. These data will enable the project analyst to assess the anticipated project impact, which is useful for appraisal, BME and post-evaluation work.

The distinction between "direct" and "indirect" beneficiaries is different from "intermediate" and "ultimate" beneficiaries. For example, in a secondary education project emphasizing the need for teacher training and involvement in improving the educational quality, teachers may be considered an intermediary educational output (to be produced during project implementation), which is at the same time an educational input in the production of higher qualified graduates (during and beyond project implementation) who may either enroll in tertiary education program or be absorbed directly by the economy. These graduates are the ultimate beneficiaries of the project. In a teacher training project, the teachers are the direct project beneficiaries (project output). Students who will benefit from having better trained teachers are the ultimate beneficiaries (educational output). Enhanced employability and earning potential are examples of educational outcome (economic impact).

2. Equity-related Benefits

As shown in Figure 4, the equity impact should distinguish clearly between gender-related equity, income-related equity (contribution to poverty reduction), regional equity (balanced geographical distribution of educational opportunities),
and socio-cultural equity. Social analysis, including an initial social assessment and a social design study (SDS), may be required to (i) provide hard data on the profile characteristics of the target population; and (ii) enable a qualitative and or quantitative assessment about the magnitude and nature of the anticipated social or equity-related benefits. The assessment of the latter is particularly important for basic and informal education projects focusing on the poorer strata or vulnerable social groups in the more underdeveloped rural areas. Those projects are expected to make a major contribution to poverty reduction objectives and to different categories of equity-related benefits, including gender-related, regional, and socio-cultural equity.

3. Beneficiaries and Benefits

There is a close relationship between beneficiaries and benefits. In education projects the distinction between direct and indirect beneficiaries has immediate implication on the category of benefits expected to be generated from the project. Direct beneficiaries (e.g., graduates/trainees and teachers) are reaping individual and family-related benefits in the short and medium term while indirect beneficiaries are mainly reaping society-related benefits in the medium and long term. The latter group of beneficiaries includes linked industries (regional employers of graduates/trainees), small-scale commercial establishments, workers and farmers who are benefiting from better community services.

4. Distributional Impact

From the viewpoint of economic analysis it is particularly important to assess the distributional impact (DI) of education projects. Positive distribution impact refers to income-related equity and materializes if students/trainees from lower-income or more vulnerable groups are comparatively more favored than those from the higher-income groups. At appraisal, it is necessary to assess the DI and incorporate measures to mitigate negative DI or reinforce positive DI into the project design, wherever appropriate. The positive DI of primary education projects, for example, may be reinforced by free distribution of textbooks and school lunches to poor students. On the other hand, the expected negative DI of an expensive tertiary education may be mitigated by increasing tuition fees for students from the higher-income social groups and introducing a suitable cross-subsidization scheme for students from low-income families or vulnerable social classes.

5. Affordability Analysis

The financial impact of proposed cost recovery on target beneficiaries should be assessed at the appraisal stage. This is particularly important for those education projects focusing mainly on basic and/or informal education for which poverty reduction and equity are major criteria for justifying the project. The
questions of affordability and equity are two important interrelated considerations. In affordability analysis all private costs, including the opportunity cost of foregone earnings, should be considered and related to the income of the target student families. In situations where information on private costs, income and employment opportunities is limited or lacking, a sample survey to collect those data is advisable. Such a survey should be part of the initial social assessment exercise at PPTA stage.

6. Maximizing equity as a project objective

In view of the enhanced social awareness and the importance of the analysis and assessment of the equity issue, it will be useful in certain projects to explicitly include a distribution impact or broader social or equity objective among project objectives, especially in those education projects expected to have a maximum poverty reduction impact. This approach could provide a better focus on the social benefits expected to be generated by the project activities. In this context, it is important to identify specific measures that directly contribute to the maximization of the equity impact objective. Maximizing social or equity impact may be ascertained in various ways, depending on country- and project-specific circumstances, for example, by (i) determining the optimum location, number and size of vocational/technical schools to maximize impact on regional economic development in a cost-effective way; (ii) appropriate selection of the catchment areas coinciding with the more backward regions; and (iii) provision of student hostels for promising students from below-poverty-line or vulnerable social groups, etc. In cases in which sufficient educational demand of target groups is not forthcoming, special incentives to increase enrollment, continuation and retention may be needed. For primary education sector projects, these include, for example, (i) incorporating a subsidized nutrition program; (ii) automatic promotion for the lower grade (1-3) students; and (iii) scholarships for continuation of studies.

7. Identification, Quantification and Valuation of Equity-related Benefits

While it is generally feasible to (i) identify the nature of equity-related benefits and other categories of social benefits (such as enhanced social mobility); (ii) provide an estimate of the number of direct project beneficiaries; and (iii) present the social profile characteristics of the latter, it should be noted that social benefits are largely intangible in nature and inherently difficult to quantify or express in monetary terms. This is particularly true for gender-related, regional and socio-cultural equity benefits. However, income-related equity (distributional impact, basically a socioeconomic benefit category) is potentially measurable in monetary terms if the higher earning potential of the poorer beneficiaries can be determined.
D. Financial Considerations

1. Analysis of Financial Costs and Budgetary Allocation

A detailed analysis of financial costs (expenditures to be incurred on civil works, equipment, instructional materials, consulting services, training programs, etc.) is important to (i) assess the funding or financing arrangements; (ii) determine cost-effectiveness; and (iii) appraise the distribution impact of the project. The budgetary allocation to education has to be analyzed and assessed in view of the financial constraints frequently faced by governments. It is also necessary at appraisal to assess the adequacy of the budgetary allocations to meet the estimated project costs, and more specifically (i) the capability of the government to mobilize the needed resources (counterpart funds); (ii) its funding arrangements (e.g., through cost recovery); and (iii) its commitment to implement the project.

2. Review of Educational Expenditures

At the appraisal stage it will be useful to (i) review and assess past, current and future total government expenditures on education; (ii) bring out growth trends for both capital and recurrent expenditure; and (iii) indicate the share of total education expenditures in GNP and total government expenditure. If, as is usually the case, the appraised project addresses issues in a particular subsector (e.g., primary education, lower and higher secondary education, informal education, etc.) it is useful to (i) provide a comparative picture of public spending in the different education subsectors; and (ii) indicate the growth trend in subsectoral expenditures. These data are helpful in assessing priorities and shifts in policy direction of the government.

3. Incremental Recurrent Cost

At the appraisal stage, it would be useful to indicate the incremental recurrent cost (IRC) on an annual basis. It is important to make a distinction between IRC during and after project implementation, as they may imply a different funding arrangement. The latter must always be assumed by the government while the former, in some cases, may be Bank-financed, preferably on a declining basis. The estimated IRC expressed as a percentage of the total annual recurrent budget for the subsector concerned is a useful indicator in assessing the financial capability of a government to assume the recurrent costs due to a project. The IRC provides a guideline on the anticipated annual recurrent budgetary requirements to sustain education quality and internal efficiency beyond the project implementation period. The government's capability to finance the IRC may be assessed by stating, for example, that the level of IRC and the corresponding recurrent cost provisions are acceptable given the high priority of education and the small proportion of IRC in total subsectoral recurrent
expenditures. Such a statement should be supported by figures. It will be useful to separate IRC during and after project implementation from specific project management/implementation costs that phase out at project completion.

4. Cost Recovery

Wherever applicable and feasible, adequate cost recovery measures (e.g., tuition fees, community contributions, revenues through production units, income from special courses, charges for use of the school’s facilities, etc.) should be identified. In this regard, the cost recovery ratio or index (student fees and other net revenue flows/total budgeted recurrent expenditures) can be used to assess their financial impact on the government’s recurrent cost burden. In basic and informal education projects, cost recovery is generally not advocated because of equity reasons and taking into account (i) government education policy (provision of free and compulsory education, education for all); and (ii) prevalent low gross enrollment rates and high illiteracy rates in certain educational contexts.

5. Affordability

In relation to cost recovery and in view of the anticipated equity impact, it is necessary to assess the affordability of existing and expected increases of private costs (tuition fees, other contributions by the family, indirect costs such as transport costs). Increased school fees should be consistent with the objective of providing education/training to the lower income members or more vulnerable groups of the community. In some instances, discrimination in tuition according to income (more tuition to students from higher income families) may be a feasible means to achieve more income-related equity.

6. Classification and Finance of Project Costs

Besides providing project cost data by category of expenditures (project inputs) it would also be useful to provide cost data for the different hard and soft components. This requires a matrix linking individual inputs to project components. This is especially useful in case the project components coincide with the project objectives. The standard percentage limits for Bank finance of total project costs may be exceeded, if justified. It should also be ascertained at the appraisal stage which domestic cost categories will be Bank-financed and to what extent. Justification of Bank financing of local currency costs should be indicated. With reference to project costing, the appraisal should specify the estimation methodology underlying the cost data. It may be helpful to identify and highlight only cost-effective measures built into the project design.
E. Cost-Benefit Comparison

1. Steps in the Economic Analysis of Education Projects

Essential steps in economic analysis are: (i) macro or sectoral justification; (ii) establishing the need (demand) for the project, (iii) ascertaining the availability of resources; (iv) cost-effectiveness; (v) affordability analysis; and (vi) cost-benefit comparison, which is discussed hereafter.

2. Social Costs of Education Projects: Identification and Valuation

The social cost of an education project comprises three categories: (i) public or government expenditures on the project; (ii) costs incurred, if any, by private institutions; and (iii) private costs incurred by the individual or his family. Categories (i) and (ii) comprise both recurrent and capital costs. In Bank-financed public sector education projects, the emphasis is put on project costs incurred by the government. Project costing should be governed by the principles of cost-effectiveness and cost-efficiency in relation to project needs and objectives. However, wherever appropriate and feasible, it is equally important to identify and quantify private education costs, which comprise (i) direct, out-of-pocket costs (tuition and other fees, cost of textbooks and instructional materials, board and lodging, and transportation); (ii) foregone earnings (participation in education may give rise to a real opportunity cost); and (iii) less quantifiable costs. These data could be collected from schools or project beneficiaries as part of the social analysis to be carried out at the PPTA stage. All direct and indirect private costs net of taxes and subsidies are also a cost to society to the extent they represent the use of scarce private resources.

The direct private costs of education are relatively easy to identify and evaluate. Valuation of the social cost of education generally does not pose major empirical difficulties as most of the cost categories involved are quantifiable, provided empirical data on private costs and costs incurred by private institutions are available. Usually, the most crucial part of the analysis of private education costs is the estimate of the opportunity cost in the form of foregone earnings of the student. This cost depends on (i) the skills level or educational attainment of the student in the before project situation; (ii) the time required to complete the education or training program; (iii) the employment opportunities and expected wage rate in the country concerned; and (iv) the income earned in the before-project situation. The share of public project expenditures in the social cost of education projects is usually large in basic education public sector projects, as in this case all educational services may be mainly subsidized. On the other hand, in private sector technical or higher education projects, this share may be small, depending on the amount of subsidies given to students and private institutions. Both private and public costs (net of transfers) should be taken into account in determining the social cost of education.

Education projects generally pursue multiple objectives and often have a multi-component structure. It is important to identify and define the project objectives carefully as the extent to which these objectives are achieved conventionally is an adequate yardstick of the social benefits expected to be generated from the project. The nature of the expected educational benefits (broadly covered by such terms as "outcomes" or "impact") has been presented in Chapter II, Figure 4. Most of these effects are intangible in nature or inherently difficult to measure. While a variety of interrelated economic benefits may actually be observed, the CBA usually is based only on earning differentials attributable to the education project under consideration. While project costs, except perhaps for adverse effects (or negative externalities) are relatively easy to be estimated at appraisal, it is much more difficult to present a reliable picture of the monetary benefits expected to be generated by a given education project. Instead, this framework emphasizes the identification and assessment of expected internal effects and external impact in qualitative terms.

4. Comparison of Costs and Benefits

In ex-post CBA carried out for a given education subsector or in ex-ante CBA for a proposed educational intervention, discounted costs and benefits are compared in the IRR analysis. As has been repeatedly stressed throughout this framework, it is not appropriate or feasible to apply CBA of a given education project at appraisal stage. If numeric information on the private, public and social returns from educational investments in a given country is required to justify the finance of educational interventions, such information should be generated through in-depth studies (sector analysis), which can best be carried out for the educational sector as a whole or for one or more particular subsectors, but not for individual education projects.

5. Time Frame of the Education Benefits

The distinction between quantitative expansion of educational services and qualitative improvement of existing services should be kept in mind in view of its implications for the nature and the time frame of the educational benefits. When additionality of supply via construction of new facilities is a major project objective, incremental effects will occur mainly after the project implementation period, and the increased student enrollment and educational output will be important quantitative indicators. The full monetary benefits will emerge only when the direct project beneficiaries are employed and receive higher incomes as a result of their education and/or training. On the other hand, when qualitative improvement of educational services and increased internal/external efficiency (through better trained teachers, more relevant curricula and better instructional materials/methods) constitute the main project objective, it is more feasible to
express education benefits by qualitative indicators such as increased student achievement, higher level of skills, and more relevant education. In this case, education benefits are expected to gradually building up even during the project implementation period. Improvement of short-term vocational and technical training courses may quickly generate economic benefits if the target beneficiaries are already employed or will be employed as a result of the training program. It should be noted, however, that higher internal efficiency via lower dropout rates generally also entails a higher education output. It is particularly important to assess at the appraisal stage when the identified benefits are expected to occur (during and/or after project implementation) and how actual outputs and outcomes will be monitored during and after project implementation, using appropriate quantitative and/or qualitative indicators (EMIS/BME).

6. BME

The initial project appraisal should create benchmark measures and identify specific cost or effectiveness indicators for monitoring project performance during implementation and operation periods. A weak commitment to benefit monitoring and evaluation (BME) can be a serious constraint to the overall project progress and especially on post-project evaluation. The appraisal activity should not only help DMCs and external assistance personnel make a more informed judgment on the potential costs and benefits of a proposed project. A good appraisal should, above all, provide both project managers in the country and external evaluators with clear guidelines for monitoring and assessing project performance during and after project implementation.

F. Cost-effectiveness

1. The Concept of Cost-effectiveness Analysis

Cost-effectiveness analysis should be consistently used in all education projects for which it is generally not feasible to provide a monetary measure of all or part of the benefits realized. This approach should not be confused with either cost minimization, given the end results, or maximization of end results, given a fixed amount of resources. CEA helps to achieve either of these two objectives and takes into account at the same time the anticipated effects of different project alternatives. The analysis, strictly speaking, is applicable only when the two following conditions are fulfilled: (i) the different (project or program) alternatives have identical or similar goals which can be compared; and (ii) a common measure of effectiveness can be used to evaluate the alternatives. In CEA, cost data are combined with data on effectiveness to provide a cost-effectiveness evaluation that will help select the alternative that will yield maximum effectiveness per unit cost or that requires the least cost per level of effectiveness. An example of CEA is given in Appendix 18.
2. *Cost Minimization*

When no data on effectiveness are available (e.g., at the appraisal stage) cost-effectiveness analysis is reduced to least-cost analysis, which is a limited application of the full CEA. The least-cost method is a first major method frequently used in ensuring cost-effectiveness when the project objectives (end results) can be expressed in quantitative terms, which often is the case. Once project objectives are clearly defined, the costs may be minimized in terms of alternatives in technology, design, location and time phasing of the project. Maximization of end results, given resource constraints, is the second cost-effectiveness method which may be applicable in social sector projects. An essential aspect of the CEA in this case is the identification of at least two feasible options.

Education projects often pursue several interdependent quantifiable or non-quantifiable objectives and it is seldom feasible to apply the conventional (theoretical) framework of CEA at global project level. It is much more feasible to focus this application on individual components, homogeneous components or even important input packages within a given component, especially when the major project components tend to coincide with the principal project objectives. It is necessary at appraisal to ascertain explicitly how cost-effectiveness will be reached, for example, by identifying technically and economically feasible ways to achieve the (given) objectives. Ascertaining least-cost choices for separate inputs/components (cost-minimization) and/or incorporating cost-efficient measures into the project design (benefit maximization) represents only a limited application of the conventional CEA.

CE may sometimes be ascertained by comparing unit costs among similar projects. Such a comparison would be valid only if the projects compared are very similar and if the cost structure reflecting the input mix is similar. However, comparisons based on unit costs have their limitations and generally should be considered only as a first step in the application of the CEA. The overall project is said to be a cost-effective means if cost-effective strategies and project components have been identified based on systematic cost comparison of alternative options for individual cost categories. Finally, cost-effective/cost-efficiency solutions should be identified at the project preparation phase and not only as a component within BME during project implementation.

G. *Risk Analysis*

1. *General Approach*

As most benefits from education projects cannot be expressed in monetary terms, an estimate of EIRR commonly is not available. Therefore, risks cannot be assessed through sensitivity analysis and no sensitivity indicators can be calculated. Risk analysis in education projects can be carried out only in qualitative terms and should bring out the factors likely to impede realization of the project objectives with adverse impact on project costs and anticipated output and outcome.
2. **Risk Assessment as Project Design Criterion**

It is useful to distinguish the following successive steps: (i) identification of risk factors with a clear indication why these factors constitute a project risk; (ii) classification of the risks into two broad groups—major and minor risks—based on their likely impact and their likelihood of occurrence; (iii) design of safeguard measures to minimize the major risks; (iv) assessment of the feasibility and effectiveness of these measures; and (v) ascertaining that the latter will be appropriately incorporated into the project design and that the required government commitments are given.

3. **Nature of the Risks**

Risks relating to both costs and benefits should be assessed. The risks on the cost side are attributable to such factors as (i) timely provision of counterpart funds; (ii) implementation capacity of the project authority; and (iii) availability of land. These risks could delay project implementation and therefore the timely realization of project benefits. In education projects, however, risks tend to be greater on the benefit side than on the cost side. The timely provision of project facilities (school buildings, training centers, equipment, furniture) is not sufficient to achieve the project objectives (e.g., a prescribed annual output of graduates with a certain skill level). The achievement of objectives may depend much more on such factors as (i) availability of qualified teachers; (ii) motivation of students; (iii) appropriate educational standards (admission, curricula, examination, instructional materials and methods); and (iv) availability of funds for the finance of maintenance costs and other operating expenditures.

The sustainability and performance of education projects depend generally on the (i) appropriate mix of hard and soft components (internal to the project); and (ii) conditions and facilities external to the project. It is important to assess the financial risk (affordability) of the project for the government. Therefore, two aspects should be noted; (i) whether the government will be capable/committed to provide the counterpart funds from its recurrent and/or development budget; and (ii) whether the government is committed to financing recurrent expenditure to maintain/operate the project facilities after project implementation. Furthermore, it is recommended that there be distinction between internal and external efficiency risks that relate to the benefit side of the project. Low internal efficiency indicators constitute potential risk factors. The external efficiency risks may be reduced by more relevant curricula and higher internal efficiency resulting in better qualified output and better employment prospects for the trainees/graduates. Career guidance, placement services and industry-education linkages also contribute to enhanced employability. Better educated persons generally show an enhanced ability to adjust to changing career opportunities brought about by dynamic changes in the economy. The benefits of reduced external efficiency risk could be quantified if tracer studies can determine (i) the time saved in looking for a job; and (ii) the higher earning potential as a result of the project.
CHAPTER VII
Conclusions

The framework and criteria for the appraisal and socioeconomic justification of education projects is the result of an in-depth review of the operational practices followed by international lending institutions in the appraisal and economic analysis of education projects. The incorporation of operationally relevant findings from a literature survey, which are largely consistent with the conclusions from the review of operational documents, has further enriched the framework, especially through the development of checklists for the internal/external efficiency indicators.

The framework has three major features: (i) the classification into design and appraisal criteria; (ii) the breakdown of appraisal criteria into internal and external project justifications; and (iii) the linkage of the framework components or appraisal levels to the successive stages in the Bank's operational cycle. The framework presents a structured set of distinctions between four levels of justification and subsets of criteria at each level. The framework has been presented as a logical model that envisions an educational project as a logical sequence of expected relationships wherein resource inputs are initially transformed into measurable educational outputs and ultimately into broader developmental outcomes (external impact or benefits). The framework is expected to be a useful instrument for (i) Bank staff in the processing and implementation of education projects; (ii) consultants who carry out the Bank's PPTA work; and (iii) DMC's education project planners, formulators and evaluators.

Compared with the existing Bank guidelines, the framework has been enriched in the following ways: (i) broadening the appraisal framework by combining economic and non-economic impact criteria; (ii) increasing the focus on the distinction between internal efficiency effects and external impact; (iii) including an explicit analysis of the conditions for project sustainability; (iv) specifying explicitly the conditions for enhancing its operational relevance and feasibility; (v) treating explicitly pre-design and design criteria as opposed to impact or appraisal criteria and specifying the relationship between predesign and appraisal criteria; (vi) specifying the tasks of Bank staff to monitor effectively the use of the framework; and (vii) describing the linkage between framework criteria and stages of the Bank's project cycle. To make the framework more applicable, the narrow economic focus has been widened to include other non-economic criteria for justifying education projects. Relevant design and appraisal practices followed by other international organizations as well as methodological and conceptual refinements emerging from the literature on education planning and evaluation have also been incorporated in the framework.

In the framework, the appraisal of an education project is based on three closely interrelated factors: (i) its congruency to predesign criteria; (ii) the internal efficiency with which the project's direct educational outputs are produced; and (iii) the external efficiency with which the broader societal impact is promoted.
The external impact is largely intangible and difficult to quantify and/or value in monetary terms, is delayed in time and is uncertain in magnitude and incidence. Therefore, the appraisal of education projects typically focuses on the inputs, processes and expected initial and ultimate educational outputs as well as on the linkages of the latter to the external impact.

The review of operational policies and practices in international lending institutions has confirmed that EIRR analysis is not used in the appraisal of education projects. As the impact from education projects is more remote in time, less certain in amount and incidence, and more in non-monetary form, it is neither appropriate nor feasible to carry out EIRR analysis for an individual education project during project processing or at appraisal. If, and only if, reliable data are available and underlying assumptions valid and plausible (two conditions very difficult to comply with), the social rate of return estimated for a given education subsector, for example, as part of sector analysis work or as a separate research exercise, could be referred to in the appraisal document to support the economic justification for the individual education project under consideration.

In the absence of EIRR analysis, the economic analysis of education projects should continue to focus on the following: (i) macroeconomic and sectoral/subsectoral justification (compliance with the pre-design criteria which are more or less given for the project analyst); (ii) demonstrating the need for the project (analysis of the demand for the project’s education services); (iii) demonstrating that the ultimate project design is a cost-effective means to the achievement of the project-specific objectives; and (iv) identification of all costs and educational effects, in qualitative terms.
List of Appendixes

Appendix

1. Glossary of Terms
2. Applicability of the Framework
3. Usefulness of the Framework
4. Framework Design Approach
5. Basic Concepts in Project Formulation and Design
6. Logical Framework Analysis Applied to Education Projects: Linkages Between Inputs, Outputs, Effects and Impacts (Benefits)
7. Key Premises on which the Framework is based
8. Linkages Between Subsectoral Issues and Basic Justification Criteria
9. Linkage of Major Framework Criteria Groupings with Types of Analysis
10. The Complementary Role of Lending Agencies and Effective Donor Coordination
11. Interfaces and Interlinkages Between Project Appraisal Subcriteria
12. Appraisal Checklist of Internal Efficiency Criteria
13. Appraisal Checklist of External Efficiency Criteria
14. The Concept of Cost-Benefit Analysis
15. Main Approaches to Economic Evaluation of Education Projects
16. Limitations of Cost-Benefit Analysis as Applied to Individual Education Projects
17. Manpower Projection Methodology
18. Cost-effectiveness Analysis
19. Key Indicators Sets for Specific Subsectors
20. Outline Terms of Reference for Consultants
APPENDIX 1
Glossary of Terms

Educational Activities. Educational activities comprise (i) human development; (ii) human resource development; (iii) education; and (iv) schooling.

Human Development. This is the broadest category of educational activities and includes all school- and non-school-based learning programs plus the health, nutritional and other social sector activities that facilitates both the acquisition and use of learning. Human development concerns also encompass the cultural, socio-cultural and political contexts that determine who has access to learning opportunities and other basic rights and the freedom to use acquired knowledge and skills in their society.

Human Resource Development. Human resource development (HRD) is a narrower term that focuses on the formal creation of skills and acquisition of knowledge. This category goes beyond education and training to include concerns with the labor market, the nutritional and health concerns of learners, workers and citizens, and the intersectoral linkages that exist among these activities.

Education. This term refers to the specific activities taking place both in school and out of school that have as a major purpose the transmission of knowledge and the development of cognitive and physical skills. Education, as defined here, also includes a set of training opportunities considered as separate from but complementary to formal education (e.g., on-the-job training and apprenticeship programs).

Schooling. This term is narrower than education and includes only educational activities that occur within the formal institutions designated as schools or educational institutions. It does not include the wide range of literacy, training and non-traditional learning programs that are included in this study's definition of the education sector.

External Efficiency. This term refers to the curriculum relevance and efficiency of an education system or an institution in producing graduates to meet the demand for appropriately trained/educated manpower from potential future employers (or receiving educational institutions). It often is measured by employment record of graduates, their social status, expected change in employment prospects, productivity increase, the length of time required by graduates to find employment, the relationship of employment to their professional training, etc. In its narrow meaning, "external efficiency" refers to curriculum relevance and enhanced employability of graduates. It may be operationally defined as percentage of graduates absorbed in gainful employment within one year of graduation. In its broader sense, as used throughout the
Framework, the term "external efficiency" encompasses the broader societal or developmental outcomes of educational activities.

*Gross Enrolment Rate.* This term refers to the ratio of the total enrolment in the given level of education system and the size of the target age cohort.

*Internal Efficiency.* This term refers to efficiency of an educational system to transform entrants to graduates. Internal efficiency is high when there is a flow of students through an educational system or an institution with minimum wastage (e.g., dropout, repetition and failure) and with high quality of learning determined by cost-effective inputs (e.g., curriculum, teaching methodology, staff qualifications, instructional materials, etc.). Operationally, internal efficiency may be defined as the number of students graduating from a school or institution at a particular level of education expressed as a percentage of the number of entrants to the school or institutions, each academic year.

*Retention Rates.* This ratio indicates the fraction of the initial intake that continues to remain in the formal education system; also "cohort survival rate" and "throughput."

*Education System Productivity and Quality of Education.* System productivity (educational output vs. enrollment) is an overall indicator of the internal efficiency of the education system. As implied in the definition given above, internal efficiency relates to the flow of students through a given education level with a minimum of waste as measured conventionally by repetition and drop-out rates. Quality of education, on the other hand, is a product-related concept embodied in highly qualified and skilled students/graduates, as determined by the quality and quantity of educational resource inputs such as facilities, teachers, curricula, instructional materials and methods, managerial efficiency. It will be helpful, within the country, subsectoral and project specific context, to define operationally performance related concepts such as internal efficiency, system productivity and educational quality and spell out clearly the interrelationships involved.

*Vocational vs. Technical Training and Education.* "Education" programs are distinct from "training" programs. "Education" refers to the more regular, formal and medium-term courses while "training" is usually more short-term nature and less formal. Training programs, however, may be organized on a more or less permanent basis. Technical education generally comprises the formal training of skilled workers, carried out at technical secondary schools, for the engineering and construction trades such as mechanics, electronics, civil works, etc. Vocational education comprises the more formal training of middle-level skilled workers, organized on a regular basis in vocational schools, mainly for business, commerce, service sectors, home economics and arts/crafts. Vocational training programs generally comprise special, short-term training courses designed to
develop job-specific skills, while vocational education is more regular, formal and mid-term in nature and focused on middle-level skilled workers. It would be useful to define the concepts of vocational vs. technical training and education in the educational and developmental context of a particular country.

Cost recovery ratio (index). Cost-recovery ratio is the ratio between student fees and other net income flows to total revenue budget expenditures for recurrent costs.

Unit Costs. Unit capital costs: total cost of land, civil works, furniture and equipment (including physical contingencies) divided by the anticipated increase in enrollment and amortized over a specified project life. Unit recurrent costs: the total estimated recurrent costs (incurred over the entire learning or training period) to train a group of students, divided by the estimated output of graduates.
APPENDIX 2
Applicability of the Framework

All design/appraisal criteria and alternative types of justification suggested in this framework will not apply in every project. Each project has its own unique internal and external efficiency justification which may include one or more appraisal criteria. For example, in the case of a technical and vocational education project that aims at system expansion and higher internal efficiency, including better quality of education and curricula relevance, the appraisal analyst will have to consider in particular the achievement/skills level of the (increased) educational output which is expected to be absorbed by the economic sectors of employment. The output (in numbers and quality) is the internal efficiency indicator.

In an educational setting characterized by favorable socio-cultural, political and institutional conditions and factors (based, for example, on sector analysis findings), the only set of external efficiency indicators to be considered at the appraisal stage is likely to be economic impact. Within this set, the focus will be on the capacity of the economy to absorb quickly the educational output. Demonstrating that the educational output as a result of the project will meet the manpower requirements of the economy and have higher productivity/incomes will be an important part of the economic justification (which is an external efficiency consideration). On the other hand, a primary (teacher) education project in a given educational setting may be largely justified in terms of meeting social demand or institutional benefits.

While the social returns to investment in this primary education project reasonably are expected to be high (as confirmed, for example, by an economic sector study), the external efficiency justification in this case should not focus on considerations such as meeting manpower requirements of the economy in terms of demand-supply shortages. It can therefore be concluded that each project has its own unique internal and external efficiency justification that may include one or more specific appraisal criteria.
APPENDIX 3
Usefulness of the Framework

The overall usefulness of this framework depends on several factors, which are highlighted in Figure A3. Most of these factors are interrelated with at least one or more other factors and it is important to bear such interrelations in mind. The practical usefulness of the Framework depends in the first place on adequate data availability. Key data on economic, demographic and education sector specific data in a given country are required. A valid, reliable and comprehensive educational management information system should be available, which would enable the compilation of objectively verifiable indicators on internal and external efficiency and benchmark data for benefit monitoring and evaluation (BME).

As most DMCs do not have comprehensive EMIS data such that data paucity is a major limitation, PPTA consultants should be required to compile additional needed data to cover such aspects as: (i) education sector/policy analysis; (ii) identification and compilation of OVI's on efficiency; (iii) social analysis; (iv) logical framework analysis; and (v) key reviews and analyses of pertinent aspects of important design/appraisal criteria. Data availability largely determines the feasibility of effectively adopting most of the suggested criteria. The conceptual framework proposed would be fully useful to the extent that numerical values for internal and external efficiency indicators or accurate and detailed qualitative assessment of anticipated effects/impacts are available.

The usefulness of the framework also depends on the specific nature of the project and its basic characteristics (concept, objectives, scope) as not all suggested design/appraisal criteria can reasonably be expected to apply to a particular project. The nature of the criteria to be considered in the design/appraisal for a single education project also depends on the subsectoral focus. For example, the economic impact criteria to be considered in a primary education project will differ markedly from those in a higher education project. All these factors (data availability, feasibility of adoption, subsectoral specificity and project focus) jointly determine the operational relevance of the framework. The nature of the criteria to be considered and their usefulness also depends on the project stage within the Bank’s project cycle, e.g., the external impact criteria (economic impacts) can only be considered validly after design criteria (at feasibility stage) have been appropriately considered and the best possible design developed.
FIGURE A3
Interrelated Factors Determining the Overall Usefulness of the Framework

- Data Availability (Sector Work, EMIS, PPTA, etc.)
- Subsector Specificity
- Stage within the Bank's Programming Cycle
- Project characteristics (Nature of Project)
- Operational Relevance to design/appraisal
- Feasibility of adoption
APPENDIX 4
Framework Design Approach

In the design of the framework the following sources of information have been used: (i) the draft Guidelines for the Socioeconomic Analysis and Justification of Education Projects,9 which are based on appraisal documents, post-evaluation findings, and the Bank's sector paper on education; (ii) a study carried out by a consultant synthesizing literature findings and operational practices adopted and followed by other international agencies; (iii) recent lessons learned from post-evaluation and project processing experience of Bank's education specialists, including written comments offered by Bank staff concerned on several earlier drafts; and (iv) findings which emerged from two feedback workshops.10 Last but not least, all considerations in Appendix 11 to the Guidelines which still hold, have been appropriately incorporated in the Framework.

Two major steps were involved in the design of the Framework, one analytical and one synthetic (Figure A4). The analytical phase consisted of a review of Bank operational documents and literature research findings. Bank operational documents largely reflect experience in the field, which was not always the case with literature documents. The operational review study was performed in-house11 while the literature review was more academically oriented and included evaluation and appraisal of education projects and was performed by a staff consultant. The review12 by the consultant also included review of operational practices followed by other international agencies, which made the study more operationally relevant. Both studies were reviewed by Bank staff concerned and were discussed during two Feedback Workshops. The synthesis phase consisted of preparing the appraisal framework based on the draft Guidelines, the Consultant's report and Feedback Workshop findings.

---

10 The first feedback workshop to discuss operational review findings was organized in August 1991 and the second one, to discuss the consultant study, in February 1993.
FIGURE A4
Major Methodological Steps in the Framework Design

A. ANALYTICAL PHASE

OPERATIONAL STUDY AND REVIEW

- Staff Review

FEEDBACK WORKSHOP (AUGUST 1991)

B. SYNTHETIC PHASE

1. Merging Operational and Literature Findings
2. Interdepartmental Review
3. Preparation of Final Text

OUTPUTS

- EDRC Report Series Publication
- Draft Guidelines
- Consultant's Report

LITERATURE STUDY AND REVIEW

- Staff Comments

FEEDBACK WORKSHOP (FEBRUARY 1993)

Draft Appraisal Framework

Comments

Final Revised Draft for Management Approval

Minutes
APPENDIX 5
Basic Concepts in Project Formulation and Design

Project Objectives. In project formulation, a distinction should be made between general and specific project objectives. The general project objectives are usually stated in qualitative terms and tend to coincide with the broader subsectoral goals which may only be achieved fully through a series of educational programs/projects, including the one under consideration. Qualitative improvement and quantitative expansion of educational services are two examples of general project objectives. Specific project objectives, on the other hand, are formulated consistently with the project scope and focus. They are more narrowly defined and tend to be more easily quantifiable, in which case they become operational targets, e.g., construction of 20 primary education schools in a given geographical area. The specification of project objectives as measurable or operational targets facilitates the design of the BME component and the assessment of the extent to which project objectives have been reached. The feasibility of the project objectives should be assessed at project design phase.

Project Scope. The scope describes the general project strategy and attempts to identify the boundary of the specific project objectives some of which may be measurable. As this boundary cannot be sharply delineated in most cases, the scope should be stated in broad terms only. The concept "scope" is important in terms of implementation as modification of project scope has financial implications. It appears to limit more the project inputs and their mix, not so much the educational outputs and benefits generated by the project.

Project Structure. The concept "project structure" refers to the project components, inputs and educational outputs. An educational project usually comprises two or more major components which broadly coincide with the project strategies the implementation of which is instrumental in reaching the stated project objectives. Project components may be further broken down into subcomponents and inputs. Inputs can be broken down into a hardware (e.g., facilities, equipment) and a software component (e.g., teaching training, curriculum dependent, student evaluation). The project formulation can be made more transparent if major components coincide with the stated project objectives. In many cases, however, project components show interfaces as they may be interlinked.
APPENDIX 6

Logical Framework Analysis Applied to Education Projects:
Linkages between Inputs, Outputs, Effects and Impacts (Benefits)

These key concepts are frequently used in the framework for justification of education projects and clarification may be useful. An educational activity or project, which can be considered as a discrete investment activity, may be described as a logical sequence of expected relationships wherein resource inputs are transformed *ultimately* into broader developmental impacts (benefits). Three basic linkages (relationships) are involved. The first linkage, between resource inputs and the more direct, measurable outputs, suggests that if certain inputs are provided and if the assumptions which link those inputs to the anticipated outputs hold, there will be certain predictable outputs. For example, if appropriate administrative and instructional processes are effectively applied to an optimal mix of resource inputs (such as facilities/equipment, teacher characteristics and curriculum/instructional materials), then certain outputs such as enhanced attainment and cognitive achievement are expected to be produced.

Both terms (inputs, outputs) are traditionally viewed as internal efficiency criteria. The number of schools built, teachers trained, instructional materials provided, etc., constitute direct, more immediate (first round) educational outputs which are produced during the earlier or later phases of project implementation. Next, the immediate outputs (new schools, new curricula, trained teachers) themselves are instrumental in producing desirable effects, such as better educated/skilled students. Again, administrative and/or instructional processes are used, combining previously produced outputs (which become inputs at this level) to produce the desirable effects (which can still be considered as educational outputs). These (second round) outputs are an indicator of the enhanced internal efficiency.

The third linkage between project effects and impact (benefits) states that, if project effects (e.g., better skilled workers) are achieved, this will have an impact on some broader development goals, such as enhanced employment opportunities for project beneficiaries thereby enhancing their standard of living through higher incomes. Again, the educational project effects considered in the third linkage could be viewed as (third round) inputs which are instrumental, if certain assumptions hold, in contributing to the wider development objective. This contribution represents an *external* impact (benefit) from education projects, which becomes part of the external efficiency justification.
APPENDIX 7

Key Premises on which the Framework is Based

Project appraisal criteria must be future-oriented; they must assess the \textit{probability} of project success within the risk aversion or risk anticipation conditions that the Bank and DMCs stipulate.

Project appraisal criteria must themselves be cost-effective; they must represent a practical balance between what they contribute to understanding and what they cost to produce and analyze.

To be used effectively, project criteria should be considered within the context of the results of education or HRD sectoral analyses (including social and cultural as well as political, economic and \textit{institutional} dimensions), the DMC’s own national policies and priorities, and the Bank’s strategic planning framework.

All project appraisal criteria must be evaluated in terms of the stated and implicit policy assumptions, i.e., the prerequisite, concomitant, or subsequent changes in educational context or practice that are implied in project design.

Sustainability shall be a critical appraisal criterion; it should be examined as a function of managerial and fiscal absorptive capacity and of the fit of the project to DMC needs and policies as well as to the cultural and social environment.

Appraisal criteria should serve as initial benchmark in the development of a benefit monitoring and evaluation system and be explicitly linked to post-project evaluation methodologies.

The project appraisal criteria should become part of the on-going, efficiency-based educational management information system (EMIS), the benefit monitoring and evaluation (BME) activities, and, wherever feasible, the criteria used should be operationalized as objectively verifiable indicators of project performance and general educational progress.

The project appraisal criteria should combine appropriate forms of quantification with qualitative indicators of project performance (including the classification of project effects by their type, their dimensions, and their incidence).

Attention should be directed to the use of the framework and appraisal criteria to draw attention to the needs of underserved and marginalized social groups; the effects of proposed projects on poverty alleviation and social mobility should receive special attention.

The role of education in increasing the participation of women in society and of promoting immediate and intergenerational improvements justifies that special attention be directed to criteria that capture these and other gender-related benefits of educational projects.

The project appraisal framework should stipulate that equity is a part of the \textit{general efficiency} criterion and that improving equity is one form of the efficiency goal, not an alternative to the achievement of efficiency, the tradeoff of equity effects for \textit{other} efficiency effects should be made explicit in any weighing of appraisal criteria.

Careful distinctions should be drawn between costs (the amount of money required and the type of expenditure) and financing (who pays and in what manner); these are linked but separate criteria considerations.

Finally, all criteria will need to be reviewed periodically to assess potential conflicts and concomitance in the dimensions they attempt to capture.
APPENDIX 8
Linkage between Subsectoral Issues and Basic Justification Criteria

SUBSECTORAL ISSUES

NEED FOR THE PROJECT (Rationale)

STRATEGIES TO ADDRESS ISSUES

PROJECT OBJECTIVES

PROJECT JUSTIFICATION (Sustainability)

INTERNAL AND EXTERNAL EFFICIENCY
APPENDIX 9
Linkage of Major Framework Criteria Groupings with Types of Analysis

CATEGORIES OF CRITERIA

LEVEL 1
1. Pre-design Criteria

LEVEL 2
2. Design Criteria

LEVEL 3
3. Internal Efficiency Justification

LEVEL 4
4. External Efficiency Justification

STAGE IN PROJECT CYCLE

Country Strategy and Program

Feasibility/Loan Fact-Finding

Appraisal

MAJOR TYPES OF ANALYSIS OR ASSESSMENT

SECTOR ANALYSIS

1. Policy Framework Assessment
2. Problem Identification/Analysis
3. Strategy Analysis
4. Pre-design Analysis

PROJECT DESIGN ANALYSIS

1. Economic Analysis (cost-effectiveness/least-cost analysis)
2. Financial Analysis (affordability analysis)
3. Social/Institutional Analysis
4. Risk Analysis
5. Environmental Assessment

ASSESSMENT

1. Economic/Financial Analysis
2. Internal Efficiency Assessment
3. Affordability Assessment
4. Residual Risk Assessment

SUSTAINABILITY ANALYSIS

1. Impact or Benefit Analysis
2. Cost-Benefit Analysis
3. Sustainability Analysis

PROJECT ANALYSIS
APPENDIX 10

The Complementary Role of Lending Agencies and Effective Donor Coordination

Assume that Bank 1 has the lead role for the education sector and has appropriated the more attractive primary and secondary education subsectors for its project pipeline. Assume further that Bank 2, in line with its country operational strategy and program, decides to support higher education. More in particular, the recipient country has an education plan and strategy that provides the framework for medium-term development of the education sector, emphasizing both the need to expand primary and secondary education and to rationalize higher education and strengthen teacher training (which is part of the higher education system). The country operational strategy of Bank 2, aware that Bank 1 is the lead agency in the education sector, promotes an active complementary role through supporting projects on a selective basis, consistent with the Government’s developmental priorities and has placed a greater emphasis on effective donor analysis and coordination within the education sector.

An education sector review has identified, among others, three major issues: (i) the need to increase access to upper secondary education and improve its quality; and (ii) the need to ease the shortage of entrants to higher education institutions (universities) and increase significantly the retention in the higher education subsector; (iii) the need to increase significantly the number of highly educated/trained citizens to occupy managerial and technical position.

Bank 1 approves an education development project to assist the government of the recipient country in implementing its education sector policies and investment plans through: (i) increasing access to upper secondary education and improve its quality; and (ii) improving the quality of upper secondary education through expanding the supply of textbooks, strengthening school inspection and guidance and improving school libraries; and (iii) strengthened institutional management.

On the other hand, Bank 2 processes a project designed to enable the higher education sector to (i) respond better to the country’s manpower and human resource development needs; (ii) improve the quality of higher education and enhance cost-effectiveness; and (iii) support the improvement and development of primary and secondary education through improving the quality and efficiency of teacher education.

Bank 2’s involvement in the higher education sector complements Bank 1’s support to upper secondary education and both interventions are necessary to increase the output (number of graduates) in the higher education system. Without Bank 2’s involvement in the higher education subsector, Bank 1’s project will be less effective as the higher output of grades 11 and 12 students would still drop out significantly at higher education level as long as increased internal efficiency and quality improvement, to be addressed by the Bank 2’s project, do not take place. Vice versa, Bank 2’s intervention in the higher education system would also be less effective without Bank 1’s involvement in upper secondary education because there would still exist an acute shortage of grades 11 and 12 graduates required for increased entrance into the higher education system.

This clearly demonstrates that two complementary projects, implemented by two different Banks, as a result of effective and sustained donor coordination, generate joint system benefits which could not be attributed to any one of the two complementary projects.
APPENDIX 11
Interface and Interlinkages between Project Appraisal Criteria

INTERNAL EFFICIENCY

1. System Rationalization and Expansion
2. Quality Improvement
3. Higher Internal Efficiency
4. Greater System Productivity (Educational Output)
5. Curriculum Relevance

EXTERNAL IMPACTS (Net Benefits)

A. ECONOMIC BENEFITS
1. Cost Savings
2. Higher Earning Potential
3. Higher Productivity
4. Improved Health/Population Benefits (reduced fertility)
5. Employment and Economic Growth (partly through technical progress)

B. SOCIAL (EQUITY) BENEFITS
1. Poverty Reduction
2. Gender-related
3. Regional Equity
4. Socio-cultural Benefits

C. INSTITUTIONAL BENEFITS
1. Policy Related
2. Strengthened Institutions
3. Better Sector/Project Management
4. Effective Coordination

D. POLITICAL BENEFITS

E. ENVIRONMENTAL IMPACT
APPENDIX 12
Appraisal Checklist of Internal Efficiency Criteria

Cost
- proper pricing of inputs
- use of least-cost combination

Financing
- incidence (including affordability)
- equity

Inputs
- teacher characteristics
  - formal educational attainment
  - teacher training attainment
  - age/experience
  - teacher availability (per student, per class, etc.)
  - attrition and turnover
  - subject specialization
  - ethnicity/nationality
  - gender
  - subject "mastery"
  - verbal abilities
  - attitudes

- facilities
  - age
  - condition
  - size (school and classroom)
  - students per school
  - students per class
  - classrooms per school
  - classes per classroom
  - availability of special use facilities
  - comparison of official norms and actual conditions

- equipment
  - availability (nominal or relative to norms)
  - suitability
  - condition
  - utilization

- curriculum
  - articulation
  - dissemination
- instructional materials
  - availability
  - relevance
  - understandability
  - condition
  - utilization

- administrative capacity
  - educational attainment
  - administrative training
  - teaching experience
  - administrative experience
  - organizational context and incentives

Processes

- administrative
  - autonomy
  - accountability
  - behavior (frequency and type)

- instructional
  - teacher time allocations
  - student time allocations

Outputs

- attainment
  - access
  - attrition
  - repetition
  - graduation

- cognitive achievement
  - school-based examination results
  - school grades
  - regional/national examination results

- non-cognitive achievement
  - values
  - attitudes
  - behaviors

- equity
  - by gender
  - by income class
  - by location (region and size of place)
  - by social stratification (including ethnicity)
APPENDIX 13
Appraisal Checklist of External Efficiency Criteria

Economic Impact
- employment
- earnings
- enhanced general productivity
- consumption behavior
- fiscal capacity
- related health and population benefits
- intergenerational effects

Socio-cultural Impact
- equity (incorporating inclusion and participation)
- social mobility
- transmission of values, beliefs, and practices

Political Impact
- acceptance of rule of law
- national identification
- belief in democratic structures
- increased individual participation in the political process

Institutional Impact
- strengthened policy dialogue and improved environment for reform
- improvement of institutional structure
- enhancement of personnel capacities (including in management)
- development of coordination/collaboration with other agencies and institutions
- strengthening of informational resources and utilization
- improvement of general management procedures (including increased commitment to BME)

Environmental Impact
- energy utilization
- demands on community facilities
- promoting environmental consciousness and enhancement
The returns to investments in the education sector can be measured on the basis of financial, economic and social CBA.

Financial project analysis generally refers to any methods that evaluate only the direct project costs and benefits and which value these at unadjusted domestic market prices. The resulting rate of return is the one which accrues to an individual household, firm or government entity but not to the economy as a whole. The private and public rate of return to investment in education are examples of financial IRR.

Economic project analysis generally refers to methods which use "economic" (referred to as "efficiency" or "accounting") prices, and which attempt to evaluate the total direct and indirect economic costs and benefits of projects to the economy as a whole. Economic project appraisal methods implicitly or explicitly, make two important assumptions: (i) the level of overall savings and its distribution between the public and private sectors is "optimal" (in the sense that at the margin, project-generated savings and consumption are valued equally, as are project-generated public and private sector savings); and (ii) any given inoptimality of inter-generational or intra-generational distribution of income is dealt with other instruments than project investments. Economic cost-benefit analysis is done on the basis of two principal methods. The first method has been called the "domestic price conversion method" (DPCM) in view of the fact that under this method, internationally priced goods and services are converted into domestic prices. The second has been called the "border price conversion method" (BPCM), given its recommendation that all goods and services be valued at international or "border" prices.

Social cost benefit analysis generally refers to those methods that extend the analytical framework of economic cost-benefit analysis to incorporate an evaluation of other, not strictly "economic" effects of projects. In practice this usually entails the relaxation of the two assumptions mentioned above and consequently a further analysis of the distributional impact of projects, both over time and between existing income groups.

A further distinction is sometimes made between private, public and social returns to education. The private IRR considers only private educational costs and corresponding private incomes. The public IRR considers public educational expenditures and corresponding public revenue flows (e.g., incremental income taxes and financial cost savings). In the social IRR calculation, private and public incomes are compared with private and public educational costs. This definition of social rate of return to investment in education is different from the definition in para. 3 above. In a highly subsidized educational system, private rates of return are usually much higher than public rates of return, which points to the potential of improved cost recovery. Government capital and recurrent expenditures are an important part of the social cost of education and a more complete cost recovery could alleviate somewhat the budgetary constraints of the Government.

14 D. Bucher, op. cit.

Three basic approaches to economic evaluation of education projects may be considered: cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and (conventional) cost-benefit analysis (CBA). Each of these types of analysis adopt the same view of identifying costs but they vary in the detail in which educational benefits are quantified and valued.

**CEA.** This approach seeks to identify either the least-cost method of achieving a given objective (which is usually treated as single dimensional) or the maximum output (usually single dimensional) attainable for a given cost level. This analysis emphasizes: (i) unit costs (or output per cost unit); (ii) the minimization of project costs; or (iii) the maximization of output for a given cost outlay. The analysis of benefits in CEA is restricted to a fairly elementary notion of non-monetarized educational output. The distinction between project outputs and project benefits should be kept in mind. Educational outputs are the measurable products of a given educational intervention (e.g., the number of teachers/students trained). On the other hand, educational benefits (outcomes or impact) are the final effects of the project's activities (e.g., increased family income, higher managerial efficiency).

**CUA.** This approach, which presents the next stage in sophistication, is to be used when there are reasons for believing that the restricted notion of "educational output" in a CEA seriously fails to capture some important dimensions of benefits (impacts) that ought to be taken into account. The CUA is essentially the same as in CEA except for the fact that a more comprehensive set of project benefits (effects) is considered, raising additional questions as to how they are to be measured and how far superior performance in one benefit dimension may compensate for less good performance in another benefit dimension.

At best, CEA and CUA are able to offer guidance only as to the least-cost way of achieving a stated objective or set of objectives. Only CBA is capable of determining whether the project is economically viable. According to cost benefit theory, the CBA seeks to determine whether the IRR of a project over its entire lifespan is higher than other investment opportunities available in the country. A rate of return for a given education project below the IRR generated by other investment opportunities (i.e., the notion of economic opportunity cost) would signal that investment in the education project results in a lower growth rate compared with the other available investment opportunities. The usefulness of CBA depends thus ultimately on the feasibility to identify all alternative investment opportunities available, a condition which cannot be met. This points to a fundamental weakness in the use of CBA when operationalized in a given educational context.
APPENDIX 16
Limitations of Cost-benefit Analysis as Applied to Individual Education Projects

Besides the assumptions, the plausibility and validity of which have to be verified in any cost-benefit analysis, the following limitations hold particularly for CBA applied to individual education projects.

Ex-post quantification and valuation of educational benefits for an individual project would require special surveys often at very high (prohibitive) cost.

Ex-post CBA for a particular project fails to isolate the improvements (and impacts) attributable to the project under consideration from the improvements (and effects) brought about by previous or later projects in the education sector or by other investment projects in related sectors (e.g., a roads improvement project, enhancing the physical access to schools).

CBA involves a numerical comparison of costs and benefits. Benefits generated by education projects are particularly difficult to quantify in monetary terms. Moreover, in education projects, non-monetized benefits or effects (those which cannot be expressed in monetary terms) may be more important than monetized benefits.

The WTP approach to estimating educational benefits has been adopted rarely and the unbiased nature of the benefits derived from this approach is extremely difficult to ascertain.

Measuring the economic returns to education in terms of observed earning differentials of people with varying levels of education is based on the assumption that these differentials are entirely caused by education. However, differences in earnings may also to some extent reflect differences in innate earnings capacity due to differences in intelligence, drive, pecuniary motivation, etc. These differences are commonly referred to as the alpha or ability factor. Since innate earning ability may be positively related to the length of education, part of the difference in average earnings by education levels may be due to ability rather than training differentials.

Overestimation of the social return to education may arise when wage rates are not closely related to the worker's marginal product but where higher-paying jobs are reserved for people with higher ranking in the educational hierarchy. "Prestige hiring" is not an unknown feature and not all personal services are valued in a competitive market. In such cases, training differentials may be relevant from the private viewpoint but resulting differentials in earnings reflect pecuniary rather than real benefits and therefore should not be allowed for in measuring the social gains to investment in education.

The use of averages is misleading if applied to subgroups or individuals. It has been shown that rates of return to education differ by social group since educational outputs are not always competitively priced. Furthermore, educational investment opportunities may be restricted rather than freely available.
Standard estimates of returns from schooling in a cross-section may in part reflect high scarcity returns to a few more-educated individuals that would not have been there should there be a substantial expansion in the numbers of more educated individuals.

The aggregated ex-post CBA cannot distinguish between the quantity of schooling (as measured by the numbers of years) and the quality of schooling.

In a single sample, ex-post CBA fails to allow for geographical aggregation biases, such as regional price/income variations, or the combination of relatively poor areas with limited physical capital and low schooling with relatively well-off areas with extensive physical capital and high levels of schooling.

CBA fails to control for dropout and repetition or for unobserved household and community variables.

Besides the empirical difficulties in estimating the additional incomes resulting from education, education projects generate a large spectrum of broader, societal or developmental effects that are identifiable but usually regarded as non-measurable in monetary terms.

All these difficulties are compounded if the CBA approach is to be used in the ex-ante evaluation for a proposed individual education (as opposed to ex-post evaluation for a particular subsector) as all projected economic benefit flows are highly uncertain. It appears indeed to be nearly impossible to predict in a reliable way the enhanced earning differential, say, 25 years into the future that result from an educational intervention that takes place in the present.

It has also been established that estimated returns to investment in the technical/vocational or higher education subsectors are highly sensitive to slight changes in the assumptions, which reduces considerably their practical usefulness as a justification criteria.
APPENDIX 17
Manpower Projection Methodology

Projection Period. Recent experience in the appraisal and implementation of education projects has shown that the MR approach using long-term projections often produces inaccurate estimates. In view of rapidly changing labor requirements in a dynamic economic environment, manpower analysis and planning should focus instead on the identification of existing shortages of specific skills and their likely future development. As vocational/technical training and education are mainly directed at meeting short-term labor shortages, short-term forecasts will suffice for this kind of projects. On the other hand, under certain circumstances medium or even long-term manpower projections should be attempted for university or other higher level education projects that produce highly qualified output in specialized areas of science and technology.

Projection Methodology. Whenever manpower forecasts are given, it is necessary to (i) describe the forecasting methodology; (ii) specify the underlying assumptions and discuss their plausibility; and (iii) assess the reliability of the data sources. Generally, the estimation of additional needs for skilled workers requires the following steps: (i) generate reliable projections of sectoral employment figures; (ii) for the major economic sectors, forecast occupational coefficients (manpower coefficients) for both technicians and skilled and semiskilled workers; (iii) apply the latter coefficients to the projected sectoral employment figures; (iv) assume a plausible annual average rate of attrition (to be applied to the existing stocks of manpower); and (v) calculate the annual additional future needs for technicians and skilled workers as the ratio "additional needs due to economic growth and attrition/projection period."

Data Availability. In case the MR approach is used to justify the educational intervention, it is necessary to analyze/assess the manpower planning system and the data availability (reliability, accuracy, relevance, and timely nature of data).
Example of CEA. Let us assume a science education project aiming at qualitative improvements, i.e., improving the test scores (which measure the level of achievement) of low achievers in high schools. A limited number of project schools are selected and 100 students in each of these schools are randomly assigned to four groups of 25 students each. Three of these groups will be given a separate, remedial instructional treatment while one control group of 25 students will receive no remedial instruction. It is expected that each of the remedial treatments will increase differentially the achievement level of the students compared with those from the control group. The three alternative, instructional treatments are: (i) group approach (a special instructor is assigned to each group); (ii) individually programmed approach (each student works with individualized material and one coordinator); and (iii) a peer-tutoring approach (senior or bright students work with small groups of students). The monthly cost of the three alternative instructional treatments depends on the various inputs (manpower, materials) used and their economic cost. These costs are shown in the Table below (column C):

<table>
<thead>
<tr>
<th>Instructional Approach</th>
<th>Monthly Cost/Student (C)</th>
<th>Effectiveness (Test Score) (E)</th>
<th>(C)/(E) Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Approach</td>
<td>500</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Individual Approach</td>
<td>900</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>Peer-tutoring</td>
<td>100</td>
<td>2</td>
<td>50</td>
</tr>
</tbody>
</table>

At the end of the year, all students in the selected schools are tested to determine their achievement level as a result of the instructional treatment. The effectiveness of every treatment is measured quantitatively by the absolute difference between the average of their scores and the average score of the control group. This effectiveness level is indicated in column (E). Based on the cost factor alone the peer tutoring approach should be selected. However, when these costs are combined with the achieved level of effectiveness, then the individual approach turns out to be the most preferred approach since the average monthly cost per student for improving their score (the project objective) is the lowest using this alternative.

Application of the CEA. CEA has some scope for application especially in education projects aiming at qualitative improvements of educational services. It would only be applicable if cost analysis can be appropriately combined with effectiveness data. When the achieved level of effectiveness is not specified or
cannot be measured or where no data are available on similar alternative instructional methodologies applied elsewhere, CEA would be reduced to a mere cost analysis, in most cases least cost analysis. It is not feasible to collect the necessary data on cost-effectiveness at the appraisal stage.

Other limitations should be noted. C/E ratios can be compared only between alternative instructional approaches with only one specific goal (improvement of student achievement level for a given academic subject matter such as science, mathematics, etc.). CEA in itself does not ensure overall efficiency in the alternative uses of the scarce resources. Based on CEA it is not possible to decide whether, for instance, the scarce resources should be used for improving science scores or for increasing the literacy level in the country. This decision should be based on the Government's policy directions and priority given to alternative education development goals within the broader context of sectoral and community needs. CEA could be carried out during project implementation or after project completion as part of BME.
APPENDIX 19
Key Indicators Sets for Specific Subsectors

A. Primary Education
- net and gross enrollment ratios
- equity (by gender, income/class, location, ethnicity)
- availability of relevant instructional materials
- adequacy of facilities
- teacher/administrator quality
- instructional technology (e.g., Time-on task measures)
- per student and cycle (incorporating attrition and repetition rates) costs
- cognitive achievement (basic literacy and numeracy)
- success in higher levels of education or in employment
- values development
- incidence and equity of financing

B. Secondary Education
- net and gross enrollment ratios
- equity (by gender, income/class, location, ethnicity)
- availability of relevant instructional materials
- adequacy of facilities (including special use areas) and of equipment
- teacher/administrator quality
- instructional technology (e.g., Time-on task measures)
- per student and cycle (incorporating attrition and repetition rates) costs
- cognitive achievement (by major curriculum area)
- success in higher levels of education or in employment
- values development
- incidence and equity of financing

C. Vocational-Technical Education
- participation ratios relative to potential enrollment population
- equity (by gender, income/class, location, ethnicity)
- availability of relevant instructional materials
- adequacy of facilities (including special use areas) and of equipment
- teacher/administrator quality
- instructional technology (e.g., Mix of academic versus applied content)
- per student and cycle (incorporating attrition and repetition rates) costs
- cognitive achievement (by major curriculum area)
- success in higher levels of education or in employment
- values and behavior development (including knowledge of world-of-work expectations)
- incidence and equity of financing
D. Non-Formal Education
- participation ratios relative to potential enrollment population
- equity (by gender, income/class, location, ethnicity)
- availability of relevant instructional materials
- adequacy of facilities (including special use areas) and of equipment
- teacher/administrator quality
- instructional technology (e.g., Adaptation to learner characteristics)
- per student and cycle (incorporating attrition and repetition rates) costs
- cognitive achievement (by major curriculum area)
- success in higher levels of education or in employment
- values and behavior development
- incidence and equity of financing

Indicator Name: Enrollment Ratios – Gross and Net

Definition: Enrollment ratios relate enrollment (as defined earlier) in a particular level of education to the age cohort that commonly would be expected to be participating in that particular level of education. For example, if six- to twelve-year-olds are expected to be in primary education, that is the age group to which the enrollments are compared. Gross enrollment ratios compare all enrollments regardless of age (thus including under- and over-age pupils) to the "normal" age cohort; net enrollment ratios compare only the enrollments from the normal cohort to the total population of that cohort. Gross and net enrollment ratios are calculated most commonly for formal schooling levels and some pre-school populations since these groups are the ones for which age and enrollment status are most closely related.
APPENDIX 20
Outline Terms of Reference for Consultants

The proposed Framework of Appraisal Criteria can be effectively adopted by Bank staff and appropriately reflected in the staff appraisal reports only if the analytical work is carried out well at the feasibility study stage. Therefore, the PPTA consultants should be requested explicitly in the TOR to adhere to the appraisal criteria spelled out in the Framework.

More specifically, the PPTA consultants are expected to review the educational policy framework, including sector analysis and sustainability issues, in particular (i) the socio-cultural context and its receptiveness to the proposed educational intervention; (ii) the economic and financial capacity of the country; and (iii) the management capacity of the country's institutional structure and culture. The review should cover all criteria laid down in chapter III of the "Framework and Criteria for the Appraisal and Socioeconomic Justification of Education Projects."

The consultants would also review all internal efficiency criteria relevant to the proposed educational intervention, given its scope and specific objectives. The internal efficiency criteria comprise (i) cost and financing criteria; (ii) educational inputs (teachers, facilities, equipment, curriculum, instructional materials, administrative capacity; (iii) administrative and instructional processes; and (iv) educational outputs (attainment, achievement, equity). The internal efficiency criteria are detailed in Chapter IV of the Framework and associated Appendix.

A third task of the consultants is to consider explicitly all project-specific design criteria such as (i) incorporation of previous project experience; (ii) minimization of social, institutional and environmental risks; (iii) effective BME system; and (iv) cost-effectiveness analysis.

A fourth area for the consultants is to articulate project scope and specific objectives such as (i) quantitative expansion and system rationalization; (ii) quality of education; (iii) internal efficiency; and (iv) system productivity, etc.

A fifth area is to assess the anticipated external impact generated by the proposed educational intervention. This impact should be classified into economic benefits, social or equity related benefits, institutional impacts, and environmental and political impact. A more detailed checklist of possible criteria is presented in the Framework.

Regarding the economic analysis of education projects, the PPTA consultants are expected to: (i) review existing data on social returns to investment in education in the country concerned, in an effort to strengthen the economic justification of the proposed project; (ii) assess the demand (need) for educational services using the social demand approach and/or the manpower requirements approach, as appropriate; (iii) assess education-employment linkages and the demand for private sector educational services, as appropriate; (iv) assess the equity impact, in terms of beneficiaries, social benefits, distributional impact and affordability; (v) analyze/assess financial data such as financial costs and
budgetary allocation, review of educational expenditures, incremental recurrent costs, cost recovery, and affordability; (vi) identify and value if feasible social costs (public and private) and social benefits and indicate the time frame of expected educational outputs and outcomes; and (vii) carry out cost-effectiveness/least-cost analysis, whichever is appropriate. The review, analysis and assessment of these aspects should be congruent with the more detailed set of guidelines specified in chapter VI of the Framework.
References


